Naval Education and Training Command

NAVEDTRA 131A
July 1997

Support Manual for
MIL-HDBK-1379-2

PERSONNEL PERFORMANCE PROFILE BASED CURRICULUM DEVELOPMENT MANUAL

VOLUME II SAMPLE PRODUCTS

0502LP0129490

DEPARTMENT OF THE NAVY
CHIEF OF NAVAL EDUCATION AND TRAINING
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1500
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LETTER OF PROMULGATION FOR NAVEDTRA 131A

1. This guidance manual has been extensively revised, in response to Navy and industry users. All changes reflect a continuing effort to increase the manual's utility to the training field. NAVEDTRA 131A supersedes and replaces NAVEDTRA 131.

2. A paradigm shift is taking place in Navy training materials development as we move from products developed within a rigid framework, and move toward design and development of training materials using a process oriented Instructional Systems Design/Systems Approach to Training (ISD/SAT). The ISD/SAT process is described in MIL-HDBK 1379-2 (9 June 1997). NAVEDTRA 131A supports the ISD/SAT process and training materials designed and developed using NAVEDTRA 131A are fully compatible with the ISD/SAT concept.

3. The procedures in this manual follow a Personnel Performance Profile (PPP) 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.

4. Guidelines for planning a curriculum development project and for producing training materials through the five stages of the PPP based method are contained in this manual. Guidelines for the implementation and evaluation of curriculum materials are contained in NAVEDTRA 135A, Navy School Management Manual (October 1995).

5. Procedural guidance for development of training materials following a task based method is published in NAVEDTRA 130A.

6. Corrections and comments concerning this manual are invited and should be addressed to Chief of Naval Education and Training, Education Training Systems (ETS) division.

7. Reviewed and approved.

E. T. BURDEN, JR.

NOTICE TO ONLINE USERS OF THIS MATERIAL

To keep online file size to a minimum, blank pages used in the paper copy for pagination have been omitted.

Only printed pages are contained online.

Chief of Naval Education and Training Education and Training Systems Division (ETS)

TAB A-1

TRAINING PROJECT PLAN

TRAINING PROJECT PLAN

FOR

TRIDENT EXTERIOR COMMUNICATIONS SYSTEM (ECS)

CONTROL, MONITOR, AND TEST SUBSYSTEM (CMT)

MAINTENANCE

A-111-4251

PREPARED FOR

DEPUTY FOR SHORE/TECHNICAL TRAINING (CNET T2)

250 DALLAS STREET

PENSACOLA, FLORIDA 32508-5220

PREPARED BY

TRIDENT TRAINING FACILITY

BANGOR, WASHINGTON 98315-5400

APRIL 91

Example Training Project Plan Cover Page

TRAINING PROJECT PLAN

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Example Training Project Plan Table of Contents Page

Example Training Project Plan

TRAINING PROJECT PLAN

SECTION 1.0 TRAINING PROJECT PLAN

Justification for Course Revision

This Training Project Plan describes a course revision to support changes to the TRIDENT Exterior Communications System (ECS) Control Monitor and Test (CMT) Subsystem Maintenance course. The following establishes the need for the course revision.

1. Major revisions to the TRIDENT Radioman PPP/TPS approved by CNTECHTRA ltr 1500 Ser N214A/1331 dtd 8 Feb 91.

2. The combination of the TRIDENT (ECS) CMT System Maintenance (A-150-0228) course and the TRIDENT (ECS) Level III Replacement (A-101-0169) course.

3. Subject course contains numerous technical documentation, and curriculum format errors.

Impact if Course is not Revised

Failure to revise the curriculum materials will result in a continuation of training which does not reflect the revised TRIDENT Radioman PPP/TPS and does not support fleet requirements.

Example Training Project Plan - Continued

TRAINING PROJECT PLAN

COURSE DATA

Course Title:

TRIDENT Exterior Communications System (ECS)
Control Monitor and Test (CMT) Subsystem

Course Identification Number (CIN):

A-111-4251

CDP: 1234

Course Status:

This is a revision to the 1976 course.

Course Mission Statement:

The TRIDENT (ECS) CMT Basic Maintenance course is designed to provide Radioman First Class the training necessary to perform documented preventive and corrective maintenance on the TRIDENT ECS Control Monitor and Test (CMT) Subsystem and undocumented corrective maintenance on selected CMT Subsystem equipments, under all conditions of readiness, in port or underway.

Occupational Classification:

NEC 4201 is awarded to course graduates.

Prerequisites:

1. Rate: RM

2. Clearance: SECRET and CRYPTO NEED-TO-KNOW

3. Graduate of TRIDENT ECS Level I (A-101-0168) course, TRIDENT (ECS) Support Subsystem (A-101-0172) course, TRIDENT (ECS) ANT/AIS Subsystem (A-101-0173) course, TRIDENT (ECS) HF/UHF Subsystem (A-101-0175) course, TRIDENT (ECS) VLF/LF Subsystem (A-101-0170) course, and TRIDENT (ECS) DSS Subsystem (A-101-0171) course.

Course Overview:

Perform selected preventive and documented corrective maintenance on the TRIDENT ECS Control Monitor and Test (CMT) Subsystem to include:

– Indicator Processor ID-2156/BSC-1

Example Training Project Plan - Continued

TRAINING PROJECT PLAN

COURSE DATA

- Antenna Deployment Indicator ID-2157/BSC-1
- Power Supply PP-7476/BSC-1
- Interface Unit J-3565/BSC-1 (Message Interface Unit)

Course Overview

- Controller Memory Unit C-1Ø448/BSC-1
- Interface Unit J-3566/BSC-1 (Digital Interface Unit)
- Switching Unit SA-22Ø4/BSC-1 (Mass Memory 2 Interface Unit)
- Interface Unit J-3568/BSC-1 (HSP/Magnetic Tape Unit Interface Unit)
- Recorder-Reproducer Control C-1Ø447/BSC-1
- Recorder-Reproducer Unit RD-442/BSC-1
- Comparator CM-5Ø7/BSC-1
- Disc Memory Unit MU-674/BSC-1

This course will also provide the training necessary to perform undocumented corrective maintenance on the following CMT Subsystem equipments:

- Interface Unit J-3565/BSC-1 (Message Interface Unit)
- Interface Unit J-3566/BSC-1 (Digital Interface Unit)
- Recorder-Reproducer Control C-1Ø447/BSC-1
- Recorder-Reproducer Unit RD-442/BSC-1
- Controller Memory Unit C-1Ø448/BSC-1
- Disc Memory Unit MU-674/BSC-1

The course lesson topic changes are as follows:

Summary of Differences		Hours Increased
4A13	Theory of the J-3566/BSC-1	7
4A13	Corrective Maintenance of the J-3566/BSC-1	12
4A10	Theory of the J-3565/BSC-1	6
4A10	Corrective Maintenance of the J-3565/BSC-1	12
4A17	Theory of the RD-442/BSC-1	7
4A17	Corrective Maintenance of the RD-442/BSC-1	12

Example Training Project Plan - Continued

TRAINING PROJECT PLAN

COURSE DATA

Planned Course Length:	Current Course Length:
1. 61 Calendar Days	1. 52 Calendar Days
2. 45 Instructional Days	2. 38 Instructional Days

Training Sites:

1. TRIDENT Training Facility, Bangor, Silverdale, Washington
2. TRIDENT Training Facility, Kings Bay, Georgia

Number of Classes by Training Site:	Current:	Planned:
1. TRIDENT Training Facility, Bangor	3	3
2. TRIDENT Training Facility, Kings Bay	3	3

Class Capacity by Training Site:	Current:	Planned:
1. TRIDENT Training Facility, Bangor		
a. Maximum:	12	12
b. Minimum:	8	8
2. TRIDENT Training Facility, Kings Bay		
a. Maximum:	12	12
b. Minimum:	8	8

Planned Average On Board by Training Site:	Current:	Planned:
1. TRIDENT Training Facility, Bangor	5	6
2. TRIDENT Training Facility, Kings Bay	5	6

Instructor/Support Manning by Training Site:

The estimated plan for instructor/support manning is based on the same ratios for all sites. Periods can be found on the Course Master Schedule.

Example Training Project Plan - Continued

TRAINING PROJECT PLAN

COURSE DATA

		Current:	Planned:
1.	TRIDENT Training Facility, Bangor	2	4
2.	TRIDENT Training Facility, Kings Bay	2	4

Example Training Project Plan - Continued

TRAINING PROJECT PLAN

COURSE DATA

SAFETY RISKS AND HAZARDOUS MATERIALS

This course will be designated as high risk in accordance with CNETINST 1500.20. Special emphasis must be placed on strict compliance with published safety precautions and on personnel awareness of potentially hazardous conditions while performing maintenance on energized equipment. 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 safety precautions.

CURRICULUM DEVELOPMENT METHOD

1. Curriculum will be developed in accordance with NAVEDTRA 131. This method provides support and continuity with related training materials.

2. The documents that will be produced/revised for this course are:

   a. Training Project Plan

   b. Personal Performance Profiles

   c. Training Path System

   d. Training Course Control Document

   e. Lesson Plan (3 Volumes)

   f. Trainee Guide (1 Volume)

   g. Test Package

   h. Support Materials

3. The primary mode of instruction will be group paced consisting of lecture and seminar periods with practical/problem solving experiences. The trainees will be guided by the instructors during graded problem solving sessions to allow maximum acquisition of knowledge and skills.

Example Training Project Plan - Continued

TRAINING PROJECT PLAN

MILESTONE CHART

Milestones		Completion Date
1.	Approval of Training Project Plan	26 April 91*
2.	Develop/Revise Personnel Performance Profiles	15 May 91
3.	Develop Training Path System	29 May 91
4.	Submit Training Course Control Document	02 August 91
5.	Approval of Training Course Control Document	09 September 91*
6.	Develop Support Material	13 December 91
7.	Request authorization to conduct pilot	16 December 91*
8.	Conduct pilot (16 March - 08 May)	08 May 92
9.	Submit pilot report and red line copy of course materials	22 June 92
10.	Incorporate changes approved by CNTECHTRA	29 June 92
11.	Issue Letter of Promulgation	29 July 92*
12.	Print and distribute to training sites	24 August 92
13.	Instructor certification/personalization complete	11 September 92
14.	Implementation of training program	21 September 92

* All follow on dates assume approval will be granted by this date.

Example Training Project Plan - Continued

TRAINING PROJECT PLAN

A-111-4251

RESOURCE REQUIREMENTS LIST

COURSE: TRIDENT Exterior Communications system (ECS)

CLASS SIZE: As per the Formal Schools Catalog

I. **Manpower**

1. TRIDENT Training Facility, Bangor

CPATS Document #: 91 68437 68437 C1Ø8A
Cost Account Code: 5PPQ

	FY91	FY92	FY93	FY94	FY95
Officer Billets Required	1	1	1	1	1
Billets Authorized	1	1	1	1	1
Billets Compensated	0	0	0	0	0
Billets Available **Delta**	0	0	0	0	0
Enlisted Billets Required	4	4	4	4	4
Billets Authorized	2	2	2	2	2
Billets Compensated	0	0	0	0	0
Billets Available **Delta**	-2	-2	- 2	-2	-2
Civilian Billets Required					
Billets Authorized	0	0	0	0	0
Billets Compensated	0	0	0	0	0
Billets Available **Delta**	0	0	0	0	0

2. TRIDENT Training Facility, Kings Bay

CPATS Document #: 91 687Ø1 687Ø1 C1Ø8A
Cost Account Code: 5PPQ

	FY91	FY92	FY93	FY94	FY95
Officer Billets Required	1	1	1	1	1
Billets Authorized	1	1	1	1	1
Billets Compensated	0	0	0	0	0
Billets Available					
Delta	0	0	0	0	0
Enlisted Billets Required	4	4	4	4	4
Billets Authorized	2	2	2	2	2
Billets Compensated	0	0	0	0	0
Billets Available					
Delta	-2	-2	-2	-2	-2
Civilian Billets Required					
Billets Authorized	0	0	0	0	0
Billets Compensated	0	0	0	0	0
Billets Available					
Delta	0	0	0	0	0

RESOURCE REQUIREMENTS LIST (CONT'D)

II. **Funding**

1. TRIDENT Training Facility, Bangor

Approp	AG/SAG	Expense	FY91	FY92	FY93	FY94	FY95
OMN	F3/FF						
OPN	F3/FF						

2. TRIDENT Training Facility, Kings Bay

Approp	AG/SAG	Expense	FY91	FY92	FY93	FY94	FY95
OMN	F3/FF						
OPN	F3/FF						

RESOURCE REQUIREMENTS LIST (CONT'D)

III. Training Materials

Nomenclature/ Description	Quantity Req'd TRITRAFAC Bangor	Quantity Req'd TRITRAFAC Kings Bay
A-111-4251 TRIDENT Exterior Communications Subsystem (ECS) Lesson Plan	10	10
A-111-4251 TRIDENT Exterior Communications Subsystem (ECS) Trainee Guide	10	10

IV. Publications

Nomenclature/ Description		
MIP/MRC C-668/ØØ1-3Ø Q12R	15	15
MIP/MRC C-668/ØØ1-3Ø Q17RØ	15	15
MIP/MRC C-668/ØØ1-3Ø Q18R	15	15

V. Audio/Visual Aids

Nomenclature/ Description		
Transparencies, A-111-4251 series	1 set	1 set

VI. Training Equipment

Nomenclature/ Description		
AN/BSC-1 Trainer	1	1

TAB A-2

PERSONNEL PERFORMANCE PROFILES

EQUIPMENT PPP TABLE EXAMPLES

PERSONNEL PERFORMANCE PROFILE

FOR

TRIDENT EXTERIOR COMMUNICATIONS SYSTEM (ECS)

SUPPORT SYSTEM

TABLE FØ194

POWER DISTRIBUTION GROUP

1 AUGUST 1990

EQUIPMENT MODIFICATION RECORD

None

NEW DESIGN - DRAWING NUMBER

None

F0194-1/F0194-2

Example Equipment PPP Table Cover Page

TABLE FØ194. Power Distribution Group (Equipment).

ITEM NO.	KNOWLEDGE/SKILL
1.	EQUIPMENT KNOWLEDGE
1-1.	GENERAL
1-1-1.	State the functions of the Power Distribution Group.
1-1-2.	State that the Power Distribution Group consists of the following major functional areas. Include the function of each. a. Power panel b. Power distribution black panel c. Power distribution red panel d. Component compartment e. Ground fault indicator panel f. Junction boxes
1-1-3.	Define the abbreviations, terms, and symbols used with the Power Distribution Group.
1-1-4.	State the operational characteristics and capabilities of the Power Distribution Group.
1-1-5.	State the security requirements for the Power Distribution Group.
1-2.	PHYSICAL DESCRIPTION
1-2-1.	Describe all major and associated components of the Power Distribution Group. Include names, nomenclature, physical appearance, reference designators, locations, and construction features. a. Power panel b. Power distribution black panel c. Power distribution red panel d. Component compartment e. Ground fault indicator panel f. Junction boxes
1-2-2.	Describe the controls and indicators directly associated with the Power Distribution Group. Include names, reference designators, positions, colors, and locations.

FØ194-3

Example Equipment PPP Table

TABLE FØ194. Power Distribution Group (Equipment) - Continued.	
ITEM NO.	KNOWLEDGE/SKILL
1-3.	FUNCTIONAL DESCRIPTION
1-3-1.	Describe how the Power Distribution Group works (functional operation). Include signal flow, sequential operation, and indications.
1-3-2.	Describe the functions of each control and indicator in each position, condition, and color.
1-4.	INTERFACE DESCRIPTION
1-4-1.	Describe the physical interface between the Power Distribution Group and related external equipments. Include names, physical appearance, reference designators, and locations. a. Cable routing b. Cable terminations
1-4-2.	Describe the functional interface between the Power Distribution Group and related external equipments. a. Power sources b. Inputs c. Outputs
1-5.	OPERATIONAL DESCRIPTION
1-5-1.	Describe the authority and regulations pertaining to the operation of the Power Distribution Group, including external equipments which interface with it.
1-5-2.	Describe operational tasks for the Power Distribution Group. a. Pre-operational procedures (1) Routine (2) Installation b. Operational procedures c. Post-operational procedures
1-5-3.	Describe indications which may occur during operation of the Power Distribution Group. Include alarms and indicators.
1-5-4.	Describe casualty/degraded/abnormal mode(s) of operation for the Power Distribution Group.
	FØ194-4

Example Equipment PPP Table - Continued

TABLE FØ194. Power Distribution Group (Equipment) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
1-5-5.	Describe personnel and equipment safety precautions which are to be observed during operation of the Power Distribution Group.
1-6.	MAINTENANCE DESCRIPTION
1-6-1.	Define the maintenance policy for the Power Distribution Group. a. Preventive maintenance - the requirement for periodic performance of tasks to minimize system malfunctions by doing the following: (1) Servicing - scheduled or unscheduled inspections, cleaning, lubrication, corrosion control and any other function in support of maintaining any equipment full mission capable. (2) Operational checks (confidence or self test) (a) Pre-maintenance procedures (b) Performance checks (c) Degradation/deterioration checks b. Corrective maintenance - checks and procedures used to locate and correct malfunctions as determined by the following guides: (1) Authorized repair responsibility to correct malfunctions to the authorized maintenance level (2) Fault isolation - location of faults to the level of available spares, and to the authorized repair level. (a) Equipment operation checks and tests (b) Fault isolation tests and procedures (3) Analytical procedures - isolation of faults using authorized techniques not contained in prescribed maintenance documentation. (4) Post-maintenance procedures - procedures performed after repair.
1-6-2.	Describe the use of special tools and test equipment required for maintenance of the Power Distribution Group as prescribed in applicable documentation.
1-6-3.	Describe preventive maintenance procedures for the Power Distribution Group. Include recognition and interpretation of indications, records, reports, and instructions.

FØ194-5

Example Equipment PPP Table - Continued

TABLE FØ194. Power Distribution Group (Equipment) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
1-6-4.	Describe alignment and adjustment procedures for the Power Distribution Group.
1-6-5.	Describe the operational tests used for maintenance of the Power Distribution Group. Include tests' names, uses, and the procedures.
1-6-6.	Describe the recognition and interpretation of all malfunction indications for the Power Distribution Group.
1-6-7.	Describe the systematic fault isolation procedures contained in the prescribed maintenance documentation for the Power Distribution Group.
1-6-8.	Describe authorized methods to isolate faults which cannot be located using procedures contained in the prescribed documentation.
1-6-9.	Describe the procedures to disassemble, repair, and reassemble the Power Distribution Group to the authorized maintenance level.
1-6-10.	Describe the post-repair procedures for the Power Distribution Group.
1-6-11.	Describe personnel and equipment safety precautions, including tag-out procedures, which are to be observed while performing maintenance on the Power Distribution Group.
1-7.	DOCUMENTATION
1-7-1.	Describe the organization, content, and use of all technical documentation provided for use with the Power Distribution Group.
2.	EQUIPMENT SKILLS
2-1.	OPERATION
2-1-1.	Perform tasks for operation of the Power Distribution Group. a. Pre-operational procedures (1) Routine (2) Installation

FØ194-6

Example Equipment PPP Table - Continued

TABLE FØ194. Power Distribution Group (Equipment) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
	b. Operational procedures c. Post-operational procedures
2-1-2.	Recognize and interpret all indications occurring during the performance of the operating procedures, and perform appropriate operator actions in proper sequence on the Power Distribution Group.
2-1-3.	Perform tasks in the casualty/degraded/abnormal modes of operation of the Power Distribution Group.
2-1-4.	Adhere to personnel and equipment safety precautions during operational procedures of the Power Distribution Group.
2-2.	MAINTENANCE
2-2-1.	Use special tools and test equipment required for maintenance of the Power Distribution Group as prescribed in applicable documentation.
2-2-2.	Perform preventive maintenance procedures on the Power Distribution Group as scheduled by the Planned Maintenance System (PMS).
2-2-3.	Perform alignment and adjustment procedures on the Power Distribution Group.
2-2-4.	Perform operational tests used for maintenance of the Power Distribution Group.
2-2-5.	Recognize and interpret all malfunction indications for the Power Distribution Group.
2-2-6.	Perform systematic fault isolation procedures contained in prescribed maintenance documentation.
2-2-7.	Use authorized methods to isolate faults which cannot be located using the procedures in the prescribed maintenance documentation.
2-2-8.	Disassemble, repair, and reassemble the Power Distribution Group to the authorized maintenance level.
	FØ194-7

Example Equipment PPP Table - Continued

TABLE FØ194. Power Distribution Group (Equipment) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
2-2-9.	Perform post-repair procedures, including quality assurance procedures, on the Power Distribution Group.
2-2-10.	Adhere to personnel and equipment safety precautions, including tag-out procedures, when performing maintenance on the Power Distribution Group.

FØ194-8

EQUIPMENT PPP TABLE - Continued

EQUIPMENT PPP TABLE
TABLE EXAMPLES

PERSONNEL PERFORMANCE PROFILE

FOR

TRIDENT EXTERIOR COMMUNICATIONS SYSTEM (ECS)

ANTENNA SUITE

TABLE FØ2Ø2

TOWED BUOY ANTENNA AN/BRR-6

1 AUGUST 1990

EQUIPMENT MODIFICATION RECORD

None

NEW DESIGN - DRAWING NUMBER

None

FØ2Ø2-1/FØ2Ø2-2

Example Equipment PPP Table Cover Page

TABLE FØ2Ø2. Towed Buoy Antenna AN/BRR-6 (Equipment).

ITEM NO.	KNOWLEDGE/SKILL
1.	EQUIPMENT KNOWLEDGE
1-1.	GENERAL
1-1-1.	State the functions of the Towed Buoy Antenna AN/BRR-6.
1-1-2.	State that the Towed Buoy Antenna AN/BRR-6 consists of the following major functional areas. Include the function of each. a. Towed Buoy TB-17/BRR-6 b. Receiver Group OR-197/BRR-6 c. Special Purpose electrical Cable Assembly CS-13Ø53/BRR-6 d. Buoy Cradle MT-49Ø5/BRR-6 e. Reeling Machine RL-275/BRR-6 f. Sensor Group OA-89Ø6/BRR-6 g. Buoy Door Sensing Switch h. Buoy Control Indicator C-1Ø25A/BRR-6 i. Antenna Control Indicator C-1Ø257/BRR-6 j. Buoy Depth Control Indicator C-1Ø258A/BRR-6 k. Relay Assembly RE-1115/BRR-6 (Buoy Winch Control Panel) l. Interconnecting Box J-3461/BRR-6 m. Towed Array Control Indicator Panel
1-1-3.	Define the abbreviations, terms, and symbols used with the Towed Buoy Antenna AN/BRR-6.
1-1-4.	State the operational characteristics and capabilities of the Towed Buoy Antenna AN/BRR-6.
1-1-5.	Describe the differences between models of the Towed Buoy Antenna AN/BRR-6.
1-1-6.	State the security requirements for the Towed Buoy Antenna AN/BRR-6.
1-2.	PHYSICAL DESCRIPTION
1-2-1.	Describe all major and associated components of the Towed Buoy Antenna AN/BRR-6. Include names, nomenclature, physical appearance, reference designators, locations, and construction features.

Example Equipment PPP Table - Continued

TABLE FØ2Ø2. Towed Buoy Antenna AN/BRR-6 (Equipment) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
	a. Towed Buoy TB-17/BRR-6 b. Receiver Group OR-197/BRR-6 c. Special Purpose electrical Cable Assembly CS-13Ø53/BRR-6 d. Buoy Cradle MT-49Ø5/BRR-6 e. Reeling Machine RL-275/BRR-6 f. Sensor Group OA-89Ø6/BRR-6 g. Buoy Door Sensing Switch h. Buoy Control Indicator C-1Ø25A/BRR-6 i. Antenna Control Indicator C-1Ø257/BRR-6 j. Buoy Depth Control Indicator C-1Ø258A/BRR-6 k. Relay Assembly RE-1115/BRR-6 (Buoy Winch Control Panel) l. Interconnecting Box J-3461/BRR-6 m. Towed Array Control Indicator Panel
1-2-2.	Describe the displays, controls, and indicators directly associated with the Towed Buoy Antenna AN/BRR-6. Include names reference designators, positions, colors, and locations
1-3.	FUNCTIONAL DESCRIPTION
1-3-1.	Describe how the Towed Buoy Antenna AN/BRR-6 works (functional operation). Include signal flow, sequential operation, and indications.
1-3-2.	Describe the functions of each control and indicator in each position, condition, and color.
1-4.	INTERFACE DESCRIPTION
1-4-1.	Describe the physical interface between the Towed Buoy Antenna AN/BRR-6 and related external equipments. Include names physical appearance, reference designators, and locations. a. Cable routing b. Cable terminations c. Hydraulic piping
1-4-2.	Describe the functional interface between the Towed Buoy Antenna AN/BRR-6 and related external equipments.

FØ2Ø2-4

Example Equipment PPP Table - Continued

TABLE FØ2Ø2. Towed Buoy Antenna AN/BRR-6 (Equipment) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
	a. Power sources b. Input signals c. Output signals d. Hydraulics
1-5.	OPERATIONAL DESCRIPTION
1-5-1.	Describe the authority and regulations pertaining to the operation of the Towed Buoy Antenna AN/BRR-6, including external equipments which interface with it.
1-5-2.	Describe operational tasks for the Towed Buoy Antenna AN/BRR-6. a. Pre-operational procedures (1) Routine (2) Installation b. Operational procedures c. Post-operational procedures
1-5-3.	Describe indications which may occur during operation of the Towed Buoy Antenna AN/BRR-6. Include alarms, indicators, and displays.
1-5-4.	Describe casualty/degraded/abnormal mode(s) of operation for the Towed Buoy Antenna AN/BRR-6.
1-5-5.	Describe personnel and equipment safety precautions which are to be observed during operation of the Towed Buoy Antenna AN/BRR-6.
1-6.	MAINTENANCE DESCRIPTION
1-6-1.	Define the maintenance policy for the Towed Buoy Antenna AN/BRR-6. a. Preventive maintenance - the requirement for periodic performance of tasks to minimize system malfunctions by doing the following: (1) Servicing - scheduled or unscheduled inspections, cleaning, lubrication, corrosion control and any other function in support of maintaining any equipment full mission capable.

FØ2Ø2-5

Example Equipment PPP Table - Continued

TABLE FØ2Ø2. Towed Buoy Antenna AN/BRR-6 (Equipment) - Continued.	
ITEM NO.	KNOWLEDGE/SKILL
	(2) Operational checks (confidence or self test) (a) Pre-maintenance procedures (b) Performance checks (c) Degradation/deterioration checks b. Corrective maintenance - checks and procedures used to locate and correct malfunctions as determined by the following guides: (1) Authorized repair responsibility to correct malfunctions to the authorized maintenance level (2) Fault isolation - location of faults to the level of available spares, and to the authorized repair level. (a) Equipment operation checks and tests (b) Fault isolation tests and procedures (3) Analytical procedures - isolation of faults using authorized techniques not contained in prescribed maintenance documentation. (4) Post-maintenance procedures - procedures performed after repair.
1-6-2.	Describe the use of special tools and test equipment required for maintenance of the Towed Buoy Antenna AN/BRR-6 as prescribed in applicable documentation.
1-6-3.	Describe preventive maintenance procedures for the Towed Buoy Antenna AN/BRR-6. Include recognition and interpretation of indications, records, reports, and instructions.
1-6-4.	Describe alignment, adjustment, and calibration procedures for the Towed Buoy Antenna AN/BRR-6.
1-6-5.	Describe the operational tests used for maintenance of the Towed Buoy Antenna AN/BRR-6. Include tests' names, uses, and the procedures.
1-6-6.	Describe the recognition and interpretation of all malfunction indication for the Towed Buoy Antenna AN/BRR-6.
1-6-7.	Describe the systematic fault isolation procedures contained in the prescribed maintenance documentation for the Towed Buoy Antenna AN/BRR-6. FØ2Ø2-6

Example Equipment PPP Table - Continued

TABLE FØ2Ø2. Towed Buoy Antenna AN/BRR-6 (Equipment) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
1-6-8.	Describe authorized methods to isolate faults which cannot be located using procedures contained in the prescribed documentation.
1-6-9.	Describe the procedures to disassemble, repair, and reassemble the Towed Buoy Antenna AN/BRR-6 to the authorized maintenance level.
1-6-10.	Describe the post-repair procedures for the Towed Buoy Antenna AN/BRR-6.
1-6-11.	Describe personnel and equipment safety precautions, including tag-out procedures, which are to be observed while performing maintenance on the Towed Buoy Antenna AN/BRR-6.
1-7.	DOCUMENTATION
1-7-1.	Describe the organization, content, and use of all technical documentation provided for use with the Towed Buoy Antenna AN/BRR-6.
2.	EQUIPMENT SKILLS
2-1.	OPERATION
2-1-1.	Perform tasks for operation of the Towed Buoy Antenna AN/BRR-6. a. Pre-operational procedures (1) Routine (2) Installation b. Operational procedures c. Post-operational procedures
2-1-2.	Recognize and interpret all indications occurring during the performance of the operating procedures, and perform appropriate operator actions in proper sequence on the Towed Buoy Antenna AN/BRR-6.
2-1-3.	Perform tasks in the casualty/degraded/abnormal modes of operation of the Towed Buoy Antenna AN/BRR-6.
2-1-4.	Adhere to personnel and equipment safety precautions during operational procedures of the Towed Buoy Antenna AN/BRR-6.

F0202-7

Example Equipment PPP Table - Continued

TABLE FØ2Ø2. Towed Buoy Antenna AN/BRR-6 (Equipment) - Continued.	
ITEM NO.	KNOWLEDGE/SKILL
2-2.	MAINTENANCE
2-2-1.	Use special tools and test equipment required for maintenance of the Towed Buoy Antenna AN/BRR-6 as prescribed in applicable documentation.
2-2-2.	Perform preventive maintenance procedures on the Towed Buoy Antenna AN/BRR-6 as scheduled by the Planned Maintenance System (PMS).
2-2-3.	Perform alignment, adjustment, and calibration procedures on the Towed Buoy Antenna AN/BRR-6.
2-2-4.	Perform operational tests used for maintenance of the Towed Buoy Antenna AN/BRR-6.
2-2-5.	Recognize and interpret all malfunction indications for the Towed Buoy Antenna AN/BRR-6.
2-2-6.	Perform systematic fault isolation procedures contained in prescribed maintenance documentation.
2-2-7.	Use authorized methods to isolate faults which cannot be located using the procedures in the prescribed maintenance documentation.
2-2-8.	Disassemble, repair, and reassemble the Towed Buoy Antenna AN/BRR-6 to the authorized maintenance level.
2-2-9.	Perform post-repair procedures, including quality assurance procedures, on the Towed Buoy Antenna AN/BRR-6.
2-2-10.	Adhere to personnel and equipment safety precautions, including tag-out procedures, when performing maintenance on the Towed Buoy Antenna AN/BRR-6.
	FØ2Ø2-8

Example Equipment PPP Table - Continued

SUBSYSTEM PPP

TABLE EXAMPLE

PERSONNEL PERFORMANCE PROFILE

FOR

TRIDENT EXTERIOR COMMUNICATIONS SYSTEM (ECS)

TABLE FØ156

DATA SWITCHING SUBSYSTEM (DSS)

1 AUGUST 1990

SUBSYSTEM MODIFICATION RECORD

None

NEW DESIGN - DRAWING NUMBER

None

FØ156-1/FØ156-2

Example Subsystem PPP Table Cover Page

TABLE FØ156. Data Switching Subsystem (DSS).

