



**NONRESIDENT
TRAINING
COURSE**



February 1998

Construction Mechanic Basic, Volume 1

NAVEDTRA 14264

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.

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.

*1998 Edition Prepared by
CMC(SCW) Charles Lathan*

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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 CONSTRUCTION MECHANIC BASIC

VOLUME 1

Construction Mechanic Basic, Volume 1, NAVEDTRA 14264, consists of chapters on Technical Administration; Principles of an Internal Combustion Engine; Construction of an Internal Combustion Engine; Gasoline Fuel Systems; Fuel Diesel Fuel Systems; and Cooling and Lubricating Systems.

VOLUME 2

Construction Mechanic Basic, Volume 2, NAVEDTRA 14273, consists of chapters on Basic Automotive Electricity; Automotive Electrical Circuits and Wiring; Hydraulic and Pneumatics Systems; Automotive Clutches and Transmissions; Drive Lines, Differentials, Axles, and Power Train Accessories; Construction Equipment Power Trains; Brakes; and Automotive Chassis and Body.

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: n314.products@cnet.navy.mil
Phone: Comm: (850) 452-1001, Ext. 1826
DSN: 922-1001, Ext. 1826
FAX: (850) 452-1370
(Do not fax answer sheets.)
Address: COMMANDING OFFICER
NETPDTC (CODE 314)
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 (CODE N331)
6490 SAUFLEY FIELD ROAD
PENSACOLA FL 32559-5000

NAVAL RESERVE RETIREMENT CREDIT

If you are a member of the Naval Reserve, you will receive retirement points if you are authorized to receive them under current directives governing retirement of Naval Reserve personnel. For Naval Reserve retirement, this course is evaluated at 8 points. (Refer to *Administrative Procedures for Naval Reservists on Inactive Duty*, BUPERSINST 1001.39, for more information about retirement points.)

COURSE OBJECTIVES

In completing this nonresident training course, you will demonstrate a knowledge of the subject matter by correctly answering questions on the following subjects: Technical Administration; Principles of an Internal Combustion Engine; Construction of an Internal Combustion Engine; Gasoline Fuel Systems; Diesel Fuel Systems; and Cooling and Lubricating Systems.

Student Comments

Course Title: Construction Mechanic Basic, Volume 1

NAVEDTRA: 14264 **Date:** _____

We need some information about you:

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

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

Your comments, suggestions, etc.:

<p>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.</p>
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NETPDTC 1550/41 (Rev 4-00)

CHAPTER 1

TECHNICAL ADMINISTRATION

LEARNING OBJECTIVE: Identify personnel, their functions, and required paper work to administer a Battalion Equipment Maintenance Program; recognize maintenance support requirements for a Civil Engineering Support Equipment (CESE) maintenance program.

The higher you ascend on the enlisted ladder, the more valuable you are to the Navy. Advancement brings both increased rewards and responsibilities. You must be able to perform various administrative duties within the Construction Mechanic rating, such as opening and closing of equipment repair orders, maintaining history jackets, updating preventive maintenance record cards, and ordering direct turnover (DTO) or repair parts. The type of activity to which you are attached will determine the way you should carry out your administrative responsibilities.

In this chapter, technical administration as it relates to the Naval Construction Force is discussed. It is primarily concerned with maintenance administration and maintenance support.

MAINTENANCE ADMINISTRATION

LEARNING OBJECTIVE: Recognize the principles and techniques of administering the Civil Engineering Support Equipment (CESE) maintenance program.

Administrative guidelines concerning Civil Engineering Support Equipment (CESE) maintenance are contained in NAVFAC P-300, *Management of Civil Engineering Support Equipment* and COMSECONDNCB/COMTHIRDNCBINST 11200.1.

MAINTENANCE ORGANIZATION

The organization of an equipment maintenance section varies depending upon several factors: number and type of assigned equipment, number and experience of personnel, working hours, number of shifts, environmental conditions, and the mission of the activity. The organization discussed in this chapter is based upon the operation of a typical Naval Mobile

Construction Battalion (NMCB). The functions discussed are also applicable to small activities where one person may be required to perform several functions.

Maintenance Supervisor

The maintenance supervisor is the senior mechanic assigned to an activity, usually a senior chief. This supervisor is responsible for the maintenance program for all assigned Civil Engineer Support Equipment (CESE) and all personnel involved. The maintenance supervisor directly supervises the inspectors, the shop supervisors, the preventive maintenance and cost control clerks, the technical librarian, and the toolroom and parts expeditors.

