



**NONRESIDENT
TRAINING
COURSE**



March 1990

Aircrew Survival Equipmentman 2

NAVEDTRA 14218

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.

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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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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: n315.products@cnet.navy.mil
Phone: Comm: (850) 452-1777
DSN: 922-1777
FAX: (850) 452-1370
(Do not fax answer sheets.)
Address: COMMANDING OFFICER
NETPDTC (CODE N315)
6490 SAUFLEY FIELD ROAD
PENSACOLA FL 32509-5237

For enrollment, shipping, grading, or completion letter questions

E-mail: n331@cnet.navy.mil
Phone: 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 10 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: Personnel parachute familiarization; automatic opening devices; NES-12 personnel parachute system; protective equipment; rescue and survival equipment; inflatable survival equipment; seat survival kit; carbon dioxide; sewing machines; fabrication and manufacture; oxygen test stands and oxygen related components.

Student Comments

Course Title: Aircrew Survival Equipmentman 2

NAVEDTRA: 14218 **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

PERSONNEL PARACHUTE FAMILIARIZATION

Learning Objective: Upon completion of this chapter, you will be able to recognize and understand the history, components, and publications used to maintain personnel emergency parachute assemblies.

The word *parachute* is, in the modern sense, derived from the Italian word *parare*, meaning to protect or shield from, and the French word *chute*, meaning a fall or quick descent—literally, “to protect from a fall.” As early as the year 1300, Chinese experimenters are reported to have jumped off the Great Wall with devices resembling umbrellas. In the year 1495, the great genius, artist, and inventor, Leonardo da Vinci, sketched a parachute design to be made of caulked linen that would permit a gentle descent to earth. About a century later, Fausto Veranzio described and sketched a parachute design consisting of a four-poled square frame covered with fabric, which he claimed could be used to escape from tall, burning buildings. Since man, not yet airborne, had no use for a lifesaving device of this nature at that time, parachutes were considered novelties or items of amusement, and interest in them gradually lessened. It was not until the invention of the first aerial balloon that interest in the parachute was renewed. As a result of the balloon, the parachute became less of a toy and more a means of escape.

In the late 1700's, the Montgolfier brothers had invented a balloon that would stay aloft. This balloon was kept in the air by burning bundles of straw beneath the bag to furnish the necessary supply of hot air. If the fabric caught fire, the flight was abruptly ended. This meant that those who went up on such flights had to have a means of escape. Those early days of ballooning saw excursions of curiosity into the use of parachutes by early balloonists such as the Montgolfiers, Blanchard, Martyn, Arnold, Appleby, Hampton, and others. Some parachute drops, using animals as passengers, were successfully made. The first human parachute descent was accomplished by the famous French balloonist Andre-Jacques Garnerin, on 22 October 1798. This historic event

took place over Monceau Park, near Paris, when Garnerin released himself and his semirigid parachute from the balloon at an altitude of 6,000 feet.

On 14 July 1808, a famous Polish balloonist, Jodaki Kuparento, was the first man to have his life saved from a flaming bag of hot air when, over Warsaw, remnants of his burning balloon blew into the balloon's net structure and blossomed into a parachute, lowering him to the ground safely. However, the need for a foolproof parachute-whose main role at that time was its use as an added thrill to balloon ascensions-was not strong enough to stimulate a great deal of inventive effort until nearly 100 years later. Hence, with the coming of the air age in 1903, when the Wright brothers made their spectacular flight at Kitty Hawk, North Carolina, there came also an era of experimentation with parachutes designed for this new type of flying machine.

Albert Berry is credited with being the first person to successfully jump from an aircraft using a parachute. This jump was made on March 1, 1912, from a Benoist Pusher Biplane, at Jefferson Barracks, not far from Kinloch Park “Aerodrome,” St. Louis. The parachute was an unbleached muslin cotton parachute, 36 feet in diameter. Its suspension lines terminated into a trapeze bar and strap arrangement. The parachute assembly was packed into a cone attached under the airplane. It was retained within the metal cone by a series of break cords. The weight of Berry's falling body pulled the canopy and lines from the container. Many others, using makeshift or experimental parachutes, made descents before World War I, but parachutes still were not considered essential equipment for military aviators. As World War I progressed, the resultant mortality rate among pilots was very high. However, the lives of over 800 balloonist