ITEM NO.	KNOWLEDGE/SKILL
1.	SUBSYSTEM KNOWLEDGE
1-1.	GENERAL
1-1-1.	State the functions of the Data Switching Subsystem (DSS).
1-1-2.	State that the DSS consists of the following major functional areas. Include the function of each. a. PP-7474/BSC-1, PP-7475/BSC-1 Power Supplies b. SA-2199/BSC-1, SA-22ØØ/BSC-1, SA-22Ø1/BSC-1 Switching Units c. Signal Data Converter CV-351ØB/UG d. TSEC/KG-84C (1) Remote Phase Control Unit (Part of Comparator CM-5Ø7/BSC-1) e. TSEC/KG-36 f. TSEC/KWR-46 g. TSEC/KY-75 h. TSEC/KY-58 i. Control Box C-12118/BSC-1
1-1-3.	Define the abbreviations, terms, and symbols used with the DSS.
1-1-4.	State the operational characteristics and capabilities of the DSS.
1-1-5.	State the security requirements for the DSS.
1-2.	PHYSICAL DESCRIPTION
1-2-1.	Describe all major and associated components of the DSS. Include names, nomenclature, physical appearance, reference designators, locations, and construction features. a. PP-7474/BSC-1, PP-7475/BSC-1 Power Supplies b. SA-2199/BSC-1, SA-22ØØ/BSC-1, SA-22ØØ/BSC-1 Switching Units c. Signal Data Converter CV-351ØB/UG d. TSEC/KG-84C (1) Remote Phase Control Unit (Part of Comparator CM-5Ø7/BSC-1)

FØ156-3

Example Subsystem PPP Table

TABLE FØ156. Data Switching Subsystem (DSS) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
	e. TSEC/KG-36 f. TSEC/KWR-46 g. TSEC/KY-75 h. TSEC/KY-58 i. Control Box C-12118/BSC-1
1-1-2.	Describe the displays, controls, and indicators directly associated with the DSS. Include names, reference designators, positions, colors, and locations.
1-3.	FUNCTIONAL DESCRIPTION
1-3-1.	Describe how the DSS works (functional operation). Include types of signals, signal flow, modes, inputs and outputs, sequence of events, and protective devices.
1-3-2.	Describe the functions of each control and indicator in each position, condition, and color.
1-4.	INTERFACE DESCRIPTION
1-4-1.	Describe the physical interface between the DSS and related external equipments. Include names, physical appearance, reference designators, and locations. a. Cable routing b. Cable terminations c. Junction boxes
1-4-2.	Describe the functional interface between the DSS and related external equipments. a. Power sources b. Input signals c. Output signals d. Control signals
1-5.	OPERATIONAL DESCRIPTION
1-5-1.	Describe the authority and regulations pertaining to the operation of the DSS, including external equipments which interface with it.
	FØ156-4

Example Subsystem PPP Table - Continued

TABLE FØ156. Data Switching Subsystem (DSS) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
1-5-2.	Describe operational tasks for the DSS. a. Pre-operational procedures (1) Routine (2) Installation b. Operational procedures c. Post-operational procedures
1-5-3.	Describe indications which may occur during operation of the DSS. Include alarms, indicators, and displays.
1-5-4.	Describe casualty/degraded/abnormal mode(s) of operation for the DSS.
1-5-5.	Describe the data logging requirements for the DSS. Include logging methods, types of data logged, and disposition.
1-5-6.	Describe personnel and equipment safety precautions which are to be observed during operation of the DSS.
1-6.	MAINTENANCE DESCRIPTION
1-6-1.	Define the maintenance policy for the DSS. a. Preventive maintenance - the requirement for periodic performance of tasks to minimize system malfunctions by doing the following: (1) Servicing - scheduled or unscheduled inspections, cleaning, lubrication, corrosion control and any other function in support of maintaining any equipment full mission capable. (2) Operational checks (confidence or self test) (a) Premaintenance procedures (b) Performance checks (c) Degradation/deterioration checks b. Corrective maintenance - checks and procedures used to locate and correct malfunctions as determined by the following guides: (1) Authorized repair responsibility to correct malfunctions to the authorized maintenance level (2) Fault isolation - location of faults to the level of available spares, and to the authorized repair level. (a) Equipment operation checks and tests (b) Fault isolation tests and procedures

FØ156-5

Example Subsystem PPP Table - Continued

TABLE FØ156. Data Switching Subsystem (DSS) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
	(3) Analytical procedures - isolation of faults using authorized techniques not contained in prescribed maintenance documentation. (4) Post-maintenance procedures - procedures performed after repair.
1-6-2.	Describe the use of special tools and test equipment required for maintenance of the DSS as prescribed in applicable documentation.
1-6-3.	Describe preventive maintenance procedures for the DSS. Include recognition and interpretation of indications, records, reports, and instructions.
1-6-4.	Describe alignment, adjustment, and calibration procedures for the DSS.
1-6-5.	Describe the operational tests and diagnostic programs used for maintenance of the DSS. Include tests' names, uses, and the procedures.
1-6-6.	Describe the recognition and interpretation of all malfunction indications for the DSS.
1-6-7.	Describe the systematic fault isolation procedures contained in the prescribed maintenance documentation for the DSS.
1-6-8.	Describe authorized methods to isolate faults which cannot be located using procedures contained in the prescribed documentation.
1-6-9.	Describe the procedures to disassemble, repair, and reassemble the DSS to the authorized maintenance level.
1-6-10.	Describe the post-repair procedures for the DSS.
1-6-11.	Describe personnel and equipment safety precautions, including tag-out procedures, which are to be observed while performing maintenance on the DSS.
1-7.	DOCUMENTATION
1-7-1.	Describe the organization, content, and use of all technical documentation provided for use with the DSS.

FØ156-6

Example Subsystem PPP Table - Continued

TABLE FØ156. Data Switching Subsystem (DSS) - Continued.	
ITEM NO.	KNOWLEDGE/SKILL
2.	SUBSYSTEM SKILLS
2-1.	OPERATION
2-1-1.	Perform tasks for operation of the DSS. a. Pre-operational procedures (1) Routine (2) Installation b. Operational procedures c. Post-operational procedures
2-1-2.	Recognize and interpret all indications occurring during performance of the operating procedures, and perform appropriate operator actions in proper sequence on the DSS.
2-1-3.	Perform tasks in the casualty/degraded/abnormal modes of operation of the DSS.
2-1-4.	Perform data logging requirements for the DSS.
2-1-5.	Adhere to personnel and equipment safety precautions during operational procedures of the DSS.
2-2.	MAINTENANCE
2-2-1.	Use special tools and test equipment required for maintenance of the DSS prescribed in applicable documentation.
2-2-2.	Perform preventive maintenance procedures on the DSS as scheduled by the Planned Maintenance System (PMS).
2-2-3.	Perform alignment, adjustment, and calibration procedures on the DSS.
2-2-4.	Perform operational tests and diagnostic programs used for maintenance of the DSS.
2-2-5.	Recognize and interpret all malfunction indications for the DSS.
2-2-6.	Perform systematic fault isolation procedures contained in prescribed maintenance documentation.
	FØ156-7

Example Subsystem PPP Table - Continued

TABLE FØ156. Data Switching Subsystem (DSS) - Continued.	
ITEM NO.	KNOWLEDGE/SKILL
2-2-7.	Use authorized methods to isolate faults which cannot be located using the procedures in the prescribed maintenance documentation.
2-2-8.	Disassemble, repair, and reassemble the DSS to the authorized maintenance level.
2-2-9.	Perform post-repair procedures, including quality assurance procedures, on the DSS.
2-2-10.	Adhere to personnel and equipment safety precautions, including tag-out procedures, when performing maintenance on the DSS.
	FØ156-8

Example Subsystem PPP Table - Continued

SYSTEM PPP

TABLE EXAMPLE

PERSONNEL PERFORMANCE PROFILE

FOR

TRIDENT EXTERIOR COMMUNICATIONS SYSTEM (ECS)

TABLE FØ147

TRIDENT EXTERIOR COMMUNICATIONS SYSTEM (ECS)

1 AUGUST 1990

SYSTEM MODIFICATION RECORD

None

NEW DESIGN - DRAWING NUMBER

None

F0147-1/F0147-2

Example System PPP Table Cover Page

TABLE FØ147. TRIDENT Exterior Communications System (ECS).	
ITEM NO.	KNOWLEDGE/SKILL
1.	SYSTEM KNOWLEDGE
1-1.	GENERAL
1-1-1.	State the functions of the Exterior Communications System (ECS).
1-1-2.	State that the ECS consists of the following major functional areas. Include the function of each. a. Control, Monitor, and Test (CMT) Subsystem b. Data Switching Subsystem (DSS) c. Antenna Interface Subsystem (AIS) d. Special Communications (SPECOM) Subsystem e. Very Low Frequency/Low Frequency (VLF/LF) Subsystem f. High Frequency/Ultra High Frequency (HF/UHF) Subsystem g. Emergency Communications Subsystem h. Support Subsystem i. Antenna Suite j. Identification Friend or Foe k. Extremely Low Frequency (ELF) Subsystem
1-1-3.	Define the abbreviations, terms, and symbols used with the ECS.
1-1-4.	State the operational characteristics and capabilities of the ECS.
1-1-5.	State the security requirements for the ECS.
1-2.	PHYSICAL DESCRIPTION
1-2-1.	Describe all major and associated components of the ECS. Include names, nomenclature, physical appearance, reference designators, locations, and construction features. a. Control, Monitor, and Test (CMT) Subsystem b. Data Switching Subsystem (DSS) c. Antenna Interface Subsystem (AIS) d. Special Communications (SPECOM) Subsystem e. Very Low Frequency/Low Frequency (VLF/LF) Subsystem f. High Frequency/Ultra High Frequency (HF/UHF) Subsystem g. Emergency Communications Subsystem h. Support Subsystem
	FØ147-3

Example System PPP Table

TABLE FØ147. TRIDENT Exterior Communications System (ECS) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
	i. Antenna Suite j. Identification Friend or Foe k. Extremely Low Frequency (ELF) Subsystem
1-2-2.	Describe the displays, controls, and indicators directly associated with the ECS. Include names, reference designators, positions, colors, and locations.
1-3.	FUNCTIONAL DESCRIPTION
1-3-1.	Describe how the ECS works (functional operation). Include types of signals, signal flow, modes, inputs and outputs, sequence of events, and protective devices.
1-3-2.	Describe the functions of each control and indicator in each position, condition, and color.
1-3-3.	Describe each program, subprogram, and routine used with the ECS. Include name, program number, and assumptions and constraints imposed. a. CP b. MP c. VLF d. On-line test e. Off-line utility package
1-4.	INTERFACE DESCRIPTION
1-4-1.	Describe the physical interface between the ECS and related external equipments. Include names, physical appearance, reference designators, and locations. a. Cable routing b. Cable terminations c. Junction boxes d. Cooling water piping
1-4-2.	Describe the functional interface between the ECS and related external equipments. a. Power sources b. Input signals c. Output signals d. Control signals

FØ147-4

Example System PPP Table - Continued

TABLE FØ147. TRIDENT Exterior Communications System (ECS) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
1-5.	OPERATIONAL DESCRIPTION
1-5-1.	Describe the authority and regulations pertaining to the operation of the ECS, including external equipments which interface with it.
1-5-2.	Describe operational tasks for the ECS. a. Pre-operational procedures (1) Routine (2) Installation b. Operational procedures c. Post-operational procedures
1-5-3.	Describe indications which may occur during operation of the ECS. Include alarms, indicators, displays, and readouts.
1-5-4.	Describe casualty/degraded/abnormal mode(s) of operation for the ECS.
1-5-5.	Describe the data logging requirements for the ECS. Include logging methods, types of data logged, and disposition.
1-5-6.	Describe personnel and equipment safety precautions which are to be observed during operation of the ECS.
1-6.	MAINTENANCE DESCRIPTION
1-6-1.	Define the maintenance policy for the ECS. a. Preventive maintenance - the requirement for periodic performance of tasks to minimize system malfunctions by doing the following: (1) Servicing - scheduled or unscheduled inspections, cleaning, lubrication, corrosion control and any other function in support of maintaining any equipment full mission capable. (2) Operational checks (confidence or self test) (a) Pre-maintenance procedures (b) Performance checks (c) Degradation/deterioration checks b. Corrective maintenance - checks and procedures used to locate and correct malfunctions as determined by the following guides:

FØ147-5

Example System PPP Table - Continued

TABLE FØ147. TRIDENT Exterior Communications System (ECS) - Continued.	
ITEM NO.	KNOWLEDGE/SKILL
	(1) Authorized repair responsibility to correct malfunctions to the authorized maintenance level (2) Fault isolation - location of faults to the level of available spares, and to the authorized repair level. (a) Equipment operation checks and tests (b) Fault isolation tests and procedures (3) Analytical procedures - isolation of faults using authorized techniques not contained in prescribed maintenance documentation. (4) Post-maintenance procedures - procedures performed after repair.
1-6-2.	Describe the use of special tools and test equipment required for maintenance of the ECS as prescribed in applicable documentation.
1-6-3.	Describe preventive maintenance procedures for the ECS. Include recognition and interpretation of indications, records, reports, and instructions.
1-6-4.	Describe alignment, adjustment, and calibration procedures for the ECS.
1-6-5.	Describe the operational tests and diagnostic programs used for maintenance of the ECS. Include tests' names, uses, and the procedures.
1-6-6.	Describe the recognition and interpretation of all malfunction indications for the ECS.
1-6-7.	Describe the systematic fault isolation procedures contained in the prescribed maintenance documentation for the ECS.
1-6-8.	Describe authorized methods to isolate faults which cannot be located using procedures contained in the prescribed documentation.
1-6-9.	Describe the procedures to disassemble, repair, and reassemble the ECS to the authorized maintenance level.
1-6-10.	Describe the post-repair procedures for the ECS.
	FØ147-6

Example System PPP Table - Continued

TABLE FØ147. TRIDENT Exterior Communications System (ECS) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
1-6-11.	Describe personnel and equipment safety precautions, including tag-out procedures, which are to be observed while performing maintenance on the ECS.
1-7.	DOCUMENTATION
1-7-1.	Describe the organization, content, and use of all technical documentation provided for use with the ECS.
2.	SYSTEM SKILLS
2-1.	OPERATION
2-1-1.	Perform tasks for operation of the ECS. a. Pre-operational procedures (1) Routine (2) Installation b. Operational procedures c. Post-operational procedures
2-1-2.	Recognize and interpret all indications occurring during the performance of the operating procedures, and perform appropriate operator actions in proper sequence on the ECS.
2-1-3.	Perform tasks in the casualty/degraded/abnormal modes of operation of the ECS.
2-1-4.	Perform data logging requirements for the ECS.
2-1-5.	Adhere to security requirements for the ECS.
2-1-6.	Adhere to personnel and equipment safety precautions during operational procedures of the ECS.
2-2.	MAINTENANCE
2-2-1.	Use special tools and test equipment required for maintenance of the ECS as prescribed in applicable documentation.
2-2-2.	Perform preventive maintenance procedures on the ECS as scheduled by the Planned Maintenance System (PMS).
2-2-3.	Perform alignment, adjustment, and calibration procedures on the ECS.

FØ147-7

Example System PPP Table - Continued

TABLE FØ147. TRIDENT Exterior Communications System (ECS) - Continued.

ITEM NO.	KNOWLEDGE/SKILL
2-2-4.	Perform operational tests and diagnostic programs used for maintenance of the ECS.
2-2-5.	Recognize and interpret all malfunction indications for the ECS.
2-2-6.	Perform systematic fault isolation procedures contained in prescribed maintenance documentation.
2-2-7.	Use authorized methods to isolate faults which cannot be located using the procedures in the prescribed maintenance documentation.
2-2-8.	Disassemble, repair, and reassemble the ECS to the authorized maintenance level.
2-2-9.	Perform post-repair procedures, including quality assurance procedures, on the ECS.
2-2-10.	Adhere to personnel and equipment safety precautions, including tag-out procedures, when performing maintenance on the ECS.

F0147-8

Example System PPP Table - Continued

TASK/FUNCTION PPP

TABLE EXAMPLE

PERSONNEL PERFORMANCE PROFILE

FOR

TASK/FUNCTION KNOWLEDGE AND SKILL

TABLE

BØØ76

MOTORIZED VEHICLE DRIVING REQUIREMENTS

JANUARY 1993

SYSTEM/SUBSYSTEM/EQUIPMENT MODIFICATION RECORD

NONE

B0076-1/B0076-2

Example Task/Function PPP Table Cover Page

TABLE BØØ76. Motorized Vehicle Driving Requirements	
ITEM NO.	KNOWLEDGE/SKILL
1.	KNOWLEDGE
1-1.	BASIC DRIVING
1-1-1.	Describe vehicle inspection points and criteria. a. Bumpers b. Headlights c. Safety glass d. Windshield wipers e. Brakes (foot and parking) f. Muffler and exhaust system g. Signal lights h. Tires i. License plate and light j. Brake and tail lights k. Mirror(s) l. Horn m. Restraint devices (seat belts, shoulder harness, child restraints)
1-1-2.	Describe driving maneuvers. a. Negotiating intersection b. Left and right turns c. Reversing direction (U-turn) d. Starting and stopping, including quick stop e. Signaling (hand/arm, automatic) f. Selecting proper lane g. Parallel parking h. Backing i. Following a vehicle j. Speed control k. Night driving l. Winter driving m. Interstate highway driving n. Driving in rain/fog o. Skidding
1-1-3.	Describe rules of the road. a. Obeying officers b. Changing lanes c. Slow moving vehicles d. Coasting e. Use of headlights f. Throwing material from vehicles g. Speed limits and adjusting speed conditions h. Passing i. Yielding to emergency vehicles and school buses j. Railroad crossings k. Traffic signs and signals
	BØØ76-3

Example Task/Function PPP Table - Continued

TABLE BØØ76. Motorized Vehicle Driving Requirements - Continued

ITEM NO.	KNOWLEDGE/SKILL
1-1-3. (Cont.)	(1) color (2) shape l. Turns and signaling m. Right-of-way n. Highway markings o. Interstate highway procedures p. Night driving and headlight courtesy q. Winter driving r. Driving in rain/fog
1-1-4.	List recommended safety and emergency equipment.
1-1-5.	Describe procedures when involved in an accident.
1-1-6.	Describe procedures when first on the scene of an accident.
1-1-7.	Describe personnel and equipment safety precautions applicable to basic driving.
1-1-8.	Describe initial procedures for emergency conditions. a. Flooded engine (stall) b. Accelerator jammed c. Brake failure (including wet brakes) d. Tire blowout e. Right wheels off pavement f. Car approaching in your lane. g. Fire
1-1-9.	Describe conditions which degrade driving behavior and ability. a. Alcohol b. Fatigue c. Highway hypnosis
1-1-10.	Describe the Implied Consent Law and the consequences of arrest for Driving While Intoxicated (DWI).
1-2.	EMERGENCY DRIVING
1-2-1.	Describe operation of collision avoidance equipment including authority and regulations for use. a. Horn b. Siren c. Lights d. Bell
1-2-2.	Describe accident prevention maneuvers including occasions for use, hazards involved, and procedures. a. Swerving to avoid stationary objects b. Swerving to avoid moving objects c. Controlled skid
	BØØ76-4

Example Tank/Function PPP Table - Continued

TABLE BØØ76. Motorized Vehicle Driving Requirements - Continued

ITEM NO.	KNOWLEDGE/SKILL
1-2-3.	Describe transiting, braking, and stopping maneuvers on hazardous surfaces, including occasions for use, hazards involved, and procedures: a. Wet pavement b. Icy pavement c. Sand d. Gravel e. Mud f. Snow g. Rain h. Fog
1-2-4.	Describe high speed maneuvers including applicable regulations, occasions for use, hazards involved, and procedures. a. Passing b. Turning c. Going through intersections d. Reversing direction
1-2-5.	Describe emergency escort procedures including applicable regulations, occasions for use, hazards involved, and procedures. a. Leading b. Following
1-2-6.	Describe abbreviations, terms, and symbols associated with emergency driving. a. Hydroplaning b. Fishtailing
1-2-7.	Describe the organization, content, and use of documentation applicable to emergency driving.
1-2-8.	Describe personnel and equipment safety precautions applicable to emergency driving.
1-2-9.	Describe situations which require emergency driving, including applicable regulations. a. Medical emergencies b. Law enforcement emergencies c. Fire/natural disasters d. Courier/message delivery
1-2-10.	Describe the effects of environmental conditions on emergency driving, including visibility, speed constraints, and traction effects. a. Rain b. Snow c. Ice d. Sand e. Gravel f. Mud g. Oil/lubricants h. Fog

BØØ76-5

Example Task/Function PPP Table - Continued

TABLE BØØ76. Motorized Vehicle Driving Requirements - Continued

ITEM NO.	KNOWLEDGE/SKILL
2.	SKILLS
2-1.	BASIC DRIVING
2-1-1.	Perform vehicle inspection. a. Bumpers b. Headlights c. Safety glass d. Windshield wipers e. Brakes (foot and parking) f. Muffler and exhaust system g. Signal lights h. Tires i. License plate and light j. Brake and tail lights k. Mirror(s) l. Horn m. Restraint devices (seat belts, shoulder harness, child restraints)
2-1-2.	Perform driving maneuvers. a. Negotiating intersection b. Left and right turns c. Reversing direction (U-turn) d. Starting and stopping, including quick stop e. Signaling (hand/arm, automatic) f. Selecting proper lane g. Parallel parking h. Backing i. Following a vehicle j. Speed control k. Night driving l. Winter driving m. Interstate highway driving n. Driving in rain/fog o. Skidding
2-1-3.	Adhere to rules of the road applicable to basic driving. a. Obeying officers b. Changing lanes c. Slow moving vehicles d. Coasting e. Use of headlights f. Throwing material from vehicles g. Speed limits and adjusting speed to conditions h. Passing i. Yielding to emergency vehicles and school buses j. Railroad crossings k. Traffic signs and signals (1) color (2) shape l. Turns and signaling m. Right-of-way n. Highway markings

BØØ76-6

Example Task/Function PPP Table - Continued

TABLE BØØ76. Motorized Vehicle Driving Requirements - Continued

ITEM NO.	KNOWLEDGE/SKILL
2-1-3. (Cont.)	o. Interstate highway procedures p. Night driving and headlight courtesy q. Winter driving r. Driving in rain/fog
2-1-4.	Adhere to personnel and equipment safety precautions applicable to basic driving.
2-2-1.	Perform emergency procedures for: a. Flooded engine (stall) b. Accelerator jammed c. Brake failure (including wet brakes) d. Tire blowout e. Right wheels off pavement f. Car approaching in your lane g. Fire
2-2.	EMERGENCY DRIVING
2-2-1.	Operate collision avoidance equipment. a. Horn b. Siren c. Lights d. Bell
2-2-2.	Perform accident preventing maneuvers. a. Swerving to avoid stationary objects b. Swerving to avoid moving objects c. Controlled skid
2-2-3.	Perform transiting, braking, and stopping maneuvers on hazardous surfaces. a. Wet pavement b. Icy pavement c. Sand d. Gravel e. Mud f. Snow
2-2-4.	Perform high speed maneuvers. a. Passing b. Turning c. Going through intersections d. Reversing direction
2-2-5.	Perform emergency escort procedures. a. Leading b. Following
2-2-6.	Adhere to personnel and equipment safety precautions applicable to emergency driving.

BØØ76-7

Example Task/Function PPP Table - Continued

TABLE BØØ76. Motorized Vehicle Driving Requirements - Continued	
ITEM NO.	KNOWLEDGE/SKILL
2-2-7.	Comply with applicable regulations while performing emergency driving. a. Medical emergencies b. Law enforcement c. Fire/natural disasters d. Courier/message delivery
	BØØ76-7

Example Task/Function PPP Table - Continued

BACKGROUND PPP

TABLE EXAMPLE

PERSONNEL PERFORMANCE PROFILE

FOR

INTRODUCTION BACKGROUND KNOWLEDGE AND SKILL

TABLE A000Ø2

BASIC ELECTRICITY

SYSTEM MODIFICATION RECORD

The system covered in this profile has been altered by the following Engineering Changes/SPALTs/Field Changes/SHIPALTs:

None

Example Background PPP Table Cover Page

TABLE A000Ø2. BASIC ELECTRICITY (BACKGROUND)	
ITEM NO.	KNOWLEDGE/SKILL
1.	KNOWLEDGE
1-1.	Define the abbreviations, terms, and symbols associated with basic electricity.
1-2.	Describe the structure of matter with respect to: a. States of matter b. Basic particles of matter 1. Molecule 2. Atom 3. Subatomic particles c. Energy level
1-3.	Describe the designators used to indicate difference between atoms. a. Shell and subshell b. Atomic weight and atomic number c. Valence
1-4.	Define electrical conductivity and its characteristics in different materials.
1-5.	Describe the principles of electrostatics. a. Law of charged bodies b. Method of charging 1. Friction 2. Contact 3. Induction c. Measurements of charges 1. Coulomb's law 2. Electroscope d. Discharging e. Law of conservation of charge f. Electrostatic lines of force g. Prime electrostatic generators
1-6.	Describe principles of magnetism. a. Natural and artificial magnets b. Magnetic poles c. Theories of magnetism 1. Weber's theory 2. Domain theory 3. Coulomb's law d. Magnetic fields e. Magnetic materials f. Magnetic shielding g. Shapes of magnets
1-7.	Describe the following: a. Work b. Energy 1. Kinetic 2. Potential
	Change 1 A000Ø2-3

Example Background PPP Table

TABLE AØØØ2. BASIC ELECTRICITY (BACKGROUND) - Continued	
ITEM NO.	KNOWLEDGE/SKILL
1-8.	Describe an electric field and its effect on: a. Electric potential b. Electric potential difference c. Potential polarity
1-9.	Describe the methods of generating electromotive force (EMF). a. Friction b. Pressure c. Heat d. Light e. Magnetism f. Chemical action
1-10.	Describe various types of cells and batteries, their construction features, specific gravity with respect to state or charge, and process utilized to generate EMF. a. Voltaic cell b. Dry cell c. Lead-acid cell d. Nickel-cadmium cell
1-11.	Describe current flow, factors which affect current flow, and unit of measurement.
1-12.	Define electrical resistance and the factors which affect resistance.
1-13.	Describe construction features of resistors. a. Carbon b. Wire-wound c. Tapped d. Sliding contact e. Potentiometers
1-14.	Describe the color code method of identifying resistor values.
1-15.	Describe the operation of simple dc series circuits with respect to the following: a. Current (I), Voltage (E), and Resistance (R) relationships 1. Ohm's law 2. Kirchoff's voltage law 3. Power determination b. Circuit safety devices
1-16.	Describe the operation of basic parallel dc circuits with respect to: a. Kirchoff's current law b. Determination of equivalent resistance 1. Reciprocal method 2. Product over the sum method c. Determination of Power
	Change 1 AØØØ2-4

Example Background PPP Table - Continued

TABLE A000Ø2. BASIC ELECTRICITY (BACKGROUND) - Continued	
ITEM NO.	KNOWLEDGE/SKILL
1-17.	Describe the operation of basic dc series parallel combination circuits, including bride circuits.
1-18.	Describe circuit analysis of dc networks utilizing the following techniques: a. Loop analysis using Kirchoff's voltage law b. Thevenin's theorem c. Norton's theorem
1-19.	Describe the construction and operation of a simple alternator in terms of: a. Induced voltage b. Complete cycle
1-20.	Describe the characteristics of sine waves a. Frequency b. Period c. Amplitude 1. Peak-to-peak 2. RMS 3. Instantaneous 4. Average 5. Effective d. Phase
1-21.	Describe sine wave phase relationships using vectors.
1-22.	Describe inductance (L) in terms of: a. Faraday's law b. Left-hand rule c. Lenz's law d. Self inductance e. Mutual inductance f. Unit of inductance
1-23.	Describe types of inductors. Include construction features and characteristics. a. Iron core b. Air core
1-24.	Describe determination of: a. Mutual inductance b. Total inductance of series connected inductors c. Total inductance of parallel connected inductors
1-25.	Describe current, voltage, and time relationships in series dc RL circuits. a. Growth and decay curves b. Rate of change c. Universal time constant chart
1-26.	Describe inductive reactance and phase relationships an inductive ac circuit.
	Change 1 A000Ø2-5

Example Background PPP Table - Continued

TABLE A000Ø2. BASIC ELECTRICITY (BACKGROUND) - Continued	
ITEM NO.	KNOWLEDGE/SKILL
1-27.	Describe transformers theory with respect to: a. Primary b. Secondary c. Phase (polarity) d. Coefficient of coupling e. Turn ratios
1-28.	Describe construction features of transformers. a. Cores b. Windings
1-29.	Describe electrical characteristics of transformers in terms of: a. Effects of load 1. Mutual flux 2. Current flux 3. Power ratio b. Losses 1. Copper 2. Eddy currents 3. Hysteresis 4. Transformer efficiency 5. Transformer rating
1-30.	Describe capacitance (C) in terms of the charging and discharging of a capacitor.
1-31.	Describe the various factors which affect capacitance. a. Plate area b. Plate spacing c. Dielectric material
1-32.	Describe various types of capacitors and their construction features. a. Variable b. Fixed 1. Paper 2. Mica 3. Oil 4. Ceramic 5. Electrolytic
1-33.	Describe the color code method of identifying capacitor values.
1-34.	Describe determination of total capacitance of: a. Series connected capacitance b. Parallel connected capacitance c. Combination capacitors circuits
1-35.	Describe the current, voltage, and time relationships in series RC circuits. a. Charging b. Discharging c. Time constants
	Change 1 A000Ø2-6