Some of the maintenance supervisors responsibilities are to enforce all established maintenance policies, approve all repair actions before accomplishment, approve requisitions for procurement of Not-In-Stock (NIS) and Not-Carried (NC) materials, maintain shop work load files, make all decisions concerning deadline CESE, control transfer and disposal of CESE, supervise the preventive maintenance (PM) program, and control shop tools and kits. The maintenance supervisor also initiates action when, during maintenance procedures, equipment abuse or misuse is suspected

Shop Supervisor

The typical NMCB maintenance organization is divided into three shops: the heavy shop, the light shop, and the support shop. Each shop is supervised by a shop supervisor. This position is held by a chief or senior first class petty officer, who is responsible for the quality of maintenance and repairs performed by personnel within the shop. The shop supervisor is also responsible for

ensuring that the equipment repair order (ERO) is complete with length of time, initials, materials list, and any required requisitions.

Crew Leader

The crew leader is a second or senior third class petty officer.. This person is responsible for ensuring the job gets done. When assigned a job, the crew leader must determine what member of the crew is to do what work, what tools and repair parts are required, identify special safety precautions to be observed, and what priority the job has. A crew may be assigned more than one job at a time. Once the job is assigned, it is the crew leader's "baby." The crew leader is also responsible for ensuring that crew time is reported, that all materials used on the job are recorded, and that any unscheduled repairs are reported to the shop supervisor.

Inspector

Inspectors examine equipment for needed repairs and services. They work directly for and are responsible to the maintenance supervisor. Inspectors should be first class or senior second class petty officers. They must be knowledgeable and proficient in their rating, and they should be able to describe each repair action on the ERO clearly.

Before the initial inspection is performed, an inspector should review the equipment history jacket. The inspector is responsible for reviewing previous EROs for follow-up adjustments from previous repairs and maintenance schedule and lubrication charts to initiate hourly/mileage repairs or adjustments. He also reviews the DTO file for parts recieved to perform deferred repairs. Inspectors may perform minor work that pertains to inspection procedures only. Inspectors should inform the maintenance supervisor of suspected equipment abuse or misuse and recurring component failures immediately.

Each piece of equipment is inspected after repairs are completed to ensure that the work was done correctly. Thorough final inspection increases reliability and reduces the mechanic's work load.

Cost Control Supervisor

The cost control supervisor is usually a first class petty officer who is responsible for administrative control of the equipment maintenance program. The cost control supervisor works directly for and responsible to the maintenance supervisor. The cost

control supervisor directly supervises the PM clerk, the DTO clerk, the tool custodian, and the technical librarian.

Some of the cost control supervisor's responsibilities are to draft all maintenance related correspondence such as monthly CESE reports, receipt messages and letters, disposal letters, 1348s and material-handling equipment (MHE) reports. The cost control supervisor also, completes EROS, forwards downloads to 3rd NCB equipment office, tracks daily and weekly equipment availability, maintains the deadline equipment file, and NORS/ANORS status board.

Preventive Maintenance Clerk

The preventive maintenance clerk controls the PM program directed by the maintenance supervisor. The PM clerk places all CESE into PM groups, prepares the PM schedule, and maintains the PM record cards with the preventive maintenance history of each vehicle. The PM clerk is responsible for controlling EROS. maintaining the ERO log, maintaining and updating equipment history jackets, and updating equipment status boards in the maintenance office. The PM clerk also summarizes the total cost of repairs and of labor expended and makes appropriate entries on the ERO.

Direct Turnover Clerk

The direct turnover (DTO) clerk maintains the maintenance shop's repair parts status and accountability records and is a liaison between the supply office and the shop. All requisitions for Not-in-Stock (NIS) and Not-Carried (NC) material must pass through the DTO clerk who maintains the DTO log and repair parts summary sheets. The DTO clerk also maintains the deadline file and deadline status board.

Technical Librarian

Technical librarians are responsible for the prepacked library that contains operational, maintenance, and parts manuals. They establish and enforce check-out procedures for the manuals and initiate parts requisitions (NAVSUP 1250s and DD Form 1348s). The task of researching and preparing the requisitions is handled by the technical librarian, so the floor mechanics can perform maintenance functions.

MAINTENANCE CATEGORIES

The goal of maintenance is to maintain equipment in a safe and serviceable condition at all times at a reasonable cost and to detect minor deficiencies before