Example Background PPP Table - Continued

TABLE A000Ø2. BASIC ELECTRICITY (BACKGROUND) - Continued	
ITEM NO.	KNOWLEDGE/SKILL
1-36.	Describe capacitance reactance and phase relationships in a capacitance ac circuit.
1-37.	Describe analysis of a series RL circuit using trigonometric functions. Include effect on the circuit form: a. Frequency variations b. Resistance variations c. Inductance variations
1-38.	Describe analysis of a series RC circuit using trigonometric functions. Include effect on the circuit form: a. Frequency variations b. Resistance variations c. Capacitance variations
1-39.	Describe frequency discrimination in series RL and RC circuits, including application in low- and high-pass filters.
1-40.	Describe determination of Q and impedance in series RL and RC circuits.
1-41.	Describe the operation of series resonant circuits. Include the determination of: a. Resonant frequency b. Circuit Q c. Impedance d. Bandwidth
1-42.	Describe analysis of a parallel RL circuit using trigonometric functions. Include effect on the circuit from: a. Frequency variations b. Resistance variations c. Applied voltage variations d. High or low Q values
1-43.	Describe analysis of a parallel RC circuit using trigonometric functions. Include effect on the circuit from: a. Frequency variations b. Resistance variations c. Applied voltage variations
1-44.	Describe operation of parallel resonant circuits. Include the determination of: a. Resonant frequency b. Circuit Q c. Impedance d. Bandwidth
1-45.	Describe how RCL circuits can be utilized as simple phase shift networks.
	Change 1 A000Ø2-7

Example Background PPP Table - Continued

TABLE A0002. BASIC ELECTRICITY (BACKGROUND) - Continued	
ITEM NO.	KNOWLEDGE/SKILL
1-46.	State the purpose of motors and generators in terms of energy conversion.
1-47.	Describe the construction features of basic motors and generators.
1-48.	Describe theory of operation of basic dc and ac motors using electromagnetic principles. Include description of: a. Right-hand rule b. Torque c. Counter EMF d. Armature reaction e. No-load and full-load characteristics
1-49.	Describe theory of operation of basic dc and ac generators using electromagnetic principles. Include description of: a. Left-hand rule b. Armature reaction c. No-load and full-load devices
1-50.	Describe the operation of ac and dc motors. a. Motor types and applications b. Motor control circuits c. Braking and clutching devices
1-51.	Describe the operation of ac and dc generators. a. Generator types and applications b. Regulator and control circuits
1-52.	Describe the principles and uses of basic dc electrical measuring devices. Include the application of shunts. a. Galvanometer b. D'Arsonval meter c. DC ammeter d. DC voltmeter e. Ohmmeter f. Megger
1-53.	Describe the principles and uses of basic ac electrical measuring devices. Include the application of shunts. a. Moving iron-vane meter b. Rectifier type meter c. Electrodynamometer-type meter d. Thermocouple-type meter e. Wattmeter
1-54.	Describe the effects of open or short circuits on the following circuits. a. Series circuits (dc and ac) b. Parallel circuits (dc and ac)
1-55.	Describe the common types and sizes of electrical wires and cables.
	Change 1 A0002-8

Example Background PPP Table - Continued

TABLE A0002. BASIC ELECTRICITY (BACKGROUND) - Continued	
ITEM NO.	KNOWLEDGE/SKILL
1-56.	Describe basic hand tools and procedures associated with maintenance of basic electrical circuits and devices such as soldering techniques and splices.
1-57.	Describe the purpose and utilization of schematic diagrams.
1-58.	Describe safety precautions which are to be observed when working with electrical circuits and Electrostatic Discharge (ESD) sensitive components, assemblies and equipment.
1-59.	Describe ESD sensitive components, assemblies, and equipment and associated problems.
1-60.	Describe the ESD control program.
1-61.	Describe the ESD protective materials and work area.
1-62.	Describe packaging, unpackaging, and inspection procedures for ESD sensitive components, assemblies, and equipments.
1-63.	Describe tools, test equipment, and maintenance procedures used for ESD protection.
1-64.	Describe ESD failure analysis techniques.
1-65.	Describe design considerations for ESD sensitive components, assemblies, and equipment.
1-66.	Describe the determination of current, voltage and impedance values in an ac circuit.
1-67.	Describe the determination of power values in an ac circuit. a. True power b. Reactive power c. Apparent power
1-68.	Describe the determination of the power factor of an ac circuit.
1-69.	Describe the analysis of series RLC circuits.
1-70.	Describe the analysis of parallel RLC circuits.
1-71.	Describe the principle of electromagnetism.
1-72.	Describe the general maintenance procedure for ac and dc motors and generators.
2.	SKILLS
2-1.	Use and interpret diagrams in conjunction with analyzing basic circuits.
2-2.	Diagnose common electrical faults.
	Change 1 A0002-9

Example Background PPP Table - Continued

TABLE A000Ø2. BASIC ELECTRICITY (BACKGROUND) - Continued	
ITEM NO.	KNOWLEDGE/SKILL
2-3.	Use basic electrical measuring devices and interpret their indications.
2-4.	Use basic handtools.
2-5.	Operate motors and generators.
2-6.	Adhere to personnel and equipment safety precautions when working with ESD sensitive components, assemblies, and equipment, electrical circuits, and basic handtools.
2-7.	Identify resistor values using resistor color codes.
2-8.	Solve basic dc series, parallel, and series parallel combination circuits, including bridge circuits. a. Current (I) Voltage (E) and Resistance (R) relationships 1. Ohm's law 2. Kirchoff's voltage law 3. Power determination 4. Determination of equivalent resistance (a) Reciprocal method (b) Product over the sum method
2-9.	Determine equivalent dc networks utilizing the following techniques. a. Loop analysis using Kirchoff's voltage law b. Thevenin's theorem c. Norton's theorem
2-10.	Determine sine wave phase relationships using vectors.
2-11.	Determine the total inductance of series, parallel, and series parallel connected inductors.
2-12.	Solve current, voltage, and time relationships in dc RL circuits.
2-13.	Solve inductive reactance and phase relationships in an inductive ac circuit.
2-14.	Determine the current, voltage, and power relationship of a transformer with respect to: a. Primary b. Secondary c. Phase (Polarity) d. Coefficient of coupling e. Turns ratio
2-15.	Determine the current, voltage, and time relationships in series RC circuits. a. Charging b. Discharging c. Time constants
	Change 1 A000Ø2-10

Example Background PPP Table - Continued

TABLE A000Ø2. BASIC ELECTRICITY (BACKGROUND) - Continued	
ITEM NO.	KNOWLEDGE/SKILL
2-16.	Determine capacitance reactance and phase relationships in a capacitive ac circuit.
2-17.	Analyze a series RL circuit using trigonometric functions. Include effect on the circuit from: a. Frequency variations b. Resistance variations c. Inductance variations
2-18.	Analyze a series RC circuit using trigonometric functions. Include effect on the circuit from: a. Frequency variations b. Resistance variations c. Capacitance variations
2-19.	Determine Q and impedance in series RL and RC circuits.
2-20.	Analyze a series resonant circuit. Include the determination of: a. Resonant frequency b. Circuit Q c. Impedance d. Bandwidth
2-21.	Analyze a parallel RL, RC circuit using trigonometric functions. Include effect on the circuit from: a. Frequency variations b. Resistance variations c. Applied voltage variations d. High or low Q values
2-22.	Analyze a parallel resonant circuits. Include the determination of: a. Resonant frequency b. Circuit Q c. Impedance d. Bandwidth
2-23.	Perform packaging, unpackaging, and inspection procedures for ESD sensitive components, assemblies, and equipment.
2-24.	Using appropriate protective materials, work area, and test equipment, perform maintenance procedures on ESD sensitive components, assemblies, and equipment.
2-25.	Determine the total capacitance of series, parallel, and series-parallel connected capacitors.
2-26.	Analyze a sine-wave to determine a. Frequency b. Period c. Wavelength d. Peak value e. Peak-to-peak value
	Change 1 A000Ø2-11

Example Background PPP Table - Continued

TABLE A000Ø2. BASIC ELECTRICITY (BACKGROUND) - Continued	
ITEM NO.	KNOWLEDGE/SKILL
	f. Instantaneous value g. Average value h. Effective value
2-27.	Determine current, voltage, and impedance values in an ac circuits.
2-28.	Determine power values in an ac circuit.
2-29.	Determine the power factor of an ac circuit.
2-30.	Analyze a series RLC circuit.
2-31.	Analyze a parallel RLC circuit.
	Change 1 A000Ø2-12

Example Background PPP Table - Continued

TAB A-3

TRAINING PATH SYSTEM

UNCLASSIFIED

TRIDENT EXTERIOR COMMUNICATIONS SYSTEM (ECS)

TRAINING PATH SYSTEM

REPORT

August 1990

UNCLASSIFIED

Example TPS Report Cover Page

PERFORM TOS SET

TØ B/G (BACKGROUND) AND T/F (TASK/FUNCTION

SKILL/KNOWLEDGE TOS

TØ – Includes: The background skill and knowledge which is *prerequisite* to the understanding of the operation and maintenance of the system, subsystem or equipment **AND** The task/function skill and knowledge *which is not unique* to the operation or maintenance of a particular system/subsystem/equipment:

S – B/G Skill:
Completion of training provides the PREREQUISITE (Background), PHYSICAL or MENTAL Skills necessary to support follow-on training in *DIRECTING* the operation or maintenance of a system/subsystem/
equipment, or further background training

B1 – B/G Knowledge:
Completion of training provides the level of knowledge necessary to recognize or recall ideas, phenomena, symbology and terminology which are *PREREQUISITE* to comprehension of a task or function

B2 – B/G Comprehension:
Completion of training provides the comprehension of principles, rules and concepts necessary to solve given problems and situations and performance

J – T/F SKILL:
Completion of training provides the *PHYSICAL AND/OR MENTAL* Skills required to *DIRECT* the job or task/function

Q – T/F KNOWLEDGE:
Completion of training provides the knowledge required to *DIRECT* the job or task/function

Example Perform TOS Set Statements

PERFORM TOS SET

FAMILIARIZATION TOS

F1 - Knowledge:
Completion of training provides FAMILIARITY with the:

- Purpose, operational concepts, location, capabilities and limitations of a system/subsystem/equipment
- Organization, content, and use of the technical documentation provided for use with the system/subsystem/equipment

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Example Perform TOS Set Statements - Continued

PERFORM TOS SET

OPERATION/MAINTENANCE SKILL TOS

O1–Skill
Completion of training provides the skill to perform normal operations.

O2–Skill
Completion of training provides the skill to perform:
- Normal operations requiring advanced analysis
- Abnormal operations (defined as casualty/degraded/not full mission capable)

P1–Skill
Completion of training provides the skill to perform preventive maintenance.

C1–Skill
Completion of training provides the skill to perform to the authorized maintenance level, systematic fault isolation procedures.

C2–Skill
Completion of training provides the skill to perform to the authorized maintenance level:
- Systematic fault isolation procedures that require advanced analysis
- Authorized techniques to isolate faults that cannot be isolated using procedures contained in prescribed documentation

C3–Skill
Completion of training provides the skill and knowledge to perform, without supervision, diagnosis of equipment malfunctions, fault isolation, and all repairs (this skill is acquired through on-the-job experience, and reflects a continuous learning process that is supported by the skills and knowledge taught in the formal school environment).

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Example Perform TOS Set Statements-Continued

PERFORM TOS SET

OPERATION/MAINTENANCE KNOWLEDGE TOS

T1–Knowledge

Completion of training provides the knowledge to perform normal operations:

- Organization, content, and use of the technical documentation provided for use with the system/subsystem/equipment

T2–Knowledge

Completion of training provides the knowledge to perform:

- Normal operations requiring advanced analysis
- Abnormal operations (defined as casualty/ degraded/not full mission capable)
- Preventive maintenance
- Basic corrective maintenance
- Organization, content, and use of the technical documentation provided for use with the system/subsystem/equipment

T3–Knowledge

Completion of training provides the knowledge to perform advanced corrective maintenance:

- Organization, content, and use of the technical documentation provided for use with the system/subsystem/equipment

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Example Perform TOS Set Statements-Continued

TRAINING LEVEL ASSIGNMENT FOR TRIDENT EXTERIOR COMMUNICATIONS SYSTEM (ECS) (NEC RM-23TA) POWER DISTRIBUTION GROUP (Equipment) TPS-RM-23TA

TABLE FØ194

ITEM	LEVEL								
	F1	T1	T2	T3	O1	O2	P1	C1	C2
1-1-1		R							
1-1-2		R							
1-1-3		R	R						
1-1-4		R	R						
1-1-5		R	R						
1-1-6		R	R						
1-2-1		R	R						
1-2-2		R	R						
1-3-1		R	R						
1-3-2		R	R						
1-4-2		R	R						
1-5-1		R							
1-5-2a		R							
a(1)		R							
b		R							
c		R							
1-5-3		R							
1-5-5		R							
1-6-1a			R						
1-6-3			R						
1-6-11			R						
1-7-1		R							
2-1-1a					R				
	F1	T1	T2	T3	O1	O2	P1	C1	C2

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Example Perform Training Level Assignment

TRAINING LEVEL ASSIGNMENT FOR TRIDENT EXTERIOR COMMUNICATIONS SYSTEM (ECS) (NEC RM-23TA) POWER DISTRIBUTION GROUP (Equipment) TPS-RM-23TA

TABLE FØ194 (Continued)

ITEM	LEVEL								
	F1	T1	T2	T3	O1	O2	P1	C1	C2
a(1)					R				
b					R				
c					R				
2-1-2					R				
2-1-4					R				
2-2-2							R		
2-2-1Ø							R		
	F1	T1	T2	T3	O1	O2	P1	C1	C2

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Example Perform Training Level Assignment-Continued

TRAINING LEVEL ASSIGNMENT FOR TRIDENT EXTERIOR COMMUNICATIONS SYSTEM (ECS) (NEC RM-23TA) TOWED BUOY ANTENNA (Equipment) TPS-RM-23TA

TABLE FØ2Ø2

ITEM	LEVEL								
	F1	T1	T2	T3	O1	O2	P1	C1	C2
1-1-1		R							
1-1-2		R							
1-1-3		R	R						
1-1-4		R	R						
1-1-5		R	R						
1-2-1		R	R						
1-2-2		R	R						
1-3-1		R	R						
1-3-2		R	R						
1-4-2a		R	R						
b		R	R						
c		R	R						
1-5-1		R							
1-5-2a		R							
a(1)		R							
b		R							
c		R							
1-5-3		R	R						
1-5-4			R						
1-5-5		R	R						
1-6-1a			R						
1-6-3			R						
1-6-11			R						
	F1	T1	T2	T3	O1	O2	P1	C1	C2

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Example Perform Training Level Assignment-Continued

TRAINING LEVEL ASSIGNMENT FOR TRIDENT EXTERIOR COMMUNICATIONS SYSTEM (ECS) (NEC RM-23TA) TOWED BUOY ANTENNA (Equipment) TPS-RM-23TA

TABLE FØ2Ø2 (Continued)

ITEM	LEVEL								
	F1	T1	T2	T3	O1	O2	P1	C1	C2
1-7-1		R							
2-1-1a					R				
a(1)					R				
b					R				
c					R				
2-1-2					R	2			
2-1-3						2			
2-1-4					R	2			
2-2-2							R		
2-2-1Ø							R		
	F1	T1	T2	T3	O1	O2	P1	C1	C2

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Example Perform Training Level Assignment-Continued

TRAINING LEVEL ASSIGNMENT FOR TRIDENT EXTERIOR COMMUNICATIONS SYSTEM (ECS) (NEC RM-23TA) DATA SWITCHING SUBSYSTEM TPS-RM-23TA

TABLE FØ156

ITEM	LEVEL								
	F1	T1	T2	T3	O1	O2	P1	C1	C2
1-1-1		R							
1-1-2		R							
1-1-3		R	R						
1-1-4		R	R						
1-1-5		R	R						
1-2-1		R	R						
1-2-2		R	R						
1-3-1		R	R						
1-3-2		R	R						
1-4-2		R	R						
1-5-1		R	R						
1-5-2a		R							
a(1)		R							
b		R							
c		R							
1-5-3		R	R						
1-5-4			R						
1-5-6		R	R						
1-6-1a			R						
1-6-3			R						
1-6-11			R						
1-7-1		R							
2-1-1a					R				
	F1	T1	T2	T3	O1	O2	P1	C1	C2

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Example Perform Training Level Assignment-Continued

TRAINING LEVEL ASSIGNMENT FOR TRIDENT EXTERIOR COMMUNICATIONS SYSTEM (ECS) (NEC RM-23TA) DATA SWITCHING SUBSYSTEM TPS-RM-23TA

TABLE FØ156 (Continued)

ITEM	LEVEL								
	F1	T1	T2	T3	O1	O2	P1	C1	C2
a(1)					R				
b					R				
c					R				
2-1-2					R	R			
2-1-3						R			
2-1-5					R	R			
2-2-2							R		
2-2-1Ø							R		
	F1	T1	T2	T3	O1	O2	P1	C1	C2

Example Perform Training Level Assignment-Continued

TRAINING LEVEL ASSIGNMENT FOR TRIDENT EXTERIOR COMMUNICATIONS SYSTEM (ECS) (NEC RM-23TA) TPS-RM-23TA

TABLE FØ147

ITEM	LEVEL								
	F1	T1	T2	T3	O1	O2	P1	C1	C2
1-1-1		R							
1-1-2a		R							
b		R							
c		R							
d		R							
e		R							
f		R							
g	R								
h		R							
i		R							
k		R							
1-1-3		R	R						
1-1-4		R	R						
1-1-5		R	R						
1-2-1a		R	R						
b		R	R						
c		R	R						
d		R							
e		R	R						
f		R	R						
g	R								
h		R	R						
i		R	R						
	F1	T1	T2	T3	O1	O2	P1	C1	C2

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Example Perform Training Level Assignment - Continued

TRAINING LEVEL ASSIGNMENT FOR TRIDENT EXTERIOR COMMUNICATIONS SYSTEM (ECS) (NEC RM-23TA) TPS-RM-23TA

TABLE FØ147 (Continued)

ITEM	LEVEL								
	F1	T1	T2	T3	O1	O2	P1	C1	C2
1-2-2		R	R						
1-3-1		R	R						
1-3-2		R	R						
1-3-3		R	R						
1-4-2		R	R						
1-5-1		R	R						
1-5-2b		R							
1-5-3		R	R						
1-5-4			R						
1-5-6		R	R						
1-6-1		R	R						
1-6-2				R					
1-6-3			R						
1-6-5				R					
1-6-6				R					
1-6-7			R						
1-6-8				R					
1-6-1Ø				R					
1-6-11				R					
1-7-1		R							
2-1-1b					R				
2-1-2					R	R			
2-1-3		R	R			R			
	F1	T1	T2	T3	O1	O2	P1	C1	C2
12									

Example Perform Training Level Assignment-Continued

TABLE FØ147 (Continued)

ITEM	LEVEL								
	F1	T1	T2	T3	O1	O2	P1	C1	C2
2-1-5					R	R			
2-2-1									R
2-2-2							R		
2-2-4									R
2-2-5									R
2-2-6								R	
2-2-7									R
2-2-9									R
2-2-1Ø									R
	F1	T1	T2	T3	O1	O2	P1	C1	C2

Example Perform Training Level Assignment-Continued

TRAINING LEVEL ASSIGNMENT FOR TRIDENT EXTERIOR COMMUNICATIONS SYSTEM (ECS) SUBMARINE FUNDAMENTALS (Task/Function) (NEC RM-23TA) TPS-RM-23TA

TABLE BØØ76

ITEM	LEVEL		ITEM	LEVEL	
	J	T4		J	T4
1-1-1		R			
1-1-2		R			
1-1-3		R			
1-1-4		R			
1-2-1		R			
1-2-2		R			
1-2-3		R			
1-3-1		R			
1-3-2		R			
1-4-1		R			
2-1-1	R				
2-1-2	R				
2-1-3	R				
2-1-4	R				
2-2-1	R				
2-2-2	R				
2-2-3	R				
2-3-1	R				
2-3-2	R				
2-4-1	R				
	J	T4		J	T4

Example Perform Training Level Assignment-Continued

TRAINING LEVEL ASSIGNMENT FOR TRIDENT EXTERIOR COMMUNICATIONS SYSTEM (ECS) BASIC ELECTRICITY (Background) (NEC RM-23TA) TPS-RM-23TA

TABLE AØØØ2			TABLE AØØØ2			TABLE AØØØ2		
ITEM	LEVEL		ITEM	LEVEL		ITEM	LEVEL	
	S	TØ		S	TØ		S	TØ
1-1		R	1-24		R	1-47		R
1-2		R	1-25		R	1-48		R
1-3		R	1-26		R	1-49		R
1-4		R	1-27		R	1-5Ø		R
1-5		R	1-28		R	1-51		R
1-6		R	1-29		R	1-52		R
1-7		R	1-3Ø		R	1-53		R
1-8		R	1-31		R	1-54		R
1-9		R	1-32		R	1-55		R
1-1Ø		R	1-33		R	1-56		R
1-11		R	1-34		R	1-57		R
1-12		R	1-35		R	1-58		R
1-13		R	1-36		R	1-59		R
1-14		R	1-37		R	1-6Ø		R
1-15		R	1-38		R	1-61		R
1-16		R	1-39		R	1-62		R
1-17		R	1-4Ø		R	1-63		R
1-18		R	1-41		R	1-64		R
1-19		R	1-42		R	1-65		R
1-2Ø		R	1-43		R	1-66		R
1-21		R	1-44		R	1-67		R
1-22		R	1-45		R	1-68		R
1-23		R	1-46		R	1-69		R
	S	TØ		S	TØ		S	TØ

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Example Perform Training Level Assignment-Continued

TRAINING PATH SYSTEM FOR TRIDENT EXTERIOR COMMUNICATIONS SYSTEM (ECS)
(NEC RM-23TA)TPS-RM-23TA

TABLE ASSIGNMENT MATRIX

TOS ASSIGNMENT

PPP TABLE	LEVEL												
	F1	T1	T2	T3	01	02	P1	C1	C2	J	T 4	S	TØ
FØ147	X	X	X	X	X	X	X	X	X				
FØ156		X	X		X	X	X						
FØ194		X	X		X		X						
FØ2Ø2		X	X		X	X	X						
BØØ76										X	X		
AØØØ2												X	X

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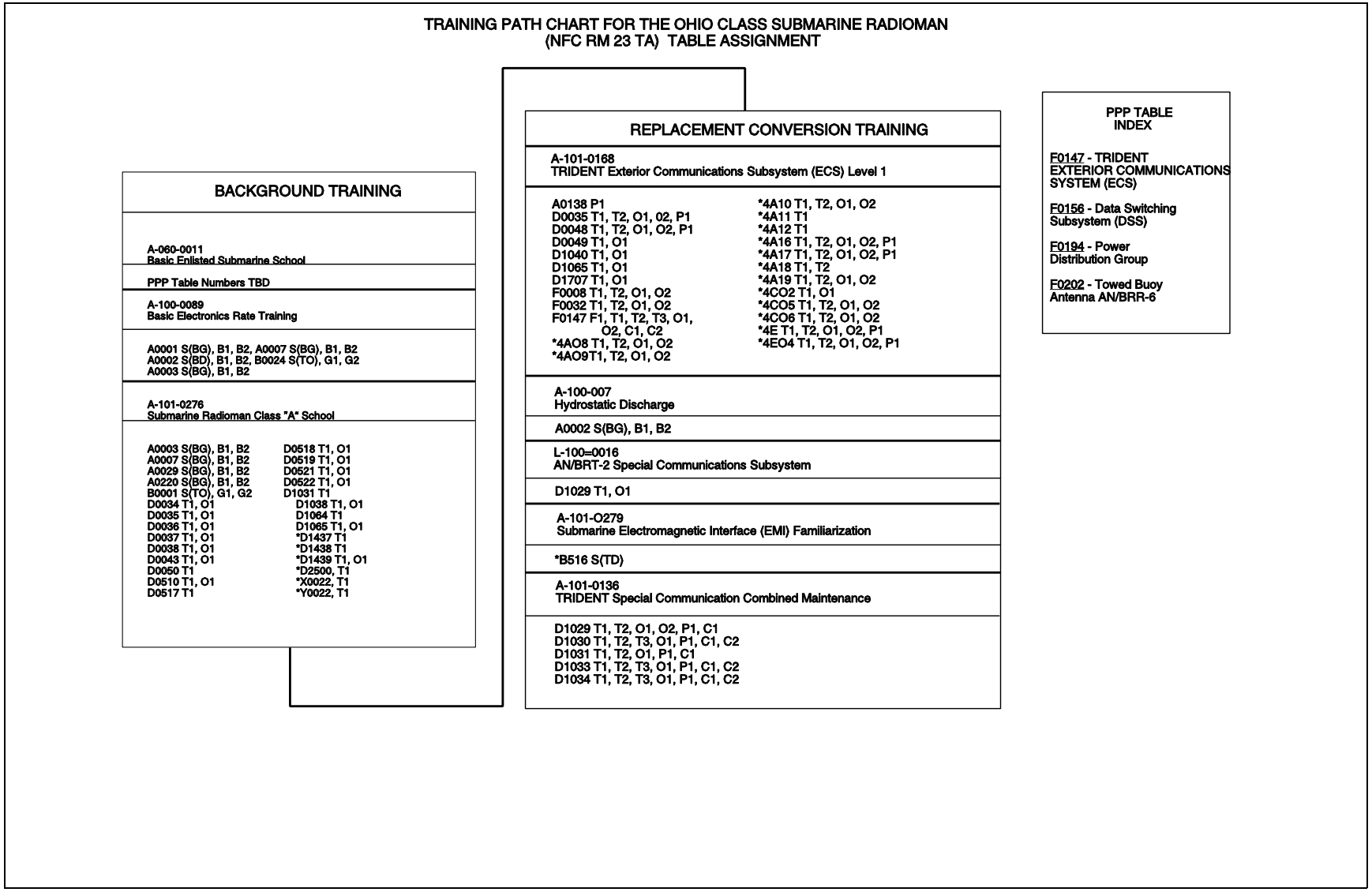
Example Table Assignment Matrix



Example Training Path Chart

TAB A-4

TRAINING COURSE CONTROL DOCUMENT

TRAINING COURSE CONTROL DOCUMENT

FOR

TRIDENT EXTERIOR COMMUNICATIONS SYSTEM (ECS)

A-111-4251

PREPARED FOR

DEPUTY FOR SHORE/TECHNICAL TRAINING (CNET T2)

250 DALLAS STREET

PENSACOLA, FLORIDA 32508-5220

PREPARED BY

TRIDENT TRAINING FACILITY

BANGOR, WASHINGTON 98315-5400

AUGUST 1991

* * * * * * * * * * * * * * * * * *

* Note to developer: The Letter of Promulgation *

* will be added after the CCA has approved the *

* course for implementation. *

* * * * * * * * * * * * * * * * * *

TRAINING COURSE CONTROL DOCUMENT

TABLE OF CONTENTS

TRAINING COURSE CONTROL DOCUMENT

Foreword

The TRIDENT Exterior Communication System (ECS) Basic Maintenance course is designed to provide the training necessary to perform selected preventive and documented corrective maintenance on the TRIDENT ECS Control Monitor and Test (CMT) Subsystem. In addition, training is provided in carrying out undocumented corrective maintenance on selected CMT Subsystem equipments.

TRAINING COURSE CONTROL DOCUMENT

COURSE DATA

Course Title:

TRIDENT Exterior Communications System (ECS)
Control Monitor and Test (CMT) Subsystem

Course Identification Number (CIN):

A-111-4251

CDP: 1234

Course Status:
This is a revision to the course developed Oct. 1976.

Course Mission Statement:

The TRIDENT (ECS) CMT Basic Maintenance course is designed to provide Radioman First Class the training necessary to perform documented preventive and corrective maintenance on the TRIDENT ECS Control Monitor and Test (CMT) Subsystem and undocumented corrective maintenance on selected CMT Subsystem equipments, under all conditions of readiness, in port or underway.

Occupational Classification:

NEC 4201 is awarded to course graduates.

Prerequisites

1. Rate: RM

2. Clearance: SECRET and CRYPTO NEED-TO-KNOW

3. Graduate of TRIDENT ECS Level I (A-1Ø1-Ø168) course, TRIDENT (ECS) Support Subsystem (A-1Ø1-Ø172) course, TRIDENT (ECS) ANT/AIS Subsystem (A-1Ø1-Ø173) course, TRIDENT (ECS) HF/UHF Subsystem (A-1Ø1-Ø175) course, TRIDENT (ECS) VLF/LF Subsystem (A-1Ø1-Ø17Ø) course, and TRIDENT (ECS) DSS Subsystem (A-1Ø1-Ø171) course.

Course Overview:

Perform selected preventive, and documented, and undocumented, corrective maintenance on the TRIDENT ECS Control Monitor and Test (CMT) Subsystem to include:

- Indicator Processor ID-2156/BSC-1

TRAINING COURSE CONTROL DOCUMENT

COURSE DATA (Continued)

- Antenna Deployment Indicator ID-2157/BSC-1
- Power Supply PP-7476/BSC-1
- Interface Unit J-3565/BSC-1 (Message Interface Unit)
- Controller Memory Unit C-1Ø448/BSC-1
- Interface Unit J-3566/BSC-1 (Digital Interface Unit)
- Switching Unit SA-22Ø4/BSC-1 (Mass Memory 2 Interface Unit)
- Interface Unit J-3568/BSC-1 (HSP/Magnetic Tape Unit Interface Unit)
- Recorder-Reproducer Control C-1Ø447/BSC-1
- Recorder-Reproducer Unit RD-442/BSC-1
- Comparator CM-5Ø7/BSC-1
- Disc Memory Unit MU-674/BSC-1

Course Length:	Current Course Length:
1. 61 Calendar Days	1. 52 Calendar Days
2. 45 Instructional Days	2. 38 Instructional Days

Training Sites:

1. TRIDENT Training Facility, Bangor, Silverdale Washington
2. TRIDENT Training Facility, Kings Bay, Georgia

Site Unique Training Considerations:

1. None

Number of Classes by Training Site:	Planned:
1. TRIDENT Training Facility, Bangor	3
2. TRIDENT Training Facility, Kings Bay	3

Class Capacity by Training Site:	Planned:
1. TRIDENT Training Facility, Bangor	
a. Maximum:	12
b. Minimum:	8

TRAINING COURSE CONTROL DOCUMENT

COURSE DATA (Continued)

Class Capacity by Training Site:- Continued	Planned:
2. TRIDENT Training Facility, Kings Bay	
a. Maximum:	12
b. Minimum:	8

Planned Average Onboard by Training Site:	Planned:
1. TRIDENT Training Facility, Bangor	12
2. TRIDENT Training Facility, Kings Bay	12

Instructor/Support Manning by Site:

The estimated plan for instructor/support manning is based on the same ratios for all sites. Periods can be found on the Course Master Schedule.

	Planned:
1. TRIDENT Training Facility, Bangor	4
2. TRIDENT Training Facility, Kings Bay	4

TRAINING COURSE CONTROL DOCUMENT

TRAINEE DATA

Personnel Physical Requirements:

NONE

Security Clearance:

Clearance: SECRET and CRYPTO NEED-TO-KNOW

Obligated Service:

In accordance with the Enlisted Transfer Manual

NOBC/NEC Earned:

NEC 42Ø1

COURSE LEARNING OBJECTIVES

Upon successful completion of this course, the trainees will have acquired the following knowledge and skills and be able to:

Knowledge:

1. Describe the theory necessary to support and understand the performance of normal and degraded operational tasks and all preventive maintenance without going into detailed logic, circuit analysis, individual program flow diagrams, or detailed mechanical component breakdown of the following:

   a. TRIDENT Exterior Communications System (ECS)
   b. Data Switching Subsystem (DSS)
   c. Power Distribution Group
   d. Towed Buoy Antenna AN/BRR-6

2. Describe the theory necessary to support and understand the performance of documented fault isolation and repair without going into detailed logic, circuit analysis, individual program flow diagrams, or detailed mechanical component breakdown of the following:

Skills:

1. Perform normal and degraded operational procedures with supervision on the following:

   a. TRIDENT Exterior Communications System (ECS)
   b. Data Switching Subsystem (DSS)
   c. Power Distribution Group
   d. Towed Buoy Antenna AN/BRR-6

NOTE TO THE READER. CLOs T1 and T2 have been combined into a single CLO, i.e., "normal and degraded"

2. Perform preventive maintenance procedures with supervision on the following:

   a. TRIDENT Exterior Communications System (ECS)
   b. Data Switching Subsystem (DSS)
   c. Power Distribution Group
   d. Towed Buoy Antenna AN/BRR-6

COURSE LEARNING OBJECTIVES - Continued.

Knowledge:

a. PP-7474/BSC-1, PP-7475/BSC-1 Power Supplies
b. SA-2199/BSC-1, SA-22ØØ/BSC-1, SA-22Ø1/BSC-1 Switching Units

3. Describe the theory necessary to support undocumented fault isolation and repair requiring advanced analysis without going into signal or electrical flow, computer instructions, or detailed mechanical component breakdown except for those mechanical or logic elements or circuits unique to the equipment or program of the Interface Unit J-3565/BSC-1 (Message Interface Unit).

Skills:

3. Perform, with supervision, documented fault isolation and repair procedures to the authorized maintenance level on the following:

   a. PP-7474/BSC-1, PP-7475/BSC-1 Power Supplies
   b. SA-2199/BSC-1, SA-22ØØ/BSC-1, SA-22Ø1/BSC-1 Switching Units

4. Perform fault isolation and repair of faults that cannot be located using procedures contained in prescribed documentation or that require advanced analysis, with supervision, on the Interface Unit J-3565/BSC-1 (Message Interface Unit).

PART FØ147

EXTERIOR COMMUNICATIONS SYSTEM (ECS) ELECTRIC SYSTEM

This part contains information from PPP Tables FØ147, FØ2Ø2 and AØØØ2.

Section 1. INTRODUCTION TO AND THEORY OF THE POWER DISTRIBUTION GROUP (T1, T2)

Section 2. BASIC OPERATION AND OPERATION OF THE DATA SWITCHING SUBSYSTEM (DSS) (O1, O2)

Section 3. PREVENTIVE MAINTENANCE OF THE TRIDENT EXTERIOR COMMUNICATIONS SYSTEM (ECS) (P1)

Section 4. THEORY OF THE DATA SWITCHING SUBSYSTEM (DSS) (T1, T2)

Section 5. BASIC CORRECTIVE MAINTENANCE OF THE SA-2199/BSC-1, SA-22ØØ/BSC-1, SA-22Ø1/BSC-1 SWITCHING UNITS AND PP-7474/BSC-1, PP-7475/BSC-1 POWER SUPPLIES (C1)

Section 6. THEORY OF AND ADVANCED THEORY OF THE INTERFACE UNIT J-3565/BSC-1 (MESSAGE INTERFACE UNIT) (KINGS BAY) (T2, T3)

Section 7. PREVENTIVE, BASIC CORRECTIVE, AND CORRECTIVE MAINTENANCE OF THE OF THE INTERFACE UNIT J-3565/BSC-1 (MESSAGE INTERFACE UNIT) (P1, C1, C2)

Section 8. THEORY OF THE TSEC/KY-58 (T1)

Section 9. PREVENTIVE AND BASIC CORRECTIVE MAINTENANCE OF THE TSEC/KY-58 (P1, C1)

Only certain pages of the Curriculum Outline of Instruction were used as examples, the other pages were intentionally omitted.

A-111-4251

Section 1: INTRODUCTION TO AND THEORY OF THE POWER DISTRIBUTION GROUP

NOTE TO THE READER. The titles are inconsistent between the section and topics because a variety of topics were selected to present a broader sampling. Also, Topic No. 2 shows four topic titles combined into one topic, while the convention recommends not more than three be combined.

TRAINING COURSE CONTROL DOCUMENT
CURRICULUM OUTLINE OF INSTRUCTION

1. INTRODUCTION TO AND THEORY OF THE POWER DISTRIBUTION GROUP A-111-4251

Topic 1: GENERAL AND DOCUMENTATION DESCRIPTION OF THE POWER DISTRIBUTION GROUP

Topic Learning Objectives

Upon successful completion of this topic, the trainee will be able to:

1. State the functions of the Power Distribution Group. (o1)

2. State that the Power Distribution Group consists of the following major functional areas. Include the function of each to support normal operations. (O2, P1, T1)

   a. Power panel

   b. Power distribution black panel

   c. Power distribution red panel

   d. Component compartment

   e. Ground fault indicator panel

   f. Junction Boxes

3. Define the abbreviations, terms, and symbols used with the Power Distribution Group to support all operations and preventive maintenance. (O2, P1)

4. State the operational characteristics and capabilities of the Power Distribution Group to support all operations and preventive maintenance. (O2, P1, T2)

5. State the security requirements for the Power Distribution Group to support all operations and preventive maintenance. (O2, P1)

6. Describe the organization, content, and use of all technical documentation provided for use with the Power Distribution Group to support normal operations. (O1, T1)

Topic Learning Objectives (TLOs) should be in instructional sequence. This is usually the same as the PPP table line item sequence.

1. INTRODUCTION TO AND THEORY OF THE POWER DISTRIBUTION GROUP A-111-4251

Topic 2: GENERAL, PHYSICAL, FUNCTIONAL, AND INTERFACE DESCRIPTION OF THE AN/BRR-6

Topic Learning Objectives

Upon successful completion of this topic, the trainee will be able to:

1. State the functions of the AN/BRR-6. (T1)

2. State the major functions of AN/BRR-6 consisting of: Include the function of each to support normal operations. (T1)

   a. Towed Buoy TB-17/BRR-6 (Bangor) or Towed Buoy TB-18A/BRR-6 (Kings Bay)

   b. Receiver Group OR-197/BRR-6

   c. Special Purpose Electrical Cable Assembly CX-13Ø53/BRR-6

   d. Buoy Cradle MT-49Ø5/BRR-6

   e. Reeling Machine RL-275/BRR-6

   f. Sensor Group OA-89Ø6/BRR-6

   g. Buoy Door Sensing Switch

   h. Buoy Control Indicator C-1Ø256A/BRR-6

   i. Antenna Control Indicator C-1Ø257/BRR-6

   j. Buoy Depth Control Indicator C-1Ø258A/BRR-6

   k. Relay Assembly RE-1115/BRR-6

   l. Interconnecting Box J-3461/BRR-6

   m. Towed Array Control Indicator Panel

Subitems should appear exactly as they do on the PPP table.

3. Define the abbreviations and terms used with the AN/BRR-6 to support all operations and preventive maintenance.(O2,P1,T2)

4. State the operational characteristics and capabilities of the AN/BRR-6 to support all operations and preventive maintenance. (O2,P1,T2)

5. State the security requirements for the AN/BRR-6 to support all operations and preventive maintenance. (O2,P1,T2)

6. Describe all major and associated components of the AN/BRR-6 to support all operations and preventive maintenance. Include names, nomenclature, physical appearance, reference designators, locations, and construction features. (O2,P1,T2)

   a. Towed Buoy TB-17/BRR-6 (Bangor) or Towed Buoy TB-18A/BRR-6 (Kings Bay)

   b. Receiver Group OR-197/BRR-6

   c. Special Purpose Electrical Cable Assembly CX-13Ø53/BRR-6

   d. Buoy Cradle MT-49Ø5/BRR-6

   e. Reeling Machine RL-275/BRR-6

   f. Sensor Group OA-89Ø6/BRR-6

   g. Buoy Door Sensing Switch

   h. Buoy Control Indicator C-1Ø256A/BRR-6

   i. Antenna Control Indicator C-1Ø257/BRR-6

   j. Buoy Depth Control Indicator C-1Ø258A/BRR-6

   k. Relay Assembly RE-1115/BRR-6

   l. Interconnecting Box J-3461/BRR-6

   m. Towed Array Control Indicator Panel

The TB-18A/BRR-6 and EE126-FA-MMF-Ø1Ø/E11Ø-BRR-6 are fictitious and used for illustration purposes only.

7. Describe the controls and indicators directly associated with the AN/BRR-6 to support all operations and preventive maintenance. Include names, reference-designators positions, conditions, colors, locations, and functions. (O2,P1,T2)

TLOs should contain only those "include" statements that are applicable to the subject matter and TOS level being covered (e.g., construction features may not be applicable to every physical description topic).

8. Describe how the AN/BRR-6 works (functional operation) to support all operations and preventive maintenance. Include signal flow,sequential operation, and indications.(O2,P1,T2)

   a. Towed Buoy TB-17/BRR-6 (Bangor) or Towed Buoy TB-18A/BRR-6 (Kings Bay)

b. Receiver Group OR-197/BRR-6

c. Special Purpose Electrical Cable Assembly CX-13Ø53/BRR-6

d. Buoy Cradle MT-49Ø5/BRR-6

e. Reeling Machine RL-275/BRR-6

f. Sensor Group OA-89Ø6/BRR-6

g. Buoy Door Sensing Switch

h. Buoy Control Indicator C-1Ø256A/BRR-6

i. Antenna Control Indicator C-1Ø257/BRR-6

j. Buoy Depth Control Indicator C-1Ø258A/BRR-6

k. Relay Assembly RE-1115/BRR-6

l. Interconnecting Box J-3461/BRR-6

m. Towed Array Control Indicator Panel

9. Describe the functional interface between the AN/BRR-6 and related external equipments to support all operations and preventive maintenance. (O2,P1,T2)

a. Power sources

b. Input signals

c. Output signals

Topic 3: OPERATIONAL DESCRIPTION OF THE DSS

Topic Learning Objectives

Upon successful completion of this topic, the trainee will be able to:

1. Describe the authority and regulations pertaining to normal operation of the following equipment, including external equipments which interface with them. (O1,T1)

   a. TSEC/KG-84C

   b. TSEC/KG-36

   c. TSEC/KWR-46

   d. TSEC/KY-75

   e. TSEC/KY-58

2. Describe the authority and regulations pertaining to all operations of the DSS and the following equipment, including external equipments which interface with them. (O2,T2)

   a. SA-2199/BSC-1, SA-2200/BSC-1, SA-2201/BSC-1 Switching Units

   b. Signal Data Converter CV-3510B/UG3.

3. Describe the routine preoperational, operational, and post operational tasks for normal operation of the DSS and the following equipment. (O1,T1)

   a. SA-2199/BSC-1, SA-2200/BSC-1, SA-2201/BSC-1 Switching Units

   b. Signal Data Converter CV-3510B/UG

   c. TSEC/KG-84C

   d. TSEC/KG-36

   e. TSEC/KWR-46

   f. TSEC/KY-75

   g. TSEC/KY-58

4. Describe indications which may occur during normal operation of the DSS and the following equipment. Include alarms, indicators, and displays. (O1,T1)

   a. TSEC/KG-84C

   b. TSEC/KG-36

c. TSEC/KWR-46

d. TSEC/KY-75

e. TSEC/KY-58

5. Describe indications which may occur during all operations of the DSS and the following equipment. Include alarms, indicators, and displays. (O2,T2)

a. SA-2199/BSC-1, SA-22Ø0/BSC-1, SA-22Ø1/BSC-1 Switching Units

b. Signal Data Converter CV-351Ø/UG

6. Describe casualty/degraded/abnormal modes of operation for the DSS and the following equipment. (O2,T2)

a. SA-2199/BSC-1, SA-22Ø0/BSC-1, SA-22Ø1/BSC-1 Switching Units

b. Signal Data Converter CV-351Ø1B/UG

7. Describe personnel and equipment safety precautions which are to be observed during normal operation of the DSS and the following equipment. (O1,T1)

a. TSEC/KG-84C

b. TSEC/KG-36

c. TSEC/KWR-46

d. TSEC/KY-75

e. TSEC/KY-58

8. Describe personnel and equipment safety precautions which are to be observed during all operations of the DSS and the following equipment. (O2,T2)

a. SA-2199/BSC-1, SA-22Ø1Ø1/BSC-1, SA-22Ø11/BSC-1 Switching Units

b. Signal Data Converter CV-351Ø1B/UG

Topic 4: MAINTENANCE DESCRIPTION OF THE ECS

Topic Learning Objectives

Upon successful completion of this topic, the trainee will be able to:

1. Define the maintenance policy for the ECS and the following subsystems and equipment required to support preventive maintenance as the requirement for periodic performance of tasks to minimize equipment malfunctions. Including: Servicing scheduled or unscheduled inspections, cleaning, lubrication, corrosion control and any other function in support of maintaining and equipment full mission capable; and Operational checks (confidence or Performance checks, and Degradation/ deterioration checks). (P1,T2)

   a. Control, Monitor, and Test (CMT) Subsystem

      (1) Interface Unit J-3565/BSC-1 (Message Interface Unit)

      (2) Interface Unit J-3566/BSC-1 (Digital Interface Unit Interface)

      (3) Interface Unit J-3568/BSC-1 (HSP/Magnetic Tape Unit Interface Unit)

      (4) Recorder-Reproducer Control C-1Ø447/BSC-1

      (5) Recorder-Reproducer Unit RD-442/BSC-1

      (6) Comparator CM-5Ø7/BSC-1

   b. Data Switching Subsystem (DSS)

      (1) SA-2199/BSC-1, SA-22ØØ/BSC-1, SA-22Ø1/BSC-1 Switching Units

      (2) Signal Data Converter CV-351ØB/UG

   c. Very Low Frequency/Low Frequency (VLF/LF) Subsystem

      (1) Radio Receiver R-21Ø9/BSC-1

      (2) Radio Receiver R-232Ø/URR

      (3) Digital Data Processor CP-1Ø71B/WR

      (4) Digital Data Demodulator MD-1191/WRR-7B

      (5) Electrical Equipment Enclosure CY-841Ø/WRR-7B

      (6) Power Supply PP-8Ø98/BSC-1

   d. High Frequency/Ultra High Frequency (HF/UHF) Subsystem

      (1) Radio Receiver-Transmitter RT-11Ø7(V)12/WSC-3(V)

      (2) Voice Switch Unit Control C-1Ø975

      (3) Command Center Telephone Terminal

   e. Support Subsystem

      (1) Teleprinter TT-624/UG

(2) Power Distribution Group

(3) Audio Tape Recorder CMS 1Ø22

(4) AN/BSC-1 Electronic Equipment Air Coolers

f. Antenna Suite

(1) Multifunction Mast Antenna Group OE-2Ø7/BR

(2) Towed Buoy Antenna AN/BRR-62.

2. Describe preventive maintenance procedures for the ECS and the subsystems and equipment listed in learning objective 1. Include recognition and interpretation of indications, records, reports, and instructions. (P1,T1)

3. Describe personnel and equipment safety precautions, including tag-out procedures, which are to be observed while performing preventive maintenance on the ECS and the subsystems and equipment listed in learning objective 1. (P1,T2)

Where ten or more sub-items exist for a series of TLOs, it is permissible to have the listing appear in the first TLO only. Then, refer back to that learning objective in the remaining TLOs.

Topic 1: Basic Operation and Operation of the DSS

Topic Learning Objectives

Upon successful completion of this topic, the trainee will be able to:

1. Perform routine preoperational, operational, and post-operational tasks for normal operation of the DSS and the following equipment. (O1,T1)
   a. SA-2199/BSC-1, SA-2200/BSC-1, SA-2201/BSC-1 Switching Units
   b. Signal Data Converter CV-3510B/UG
   c. TSEC/KG-84C
   d. TSEC/KG-36
   e. TSEC/KWR-46
   f. TSEC/KY-75
   g. TSEC/KY-58
2. Recognize and interpret all indications occurring during the performance of normal operating procedures, and perform appropriate operator actions in proper sequence on the DSS and the following equipment. (O1,T1)
   a. TSEC/KG-84C
   b. TSEC/KG-36
   c. TSEC/KG-46
   d. TSEC/KY-75
   e. TSEC/KY-58
3. Recognize and interpret all indications occurring during the performance of all operating procedures, and perform appropriate operator actions in proper sequence on the DSS and the following equipment. (O2,T2)
   a. SA-2199/BSC-1, SA-2200/BSC-1, SA-2201/BSC-1 Switching Units
   b. Signal Data Converter CV-3510B/UG
4. Perform operational tasks in the casualty/degraded/abnormal modes of operation of the DSS and the following equipment. (O2,T2)
   a. SA-2199/BSC-1, SA-2200/BSC-1, SA-2201/BSC-1 Switching Units
   b. Signal Data Converter CV-3510B/UG
5. Adhere to personnel and equipment safety precautions during normal operational procedures of the DSS and the following equipment. (O1,T1)
   a. TSEC/KG-84C
   b. TSEC/KG-36

c. TSEC/KG-46

d. TSEC/KY-75

e. TSEC/KY-58

6. Adhere to personnel and equipment safety precautions during all operational procedures of the DSS and the following equipment. (T2,O2)

a. SA-2199/BSC-1, SA-22ØØ/BSC-1, SA-22Ø1/BSC-1 Switching Units

b. Signal Data Converter CV-351ØB/UG

7. Perform Preventive Maintenance Procedures for the ECS and the subsystem and equipment listed in the maintenance description, TLO #1.

8. Adhere to personnel and equipment safety precautions while performing preventive maintenance procedures on all the subsystems and equipment listed in the maintenance description TLO #1.

ANNEX A

PROFILE ITEM-TO-TOPIC OBJECTIVE ASSIGNMENT CHART

PROFILE ITEM-TO-TOPIC OBJECTIVE ASSIGNMENT CHART

TABLE	ITEM	TOS	VOL	PART	SECT	TOPIC	L.O.	TEST ITEM NO.
F0147	1-1-3	T1	1	4	6	1	1	
	1-5-1	T1			1	3	1	
	1-5-1	T2			1	3	1	
	1-5-2 a	T1			1	3	2	
	a(1)	T1			1	3	2	
	To reduce the amount of “ripple” when updating the OAC, start each new PPP table at the top of the next column.							
	The volume number should appear in the first entry of each page. Otherwise, it only appears when it changes.							

TABLE	ITEM	TOS	VOL	PART	SECT	TOPIC	L.O.	TEST ITEM NO.
F0147	1-5-3	T1	1	4	1	3	2	
Cont.	1-5-3	T2			1	3	2	
	1-5-4	T2			1	3	2	
	1-5-6	T1			1	3	2	
	1-5-6	T2			1	3	2	
	1-6-8	T3			6	3	4	
	1-6-10	T3			6	3	6	
	1-6-11	T3			6	3	7	
	1-7-1	T3			6	1	3	
	2-1-1	01	2		2	3	1	
	a	01			2	3	1	
	a(1)	01			2	1	1	

ANNEX A (1)

TRAINING COURSE CONTROL DOCUMENT

A-111-4251A VOLUME 3

PROFILE ITEM-TO-TOPIC OBJECTIVE ASSIGNMENT CHART

TABLE	ITEM	TOS	VOL	PART	SECT	TOPIC	L.O.	TEST ITEM NO.
F0147	1-1-3	T1	1	4	6	1	1	
	1-5-1	T1			1	3	1	
	1-5-1	T2			1	3	1	
	1-5-2 a	T1			1	3	2	
	a(1)	T1			1	3	2	

To reduce the amount of "ripple" when updating the OAC, start each new PPP table at the top of the next column.

The volume number should appear in the first entry of each page. Otherwise, it only appears when it changes.

TABLE	ITEM	TOS	VOL	PART	SECT	TOPIC	L.O.	TEST ITEM NO.
F0147	1-5-3	T1	1	4	1	3	2	
Cont.	1-5-3	T2			1	3	2	
	1-5-4	T2			1	3	2	
	1-5-6	T1			1	3	2	
	1-5-6	T2			1	3	2	
	1-6-8	T3			6	3	4	
	1-6-10	T3			6	3	6	
	1-6-11	T3			6	3	7	
	1-7-1	T2			6	1	3	
	2-1-1	01	2		2	3	1	
	a	01			2	3	1	
	a(1)	01			2	1	1	

TRAINING COURSE CONTROL DOCUMENT

A-111-4251A VOLUME 3

PROFILE ITEM-TO-TOPIC OBJECTIVE ASSIGNMENT CHART - Continued

TABLE	ITEM	TOS	VOL	PART	SECT	TOPIC	L.O.	TEST ITEM NO.
F0147 Cont.	2-1-1 Cont.							
	b	01	2		2	1	1	
	c	01			2	1	1	
	2-1-2	01			2	1	2	
	2-1-2	02			2	1	2	
	2-1-3	01			2	1	3	
	2-1-5	01			2	1	4	
	2-1-5	02			2	1	4	

TABLE	ITEM	TOS	VOL	PART	SECT	TOPIC	L.O.	TEST ITEM NO.

This is not a complete OAC. It is provided for illustration purposes only.

The part number only appears when it is different than the PPP table number.

ANNEX B

RESOURCE REQUIREMENTS LIST

RESOURCE REQUIREMENTS LIST

COURSE: TRIDENT Exterior Communications System (ECS)

CLASS SIZE: As per the Formal Schools Catalog

A. Texts

Doc. No.	Title	Per Tr.	Per Inst.	Per Cl.
A-111-4251	TRIDENT Exterior Communications System (ECS) Model Curricula Lesson Plan. Prepared by Chief of Naval Technical Training.		1	
A-111-4251	TRIDENT Exterior Communications System (ECS) Model Curricula Maintenance Trainee Guide. Prepared by Chief of Naval Technical Training.	1	1	

B. References

Doc. No.	Title	Per Tr.	Per Inst.	Per Cl.
CNETINST 1500.20 series	Safety Policy and Procedures for Conducting Training		1	

RESOURCE REQUIREMENTS LIST - Continued.

Doc. No.	Title	Per Tr.	Per Inst.	Per Cl.
CNTECHTRA-ST1 Vol. 21	Integrated Radio Room AN/BSC-1 Fault Insertion Guide for TRIDENT Training Facility		1	
CSP-1 series	Cryptographic Security Policy and Procedures (U)		1	
COMSUBLANTINST 5101.2 series	Equipment Tag-out Procedures (Kings Bay)		1	
COMSUBPACINST 5101.4 series	Equipment Tag-out Procedures (Bangor)		1	
COMSUBPAC/ COMSUBLANTINST 5400.38 series	Standard Submarine Organization and Regulations Manual		1	
EE109-AJ-MMO-010/ W153-PDG	Power Distribution Group OP-118/BSC-1 Operation and Maintenance Instructions	1	1	
EE109-AL-MMO-010/ W153-DSS	Data Switching Subsystem Operation and Maintenance Instructions, Volume 1	1	1	
EE125-FA-MMF-010/ E110-BRR-6	FOMM Technical Manual Support Volume for Radio Receiving Set AN/BRR-6, Volume 1	1	1	
NAVSEA S9SSB-X9-SSM-84E/(U)726 V6P3B7E-1	Exterior Communications System - Normal Operating Procedures	1	1	(2)

RESOURCE REQUIREMENTS LIST - Continued.

C. Equipment

Item No.	Nomenclature Cl.	Part No.	Unit Cost	FSCM	Tech. Ref.	Per Tr.	Per Inst.	Per
1.	AN/BSC-1 Trainer				NAVSEA S8200-BG-PLN -010/LCSP(OP)TTF or NAVSEA S8200-KB-PLN -010/LCSP(OP)TTF			1
2.	Board extractor tool	8784656-1						1
3.	Data acquisition probe lead set	012-0747-00						1
4.	Data Acquisition Probes Tektronix P6451	010-6451-02						1
5.	Digital Multimeter,	Fluke Model 8600A-01 2			SCIN/SCAT 4212			
6.	NAVSEA Form 9210/9 (Danger/Caution Tag-Out Record Sheet)							12
7.	NAVSHIPS Form 9890/5 (Caution Tag)							12
8.	NAVSHIPS Form 9890/6 (Out of Calibration Sticker)							12

(3)

RESOURCE REQUIREMENTS LIST - Continued.

Item No.	Nomenclature Cl.	Part No.	Unit Cost	FSCM	Tech. Ref.	Per Tr.	Per Inst.	Per
9.	Prefaulted Module	8560392 (Fault No. 4X01-P-010)						1
10.	Prefaulted Module	8560399 (Fault No. 4X01-P-017)						1
11.	Prefaulted Module	61443PFM047 (Fault No. 4X01-P-023)						1
12.	SUBGEN Form 9890/31 (Index/Audit Record)							1

D. Films/Videotapes/Videodiscs

Designator	Title	Running Time	Per Cl.
None			

E. Graphics

Transparencies are A-111-4251 series.

RESOURCE REQUIREMENTS LIST - Continued.

1. Transparencies

Transparency No.	Title	Per Cl.	Source	Figure No.
4X-1-3-1	Radio Room Status	1	EE109-AA-MMO-010/ W153-BSC1	5-2
4X-1-3-2	Power Status	1	Original Transparency prepared by SPAWAR 153-1L	
4X-4-4-2	(Deleted)			
4X-4-4-3	Power Supply PP-7474/BSC-1 Functional Interface (Bangor)	1	Original Transparency prepared by SPAWAR 153-1L	

2. Wall Charts. The wall charts for this course are full-sized photocopies of Communications Central AN/BSC-1 equipment racks. The wall chart numbers were determined based on the first time the wall chart was used in the TRIDENT Radioman pipeline. For example, the number A-101-0168-4-5 indicates that the Rack A5 wall chart was first used in the TRIDENT ECS Level I course, it relates to PPP Table 4, and it is the fifth wall chart associated with that PPP table.

Wall Chart No.	Title	Per Cl.	Source	Figure No.
A-101-0168-4-1	Antenna Control Group OK-371/BSC-1	1	Original Wall Chart prepared by SPAWAR 153-1L	
A-101-0168-4-5	Interconnecting Group ON-165/BSC-1	1	Original Wall Chart prepared by SPAWAR 153-1L	(5)

RESOURCE REQUIREMENTS LIST - Continued.

F. Support materials

Instruction Sheets. All instruction sheets (i.e., Assignment Sheets, Job Sheets, etc.) are A-111-4251 series.

Identification No.	Instruction Sheet Type	Title	Per Tr.	Per Inst.	Per Cl.

(All instruction sheets for this course are contained within Trainee Guide A-111-4251.)

ANNEX C

COURSE MASTER SCHEDULE

COURSE MASTER SCHEDULE

A-111-4251

WEEK 1 Length of Period: 50 minutes

Day 1

Topic No.	**Type**	**Period**	**Topic**	**Ratio**
F0147.1.1	Class	1	General and Documentation description of the Power Distribution Group	25:1
F0147.1.2	Class	2	General, Physical, Functional and Interface description of AN/BRR-6	25:1
F0147.1.2	Class	3	Same	25:1
F0147.1.2	Class	4	Same	25:1

Only Part F0147, Sections 1 and 2 are used as examples in Volume II. The others are intentionally omitted.

WEEK 3

Day 1

Topic No.	**Type**	**Period**	**Topic**	**Ratio**
F0147.1	Test	81	Power Distribution Group	25:1
F0147.2.1	Class	82	Basic operation of the DSS	25:1
F0147.2.1	Lab	11	Same	10:1

ANNEX C (18)

ANNEX D

FAULT APPLICABILITY LIST

FAULT APPLICABILITY LIST

PART	SECT	TOS	EQUIPMENT	FUNCTION FAULTED	FAULT NO.	DOCUMENT
F0147	4	C1	SA-2199/BSC-1	DC Power	F104701-P-010*	CENTECHTRA-ST1, VOL. 21
F0147	4	C1	SA-2200/BSC-1	Control Matrix	F104701-P-017*	CENTECHTRA-ST1, VOL. 21
F0147	4	C1	SA-2200/BSC-1	Interlock Reset	F104701-P-023*	CENTECHTRA-ST1, VOL. 21
F0147	4	C1	SA-2201/BSC-1	SSI Monitoring	F104701-X-002A*	CENTECHTRA-ST1, VOL. 21
F0147	4	C1	SA-2199/BSC-1	SSI Monitoring	F104701-X-003A*	CENTECHTRA-ST1, VOL. 21
F0147	7	C1/C2	J-3265/BSC-1	SSIXS Message Display	F104702-P-011	CENTECHTRA-ST1, VOL. 21
F0147	7	C1/C2	J-3265/BSC-1	ODT to NTDS	F104702-P-013	CENTECHTRA-ST1, VOL. 21
F0147	7	C1/C2	J-3265/BSC-1	150 HzA	F104702-P-014	CENTECHTRA-ST1, VOL. 21
F0147	7	C1/C2	J-3265/BSC-1	Transition Detected Signal	F104702-P-015	CENTECHTRA-ST1, VOL. 21

NOTE 1: The PART and SECT columns indicate the most appropriate location within the curriculum to use the fault.
NOTE 2: The asterisk in the Fault No. column indicates that this fault is required for use in the curriculum.
NOTE 3: Faults approved for dual use (C1 as C2) are noted in the TOS column.

TAB A-5

LESSON PLAN

TRIDENT EXTERIOR COMMUNICATIONS SYSTEM (ECS)

LESSON PLAN

July 1992

PUBLISHED BY DIRECTION OF THE CHIEF OF NAVAL EDUCATION AND TRAINING

LIST OF EFFECTIVE PAGES

Volume/revision/change identification is shown for illustration purposes only.

Page No.	Change in Effect	Page No.	Change in Effect	Page No.	Change in Effect
Cover, ii, iia,	Change 1	FØ147-2-1-1 thru FØ1147-2-1-10	Original	FØ147-4-4-9, FØ147-4-4-10	Original
Letter of Promulgation	Original	FØ147-3-1 FØ147-3-2	Original	FØ147-4-5-1 thru FØ147-4-5-16	Original
iv	Change 1	FØ147-3-1-1 thru FØ147-3-1-14	Original	FØ147-5-1, FØ147-5-2	Original
v thru xxiv	Original	FØ147-4-1 FØ147-4-2	Original	FØ147-5-1-1 thru FØ147-5-1-12	Original
Tab Part FØ147	Original	FØ147-4-1-1 thru FØ147-4-1-10	Original	FØ147-6-1, FØ147-6-2	Original
FØ147-1-1-2 FØ147-1-2	Change 1	FØ147-4-2-1 thru FØ147-4-2-12	Original	FØ147-6-1-1 thru FØ147-6-1-4	Original
FØ147-1-1-1 thru FØ147-1-1-8	Original	FØ147-4-3-1 thru FØ147-4-3-16	Original	FØ147-6-2-1 thru FØ147-6-2-14	Original
FØ147-1-2-1 thru FØ147-1-2-20	Original	FØ147-4-4-1, FØ147-4-4-2	Change 1	FØ147-6-3-1 thru FØ147-6-3-4	Original
FØ147-1-3-1 thru FØ147-1-3-20	Original	FØ147-4-4-3 thru FØ147-4-4-6	Original	FØ147-6-4-1 thru FØ147-6-4-9	Original
FØ147-1-4-1 thru FØ147-1-4-22	Original	FØ147-4-4-7, FØ147-4-4-8	Change 1	FØ147-6-4-10	Change 1
FØ147-2-1 FØ147-2-2	Original				

LIST OF EFFECTIVE PAGES - Continued.

Page No.	Change in Effect	Page No.	Change in Effect	Page No.	Change in Effect
FØ147-6-4-11 thru FØ147-6-4-16	Deleted				
FØ147-6-4-17, FØ147-6-4-18	Original				
FØ147-7-1, FØ147-7-2	Original				
FØ147-7-1-1 thru FØ147-7-1-8	Original				
FØ147-8-1, FØ147-8-2	Original				
FØ147-8-1-1 thru FØ147-8-1-20	Original				
FØ147-9-1, FØ147-9-2	Original				
FØ147-9-1-1 thru FØ147-9-1-10	Original				
(1) thru (13)	Original				
(14)	Change 1				
(15) thru (24)	Original				

Reserved for
Letter of Promulgation

CHANGE RECORD

Number and Description of Change	Entered by	Date
1 To incorporate examples of change markings.	RM 1 C. Developer	8/15/90
This Lesson Plan was printed with Change 1 incorporated. Technical changes would be added by the instructor and noted on this page.		

TABLE OF CONTENTS

This example contains only a portion of the entire Lesson Plan prepared for this course.

TABLE OF CONTENTS - Continued.

TABLE OF CONTENTS - Continued.

SECURITY AWARENESS NOTICE

In the event that classified information is added to this Lesson Plan as a result of instructor personalization, the Lesson Plan shall be marked and handled in accordance with the regulations of the latest edition of the Department of the Navy Supplement to the DoD Information Security Program Regulation OPNAVINST 5510.1 series.

SAFETY/HAZARD AWARENESS NOTICE

All personnel involved in operation or maintenance of electronic equipment must be thoroughly familiar with the electronic equipment safety precautions contained in Electronic Installation and Maintenance Book (SE000-00-EIM-100), section 3, and NSTM, Electronics, chapter 400, (S9086-ND-STM-000/ch. 400), section 2. In addition, attention is directed to the Navy Occupational Safety and Health Program, OPNAVINST 5100.19 series, Navy Occupational Safety and Health for Forces Ashore, OPNAVINST 5100.23 series, and Safety Policy and Procedures for Conducting Training, CNETINST 1500.20 series.

This equipment employs voltages which are dangerous and may be fatal if contacted by operating or maintenance personnel. Extreme caution must be exercised when working with this equipment. Hazard awareness dictates that this equipment must always be viewed as an integral part of a system and not as a component. While every practical precaution has been incorporated into this equipment, it is not possible or practical to try to list every condition or hazard that you may encounter. Therefore, all operating or maintenance personnel must at all times observe as a minimum, the following:

Don't service or adjust alone. Under no circumstances will a person operate or maintain equipment without the immediate presence or assistance of another person capable of rendering aid. Unless under direct supervision of a qualified person, no person shall operate or maintain equipment for which he is not qualified.

Don't tamper with interlocks. Reliance on interlock circuits to remove power from the equipment is never to be assumed. Until operation of the interlock is verified, equipment is assumed to be in the hazardous mode of operation. Under no circumstances will any access gate, door, or interlock switch be removed, bypassed or modified in any way by other than authorized maintenance personnel and then only after observing proper tag-out procedures.

Training Time Out. Any time a trainee or instructor has apprehension concerning his personal safety, or that of another, he shall verbally signal "TRAINING TIME OUT" to stop the exercise and receive or provide additional instruction as appropriate in accordance with CNETINST 1500.20 series.

SAFETY/HAZARD AWARENESS NOTICE - Continued.

Report all hazards. If at any time you detect a hazard, it is your responsibility to report the hazard to ensure that it is corrected. If at any time you detect a "new" or "suspected new" hazard, particularly due to equipment installation, modification or repair, it is your responsibility to ensure that a SAFETYGRAM is submitted to the Naval Safety Center, Norfolk, VA, in accordance with OPNAVINST 5100.19 series. This will ensure that this hazard will be investigated, publicized, or corrected, as required.

The Pre-Mishap plan explains the procedures to follow and essential telephone numbers to call in case of an accident or emergency. It is located by the emergency exit in the laboratory.

A-5-15

HOW TO USE THE LESSON PLAN

COMPOSITION OF THE LESSON PLAN

This Lesson Plan provides an instructor with the information required to prepare for, and instruct, the topics assigned. As an introduction to each topic, the instructor shall display his/her name and the topic title on the chalkboard. The instructor will also inform the trainees of the Topic Learning Objectives, establish classroom procedures (questioning, note taking, breaks, etc.), and motivate the trainees by emphasizing the importance of the topic. At the end of each day of instruction, the instructor will assign the trainee any materials required in preparation for the following day. Each topic within this Lesson Plan contains the following:

1. Topic Learning Objectives. These objectives are written to reflect the training level(s) of Personnel Performance Profiles (PPPs) that the topic supports. The objectives are derived by applying elements of the Training Objective Statements (TOS) to the elements for the PPPs.

2. Trainee Preparation. This portion assigns the study and review material that the trainee must complete to prepare for this topic. It contains detailed assignments in reference publications, diagrams, and support materials, and is assigned at the end of each day of instruction. The instructor must review the Trainee Preparation portion of the topics planned for the following day and make study assignments accordingly.

3. Instructor Preparation. This part of the topic page contains:

   a. A reminder to review assigned trainee material.

   b. A list of all reference materials required by the instructor to prepare for instructing a topic.

   c. A list of all trainee materials required for the topic, including reference, equipment, support materials, and test equipment.

HOW TO USE THE LESSON PLAN - Continued

4. Discussion-Demonstration-Activities. This page is divided into two columns, as follows:

   a. Discussion Point. This column outlines the subject matter to the depth necessary to support the training level(s) of the corresponding topic learning objective. Also, sufficient space is provided for instructor personalization.

   b. Related Instructor Activity. This column lists specific instructor activities, excluding oral discussion, which will aid in trainee learning. This Related Instructor Activity Column provides the instructor specific instructions relative to reference documents, instructional media material, and guidance regarding trainee behavior during presentation of instruction. These activities carry the same number as the discussion points to which they are related. As with the discussion points, space is left for the instructor to add personalizing notes. The phrase “Reference ...” is used to help the instructor locate information applicable to a particular discussion point and to be used to prepare for the material to be covered. It is not intended to direct the instructor to use that reference material in the classroom. The term “Refer to ...” provides direction for the instructor when the reference material is actually intended for use in the classroom. If there is no related instructor activity for a discussion point, the space is left blank and the number omitted.

FUNCTION OF THE LESSON PLAN

The Lesson Plan expands the approved Curriculum Outline of Instruction into a content format that will serve as an effective plan for instruction. It provides room for instructors to add individual notes. The form of the lesson plan facilitates preparation, minimizes deviation from the approved plan for the topic, and lessens the need for rewriting material already contained in the outline. As the instructors prepare to teach the topic for the first time, they may write in the technical data, information, or notes to be used to do a professional job of

HOW TO USE THE LESSON PLAN - Continued

instruction. As instructors gain experience teaching a topic, they may modify and improve the data written in.

All theory discussions must relate to practical work. The design theory of an equipment may be interesting to the instructor, but the trainee must learn how to keep the equipment in proper operating condition. The trainee must bypass all unnecessary knowledge and concentrate on learning to perform the necessary maintenance techniques required by these equipments. Any activity that does not contribute directly to training in the operation and maintenance of these equipments is wasted effort, regardless of how interesting it may seem to be. A thorough understanding of the equipment theory is necessary in order that the practical work on the equipment may be accomplished. The reason for the theory is to assist the trainee in doing practical work.

A-5-19

A Lesson Plan without the instructor's personalization is maintained in the appropriate school offices and has several administrative functions. The Officer-in-Charge and the course supervisors will use it as a guide in determining the kind and depth of the material taught, and as a reference in monitoring the effectiveness of instruction. Each instructor will use it as a reference to determine what the trainees have learned prior to, and will learn subsequent to the topic, so that the instructor can gauge the level and direction of instruction. When approved by the Chief of Naval Education and Training, this Lesson Plan becomes the master plan for instruction.

USE OF THE LESSON PLAN

When issued to an instructor, this plan becomes his/her personal property, subject only to the regulations that govern classified matter. Each instructor will make handwritten entries in the spaces provided. Personalized topics may be passed on to a relieving instructor. However, they are to be used only for reference purposes in developing a personalized Lesson Plan.

HOW TO USE THE LESSON PLAN - Continued

Changes to this plan are made by direction of the Chief of Naval Education and Training through recommendations by the school and from the results of the training evaluation program. All changes shall ensure effective trainee comprehension and fulfillment of topic learning objectives.

STUDY ASSIGNMENTS

Study assignments are provided in the Lesson Plan. One of the objectives of the training is learning to intelligently use the technical manuals associated with the equipments. Training effectiveness depends on conscientious and consistent use of the assignments and schematics in the pertinent technical manuals. All completed assignments should be reviewed with the trainee at the first opportunity.

EQUIPMENT FAULTS

The Fault Applicability List in the Lesson Plan lists the faults/fault insertion devices required in this course. When desirable, additional faults may be selected from the Fault Applicability List.

INSTRUCTION SHEETS, EXAMINATIONS, QUIZZES

Instruction Sheets, consisting of Information Sheets, Job Sheets, Assignment Sheets, Problem Sheets, and Diagram Sheets are an integral part of the course and aid trainees in achieving the topic learning objectives. It is necessary to see that these activities are accurately completed.

Answers to questions on the sheets are provided on the Answer Sheet at the back of each Lesson Plan. Trainees should be instructed to write only on Trainee Name Page, Job Sheets, Diagram Sheets, and Problem Sheets. At the end of the course, the instructor will collect Trainee Guides or Instruction Sheets. New Trainee Name Pages, Job Sheets, Diagram Sheets, and Problem Sheets will be reproduced and inserted so the Trainee Guides and Instruction Sheets may be used in the next course.

HOW TO USE THE LESSON PLAN - Continued

Quizzes and examinations are administered to monitor trainee comprehension at the completion of significant areas of instruction.

DIVISION OF COURSE MATERIALS INTO FUNCTIONAL PARTS

The course material in the Lesson Plan has been divided into parts to support PPP tables as assigned by the corresponding Table Assignment Charts. It has been further divided into sections to support instruction on theory, operation, preventive maintenance, and corrective maintenance. The sequence of instruction is based on an analysis of the tasks for trainee performance and on the requirements for prerequisite knowledge or skills required for instruction on the more complex equipments.

A-5-21

TRAINING MATERIAL SUPPORT PROGRAM

The Training Material Support Program has been established for the purpose of improving the curriculum and other training materials. It is each instructor's responsibility to become familiar with this program as outlined in the applicable management documentation. You are to submit all your suggestions for improvement through a Change Recommendation as outlined in the applicable management documentation. These suggestions should include discrepancies found or any comments that you feel will improve training. There will be no changes in this curriculum until authorized by the Deputy For Shore/Technical Training (CNET T2).

SAFETY PRECAUTIONS

Voltages present in the equipment are extremely dangerous. The delicacy of some equipment and the stringent ventilation requirements for solid-state electronic circuits must be continuously stressed. Safety must be part of each day of training so that the trainee will develop safe working habits. Practice and Teach Safety!

COURSE MASTER SCHEDULE

A-111-4251

Length of Period: 50 minutes

WEEK 1
DAY 1

Topic No.	Type	Period	Topic	Ratio
FØ147.1.1	Class	1	General and Documentation Description of the Power Distribution Group	25:1
FØ147.1.2	Class	2	General, Physical, Functional and Interface Description of AN/BRR-6	25:1
FØ147.1.2	Class	3	Same	25:1
FØ147.1.2	Class	4	Same	25:1

Only Part FØ147, sections 1 and 2 are used as examples in Volume II. The others are intentionally omitted. The instructor has added the CMS page here for his own use. It is not required in the LP.

WEEK 3
DAY 1

Topic No.	Type	Period	Topic	Ratio
FØ147.1.	Test	81	Power Distribution Group	25:1
FØ147.2.1	Class	82	Basic Operation of the DSS	25:1
FØ147.2.1	Lab	11	Same	10:1

ALLOCATION OF INSTRUCTIONAL TIME

Volume No.	Part No.	Section No.	Topic No.	Classroom Hours	Laboratory Hours	Part Totals
1	F0147	1	1	1.00	--.--	
			2	3.00	--.--	
			3	1.50	--.--	
			4	1.75	--.--	
			Section Total	7.25	--.--	7.25
		2	1	0.00	3.00	
			Section Total	0.00	3.00	3.00
			Final Eval		6.00	6.00
			Instructional Time Total			16.25
			Testing Time Total			0.00
			Review Time Total			1.00
			Course Total			17.25

NOTE

Classroom and laboratory hours shown reflect the time used during curriculum pilot with an actual class size of ___ and a student/instructor ratio for laboratory periods of ___. These times may vary slightly at different activities due to different class loading or available resources. Actual times should be reflected on each activity's course master schedule.

LESSON PLAN

A-111-4251 REV A

COURSE LEARNING OBJECTIVES

Upon successful completion of this course, the trainees will have acquired the following knowledge and skills and be able to:

Knowledge:

1. Describe the theory necessary to support and understand the performance of normal and degraded operational tasks and all preventive maintenance without going into detailed logic, circuit analysis, individual program flow diagrams, or detailed mechanical component breakdown of the following:

   a. TRIDENT Exterior Communications System (ECS)
   b. Data Switching Subsystem (DSS)
   c. Power Distribution Group
   d. Towed Buoy Antenna AN/BRR-6

2. Describe the theory necessary to support and understand the performance of documented fault isolation and repair without going into detailed logic, circuit analysis, individual program flow diagrams, or detailed mechanical component breakdown of the following:

Skills:

1. Perform normal and degraded operational procedures with supervision on the following:

   a. TRIDENT Exterior Communications System (ECS)
   b. Data Switching Subsystem (DSS)
   c. Power Distribution Group
   d. Towed Buoy Antenna AN/BRR-6

2. Perform preventive maintenance procedures with supervision on the following:

   a. TRIDENT Exterior Communications System (ECS)
   b. Data Switching Subsystem (DSS)
   c. Power Distribution Group
   d. Towed Buoy Antenna AN/BRR-6

COURSE LEARNING OBJECTIVES - Continued.

Knowledge:

a. PP-7474/BSC-1, PP-7475/BSC-1 Power Supplies
b. SA-2199/BSC-1, SA-22ØØ/BSC-1, SA-2201/BSC-1 Switching Units

3. Describe the theory necessary to support undocumented fault isolation and repair requiring advanced analysis without going into signal or electrical flow, computer instructions, or detailed mechanical component breakdown except for those mechanical or logic elements or circuits unique to the equipment or program of the Interface Unit J-3565/BSC-1 (Message Interface Unit).

Skills:

3. Perform, with supervision, documented fault isolation and repair procedures to the authorized maintenance level on the following:

   a. PP-7474/BSC-1, PP-7475/BSC-1 Power Supplies
   b. SA-2199/BSC-1, SA-22ØØ/BSC-1, SA-22Ø1/BSC-1 Switching Units

4. Perform fault isolation and repair of faults that cannot be located using procedures contained in prescribed documentation or that require advanced analysis, with supervision, on the Interface Unit J-3565/BSC-1 (Message Interface Unit).

Part FØ147

EXTERIOR COMMUNICATIONS SYSTEM (ECS) ECLECTIC SYSTEM

This part contains information from PPP Tables FØ147, FØ194, FØ156, and FØ2Ø2.

Section 1. INTRODUCTION TO AND THEORY OF THE POWER DISTRIBUTION GROUP (T1, T2)

Section 2. BASIC OPERATION AND OPERATION OF THE DATA SWITCHING SUBSYSTEM (DSS) (O1, O2)

Section 3. PREVENTIVE MAINTENANCE OF THE TRIDENT EXTERIOR COMMUNICATIONS SYSTEM (ECS) (P1)

Section 4. THEORY OF THE DATA SWITCHING SUBSYSTEM (DSS) (T1, T2)

Section 5. BASIC CORRECTIVE MAINTENANCE OF THE SA-2199/BSC-1, SA-22ØØ/BSC-1, SA-22Ø1/BSC-1 SWITCHING UNITS AND PP-7474/BSC-1, PP-7475/BSC-1 POWER SUPPLIES (C1)

Section 6. THEORY OF AND ADVANCED THEORY OF THE INTERFACE UNIT J-3565/BSC-1 (MESSAGE INTERFACE UNIT) (KINGS BAY) (T2, T3)

Section 7. PREVENTIVE, BASIC CORRECTIVE, AND CORRECTIVE MAINTENANCE OF THE INTERFACE UNIT J-3565/BSC-1 (MESSAGE INTERFACE UNIT) (P1, C1, C2)

Section 8. THEORY OF THE TSEC/KY-58 (T1)

Section 9. PREVENTIVE AND BASIC CORRECTIVE MAINTENANCE OF THE TSEC/KY-58 (P1,C1)

A-111-4251

TAB DIVIDER PAGE

Section 1: INTRODUCTION TO AND THEORY OF THE POWER DISTRIBUTION GROUP

The titles are inconsistent between the section title and topics because a variety of topics were selected to present a broader sampling.

1. INTRODUCTION TO AND THEORY OF THE POWER DISTRIBUTION GROUP — A-111-4251 REV A

LAB PERIODS:0.0

Topic 1: GENERAL AND DOCUMENTATION DESCRIPTION OF THE POWER DISTRIBUTION GROUP — CLASS PERIODS:1.0

Topic Learning Objectives

Upon successful completion of this topic, the trainee will be able to:

1. State the functions of the Power Distribution Group.

2. State that the Power Distribution Group consists of the following major functional areas. Include the function of each to support normal operations.

   a. Power panel

   b. Power distribution black panel

   c. Power distribution red panel

   d. Component compartment

   e. Ground fault indicator panel

> Topic Learning Objectives (TLOs) should be in instructional sequence. This is usually the same as the PPP table line item sequence.

3. Define the abbreviations, terms, and symbols used with the Power Distribution Group to support all operations and preventive maintenance.

> "All operations" is used as the condition modifier to indicate that the TLO is intended to support normal operations, casualty/degraded/abnormal/not full mission capable modes of operation, and/or operation requiring advanced analysis as applicable to the subsystem or equipment identified therein.

> TLOs should be tailored to suit the subject matter of the topic (e.g., if there are no symbols used with the Power Distribution Group for operation and preventive maintenance, then symbols should not appear in the TLO or the related DP in the DDA pages).

4. State the operational characteristics and capabilities of the Power Distribution Group to support all operations and preventive maintenance.

5. State the security requirements for the Power Distribution Group to support all operations and preventive maintenance.

FØ147-1-1-1

6. Describe the organization, content, and use of all technical documentation provided for use with the Power Distribution Group to support normal operations.

Trainee Preparation

A. Trainee Support Material:

1. None

> Whenever material should be reviewed by the trainee before the topic, it should be listed.

B. Reference Publications:

1. None

Instructor Preparation

A. Review Assigned Trainee Material.

B. Reference Publications:

1. EE1Ø9-AJ-MMO-Ø1Ø/W153-PDG

2. NAVSEA S9SSB-X9-SSM-12C/(U)726V2P7C1-8

3. OPNAVINST 5510.1 series

> Whenever an instruction is used it is assumed the latest version will be used.

C. Training Materials Required:

1. Trainee Guide

2. Publications:

a. EE1Ø9-AJ-MMO-Ø1Ø/W153-PDG

3. Wall Charts:

a. A-101-0168-FØ147-23

4. Equipment:

a. "CLASSIFIED SESSION" sign

> All listings on the topic pages, except prefaulted modules, should be listed in alphanumeric order.

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
1.Introduction	NOTE Inform the trainees that portions of the information covered under this topic are classified. Provide classification guidance sufficient to enable identification of classified information. Reference OPNAVINST 5510.1 series. Review and emphasize the regulations governing note taking and the handling and storage of classified material in a classroom environment. Refer trainees to Outline Sheet 4-1-1 for topic objectives. Refer to Information Sheet FØ147-1-3-1
Notes, as you see in the RIA column, are tailored to the type of material being handled, and should appear at the beginning of any topic that calls for the use of any classified information.	NOTE Post a "Classified Session" sign outside the classroom and direct the trainees not to transcribe classified material.
2. Security requirements	2. Reference OPNAVINST 5510.1

LESSON PLAN

1. INTRODUCTION TO AND THEORY OF THE POWER DISTRIBUTION GROUP A-111-4251 REV A

Topic 1. GENERAL AND DOCUMENTATION DESCRIPTION OF THE POWER DISTRIBUTION GROUP

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
a. Equipment	Refer to Diagram Sheet FØ147-1-4-1
b. Material	
3. Functions of the Power Distribution Group	3. Reference EE1Ø9-AJ-MMO-Ø1Ø, paragraph 3-2.
4. Major functional areas and their functions	4. Display Wall Chart A-101-0168-FØ147-23. Reference paragraphs 1-3 and 1-3.a.
a. Power panel	

Topic 1. GENERAL AND DOCUMENTATION DESCRIPTION OF THE POWER DISTRIBUTION GROUP

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
b. Power distribution black panel	
c. Power distribution red panel	
d. Component compartment	
e. Ground fault indicator panel	
5. Technical documentation	5. Refer to Information Sheet FØ147-1-1-1.
a. Communications Central AN/BSC-1 operation and maintenance instructions	

The standard rules for capitalization (proper names, titles, etc.) apply to discussion points. For the ECS components, subsystem names and equipment nomenclature are capitalized, but common names are not (e.g., Buoy Depth Control Unit C-10258/BRR-6 is capitalized, because it is the nomenclature; whereas buoy depth control unit is not, because it is the common name).

LESSON PLAN

1. INTRODUCTION TO AND THEORY OF THE POWER DISTRIBUTION GROUP A-111-4251 REV A

Topic 1. GENERAL AND DOCUMENTATION DESCRIPTION OF THE POWER DISTRIBUTION GROUP

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(1) Organization	
(2) Content	
(3) Use	
b. TRIDENT Submarine Integrated Radio Room Cable List	
(1) Organization	
(2) Content	

Topic 1. GENERAL AND DOCUMENTATION DESCRIPTION OF THE POWER DISTRIBUTION GROUP

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(3) Use	(3). Refer to Job Sheet FØ147-5-1-1
6. Abbreviations, terms, and symbols	6. Refer to glossary
7. Operational characteristics and capabilities	7. Reference paragraphs 1-3.a and 2-3.e and SSM V2P7, chapter 1, paragraph 3.3.3.a.

There should be a numbered (first level) discussion point for each TLO, except where teachability dictates otherwise (e.g., when grouping all DPs for a specific unit together in a topic that covers several units), and the discussion points should be key words that relate directly to the TLO. Additionally, the wording of discussion points that relate to the various PPP table line items should be the same throughout the curriculum materials (e.g., wherever characteristics and capabilities is a discussion point, it should always be worded "Operational characteristics and capabilities"; wherever safety is a discussion point, it should always be worded "Safety precautions"; etc.).

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
8. Review and summary	
9. Assignment	9. Make study assignment, Assignment Sheet FØ147-1-2-1

1. INTRODUCTION TO AND THEORY OF THE POWER DISTRIBUTION GROUP — A-111-4251 REV A

Topic 2: GENERAL, PHYSICAL, FUNCTIONAL, AND INTERFACE DESCRIPTION OF THE AN/BRR-6 — LAB PERIODS: ___ CLASS PERIODS: 3

Topic Learning Objectives

Upon successful completion of this topic, the trainee will be able to:

1. State the functions of the AN/BRR-6.

2. State the major functions of AN/BRR-6 consisting of: Include the function of each to support normal operations.

   a. Towed Buoy TB-17/BRR-6 (Bangor) or Towed Buoy TB-18A/BRR-6 (Kings Bay)

   b. Receiver Group OR-197/BRR-6

   c. Special Purpose Electrical Cable Assembly CX-13Ø53/BRR-6

   d. Buoy Cradle MT-49Ø5/BRR-6

   e. Reeling Machine RL-275/BRR-6

   f. Sensor Group OA-89Ø6/BRR-6

   g. Buoy Door Sensing Switch

   h. Buoy Control Indicator C-1Ø256A/BRR-6

   I. Antenna Control Indicator C-1Ø257/BRR-6

   j. Buoy Depth Control Indicator C-1Ø258A/BRR-6

   k. Relay Assembly RE-1115/BRR-6

   l. Interconnecting Box J-3461/BRR-6

   m. Towed Array Control Indicator Panel

Subitems should appear exactly as they do on the PPP table.

3. Define the abbreviations and terms used with the AN/BRR-6 to support all operations and preventive maintenance.

4. State the operational characteristics and capabilities of the AN/BRR-6 to support all operations and preventive maintenance.

5. State the security requirements for the AN/BRR-6 to support all operations and preventive maintenance.

6. Describe all major and associated components of the AN/BRR-6 to support all operations and preventive maintenance. Include names, nomenclature, physical appearance, reference designators, locations, and construction features.

   a. Towed Buoy TB-17/BRR-6 (Bangor) or Towed Buoy TB-18A/BRR-6 (Kings Bay)

   b. Receiver Group OR-197/BRR-6

   c. Special Purpose Electrical Cable Assembly CX-13Ø53/BRR-6

   d. Buoy Cradle MT-49Ø5/BRR-6

   e. Reeling Machine RL-275/BRR-6

   f. Sensor Group OA-89Ø6/BRR-6

   g. Buoy Door Sensing Switch

   h. Buoy Control Indicator C-1Ø256A/BRR-6

   i. Antenna Control Indicator C-1Ø257/BRR-6

   j. Buoy Depth Control Indicator C-1Ø258A/BRR-6

   k. Relay Assembly RE-1115/BRR-6

   l. Interconnecting Box J-3461/BRR-6

   m. Towed Array Control Indicator Panel

> The TB-18A/BRR-6 and EE126-FA-MMF-Ø1Ø/E11Ø-BRR-6 are fictitious and used for illustration purposes only.

7. Describe the controls and indicators directly associated with the AN/BRR-6 to support all operations and preventive maintenance. Include names, reference designators, positions, conditions, colors, locations, and functions.

> TLOs should contain only those "include" statements that are applicable to the subject matter and TOS level being covered (e.g., construction features may not be applicable to every physical description topic).

8. Describe how the AN/BRR-6 works (functional operation) to support all operations and preventive maintenance. Include signal flow, sequential operation, and indications.

a. Towed Buoy TB-17/BRR-6 (Bangor) or Towed Buoy TB-18A/BRR-6 (Kings Bay)

b. Receiver Group OR-197/BRR-6

c. Special Purpose Electrical Cable Assembly CX-13Ø53/BRR-6

d. Buoy Cradle MT-49Ø5/BRR-6

e. Reeling Machine RL-275/BRR-6

f. Sensor Group OA-89Ø6/BRR-6

g. Buoy Door Sensing Switch

h. Buoy Control Indicator C-1Ø256A/BRR-6

i. Antenna Control Indicator C-1Ø257/BRR-6

j. Buoy Depth Control Indicator C-1Ø258A/BRR-6

k. Relay Assembly RE-1115/BRR-6

l. Interconnecting Box J-3461/BRR-6

m. Towed Array Control Indicator Panel

9. Describe the functional interface between the AN/BRR-6 and related external equipments to support all operations and preventive maintenance.

   a. Power sources

   b. Input signals

   c. Output signals

Trainee Preparation

A. Trainee Support Material:

   1. Complete Assignment Sheet FØ147-1-2-1.

B. Reference Publications:

   1. EE125-FA-MMF-Ø1Ø/E11Ø-BRR-6

   2. EE126-FA-MMF-Ø1Ø/E11Ø-BRR-6 (Kings Bay)

   3. NAVSEA S9SSB-X9-SSM-64Ø/(U)726V4P5C2 (SSM V4P5C2)

Instructor Preparation

A. Review Assigned Trainee Material.

B. Reference Publications:

1. EE125-FA-MMF-Ø1Ø/E11Ø-BRR-6

2. EE126-FA-MMF-ØØØ/E11Ø-BRR-6 (Kings Bay)

3. NAVSEA S9SSB-X9-SSM-64Ø/(U)726V4P5C2 (SSM V4P5C2)

4. OPNAVINST 5510.1 series

C. Training Materials Required:

1. Trainee Guide

2. Publications:

a. EE125-FA-MMF-Ø1Ø/E11Ø-BRR-6

b. NAVSEA S9SSB-X9-SSM-64Ø/(U)726V4P5C2 (SSM V4P5C2)

3. Wall Charts:

Publications required for use with assignment sheets are not necessarily listed under Training Materials Required. Only those publications required for use in the classroom for the conduct of the topic are listed under Training Materials Required.

a. A-101-0168-FØ147-1

b. A-101-0168-FØ147-10

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
Introduction	Note: Provide trainees with lesson topic title and objectives.
1. Security requirements	1. Reference OPNAVINST 5510.1 series.
a. Equipment	
b. Material	
2. Functions of the AN/BRR-6	2. Reference EE125-FA-MMF-Ø1Ø, paragraph 3-1.
3. Abbreviations and terms	3. Refer to Information Sheet FØ147-1-2-2.

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
4. Major functional areas/major and associated components	4. Refer to EE125-FA-MMF-Ø1Ø, figure 1-3 and tables 1-1 and 1-2. Reference paragraph 1-2.1.
a. Towed Buoy TB-17/BRR-6 (Unit 1) (Bangor)	a. Reference paragraphs 1-2.2 and 3-2.
or	or
Towed buoy TB-18/BRR-6 (Unit 1) (Kings Bay)	Reference EE125-FA-MMF-Ø1Ø, paragraphs 1-2.2 and 3-4 through 3-8.
(1) Name/nomenclature	

Discussion point 4a shows an example of how site unique requirements may be addressed.

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(2) Location/reference designator	
(3) Physical appearance/construction features	
(4) Function	

The sub-DPs for the major DPs associated with the same PPP table line item should be consistent throughout the curricula materials (e.g., all sub-DPs for major and associated components wherever appearing should be the same as these). The only variation would be where one or more do not apply. In those cases, the same structure should still be retained using those that do apply.

b. Receiver Group OR-197/BRR-6 (Unit 2)	b. Reference EE125-FA-MMF-Ø1Ø, paragraph 1-2.3, 3-4.1, and 3-4.2.3.

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(1) Name/nomenclature	
(2) Location/reference designator	
(3) Physical appearance/construction features	
(4) Function	
c. Special Purpose Electrical Cable Assembly CX-13Ø53/BRR-6 (Unit 3)	c. Reference paragraph 1-2.4.

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(1) Name/nomenclature	
(2) Location/reference designator	
(3) Physical appearance/construction features	
(4) Function	
d. Buoy Cradle MT-49Ø5/BRR-6 (Unit 4)	d. Reference paragraph 1-2.5.
(1) Name/nomenclature	

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(2) Location/reference designator	
(3) Physical appearance/construction features	
(4) Function	
e. Reeling Machine RL-275/BRR-6 (Unit 5)	e. Reference paragraphs 1-2.6, 3-3, 3-4.1, and 3-4.2.1.
(1) Drum assembly	

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(a) Name/nomenclature	
(b) Location/reference designator	
(c) Physical appearance/construction features	
(d) Function	
(2) Aft tension sheave assembly	
(a) Name/nomenclature	

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(b) Location/reference designator	
(c) Physical appearance/construction features	
(d) Function	
(3) Drive Unit	
(a) Name/nomenclature	
(b) Location/reference designator	

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(c) Physical appearance/construction features	
(d) Function	
f. Sensor Group OA-89Ø6/BRR-6 (Unit 6)	f. Reference paragraphs 1-2.7 and 3-4.3.3.
(1) Name/nomenclature	
(2) Location/reference designator	
(3) Physical appearance	

Note that not all sub-DPs apply to the sensor group ("construction features" is missing from item f(3)), but the same structure is retained.

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(4) Function	
g. Buoy Door Sensing Switch	g. Reference figure 3-2 and paragraph 3-4.3.1.
(1) Name/nomenclature	
(2) Location/reference designator	
(3) Physical appearance/construction features	
(4) Function	

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
h. Buoy Control Indicator C-10256A/BRR-6 (Unit 8)	h. Reference paragraph 1-2.8.
(1) Name/nomenclature	
(2) Location/reference designator	
(3) Physical appearance/construction features	
(4) Function	

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(5) Controls and indicators	(5) Refer to figure 2-1 and table 2-1.
(a) Names	Note that this is a case where, rather than have a first level DP for the "controls and indicators" TLO, the controls and indicators are covered with the physical description of the unit.
(b) Locations/reference designators	
(c) Positions/conditions/colors	
(d) Functions	

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
i. Antenna Control Indicator C-1Ø257/BRR-6	i. Display Wall Chart A-101-0168-FØ147-1. Reference paragraphs 1-2.9, 3-1.4, 3-4.1, and 3-4.2.3.
5. Functional operation	5. Refer to EE125-FA-MMF-Ø1Ø, figure 1-3. Reference paragraphs 3-1.1 through 3-4.3.3.
a. Signal flow	
b. Sequential operation	
c. Indications	

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
6. Functional interface	5. Refer to figure 5-1, sheet 2 of 3.
a. Power sources	
b. Input signals	
c. Output signals	
7. Operational characteristics and Capabilities	7. Refer to table 1-1. Reference paragraphs 1-2.1 and 3-1.1.

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
8. Review and summary	
9. Assignment	9. Make study assignments if required.

Topic Learning Objectives

Upon successful completion of this topic, the trainee will be able to:

1. Describe the authority and regulations pertaining to normal operation of the following equipment, including external equipments which interface with them.

   a. TSEC/KG-84C

   b. TSEC/KG-36

   c. TSEC/KWR-46

   d. TSEC/KY-75

   e. TSEC/KY-58

2. Describe the authority and regulations pertaining to all operations of the DSS and the following equipment, including external equipments which interface with them.

   a. SA-2199/BSC-1, SA-2200/BSC-1, SA-22Ø1/BSC-1 Switching Units
   b. Signal Data Converter CV-351ØB/UG

3. Describe the routine pre-operational, operational, and post-operational tasks for normal operation of the DSS and the following equipment.

   a. SA-2199/BSC-1, SA-2200/BSC-1, SA-22Ø1/BSC-1 Switching Units

   b. Signal Data Converter CV-3510B/UG

   c. TSEC/KG-84C

   d. TSEC/KG-36

   e. TSEC/KWR-46

   f. TSEC/KY-75

   g. TSEC/KY-58

4. Describe indications which may occur during normal operation of the DSS and the following equipment. Include alarms, indicators, and displays.

   a. TSEC/KG-84C

   b. TSEC/KG-36

   c. TSEC/KWR-46

d. TSEC/KY-75

e. TSEC/KY-58

5. Describe indications which may occur during all operations of the DSS and the following equipment. Include alarms, indicators, and displays.

a. SA-2199/BSC-1, SA-22ØØ/BSC-1, SA-22Ø1/BSC-1 Switching Units

b. Signal Data Converter CV-3510B/UG

6. Describe casualty/degraded/abnormal modes of operation for the DSS and the following equipment.

a. SA-2199/BSC-1, SA-22ØØ/BSC-1, SA-22Ø1/BSC-1 Switching Units

b. Signal Data Converter CV-351ØB/UG

7. Describe personnel and equipment safety precautions which are to be observed during normal operation of the DSS and the following equipment.

a. TSEC/KG-84C

b. TSEC/KG-36

c. TSEC/KWR-46

d. TSEC/KY-75

e. TSEC/KY-58

8. Describe personnel and equipment safety precautions which are to be observed during all operations of the DSS and the following equipment.

a. SA-2199/BSC-1, SA-22ØØ/BSC-1, SA-22Ø1/BSC-1 Switching Units

b. Signal Data Converter CV-351ØB/UG

Trainee Preparation

A. Trainee Support Material:

1. None

B. Reference Publications:

1. None

Instructor Preparation

A. Review Assigned Trainee Material.

B. Reference Publications:

1. CNETINST 1500.20 series
2. COMSUBPAC/COMSUBLANTINST 5400.38 series
3. EE1Ø9-AC-MMO-Ø1Ø/W153-BSC1-CMT
4. EE1Ø9-AL-MMO-Ø1Ø/W153-DSS
5. KAO-83E/TSEC
6. KAO-137E/TSEC
7. KAO-154B/TSEC
8. KAO-168B/TSEC
9. KAO-2Ø7A/TSEC
10. NAVSEA S9SSB-X9-SSM-84E/(U)726V6P3B7E-1 (SSM V6P3B7E-1)
11. NAVSEA S9SSB-X9-SSM-84E/(U)726V6P3B7E-2 (SSM V6P3B7E-2)
12. NAVSEA S9SSB-X9-SSM-84E/(U)726V6P3B7E-3 (SSM V6P3B7E-3)

C. Training Materials Required:

1. Trainee Guide
2. Publications:
   a. EE1Ø9-AL-MMO-Ø1Ø/W153-DSS
   b. NAVSEA S9SSB-X9-SSM-84E/ (U)726V6P3B7E-1 (SSM V6P3B7E-1)
   c. NAVSEA S9SSB-X9-SSM-84E/ (U)726V6P3B7E-2 (SSM V6P3B7E-2)
   d. NAVSEA S9SSB-X9-SSM-84E/ (U)726V6P3B7E-3 (SSM V6P3B7E-3)
3. Transparencies:
   a. FØ147-1-3-1

FØ147-1-3-3

b. FØ147-1-3-2

c. FØ147-1-3-3

d. FØ147-1-3-4

e. FØ147-1-3-5

f. FØ147-1-3-6

4. Equipment:

a. KOI-18/TSEC Tape Reader and Fill Cable

b. KYK-13/TSEC Electronic Transfer Device

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
Introduction	Note: Provide lesson topic title and refer trainees to the objectives.
1. Authority and regulations (including external equipments)	1. Reference COMSUBPAC/COMSUBLANTINST 5400.38 series (SSBN 726 class SSORM), chapter 2.
a. SA-2199/BSC-1, SA-2200/BSC-1, SA-2201/BSC-1 Switching Units	
b. CV-3510B/UG	
c. TSEC/KG-84C	
d. TSEC/KG-36	

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
e. TSEC/KWR-46	
f. TSEC/KY-75	
g. TSEC/KY-58	
2. Normal operational tasks and indications	
a. Routine pre-operational and operational procedures	

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(1) Interconnecting Group ON-165/BSC-1	(1) Refer to SSM V6P3B7E-1, FP 7Ø1-7.
(a) Alarms/indicators	
(b) Displays	
(2) Interconnecting Group ON-166/BSC-1	(2) Refer to FP 7Ø1-8.
(a) Alarms/indicators	
(b) Displays	

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(3) Decoder Group OX-48/BSC-1	(3) Refer to FP 7Ø1-11.
(a) Alarms/indicators	
(b) Displays	
(4) Interconnecting Group HNF-3-2/TSEC	(4) Refer to FP 7Ø1-2.
(a) Alarms/indicators	
(b) Displays	

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
b. Crypto equipment initialization	b. Demonstrate key setting using KOI-18/TSEC. Tape Reader and Fill Cable and KYK-13/TSEC Electronic Transfer Device. Reference KAO-2Ø7A/TSEC, paragraph 3-10.d.
(1) TSEC/KW-7	(1) Reference KAO-83E/TSEC, section 2007.
(2) TSEC/KG-36	(2) Reference KAO-137E/TSEC, paragraphs 4100 through 4104.
(3) TSEC/KWR-46	(3) Reference KAO-2Ø7A/TSEC, paragraph 3-10.d.
(4) TSEC/KY-58	(4) Reference KAO-168B/TSEC, paragraph 3002.

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DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(5) TSEC/KY-75	(5) Reference KAO-154B/TSEC, section 3002.
c. Display console menus	NOTE Discuss only the DSS component of the following transparencies.
(1) Radio room status	(1) Display Transparency FØ147-1-3-1.
(2) Power status	(2) Display Transparency FØ147-1-3-2.

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(3) Equipment status	(3) Display Transparency FØ147-1-3-3.
(4) Red data switch status	(4) Display Transparency FØ147-1-3-4.
(5) Black data switch status	(5) Display Transparency FØ147-1-3-5.
(6) Local/remote status	(6) Display Transparency FØ147-1-3-6.
d. Post-operational procedures	
(1) Interconnecting Group ON-165/BSC-1	(1) Refer to SSM V6P3B7E-1, FP 7Ø1-7.

FØ147-1-3-11

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(a) Indicators	
(b) Displays	
(2) Interconnecting Group ON-166/BSC-1	(2) Refer to FP 7Ø1-8.
(a) Indicators	
(b) Displays	
(3) Decoder Group OX-48/BSC-1	(3) Refer to FP 7Ø1-11.

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(a) Indicators	
(b) Displays	
(4) Interconnecting Group HNF-3-2/TSEC	(4) Refer to FP 7Ø1-2.
(a) Indicators	
(b) Displays	

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
3. Casualty/degraded/abnormal modes of operation and indications	3. Reference EE1Ø9-AL-MMO-Ø1Ø, paragraph 2-3.b.
a. Local mode of operation	a. Refer to SSM V6P3B7E-2, AP 7Ø4-5 and EE109-AL-MMO-Ø1Ø, table 2-15. Reference paragraph 2-3.b.
(1) Alarms/indicators	
(2) Displays	
b. Emergency operation	b. Refer to tables 2-17 through 2-20; SSM V6P3B7E-2, AP 7Ø4-5; and SSM V6P3B7E-3, ERP 701-9. Reference EE1Ø9-AL-MMO-Ø1Ø, paragraph 2-3.e.

F0147-1-3-14

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(1) Alarms/indicators	
(2) Displays	
c. Return to initial conditions	
(1) Alarms/indicators	
(2) Displays	

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
d. Emergency turn off	d. Refer to table 2-21. Reference paragraph 2-3.f.
(1) Alarms/indicators	
(2) Displays	
4. Safety precautions	4. Refer to the Hazard Awareness Notice in the Trainee Guide.
a. Personnel	

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(1) Training Time Out (TTO) policy	(1) Refer to Information Sheet FØ147-1-3-1. Reference CNETINST 1500.20 series.

TTO procedures are to be covered under the first safety discussion point in the course. Thereafter, the procedures are reviewed prior to the beginning of each lab period per CNET 1500.20.

b. Equipment	b. Reference EE1Ø9-AC-MMO-Ø1Ø, paragraph 1-1; SSM V6P3B7E-1, PG 701; and EE1Ø9-AL-MMO-Ø1Ø, paragraph 1-1.
(1) SA-2199/BSC-1, SA-22ØØ/BSC-1, SA-22Ø1/BSC-1 Switching Units	
(2) CV-351ØB/UG	

DISCUSSION POINT RELATED INSTRUCTOR ACTIVITY

(3) TSEC/KG-84C

(4) TSEC/KG-36

(5) TSEC/KWR-46

(6) TSEC/KY-75

(7) TSEC/KY-58

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
5. Review and summary	
6. Assignment	6. Make study assignments if required.

1. INTRODUCTION TO AND THEORY OF THE POWER DISTRIBUTION GROUP — A-111-4251 REV A
Topic 4: MAINTENANCE DESCRIPTION OF THE ECS — LAB PERIODS: _____
CLASS PERIODS: 1.75

Topic Learning Objectives

Upon successful completion of this topic, the trainee will be able to:

1. Define the maintenance policy for the ECS and the following subsystems and equipment required to support preventive maintenance as the requirement for periodic performance of tasks to minimize equipment malfunctions. Including: Servicing - scheduled or unscheduled inspections, cleaning, lubrication, corrosion control and any other function in support of maintaining and equipment full mission capable; and Operational checks (Confidence or Performance checks, and Degradation/deterioration checks).

   a. Control, Monitor, and Test (CMT) Subsystem

      (1) Interface Unit J-3565/BSC-1 (Message Interface Unit)

      (2) Interface Unit J-3566/BSC-1 (Digital Interface Unit Interface)

      (3) Interface Unit J-3568/BSC-1 (HSP/Magnetic Tape Unit Interface Unit)

      (4) Recorder-Reproducer Control C-1Ø447/BSC-1

      (5) Recorder-Reproducer Unit RD-442/BSC-1

      (6) Comparator CM-5Ø7/BSC-1

   b. Data Switching Subsystem (DSS)

      (1) SA-2199/BSC-1, SA-22ØØ/BSC-1, SA-22Ø1/BSC-1 Switching Units

      (2) Signal Data Converter CV-351ØB/UG

   c. Very Low Frequency/Low Frequency (VLF/LF) Subsystem

      (1) Radio Receiver R-21Ø9/BSC-1

      (2) Radio Receiver R-232Ø/URR

      (3) Digital Data Processor CP-1Ø71B/WR

      (4) Digital Data Demodulator MD-1191/WRR-7B

      (5) Electrical Equipment Enclosure CY-841Ø/WRR-7B

F0147-1-4-1

(6) Power Supply PP-8Ø98/BSC-1

d. High Frequency/Ultra High Frequency (HF/UHF) Subsystem

(1) Radio Receiver-Transmitter RT-11Ø7(V)12/WSC-3(V)

(2) Voice Switch Unit Control C-1Ø975

(3) Command Center Telephone Terminal

e. Support Subsystem

(1) Teleprinter TT-624/UG

(2) Power Distribution Group

(3) Audio Tape Recorder CMS 1Ø22

(4) AN/BSC-1 Electronic Equipment Air Coolers

f. Antenna Suite

(1) Multifunction Mast Antenna Group OE-2Ø7/BR

(2) Towed Buoy Antenna AN/BRR-6

2. Describe preventive maintenance procedures for the ECS and the subsystems and equipment listed in learning objective 1. Include recognition and interpretation of indications, records, reports, and instructions.

3. Describe personnel and equipment safety precautions, including tag-out procedures, which are to be observed while performing preventive maintenance on the ECS and the subsystems and equipment listed in learning objective 1.

Where ten or more sub-items exist for a series of TLOs, it is permissible to have the listing appear in the first TLO only. Then, refer back to that learning objective in the remaining TLOs.

Trainee Preparation

A. Trainee Support Material:

1. None

Topic 4: MAINTENANCE DESCRIPTION OF THE ECS - Continued.

B. Reference Publications:

1. None

Instructor Preparation

A. Review Assigned Trainee Material.

B. Reference Publications:

1. CNTECHTRAINST 5100.5 series
2. COMSUBLANTINST 5101.2 series (Kings Bay)
3. COMSUBPACINST 5101.4 series (Bangor)
4. MIP C-447 MRCs
5. MIP C-458 MRCs
6. MIP C-531 MRCs
7. MIP C-668 MRCs
8. MIP C-669 MRCs
9. MIP C-67Ø MRCs
10. MIP C-672 MRCs
11. MIP C-673 MRCs
12. MIP C-674 MRCs
13. MIP C-675 MRCs
14. MIP C-676 MRCs
15. MIP C-677 MRCs
16. MIP C-796 MRCs
17. NAVEDTRA 172-17-ØØ-84
18. OPNAVINST 3120.32 series
19. OPNAVINST 4790.4 series
20. OPNAVINST 5100 series
21. TTFBANGORINST 5100.5 series (Bangor)
22. TTFKINGSBAYINST 5100.5 series (Kings Bay)

C. Training Materials Required:

1. Trainee Guide

2. Publications:

a. MIP C-447 MRCs

b. MIP C-458 MRCs

c. MIP C-531 MRCs

d. MIP C-668 MRCs

e. MIP C-669 MRCs

f. MIP C-670 MRCs

g. MIP C-672 MRCs

h. MIP C-673 MRCs

i. MIP C-674 MRCs

j. MIP C-675 MRCs

k. MIP C-676 MRCs

l. MIP C-677 MRCs

m. MIP C-796 MRCs

3. Equipment:

a. NAVSEA Form 9210/9 (Danger/Caution Tag-Out Record Sheet)

b. NAVSHIPS Form 9890/5 (Caution Tag)

c. NAVSHIPS Form 9890/6 (Out of Calibration Sticker)

d. NAVSHIPS Form 9890/8 (Danger Tag)

e. NAVSHIPS Form 9890/7 (Out of Commission Sticker)

f. SUBGEN Form 9890/31 (Index/Audit Record)

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
1. Introduction	Note: Provide trainees with lesson topic title and the objectives.
2. Preventive maintenance policy	NOTE: Ensure that discussion points 1 through 1.b(3) are covered for each subsystem and equipment listed in learning objective 1 on the topic page.
a. Servicing	a. Reference OPNAVINST 4790.4 series, paragraphs 2-3.9 and 5-1 through 5-1.2.
(1) Cleaning	
(2) Inspection	

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(3) Lubrication	
b. Operational checks (confidence or self-tests)	
(1) Pre-maintenance procedures	
(2) Performance checks	
(3) Degradation/deterioration checks	

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
c. Equipment tag-out procedures	c. Reference COMSUBPACINST 5101.4 series (Bangor) or COMSUBLANTINST 5101.2 series (Kings Bay).
(1) Index/audit record	(1) Refer to SUBGEN Form 9890/31.
(2) Danger/caution tag-out record sheet	(2) Refer to NAVSEA Form 9210/9.
(3) Danger tag	(3) Refer to NAVSHIPS Form 9890/8.
(4) Caution tag	(4) Refer to NAVSHIPS Form 9890/5.

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(5) Out of calibration sticker	(5) Refer to NAVSHIPS Form 9890/6.
(6) Out of commission sticker	(6) Refer to NAVSHIPS Form 9890/7.
	NOTE Inform trainees that numerous preventive maintenance procedures for the ECS subsystems are identical (give an example). In these cases, only one procedure of each type will be discussed

3. Preventive maintenance procedures for the Support Subsystem

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
a. EMI	a. Reference NAVEDTRA 172-17-00-84, pages 3-35 through 3-37.
b. Power Distribution Group	b. Refer to MIP C-672 MRCs W-1, A-1, A-2, and 18M-1.
c. Teleprinter	c. Refer to W-2, M-2, and R-1Q.
4. Preventive maintenance procedures for the Antenna Suite	
a. AS-2629B/BRR	a. Refer to MIP C-458 MRCs Q-1, Q-2, Q-3, R-1.

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
b. AN/BRR-6	b. Refer to C-674 MRCs Q-1, Q-2, A-1, and 24M-1.
	NOTE The following MRCs for the emergency antenna equipment are discussed only to show that they exist as part of the overall ECS preventive maintenance requirements.
c. AN/BRA-6	c. Refer to C-675 MRC A-2.
d. AT-774/UR	d. Refer to Q-1 and A-1.

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
e. AT-441/MRC	e. Refer to MIP C-676 MRCs Q-1 and A-1.
f. OE-2Ø7/BR	f. Refer to MIP C-677 MRCs M-1, A-1, and R-1.
4. Preventive maintenance procedures for the Control, Monitor, and Test (CMT) Subsystem	
a. Communication Monitoring Control Console (A1Ø)	a. Refer to MIP C-668 MRCs W-2 and M-1.
b. Data Analysis-Programming Group (A15)	

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(1) Message Interface Unit (MIU) and Digital Interface Unit (DIU)	(1) Refer to Q-17R and Q-18R.
	NOTE Inform trainees that test point locations are different on the MIU power supply than they are on the DIU power supply, but the procedures are identical.
c. Recorder-Reproducer Group (A22)	c. Refer to Q-3, Q-11R, and Q-12R.
	NOTE Inform trainees that MRCs Q-13R, Q-14R, Q-15R, Q-16R, S-11R, 18M-2, and 18M-3 are normally performed by TRIREFFAC personnel.

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
5. Preventive maintenance procedures for the Data Switching Subsystem (DSS)	
a. Interconnecting Group (A5)	a. Refer to MIP C-67Ø MRCs Q-1 and Q-3.
b. Interconnecting Group (A6)	b. Refer to Q-2.
6. Preventive maintenance procedures for the HF/UHF Subsystem	
a. Receiver-Transmitter Group (A21)	a. Refer to MIP C-673 MRCs W-2 and M-4.

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
b. Fixed Attenuators (A25 and A26)	b. Refer to MRCs M-3 and M-5.
	NOTE Inform trainees that they will perform MRC M-2, in lieu of M-5, if Field Change 10 is not installed.
7. Preventive maintenance procedures for the Emergency Communications Equipment	NOTE The following MRCs for Emergency Communications Equipment are discussed only to show that they exist as part of the overall ECS preventive maintenance requirements.

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
a. AN/BRT-1 and AN/BRM-2	a. Refer to MIP C-447 MRCs A-1R and A-2R.
b. Radio Transmitting Buoy T-616/SRT	b. Refer to MIP C-531 MRCs W-1 and S-1R.
	NOTE Inform trainees that if MRC S-1R is to be performed by ship's force personnel, it must be done while the ship is submerged.
c. VHF-FM Hand Transceiver AN/PRC-94	c. Refer to MIP C-796 MRCs R-1 and R-2.
8. Preventive maintenance procedures for the VLF/LF Subsystem	

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
a. R-21Ø9/BSC-1	a. Refer to W-2, step 2 and S-1.
9. Safety precautions	9. Refer to the Hazard Awareness Notice in the Trainee Guide. Reference OPNAVINST 5100 series.
a. Personnel	
b. Equipment	
(1) CMT Subsystem	
(a) Message Interface Unit	

DISCUSSION POINT RELATED INSTRUCTOR ACTIVITY

(b) Digital Interface Unit Interface

(c) HSP/Magnetic Tape Unit Interface Unit

(d) C-1Ø447/BSC-1

(e) RD-442/BSC-1

(f) CM-5Ø7/BSC-1

(2) DSS

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(a) SA-2199/BSC-1, SA-22ØØ/BSC-1, SA-22Ø1/BSC-1 Switching Units	
(b) CV-351ØB/UG	
(3) VLF/LF Subsystem	
(a) R-21Ø9/BSC-1	
(b) R-2320/URR	
(c) CP-1Ø71B/WR	

DISCUSSION POINT RELATED INSTRUCTOR ACTIVITY

(d) MD-1191/WRR-7B

(e) CY-8410/WRR-7B

(f) PP-8098/BSC-1

(4) HF/UHF Subsystem

(a) RT-1107(V)12/WSC-3(V)

(b) C-10975

DISCUSSION POINT | RELATED INSTRUCTOR ACTIVITY

(c) Command Center Telephone Terminal

(5) Support Subsystem

(a) TT-624/UG

(b) Power Distribution Group

(c) CMS 1Ø22

(d) AN/BSC-1 Electronic Equipment Air Coolers

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(6) Antenna Suite	
(a) OE-2Ø7/BR	
(b) AN/BRR-6	
c. Tag-out procedures	c. Reference OPNAVINST 3120.32 series, OPNAVINST 4790.4 series, COMSUBPACINST 5101.4 series (Bangor) or COMSUBLANTINST 5101.2 series (Kings Bay), and TTFBANGORINST 5100.4 series (Bangor) or TTFKINGSBAYINST 5100.5 series (Kings Bay).

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
10. Review and summary	
12. Assignment	12. Make study assignments if required.

Section 2: BASIC OPERATION AND OPERATION OF THE DATA SWITCHING SUBSYSTEM (DSS)

Topic Learning Objectives

Upon successful completion of this topic, the trainee will be able to:

1. Perform routine pre-operational, operational, and post-operational tasks for normal operation of the DSS and the following equipment.

   a. SA-2199/BSC-1, SA-22ØØ/BSC-1, SA-22Ø1/BSC-1 Switching Units

   b. Signal Data Converter CV-351ØB/UG

   c. TSEC/KG-84C

   d. TSEC/KG-36

   e. TSEC/KWR-46

   f. TSEC/KY-75

   g. TSEC/KY-58

2. Recognize and interpret all indications occurring during the performance of normal operating procedures, and perform appropriate operator actions in proper sequence on the DSS and the following equipment.

   a. TSEC/KG-84C

   b. TSEC/KG-36

   c. TSEC/KG-46

   d. TSEC/KY-75

   e. TSEC/KY-58

3. Recognize and interpret all indications occurring during the performance of all operating procedures, and perform appropriate operator actions in proper sequence on the DSS and the following equipment.

   a. SA-2199/BSC-1, SA-22ØØ/BSC-1, SA-22Ø1/BSC-1 Switching Units

   b. Signal Data Converter CV-351ØB/UG

4. Perform tasks in the casualty/degraded/abnormal modes of operation of the DSS and the following equipment.

   a. SA-2199/BSC-1, SA-22ØØ/BSC-1, SA-22Ø1/BSC-1 Switching Units

   b. Signal Data Converter CV-3510B/UG

5. Adhere to personnel and equipment safety precautions during normal operational procedures of the DSS and the following equipment.

   a. TSEC/KG-84C

   b. TSEC/KG-36

   c. TSEC/KG-46

   d. TSEC/KY-75

   e. TSEC/KY-58

6. Adhere to personnel and equipment safety precautions during all operational procedures of the DSS and the following equipment.

   a. SA-2199/BSC-1, SA-22ØØ/BSC-1, SA-22Ø1/BSC-1 Switching Units

   b. Signal Data Converter CV-3510B/UG

Trainee Preparation

A. Trainee Support Material:

   1. Study Job Sheets FØ147-2-1-1 through FØ147-2-1-3.

B. Reference Publications:

   1. Study EE1Ø9-AL-MMO-Ø1Ø/W153-DSS, tables 2-15 and 2-19.

   2. Study KAO-83E/TSEC, sections 2007 and 3003a.

   3. Study KAO-137E/TSEC, section 5102.

   4. Study KAO-154B/TSEC, section 3002.

   5. Study KAO-168B/TSEC, paragraph 3-2.

   6. Study KAO-2Ø7A/TSEC, paragraph 3.10.d.

   7. Study NAVSEA S9SSB-X9-SSM-84E/(U) 726V6P3B7E-2 (SSM V6P3B7E-2), AP 7Ø4-5.

8. Study NAVSEA S9SSB-X9-SSM-84E/(U) 726V6P3B7E-3 (SSM V6P3B7E-3), ERP 7Ø1-9.

Instructor Preparation

A. Review Assigned Trainee Material.

B. Reference Publications:

1. CNETINST 1500.20 series
2. EE1Ø9-AC-MMO-Ø1Ø/W153-BSC1-CMT
3. EE1Ø9-AL-MMO-Ø1Ø/W153-DSS
4. KAO-83E/TSEC
5. KAO-137E/TSEC
6. KAO-154B/TSEC
7. KAO-168B/TSEC
8. KAO-2Ø7A/TSEC
9. NAVSEA S9SSB-X9-SSM-84E/(U)726V6P3B7E-2 (SSM V6P3B7E-2)
10. NAVSEA S9SSB-X9-SSM-84E/(U)726V6P3B7E-3 (SSM V6P3B7E-3)
11. 8562110 AN/BSC-1 Instructor Utilization Handbook

C. Training Materials Required:

1. Trainee Guide
2. Publications:
   a. EE1Ø9-AL-MMO-Ø1Ø/W153-DSS
   b. KAO-83E/TSEC
   c. KAO-137E/TSEC
   d. KAO-154B/TSEC
   e. KAO-168B/TSEC
   f. NAVSEA S9SSB-X9-SSM-84E/(U) 726V6P3B7E-2 (SSM V6P3B7E-2)

Topic 1: Basic Operation and Operation of the DSS - Continued.

g. NAVSEA S9SSB-X9-SSM-84E/(U) 726V6P3B7E-3 (SSM V6P3B7E-3)

h. 8562110 AN/BSC-1 Instructor Utilization Handbook

3. Equipment:

a. AN/BSC-1 Trainer

Topic 1. BASIC OPERATION AND OPERATION OF THE DSS

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
Introduction Notes: Provide trainees with lesson topic title and the objectives.	
1. Safety precautions	1. Reference CNETINST 1500.20 series.
a. Personnel	a. Review Training Time Out procedures.
b. Equipment	b. Reference SSM V6P3B7E-1, PG 701; EE1Ø9-AL-MMO-Ø1Ø, paragraph 1-1; and EE1Ø9-AC-MMO-Ø1Ø, paragraph 1-1.
(1) SA-2199/BSC-1, SA-22ØØ/BSC-1, SA-22Ø1/BSC-1 Switching Units	
(2) CV-351ØB/UG	

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(3) TSEC/KG-84C	
(4) TSEC/KG-36	
(5) TSEC/KWR-46	
(6) TSEC/KY-75	
(7) TSEC/KY-58	
2. Normal operation and indications	2. Prepare the AN/BSC-1 Trainer for use with Job Sheet FØ147-2-1-1 using AN/BSC-1 IUH, section 3.

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
	a. Direct the trainee to perform Job Sheet FØ147-2-1-1. Verify that the trainee observes safety precautions and answers all questions correctly. Correct answers are provided on the Answer Sheet.
	b. Critique the job sheet to check for trainee understanding.
	c. Repeat Instructor Activity 1 and 2 through 2.b for remaining trainees.
	Instructor Activity 1 is identified individually to emphasize the need to repeat it, because it pertains to safety.
3. Casualty/degraded operation and indications	3. Prepare the AN/BSC-1 Trainer for use with Job Sheets FØ147-2-1-2 and FØ147-2-1-3 using AN/BSC-1IUH, section 3.

Topic 1. BASIC OPERATION AND OPERATION OF THE DSS

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
a. Configured circuit Job Sheet equipment failure	a. Direct trainee to perform FØ147-2-1-2. Verify that the trainee observes safety precautions and answers all questions correctly. Correct answers are provided on the Answer Sheet.
	b. Critique the job sheet to check for trainee understanding.
	c. Repeat Instructor Activity 1 and 3 through 3.b for remaining trainees.
	d. Ensure that the trainer is returned to its original operating condition.

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
	NOTE With the trainee absent from the trainer set the BLACK DATA switch on A5A1 to OFF.
e. Black switch failure	e. Direct the trainee to perform Job Sheet FØ147-2-1-3. Verify that the trainee observes safety precautions and answers all questions correctly. Correct answers are provided on the Answer Sheet.
	f. Critique the job sheet to check for trainee understanding.
	g. Repeat Instructor Activity 1 and 3.e and 3.f for remaining trainees.

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
	h. Ensure that the trainer is returned to its original operating condition.
4. Review and Summary	
5. Assignment	5. Make study assignments if required.

TAB A-6

TRAINEE GUIDE

TRIDENT EXTERIOR COMMUNICATIONS SYSTEM (ECS)

TRAINEE GUIDE

APRIL 1991

Published by Direction of the Deputy For Shore/Technical Training (CNET T2)

TRAINEE NAME PAGE

TRAINEE GUIDE

NAME _____

CLASS NUMBER _____

LIST OF EFFECTIVE PAGES

Page No.	Change in Effect	Page No.	Change in Effect
4	ORIGINAL		
5	ORIGINAL		
6	ORIGINAL		
7	ORIGINAL		
9	ORIGINAL		
11	ORIGINAL		
FØ147-1-2-1	ORIGINAL		
FØ147-1-3-1	ORIGINAL		
FØ147-1-4-1	ORIGINAL		
FØ147-1-5-1	ORIGINAL		

LETTER OF PROMULGATION

CHANGE RECORD

Number and Description of Change	Entered By	Date

SAFETY/HAZARD AWARENESS NOTICE

All personnel involved in operation or maintenance of electronic equipment must be thoroughly familiar with the electronic equipment safety precautions contained in Electronic Installation and Maintenance Book (SE000-00-EIM-100), section 3, and NSTM, Electronics, chapter 400, (S9086-ND-STM-000/ch. 400), section 2. In addition, attention is directed to the Accident Prevention Manual, OPNAVINST 5100.19 series, and Safety Policy and Procedures for Conducting Training, CNETINST 1500.20 series.

This equipment employs voltages which are dangerous and may be fatal if contacted by operating or maintenance personnel. Extreme caution must be exercised when working with this equipment. Hazard awareness dictates that this equipment must always be viewed as an integral part of a system and not as a component. While every practical precaution has been incorporated into this equipment, it is not possible or practical to try to list every condition or hazard that you may encounter. Therefore, all operating or maintenance personnel must at all times observe as a minimum, the following:

Don't service or adjust alone. Under no circumstances will a person operate or maintain equipment without the immediate presence or assistance of another person capable of rendering aid. Unless under direct supervision of a qualified person, no person shall operate or maintain equipment for which he is not qualified.

Don't tamper with interlocks. Reliance on interlock circuits to remove power from the equipment is never to be assumed. Until operation of the interlock is verified, equipment is assumed to be in the hazardous mode of operation. Under no circumstances will any access gate, door, or interlock switch be removed, bypassed or modified in any way by other than authorized maintenance personnel and then only after observing proper tag-out procedures.

Training Time Out. Any time a trainee or instructor has apprehension concerning his personal safety, or that of another, he shall verbally or physically signal "TRAINING TIME OUT" to stop the exercise and receive or provide additional instruction as appropriate in accordance with CNETINST 1500.20 series.

Report all hazards. If at any time you detect a hazard, it is your responsibility to report the hazard to ensure that it is corrected. If at any time you detect a "new" or "suspected new" hazard, particularly due to equipment installation, modification or repair, it is your responsibility to ensure that a SAFETYGRAM is submitted to the Naval Safety Center, Norfolk, VA, in accordance with OPNAVINST 5100.19 series. This will ensure that this hazard will be investigated, publicized, or corrected, as required.

The Pre-Mishap plan explains the procedures to follow and essential telephone numbers to call in case of an accident or emergency. It is located by the emergency exit in the laboratory.

SECURITY AWARENESS NOTICE

In the event that classified information is added to this Trainee Guide as a result of instructor personalization, the Trainee Guide shall be marked and handled in accordance with the regulations of the latest edition of the Department of the Navy Supplement to the DoD Information Security Program Regulation OPNAVINST 5510.1 series.

TABLE OF CONTENTS

All Instruction Sheets listed in this Table of Contents are not provided in this example Trainee Guide. Only one example of each Instruction Sheet type is provided.

HOW TO USE YOUR TRAINEE GUIDE

TRAINEE GUIDE

This publication is now in your custody and is for your use while learning *theory of operation, adjustment, alignment, and maintenance of the Exterior Communications System (ECS) Eclectic System.* **[Tailor to specific course.]**

You may not mark any pages in this book except for *Job Sheets, Diagram Sheets, Problem Sheets, and the Trainee Name Page.* **[Tailor to specific course.]**

Upon completion of this course of instruction return this Trainee Guide to your instructor.

OTHER PUBLICATIONS

Reference publications contain most of the information needed for this equipment but were not prepared for training use.

This Trainee Guide was prepared to guide your training on this equipment and prepare you to use the equipment documentation in maintaining *(or operating)* the Exterior Communications System (ECS) Eclectic System.

Several other pertinent publications will be referred to frequently during the course.

PRESENTATION OF COURSE MATERIAL

The course material on the Exterior Communications System (ECS) Eclectic System is divided into Sections and Topics, presented in a logical sequence. *Operation, adjustment, alignment, troubleshooting, and efficient use of maintenance aids (documentation and test equipment) are stressed.* **[Tailor to specific course.]** The knowledge and skills to be acquired are stated for each topic so that you can check your progress.

Assignments in publications are given for study. The effectiveness of this Trainee Guide depends upon the conscientious accomplishment of the reading and study assignments in the reference publications.

WRITTEN AND PERFORMANCE TESTS

A testing program consisting of written and practical performance tests will be administered by the instructor.

HOW TO USE YOUR TRAINEE GUIDE - Continued.

SAFETY PRECAUTIONS

Voltages present in this and associated equipment are extremely dangerous. Read the Safety Precautions carefully and be aware of dangerous voltages when working on the equipment. Practice safety while learning about this equipment. Take time to be safe.

If you have any apprehension concerning your personal safety or that of another you shall verbally signal "Training Time Out" to the instructor to stop the exercise.

SECURITY

In the event that classified information is added to this Trainee Guide as a result of trainee notes, the Trainee Guide shall be marked and handled in accordance with the regulations of the latest edition of the Department of the Navy Supplement to the DoD Information Security Program Regulation (OPNAVINST 5510.1 series).

COURSE LEARNING OBJECTIVES

Upon successful completion of this course, the trainees will have acquired the following knowledge and skills and be able to:

Knowledge:

1. Describe the theory necessary to support and understand the performance of normal and degraded operational tasks and all preventive maintenance without going into detailed logic, circuit analysis, individual program flow diagrams, or detailed mechanical component breakdown of the following:

   a. TRIDENT Exterior Communications System (ECS)
   b. Data Switching Subsystem (DSS)
   c. Power Distribution Group
   d. Towed Buoy Antenna AN/BRR-6

2. Describe the theory necessary to support and understand the performance of documented fault isolation and repair without going into detailed logic, circuit analysis, individual program flow diagrams, or detailed mechanical component breakdown of the following:

   a. PP-7474/BSC-1, PP-7475/BSC-1 Power Supplies
   b. SA-2199/BSC-1, SA-22ØØ/BSC-1, and SA-22Ø1/BSC-1 Switching Units

3. Describe the theory necessary to support undocumented fault isolation and repair requiring advanced analysis without going into signal or electrical flow, computer instructions, or detailed mechanical component breakdown except for those mechanical or logic elements or circuits unique to the equipment or program of the Interface Unit J-3565/BSC-1 (Message Interface Unit).

Skills:

1. Perform normal and degraded operational procedures with supervision on the following:

   a. TRIDENT Exterior Communications System (ECS)
   b. Data Switching Subsystem (DSS)
   c. Power Distribution Group
   d. Towed Buoy Antenna AN/BRR-6

2. Perform preventive maintenance procedures with supervision on the following:

   a. TRIDENT Exterior Communications System (ECS)
   b. Data Switching Subsystem (DSS)

COURSE LEARNING OBJECTIVES - Continued

c. Power Distribution Group
d. Towed Buoy Antenna AN/BRR-6

3. Perform, with supervision, documented fault isolation and repair procedures to the authorized maintenance level on the following:

a. PP-7474/BSC-1, PP-7475/BSC-1 Power Supplies
b. SA-2199/BSC-1, SA-22ØØ/BSC-1, SA-22Ø1/BSC-1 Switching Units

4. Perform fault isolation and repair of faults that cannot be located using procedures contained in prescribed documentation or that require advanced analysis, with supervision, on the Interface Unit J-3565/BSC-1 (Message Interface Unit).

COURSE MASTER SCHEDULE

A-111-4251

Length of Period: 50 minutes

WEEK 1
DAY 1

TOPIC NO.	TYPE	PERIOD	TOPIC	RATIO
FØ147.1.1	Class	1	General and Documentation Description of the Power Distribution Group	25:1
FØ147.1.2	Class	2	General, Physical, Functional, and Interface Description of the AN/BRR-6	25:1
FØ147.1.2	Class	3	Same	25:1
FØ147.1.2	Class	4	Same	25:1

Only Part FØ147, Sections 1 and 2 are used as examples in Volume II. The others are intentionally omitted.

WEEK 3
DAY 1

TOPIC NO.	TYPE	PERIOD	TOPIC	RATIO
FØ147.1.10	Test	81	Power Distribution Group	25:1
FØ147.2.1	Class	82	Basic Operation of the DSS	25:1
FØ147.2.1	Lab	11	Same	10:1

ASSIGNMENT SHEET FØ147-1-2-1

GENERAL, PHYSICAL, FUNCTIONAL, AND
INTERFACE DESCRIPTION OF THE AN/BRR-6

INTRODUCTION

This lesson will show how the AN/BRR-6 operates and its effect on the system as a whole.

TOPIC LEARNING OBJECTIVES

Upon successful completion of this topic, you will be able to:

1. State the functions of the AN/BRR-6.

2. State that the AN/BRR-6 consists of the following major functional areas. Include the function of each to support normal operations.

   a. Towed Buoy TB-17/BRR-6 (Bangor) or Towed Buoy TB-18A/BRR-6 (Kings Bay)
   b. Receiver Group OR-197/BRR-6
   c. Special Purpose Electrical Cable Assembly CX-13Ø53/BRR-6
   d. Buoy Cradle MT-49Ø5/BRR-6
   e. Reeling Machine RL-275/BRR-6
   f. Sensor Group OA-89Ø6/BRR-6
   g. Buoy Door Sensing Switch
   h. Buoy Control Indicator C-1Ø256A/BRR-6
   i. Antenna Control Indicator C-1Ø257/BRR-6
   j. Buoy Depth Control Indicator C-1Ø258A/BRR-6
   k. Relay Assembly RE-1115/BRR-6
   l. Interconnecting Box J-3461/BRR-6
   m. Towed Array Control Indicator Panel

3. Define the abbreviations and terms used with the AN/BRR-6 to support all operations and preventive maintenance.

4. State the operational characteristics and capabilities of the AN/BRR-6 to support all operations and preventive maintenance.

5. State the security requirements for the AN/BRR-6 to support all operations and preventive maintenance.

6. Describe all major and associated components of the AN/BRR-6 to support all operations and preventive maintenance. Include names, nomenclature, physical appearance, reference designators, locations, and construction features.

    a. Towed Buoy TB-17/BRR-6 (Bangor) or Towed Buoy TB-18A/BRR-6 (Kings Bay)
    b. Receiver Group OR-197/BRR-6
    c. Special Purpose Electrical Cable Assembly CX-13Ø53/BRR-6
    d. Buoy Cradle MT-49Ø5/BRR-6
    e. Reeling Machine RL-275/BRR-6
    f. Sensor Group OA-89Ø6/BRR-6
    g. Buoy Door Sensing Switch
    h. Buoy Control Indicator C-1Ø256A/BRR-6
    i. Antenna Control Indicator C-1Ø257/BRR-6
    j. Buoy Depth Control Indicator C-1Ø258A/BRR-6
    k. Relay Assembly RE-1115/BRR-6
    l. Interconnecting Box J-3461/BRR-6
    m. Towed Array Control Indicator Panel

7. Describe the controls and indicators directly associated with the AN/BRR-6 to support all operations and preventive maintenance. Include names, reference designators, positions, conditions, colors, locations, and functions.

8. Describe how the AN/BRR-6 works (functional operation) to support all operations and preventive maintenance. Include signal flow, sequential operation, and indications.

    a. Towed Buoy TB-17/BRR-6 (Bangor) or Towed Buoy TB-18A/BRR-6 (Kings Bay)
    b. Receiver Group OR-197/BRR-6
    c. Special Purpose Electrical Cable Assembly CX-13Ø53/BRR-6
    d. Buoy Cradle MT-49Ø5/BRR-6
    e. Reeling Machine RL-275/BRR-6
    f. Sensor Group OA-89Ø6/BRR-6

g. Buoy Door Sensing Switch
h. Buoy Control Indicator C-1Ø256A/BRR-6
i. Antenna Control Indicator C-1Ø257/BRR-6
j. Buoy Depth Control Indicator C-1Ø258A/BRR-6
k. Relay Assembly RE-1115/BRR-6
l. Interconnecting Box J-3461/BRR-6
m. Towed Array Control Indicator Panel

9. Describe the functional interface between the AN/BRR-6 and related external equipments to support all operations and preventive maintenance.

a. Power sources
b. Input signals
c. Output signals

STUDY ASSIGNMENT

1. Study EE125-FA-MMF-Ø1Ø/E11Ø-BRR-6, FOMM Technical Manual Support Volume for Radio Receiving Set AN/BRR-6, Volume 1, glossary; tables 1-1 and 2-1 through 2-7; paragraphs 1-1, 1-2, 1-2.1 through 1-2.12, and 1-3 through 1-6; and figures 2-1 through 2-8, 5-1, and 5-3.

2. Study NAVSEA S9SSB-X9-SSM-9ØØ/(U)726V6P3B13 (SSM V76P3B13), Habitability, Ship Handling, and Emergency Systems Operating Instructions, OI 637-11, paragraph 1-1.

STUDY QUESTIONS

1. How many units comprise the BRR-6?

2. What is the frequency range of the BRR-6?

3. What is the maximum speed allowable for towing the buoys?

4. What is the maximum speed for launching a buoy?

5. Is it good practice to stream the buoyant cable and fly a buoy at the same time?

6. How many buoys are associated with each BRR-6?

7. What is the minimum depth for launching a buoy?

8. How much cable does each cable have?

9. What does FOMM mean?

10. Which units of the BRR-6 are located in the IRR?

11. Which units of the BRR-6 are located in the Command and Control Center?

12. How many antennas are associated with the Towed Buoy?

13. What is the purpose of the Depth and Destruct Canister? Where is it located?

14. Which unit controls all the buoy electronics?

15. How close to the surface must the buoy be before Unit 10 can take over depth control?

16. How does Unit 9 (Towed Buoy Antenna Control Unit) communicate with the buoy electronics?

17. Where are the tow cable cutters located?

18. Where does the BRR-6 receive its 115 vac 60 Hz power from?

19. Do the navigation center signals go through the AIS cabinet in the IRR?

OUTLINE SHEET FØ147-1-2-1

GENERAL, PHYSICAL, FUNCTIONAL, AND
INTERFACE DESCRIPTION OF THE AN/BRR-6

INTRODUCTION

This lesson will show how the AN/BRR-6 operates and its effect on the system as a whole.

TOPIC OUTLINE

1. Security requirements
2. Functions of the AN/BRR-6
3. Abbreviations and terms
4. Major functional areas/major and associated components
5. Functional operation
6. Functional interface
7. Operational characteristics and capabilities

NOTE TO READER: This Outline Sheet was developed to leave room for the trainee to take notes.

INFORMATION SHEET FØ147-1-3-1

SAFETY POLICY FOR CONDUCTING TRAINING

A. INTRODUCTION

1. This information sheet is designed to provide you with an understanding of Navy policy regarding training safety.

2. This information sheet covers "Training Time Out" procedures that are to be used during the conduct of this course.

B. REFERENCES

1. CNETINST 1500.20 series, Safety Procedures for Conducting Training in Arduous or Potentially High Risk Activities

C. INFORMATION

1. The mission of the Navy dictates the need for an aggressive training program to prepare personnel to perform professionally and competently in many high risk activities under diverse and possible adverse conditions. Potentially high risk training includes, but is not limited to, training requiring exposure to potentially hazardous conditions involving the environment (water entry, temperature extremes), atmosphere (fire fighting, use of solvents), explosives (weapons), electrical mechanical or hydraulic training devices or equipments.

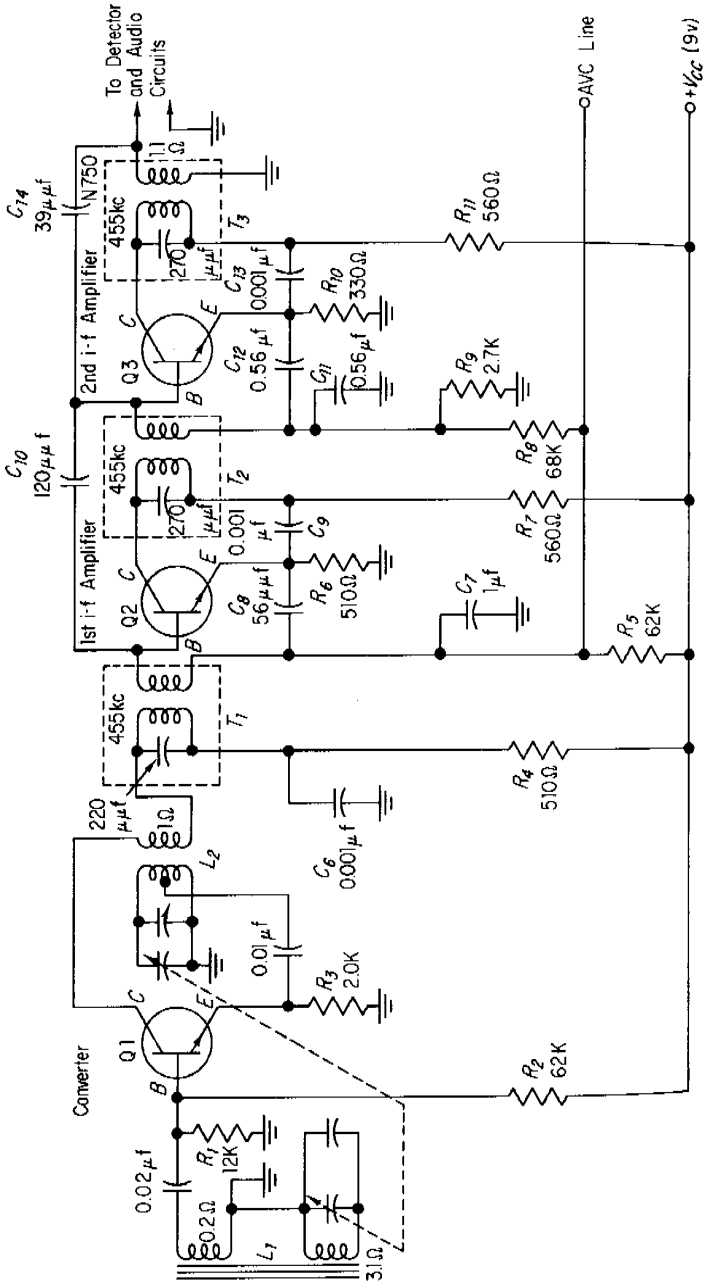
2. It is the policy of the Chief of Naval Education and Training (CNET) to provide required training under controlled conditions, within practical and realistic limits, to obtain desired training outcomes while maintaining the maximum margin of safety. Included in this policy is the requirement that in the event a trainee is apprehensive of his personal safety while undergoing training, that concern shall be addressed.

D. TRAINING TIME OUT (TTO)

1. Any time a trainee or Instructor has apprehension concerning his personal safety or that of another, he shall verbally signal "TRAINING TIME OUT" to stop the exercise and receive or provide additional instruction as appropriate in accordance with CNETINST 1500.20 series.

DIAGRAM SHEET

FØ147-1-4-1



FOR TRAINING USE ONLY

JOB SHEET FØ147-5-1-1

POWER SUPPLIES PP-7474/BSC-1 AND PP-7475/BSC-1
ADJUSTMENT PROCEDURES

A. INTRODUCTION

1. This job sheet will aid you in becoming proficient in performing adjustments on the Power Supply PP-7474/BSC-1 to support documented corrective maintenance.

2. You will be evaluated on your observance of safety precautions during performance of this job sheet. In addition, strict adherence to documented procedures will be closely monitored.

B. EQUIPMENT

1. AN/BSC-1 Trainer

2. Test Equipment

a. Digital Multimeter, Fluke Model 86ØØA-Ø1, SCIN/SCAT 4212

3. Tools

a. Flat-tip screwdriver, 8-inch, 5/16-inch tip, LCA 1613
b. Offset screwdriver, NSN 512Ø-ØØ-287-213Ø
c. Open end wrench, 1/2-inch, 4-inch, LCA 2516
d. Phillips screwdriver, No. 2, 8-inch, LCA 2838

C. REFERENCES

1. EE1Ø9-AL-MMO-Ø1Ø/W153-DSS, Data Switching Subsystem Operation and Maintenance Instructions, Volume 1

NOTE: The adjustment procedures for the Power Supply PP-7474/BSC-1 are identical to the adjustment procedures for the Power Supply PP-7475/BSC-1.

D. JOB STEPS

Step 1. Perform the power supply voltage checks as described in paragraphs 6-2.a through 6-2.a(4) and table 6-2. Record your readings in the spaces provided. Inform the instructor of any out of tolerance readings.

PS1:_____ PS2:_____ PS3:_____

INSTRUCTOR CHECK _____
SAT

Step 2. Perform the power supply voltage adjustments as described in paragraphs 6-2.a(5) through 6-2.a(12) to correct the power supply(s) which are not within the specified tolerances.

INSTRUCTOR CHECK _____
SAT

Step 3. Return the equipment to its original operating condition.

INSTRUCTOR CHECK _____
SAT

PROBLEM SHEET FØ147-5-1-1

A. INTRODUCTION

This Problem Sheet will help you become proficient at troubleshooting the Power Supply PP-7474/BSC-1 using the authorized technical documentation.

B. REFERENCES

1. EE1Ø9-AL-MMO-Ø1Ø\W153-DSS, Data Switching Subsystem Operation and Maintenance Instructions, Volume I.

C. PROBLEM

Using the authorized technical documentation, list in logical order the troubleshooting steps required to isolate the problem.

D. GIVEN

Each PP-7474/BSC-1 Power Supply malfunction can be identified and isolated using the authorized technical documentation.

E. INITIAL CONDITIONS

An operator of the Data Switching Subsystem reports that the system will power up but will not remain online.

F. REQUIRED RESPONSES

1. Locate the symptom index

---

2. Locate the symptom

---

3. Where are the recommended tests and inspections located?

---

4. Locate the "Troubleshooting and Diagnosing" chapter.

5. Once the problem has been identified, the technical documentation and the steps required to correct the problem.

FOR TRAINING USE ONLY

TAB A-7

TEST PACKAGE

TESTING PLAN
FOR
TRIDENT EXTERIOR COMMUNICATIONS SYSTEM (ECS)
MODEL CURRICULA

A-111-4251 REV A

PREPARED BY

TRIDENT TRAINING FACILITY, BANGOR
SILVERDALE, WA 98315-5400

PREPARED FOR

DEPUTY FOR SHORE/TECHNICAL TRAINING (CNET T2)
250 DALLAS STREET
PENSACOLA, FLORIDA 32508-5220

1 MAY 1990

TESTING PLAN FOR:

A-111-4251 REV A
TRIDENT EXTERIOR COMMUNICATIONS SYSTEM (ECS)
MODEL CURRICULA

TESTS AND METHODS

The purpose of this Testing Plan is to establish procedures which will be used in evaluating the trainee's performance on attaining the objectives of the course. Performance for the A-111-4251 REV A course is measured by the following:

1. Written Progress Test
2. Performance Test
3. Practical Work

Tests are as follows:

Written Progress Test - A written test with a minimum of 30 questions is administered at the end of Section 1, Topic 4. The following TLO's must be tested: 1-1-2, 1-1-4, 1-2-2, 1-2-4, 1-2-6, 1-2-8, 1-3-2, 1-3-4, 1-3-5, 1-4-2, and 1-4-3. Additional TLO's may be selected for testing to make up a test with a minimum of 30 questions.

Performance Test - A skill test is administered at the end of Section 2, Topic 1 utilizing Job Sheet FØ147-2-1-1 and Administrator Guide (minimum score of 70% is required).

Performance Test - A skill test is administered at the end of Section 3, Topic 1 utilizing Job Sheet FØ147-3-1-1 and Administrator Guide (minimum score of 70% is required).

Written Progress Test - A written test with a minimum of 30 questions is administered at the end of Section 4, Topic 5. The following TLO's must be tested: 4-1-2, 4-2-1, 4-2-3, 4-3-2, 4-3-3, 4-3-4, 4-3-5, 4-4-2, 4-5-3, 4-5-4, 4-4-5, 4-4-6, and 4-5-8. Additional TLO's may be selected for testing to make up a test with a minimum of 30 questions.

Performance Test - A skill test is administered at the end of Section 5, Topic 1 utilizing Job Sheet FØ147-5-1-1 and Administrator Guide (minimum score of 70% is required).

Written Progress Test - A written test with a minimum of 30 questions is administered at the end of Section 6, Topic 3. The following TLO's must be tested: 6-1-2, 6-2-2, 6-3-2, 6-3-3, 6-3-4, 6-3-5, and 6-3-7. Additional TLO's may be selected for testing to make up a test with a minimum of 30 questions.

Performance Test - A skill test is administered at the end of Section 7, Topic 1 utilizing Job Sheet FØ147-7-1-1 and Administrator Guide (minimum score of 70% is required).

TESTING CONSTRAINTS

There are no constraints which prevent achievement of all course objectives.

PERFORMANCE TEST PROCEDURES AND NUMERICAL GRADE

Performance tests are administered individually. Performance tests are given to evaluate the trainee's overall skills taught in the course. The instructor/evaluator uses checklists and rating scales to evaluate the trainee. The standard for the performance tests is 70%. All critical steps must be performed without error. Trainees will be allowed one retake. Prior to the retake, the instructor will provide specific feedback to the trainee as to his or her performance on the failed test to allow the trainee to correct any problems. Additional practice may be required of the trainee prior to retaking the test. Trainees who are not able to meet the standard after the retest will be recommended for an Academic Review Board. Performance tests will be critiqued.

MINIMUM PASSING GRADE

All tests are criterion-referenced in that they measure the trainees' actual knowledge or performance against criteria derived from learning objectives. The minimum grade for the A-111-4251 REV A course is 70%, based on evaluation of the learning objectives and determination that the minimum passing grade needs to be at or above the point of average understanding.

WEIGHTING CRITERIA FOR COMPUTING FINAL COURSE GRADES

Comprehensive Tests	30% X (Trainee's Grades) =	_____
Performance Tests	60% X (Trainee's Grades) =	_____
Practical Work	10% X (Trainee's Grades) =	_____

Total = Final Course Grade

WRITTEN PROGRESS TEST PROCEDURES

Written Progress tests are administered to the entire class. Results of the tests are used to evaluate the trainee's progress in the course. The minimum passing grade is 70%.

PRACTICAL WORK GRADES

Practical work grades for the course consist of graded homework and assignment sheets. The practical work grades will be averaged and will count as a percentage of the final grade as indicated on the Weighting Criteria area of this testing plan. If problem areas occur during practical work they will be remediated during class.

REMEDIATION

A trainee who scores at or above the minimum passing score will be immediately remediated in class to their specific problem areas. A trainee who scores below the minimum passing score will be subject to instructor oral remediation and night study. In addition the trainee will be retested as soon as possible. Trainees will be allowed one retake. Trainees who fail the retake will be recommended for an Academic Review Board.

Test to Objective to PPP Line Item Comparison

Part	Section	Lesson Topic	Objective	PPP Number	Test	Number	Version
FØ147	1	4.1.4	1	1-6-1a	5020	12	1
FØ147	1	4.1.4	2	1-6-3	5020	45	1
FØ147	1	4.1.4	3	1-6-11	6112	10	3
FØ147	3	4.1.1	1	2-2-2	5020	30	1
FØ147	3	4.1.1	2	2-2-1Ø	6112	15	3

TEST SCHEDULE

Period	Test Number
40	5020
55	6112
80	7103

TRIDENT EXTERIOR COMMUNICATIONS SYSTEM (ECS)

A-111-4251

WRITTEN TEST ADMINISTRATORS GUIDE

WRITTEN TEST NO. 121A

OPERATIONAL DESCRIPTION OF THE DSS

August 1991

WRITTEN TEST ADMINISTRATOR'S GUIDE

TRIDENT EXTERIOR COMMUNICATIONS SYSTEM (ECS)

A-111-4251

I. Instructions To Administrator

A. Prior to the start of testing:

1. Cover or Remove all training materials that could assist the trainees in answering test items.

2. Inform trainees that they have 50 minutes for the test.

3. Provide pencils and scratch paper as necessary.

4. Read the test instructions to the trainees.

5. Provide pertinent reference documentation.

6. Honor local instruction pertinent to testing as applicable.

B. After completing the test:

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.

II. EVALUATION INSTRUMENT N/A

III. GRADING CRITERIA

As per NAVEDTRA 135, Appendix B7, *Translation of the Raw Score on a Written Test to a Grade*.

IV. INSTRUCTIONS TO THE TRAINEE

A. This is a completion or short answer test.
B. On the answer sheet print your name and social security number.
C. Anyone caught cheating fails and is subject to disciplinary action.
D. The time to take this test is 50 minutes.
E. This test completes Your Knowledge Course Learning Objective 1.

TRIDENT EXTERIOR COMMUNICATIONS SYSTEM (ECS)

A-111-4251

WRITTEN TEST ADMINISTRATORS GUIDE

WRITTEN TEST NO. 121A

OPERATIONAL DESCRIPTION OF THE DSS

August 1991

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TRIDENT EXTERIOR COMMUNICATIONS SYSTEM

C1

SECTION/TOPIC 1.1 TEST #11111
Date: Oct 1991 Revised_____

1. The function of the Power Distribution Group is

   to _____.

2. List the major functional areas of the Power Distribution Group.

   a.
   b.
   c.
   d.
   e.

3. The function of the AN/BRR-6 is to_____
   _____.

4. List the function of each to support normal operation of the AN/BRR-6.

   a. Towed Buoy TB-17/BRR-6 (Bangor) or Towed Buoy TB-18A/BRR-6 (Kings Bay)

   b. Receiver Group OR-197/BRR-6

   c. Special Purpose Electrical Cable Assembly CX-13Ø53/BRR-6

   d. Buoy Cradle MT-49Ø5/BRR-6

   e. Reeling Machine RL-275/BRR-6

   f. Sensor Group OA-89Ø6/BRR-6

   g. Buoy Door Sensing Switch

   h. Buoy Control Indicator C-1Ø256A/BRR-6

   i. Antenna Control Indicator C-1Ø257/BRR-6

   j. Buoy Depth Control Indicator C-1Ø258A/BRR-6

   k. Relay Assembly RE-1115/BRR-6

   l. Interconnecting Box J-3461/BRR-6

   m. Towed Array Control Indicator Panel

Questions 5 - 29 omitted for this example

30. Describe preventive maintenance procedures for the following

   a. Control, Monitor, and Test (CMT) Subsystem

      (1) Interface Unit J-3565/BSC-1 (Message Interface Unit)

      (2) Interface Unit J-3566/BSC-1 (Digital Interface Unit Interface)

      (3) Interface Unit J-3568/BSC-1 (HASP/Magnetic Tape Unit Interface Unit)

(4) Recorder-Reproducer Control C-1Ø447/BSC-1

(5) Recorder-Reproducer Unit RD-442/BSC-1

(6) Comparator CM-5Ø7/BSC-1

b. Data Switching Subsystem (DSS)

(1) SA-2199/BSC-1, SA-22ØØ/BSC-1, and SA-22Ø1/BSC-1 Switching Units

(2) Signal Data Converter C-351ØB/U

c. Very Low Frequency/Low Frequency (VLF/LF) Subsystem

(1) Radio Receiver R-21Ø9/BSC-1

(2) Radio Receiver R-232Ø/UAR

(3) Digital Data Processor C-1Ø71B/W

(4) Digital Data Demodulator MD-1191/WAR-B

(5) Electrical Equipment Enclosure C-841Ø/WAR-B

(6) Power Supply PP-8Ø98/BSC-1

d. High Frequency/Ultra High Frequency (HF/UHF) Subsystem

(1) Radio Receiver-Transmitter R-11Ø7(V)12/WAC-3(V)

(2) Voice Switch Unit Control C-1Ø975

(3) Command Center Telephone Terminal

e. Support Subsystem

(1) Teleprinter T-624/U

(2) Power Distribution Group

(3) Audio Tape Recorder CMS 1Ø22

(4) AN/BSC-1 Electronic Equipment Air Coolers subsystems and equipment

TRIDENT EXTERIOR COMMUNICATIONS SYSTEM (ECS)

A-111-4251

PERFORMANCE TEST ADMINISTRATORS GUIDE

PERFORMANCE TEST NO. 121A

OPERATIONAL DESCRIPTION OF THE DSS

AUGUST 1991

PERFORMANCE TEST ADMINISTRATOR'S GUIDE

TRIDENT EXTERIOR COMMUNICATIONS SYSTEM (ECS)

A-111-4251

I. Instructions To Administrator

A. Prior to the start of testing:

1. This job sheet will aid you in becoming proficient in performing adjustments on the Power Supply PP-7474/BSC-1 to support documented corrective maintenance.
2. You will be evaluated on your observance of safety precautions during performance of this job sheet. In addition, strict adherence to documented procedures will be closely monitored.
3. Inform trainees that they have 50 minutes for the test.
4. Provide pencils and scratch paper as necessary.
5. Provide pertinent reference documentation
6. Honor local instruction pertinent to testing as applicable.

EQUIPMENT

1. AN/BSC-1 Trainer
2. Test Equipment
   a. Digital Multimeter, Fluke Model 86ØØA-Ø1, SCAN/SCAT 4212
3. Tools
   a. Flat-tip screwdriver, 8-inch, 5/16-inch tip, LA 1613
   b. Offset screwdriver, NSN 512Ø-ØØ-287-213Ø
   c. Open end wrench, 1/2-inch, 4-inch, LA 2516
   d. Phillips screwdriver, No. 2, 8-inch, LA 2838

B. After completing the test:

1. Collect and inventory all tools.
2. Shut down all power supplies.
3. Review test with trainees.

4. Evaluate any test area challenged by trainees.

5. Apply local instructions as necessary.

II. Evaluation Instrument

A. Job sheet No. 4-5-1-1

B. Steps: There are 2 steps to be evaluated. They are the PE checks and the PE adjustments.

C. Description of errors: The most common error made by the trainee is reading multimeter wrong.

III. Grading Criteria

A. Step 1=checklist evaluation as satisfactory/unsatisfactory on the reading.

B. Step 2=Rating scale based on time, accuracy(+/-5%), safety, use of equipment, and procedures.

IV. Instructions to the Trainee

1. Remember TTO Procedures. There is a 50-minute time limit.

2. This job sheet will aid you in becoming proficient in performing adjustments on the Power Supply PP-7474/BSC-1 to support documented corrective maintenance.

3. You will be evaluated on your observance of safety precautions during performance of this job sheet. In addition, strict adherence to documented procedures will be closely monitored.

Performance Record Sheet

Name: _____

SSN: _____ ____ _____

Class No: _____

Start Time: _____

Stop Time: _____

Score: _____

JOB SHEET FØ147-5-1-1

POWER SUPPLIES PP-7474/BSC-1 AND PP-7475/BSC-1
ADJUSTMENT PROCEDURES

A. INTRODUCTION

1. This job sheet will aid you in becoming proficient in performing adjustments on the Power Supply PP-7474/BSC-1 to support documented corrective maintenance.

2. You will be evaluated on your observance of safety precautions during performance of this job sheet. In addition, strict adherence to documented procedures will be closely monitored.

B. EQUIPMENT

1. AN/BSC-1 Trainer

2. Test Equipment

   a. Digital Multimeter, Fluke Model 86ØØA-Ø1, SCAN/SCAT 4212

3. Tools

   a. Flat-tip screwdriver, 8-inch, 5/16-inch tip, LA 1613

   b. Offset screwdriver, NSN 512Ø-ØØ-287-213Ø

   c. Open end wrench, 1/2-inch, 4-inch, LA 2516

   d. Phillips screwdriver, No. 2, 8-inch, LA 2838

C. REFERENCES

1. EE1Ø9-AL-MMO-Ø1Ø/W153-DSS, Data Switching Subsystem Operation and Maintenance Instructions, Volume 1

NOTE

The adjustment procedures for the Power Supply PP-7474/BSC-1 are identical to the adjustment procedures for the Power Supply PP-7475/BSC-1.

FOR TRAINING USE ONLY

D. JOB STEPS

Step 1. Perform the power supply voltage checks as described in paragraphs 6-2.a through 6-2.a(4) and table 6-2. Record your readings in the spaces provided. Inform the instructor of any out of tolerance readings.

PS1:_____ PS2:_____ PS3:_____

Note: Instructor mark sat/unsat.

INSTRUCTOR CHECK _____
SAT

Step 2. Perform the power supply voltage adjustments as described in paragraphs 6-2.a(5) through 6-2.a(12) to correct the power supply(s) which are not within the specified tolerances.

Use a 10 point rating scale:

a. Procedures_____
b. Safety_____
c. Accuracy_____
d. Use of equipment____

INSTRUCTOR CHECK _____
SAT

Step 3. Return the equipment to its original operating condition.

INSTRUCTOR CHECK _____
SAT

TAB A-8

PILOT COURSE MONITORING REPORT

PILOT COURSE MONITORING REPORT

LOCATION: TRITRAFAC BANGOR **TITLE:** Trident Exterior Communications System

PERIOD OF REPORT: 17 Mar – 22 May 91 **CIN:** A-111-4251

MONITORS/REPRESENTING: ETCS Trueman (Pilot Team Chairman) TRITRAFAC, BANGOR
ETC Upton (Course Monitor) TRITRAFAC, BANGOR

I. ADMINISTRATION

A. Facilities

1. The present facility at TRITRAFAC, BANGOR is large enough to accommodate 24 trainees. However, since the equipment utilized for the follow-on course can only accommodate 12 trainees, it is recommended that the Exterior Communications System class size be held to a maximum of 12 trainees.

B. Safety

1. TTO and specific safety hazards were called out before each laboratory.

C. Security

1. Not applicable as this course is unclassified.

D. Allocation

1. This course can be taught in 9 weeks, as planned, with a total of 360 contact hours.

E. Critique Sheets (Summary of trainee comments)

1. Overall, trainee comments were favorable regarding the course content and the instructors.

2. Trainees felt the skills and knowledge acquired from the course would be directly applied on the job.

3. A number of trainees felt the course should have been a week longer in order to slow the pace down and provide more time for studying before the tests.

II. CURRICULUM VALIDATION

A. Lesson Plan

1. This command scheduled a pilot and taught this course from 28 January to 10 April 1991. However, shortly into the pilot, the course monitors and LT Duncan, Deputy for Shore/Technical Training (CNET T2), all agreed that the lesson materials should be revised and a second course pilot conducted.

2. The following changes were made to the lesson materials prior to the repilot:

a. The revised Training Level Assignment (TLA) dated 4 December 1991 was utilized vice the TLA dated 8 November 1990.

b. More information supporting each of the main headings was included in the Lesson Plan. The informational bullets were included to assist the instructors in personalizing their Lesson Plan and in teaching the course.

c. Topics were resequenced for better teachability and flow.

d. The Resource Requirements list was revised to accurately reflect required training materials.

e. PPP line items from Logistics Leadership and Management Table B061 were not included in the Lesson Plan. These items will be taught in General Military Training (GMT).

B. Trainee Guide

1. The Trainee Guide was revised to correspond with the Lesson Plan and study questions on the reading assignments were included. The instructors reviewed the assigned study questions at the start of each day.

2. Due to the short turnaround time, the Trainee Guide used in the pilot was a cut-and-paste revision of the previous Trainee Guide.

3. It was decided that the trainees should write in the Trainee Guide and take it with them to their next command. While this will result in higher printing costs, it was determined that the revised Trainee Guide contains a considerable amount of valuable information that the trainees could use at their next command.

C. Equipment/Tools

1. All equipment and tools were adequate except the AN/ASM-4D Multimeter input impedances too low and gives inaccurate readings. Digital Voltmeter replacement will be required.

D. Instructional Media Materials

1. All transparencies will be screened for readability at 20 feet from the screen.

E. Instruction

1. The instructors were prepared to teach all of the lessons and the lessons were well presented, which kept the interest level high throughout the course.

F. Testing

1. Only one version of the test series was completed in time for the pilot. The course testing officer has been tasked to develop alternate test series for the course.

III. INSTRUCTIONAL ACCURACY/ADEQUACY

A. Not applicable

IV. MINORITY REPORTS

A. None

V. OTHER

A. As the Monitoring Team Chairman, I recommend that this course be revised as is indicated by the red-lined Lesson Plan. I recommend that all subsequently scheduled classes be taught using the red-lined Lesson Plan until smooth copies are promulgated.

TAB A-9

EXERCISE CONTROLLER GUIDE

NOT SUPPORTED BY A LESSON PLAN

TRIDENT COMMON NAVIGATION TECHNICIAN
COMPUTER BASED TRAINER

EXERCISE CONTROLLER GUIDE

1 JUNE 1996

PUBLISHED BY DIRECTION OF CHIEF OF NAVAL EDUCATION AND TRAINING

EXERCISE CONTROLLER GUIDE

ECG-N5

LIST OF EFFECTIVE PAGES

Exercise/ Page No.	Change in Effect	Exercise/ Page No.	Change in Effect	Exercise/ Page No.	Change in Effect	Exercise/ Page No.	Change in Effect
Title Page	Original	E3110-1	Original				
ii	Original	(1) thru (5)	Original				
Letter of Promulgation	Original						
iv thru xii	Original						
E3100-1	Original						
E3100-2	Original						
E3100-3	Original						
E3100-4	Original						
E3100-5	Original						
E3100-6	Original						
E3100-7	Original						
E3100-8	Original						
E3100-9	Original						
E3100-10	original						

ECG-N5

CHANGE RECORD

Number and Description of Change	Entered by	Date

HAZARD AWARENESS NOTICE

All personnel involved in operation or maintenance of electronic equipment must be thoroughly familiar with the electronic equipment safety precautions contained in Electronic Installation and Maintenance Book, General, NAVSEA SE000-00-EIM-100, section 3, and Naval Ships' Technical Manual, chapter 300, S9086-KC-STM-010/CH-300, section 2. In addition, attention is directed to the Navy Safety Program Instructions, OPNAVINST 5100.19 (series) and 5100.23 (series), and the safety training requirements contained in CNETINST 1500.20 (series).

This equipment employs voltages which are dangerous and may be fatal if contacted by operating or maintenance personnel. There are mechanical safety devices associated with this equipment that must be maintained in a constant state of readiness to preclude causing injury to personnel and/or damage to equipment. Extreme caution must be exercised when working with or handling this equipment. Some components are extremely heavy. Rigid pre-inspections must be made to handling equipment to ensure their safety and safety summaries must be read to the handling teams prior to conducting dangerous evolutions. Hazard awareness dictates that this equipment must always be viewed as an integral part of a system and not as a component. While every practical precaution has been incorporated into this equipment, it is not possible or practical to try to list every condition or hazard that you may encounter. Therefore, all operating or maintenance personnel must at all times observe as a minimum, the following:

DON'T SERVICE OR ADJUST ALONE

Under no circumstances will a person operate or maintain equipment without the immediate presence or assistance of another person capable of rendering aid. Unless under direct supervision of a qualified person, no person shall operate or maintain equipment for which they are unqualified.

DON'T TAMPER WITH INTERLOCKS

Reliance on interlock circuits to remove power from the equipment is never to be assumed. Until operation of the interlock is verified, equipment is assumed to be in the hazardous mode of operation. Under no circumstances will any access gate, door, or interlock switch be removed, bypassed, or modified in any way by other than authorized maintenance personnel and then only after observing proper tag-out procedures.

HAZARD AWARENESS NOTICE (Continued)

REPORT ALL HAZARDS

If at any time you detect a hazard, it is your responsibility to report the hazard to ensure that it is corrected. If the hazard is detected during a teaching session, verbally call a "TRAINING TIME OUT" (TTO), raise a clenched fist if the verbal TTO signal cannot be heard. Stop any exercise if a trainee indicates a TTO. If at any time you detect a "new" or "suspected new" hazard, particularly due to equipment installation, modification, or repair, it is your responsibility to ensure that a SAFETYGRAM is submitted to the Naval Safety Center, Norfolk, VA in accordance with OPNAVINST 5102.1 (series). This will ensure that this hazard will be investigated, publicized, or corrected, as required. Additionally, SSPINST 3100.1 (series) requires SWS personnel to submit special check TFRs when a potential or actual unsafe condition is noticed that could cause injury to personnel and/or damage to equipment. When a problem/failure occurs involving the safety of personnel or equipment and it cannot be immediately resolved by command/technical assistance on-site, the TFR data shall be transmitted to SSP and others by Naval Message.

INFORM TRAINEES OF THEIR RESPONSIBILITY FOR SAFETY

Inform trainees to verbally call a TTO if they detect a hazardous condition during any teaching session (lab or theory), or to raise a clenched fist to indicate a TTO if the verbal command cannot be heard.

TABLE OF CONTENTS

HOW TO USE THE EXERCISES

INTRODUCTION TO THE EXERCISE CONTROLLER GUIDE

This Exercise Controller Guide (ECG) is a compilation of independent exercises to be used with the Computer Base Trainer. Each exercise provides scenarios and selected procedures to accomplish specific, predetermined training objectives.

The exercises are designed to provide an effective means to develop and reinforce those skills required as a basic navigation watchstander. Each exercise supports a controller-to-trainee relationship (to be us y a controller to conduct either individual or team training and assessment). The core of the ECG is a series of training exercises which can be used to sequentially represent a normal refit period and/or patrol period.

The exercises contained in this ECG are used in conjunction with formal and informal courses of instruction: TRIDENT Common Navigation Technician Conversion (A-193-0375), TRIDENT Navigation Operator (A-193-0378), TRIDENT Navigation Maintenance (A-193-0379), ESGN Theory and Maintenance I (A-193-0389), ESGN Theory and Maintenance II (A-193-0390), and responsive training. Many exercises may be applicable for use in other curricula and will be identified at a later date.

EXERCISE SELECTION

The key to using the ECG is the process of selecting the exercises for use in training. Two methods are available for use by the school's instructional staff: the prescribed order identified by formal courseware or by use of the Exercise Selection Index (ESI).

The exercise selection by A-193-0375, A-193-0378, A-193-0379, A-193-0389, and A-193-0390 has been designed to represent those tasks which would normally be executed/encountered during refit and patrol periods. The order of selection established will expose the trainee to those tasks, in the proper sequence, necessary to perform a refit and patrol.

Exercise selection utilizing the index is an alternate method of selecting one or more exercises for a training program. Depending on the program and its purpose, exercises on a particular type of operational task or training level may be included which are suited to the individuals being trained. This method is useful when needed training emphasis is known.

EXERCISE SELECTION INDEX

EXERCISE NUMBER	EXERCISE OBJECTIVE	EXERCISE SCENARIO	SYS/SUBSYSTEM CONFIGURATION	EXER LENGTH (MIN.)	TRNG LEVEL (TOS)	DIFF INDEX
E3100-1	To provide training necessary for students to operate the Computer Based Trainer Student Workstation	Computer Based Trainer Introduction	Computer Based Trainer	30	01	Basic
E3100-2	To provide training necessary for students to describe the inertial navigation principles used in the Navigation Subsystem	Inertial Navigation Principles	Computer Based Trainer	60	T1	Basic
E3100-3	To provide training necessary for students to describe the three Global Positioning System (GPS) segments and concepts of GPS fix taking	Global Positioning System Principles	Computer Based Trainer	60	T1	Basic
E3100-4	To provide training necessary for students to describe the NSS Correlation SONAL principles used in the Navigation Subsystem for the D5 Weapon System	Correlation Velocity Principles	Computer Based Trainer	60	T1	Basic
E3100-5	To provide training necessary for students to perform normal and abnormal EM Log calibration procesdures	EM Log Calibration	Computer Based Trainer	30 or 45	01 or 02	Basic or Advanced

EXERCISE TITLE SHEET

EXERCISE NO.	TITLE	SHEET
E3100-6	NSS FIX TAKING	X of 5

OBJECTIVE:

1. To provide training necessary for students to perform basic and advanced NSS fix taking procedures

Exercise Length (Min)

Training Level (TOS)

Difficulty Index
01 or 02

REQUIREMENTS:

1. Equipment:
   a. Computer Based Trainer
   b. Parallel Rule
   c. Scotch Tape
   d. Tracing Paper
2. Publications:
   a. OD 61600, Vols. 1,3, and 4
   b. OP 4637, Vol. 5, Parts 1 and 2 (Kings Bay)

TRAINING APPROACH: Basic or Advanced

This exercise demonstrates the operational tasks associated with NSS fix taking.

SPECIAL INSTRUCTIONS:

Instructors must have the Computer Based Trainer set up and students logged on as called out in Exercise E3100-1.

Students must have completed Exercise E3100-1 prior to beginning this exercise. Inform the students that the Map Record Number (MRN) for this exercise is 55.

EXERCISE TITLE SHEET (Continued)

EXERCISE NO.	TITLE:	Sheet
E3100-6	NSS FIX TAKING	xi of 5
OBJECTIVE:		Exercise Length (Min)
		Training Level (TOS)
		Difficulty Index
REQUIREMENTS: C. OP 4671, Vol 3, Parts 1 and 2 (Bangor)	TRAINING APPROACH: SPECIAL INSTRUCTIONS:	

EXERCISE DATA SHEET

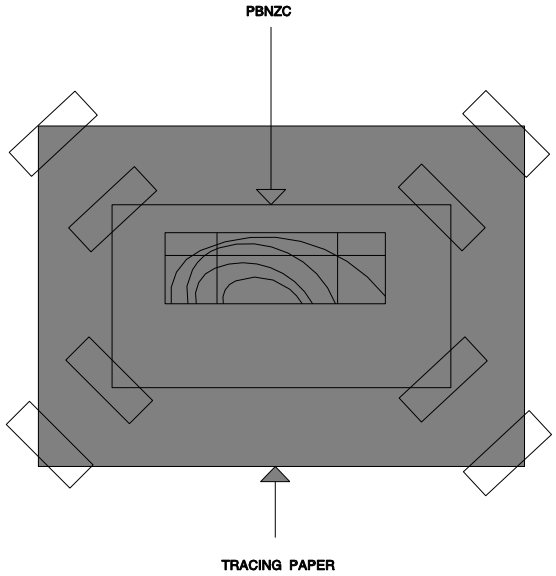
EXERCISE NO.	TITLE:	Sheet
E3100-6	NSS FIX TAKING	Xii of 5

A. Datasheet Index - Required for each student (Basic or Advanced)

1. Zone Evaluation Datasheet (ZED) (Blank)

2. Precise Bathymetric Navigation Zone (U) PBNZC LANT 12-123 (Kings Bay) or Precise Bathymetrics Navigation Zone (U) PBNZC PAC 12-123 (Bangor)

B. Typical Chart Layout at Student Workstation (Advanced)



EVENT-ACTIVITIES SHEET

EXERCISE NO.	TITLE:	Sheet
E3100-6	NSS FIX TAKING	Xiii of 5

Time	Event	Controller Activity	Operator Activity
Pre-comex	1. Class Options	1. Select **Lesson Options** and then **Class** From the Instructor's Status Monitoring Screen. On the Lesson Options screen, Select: a. under the Class group, the appropriate Class number b. under the Lesson group, **NSS Fix Taking** c. under the Options group, **Basic** or **Advanced** and **Enable lesson**	
Pre-0 comex	2. PBNZC Setup	2. For the Advanced option, direct the students To set up the PBNZC as illustrated on the Exercise Data Sheet.	2. Set up PBNZC.
Pre-comex	3. Course Selection	3. Refer to the Special Instructions on the Exercise Title Sheet of this exercise. Direct the students to select **Operation** for course selection.	3. Select **Operation**.

EVENT-ACTIVITIES SHEET (Continued)

EXERCISE NO.	TITLE:	Sheet
E3100-6	NSS FIX TAKING	xiv of 5

Time	Event	Controller Activity	Operator Activity
T+0	4. Comex NSS Fix Taking	4. Direct the students to perform the exercise by selecting **NSS Fix Taking.**	4. Select **NSS Fix Taking.**
T+10	5. Set & Drift Compensation	5. For the Advanced Option, direct the students to plot the ship's position on the PBNZC as they transit the Feature Area and to notify CONN if a course change is required.	5. Plot Ship's position on the PBNZC.
T+90	6. Main Menu	6. Direct the students to return to the Main Menu upon completion of the lesson.	6. **EXIT** to the Main Menu upon completion of the lesson.
T+ as re-quired	7. Student Log Off	7. If required, direct the students to log off.	7. **EXIT** to the Log on screen.

MASTER MATERIALS LIST

Course: TRIDENT Common Navigation Technician Computer Based Trainer

Class Size: Maximum of 10

A. TEXTS

Navy No.	Title	Per Tr.	Per Inst.	Per Cl.
ECG-N5	TRIDENT Common Navigation Technician Computer Based Trainer Exercise Controller Guide prepared by Chief of Naval Education and Training		1	

B. REFERENCES

Navy No.	Title	Per Tr.	Per Inst.	Per Cl.
OD 61600	TRIDENT SWS Common Navigation Standard Operating Procedures (CONFIDENTIAL DOCUMENT)	1	1	
OP 4637, Vol. 5, Part 1 Navigation Equipment (Kings Bay)	Navigation Training System for TRIDENT SWS Common	1		
OP 4637, Vol. 5, Part 2 Navigation Equipment (Kings Bay)	Navigation Training System for TRIDENT SWS Common	1	1	

MASTER MATERIALS LIST (Continued)

B. REFERENCES (Continued)

Navy No.	Title	Per Tr.	Per Inst.	Per Cl.
OP 4671, Vol. 3, Part 1 Navigation Equipment (Bangor)	Navigation Training System for TRIDENT SWS Common	1		
OP 4671, Vol. 3, Part 2 Navigation Equipment (Bangor)	Navigation Training System for TRIDENT SWS Common 1	1		
0652-026-7, Vol. 3, Parts 1 and 3	ESGN Mk 1 Mod 0 Description and Fault Isolation Support Data	1	1	
0652-026-8	ESGN Mk 1 Mod 0 Fault Isolation and Repair	1	1	
0652-027-4	ESGN Mk 1 Mod 0 Operation and Preventive Maintenance	1	1	
0652-031-5, Vol. 2, Parts 1, 2, and 4	TRIDENT SWS Common Navigation Subsystem	1	1	

MASTER MATERIALS LIST (Continued)

C. EQUIPMENT

Item No.	Nomenclature	Part No.	Tech. Ref.	Per Tr.	Per Inst.	Per Cl.
1.	Computer Based Trainer					1
2.	Parallel Rule			1		
3.	Scotch Tape					1
4.	Tracing Paper (roll)					1

D. OTHER

Item No.	Description	Per Tr.	Per Inst.	Per Cl.
1.	AAA Setup Datasheet (filled in)	1	1	
2.	Berthing Locations List	1	1	
3.	Data Ident: A_-2601, ESGN Optical Alignment Terms (filled in)	1	1	
4.	Data Ident: A_-2602, Polar Gyro Parameters Datasheet (blank)	1	1	
5.	Data Ident: A_-2602, Polar Gyro Parameters Datasheet (filled in)	1	1	
6.	Data Ident: A_-2603, Equatorial Gyro Parameters Datasheet (blank)	1	1	

MASTER MATERIALS LIST (Continued)

G. OTHER (Continued)

Item No.	Description	Per Tr.	Per Inst.	Per Cl.
7.	Data Ident: A_-2603, Equatorial Gyro Parameters Datasheet (filled in)	1	1	
8.	Data Ident: A_-2604, ESG Test Stand Parameters Datasheet (blank)	1	1	
9.	Data Ident: A_-2604, ESG Test Stand Parameters Datasheet (filled in)	1	1	
10.	Data Ident: A_-2605, EMA Calibration Worksheet (blank)	1	1	
11.	Data Ident: A_-2606, EMA/Platform/Optical Parameters Datasheet (blank)	1	1	
12.	Data Ident: A_-2606, EMA/Platform/Optical Parameters Datasheet (filled in)	1	1	
13.	Precise Bathymetric Navigation Zone (U) PBNZC LANT 12-123 (Kings Bay)	1	1	
14.	Precise Bathymetric Navigation Zone (U) PBNZC PAC 12-123 (Bangor)	1	1	
15.	Worksheet 2-1, Optical Calibration Case Mirror to ORA Worksheet (blank)	1	1	
16.	Worksheet 2-2, Optical Calibration U Mirror Worksheet (blank)	1	1	
17.	Worksheet 92-1 (blank)	1	1	
18.	Zone Evaluation Datasheet (ZED) (blank)	1	1	

PROFILE ITEM-TO-EXERCISE OBJECTIVE ASSIGNMENT CHART

TABLE	ITEM/ SUBITEM	TRNG LEVEL (TOS)	ECG VOL	EXERCISE NO.	EXER OBJ
E3100	1-1-5				
	a	T1		E3100-2	1
	b	T1		E3100-3	1
	d	T1		E3100-4	1
	2-1-1	01			
	b	02		E3100-6	1
	b	01		E3100-6	1
	e	01		E3100-5	1
	e	01		E3100-7	1
	2-1-2	02		E3100-5	1
	2-1-2	02		E3100-7	2
	2-1-2	02		E3100-8	1
	2-1-2	02		E3100-9	1
	2-1-2	02		E3100-10	1

TABLE	ITEM/ SUBITEM	TRNG LEVEL (TOS)	ECG VOL	EXERCISE NO.	EXER OBJ
E3110	2-2-1	C1		E3110-1	1
E3110	2-2-1	C2		E3110-1	1
E3110	2-2-3	C1		E3110-1	1
E3110	2-2-3	C2		E3110-1	1
E3110	2-2-4	C1		E3110-1	1
E3110	2-2-4	C2		E3110-1	1
E3110	2-2-5	C1		E3110-1	1
E3110	2-2-6	C1		E3110-1	1
E3110	2-2-7	C1		E3110-1	1
E3110	2-2-9	C2		E3110-1	1
E3110	2-2-10	C1		E3110-1	1
E3110	2-2-10	C2		E3110-1	1

TAB A-10

EXERCISE CONTROLLER GUIDE

SUPPORTED BY A LESSON PLAN

CHANGE 5
A-123-0001

TORPEDOMAN TRAINING

INSTRUCTOR GUIDE

1 JUNE 1996

This example shows that the CCA has authorized use of the Optional Name—*INSTRUCTOR GUIDE*.

PUBLISHED BY DIRECTOR OF SHORE/TECHNICAL TRAINING (CNET T2)
A-10-3

LIST OF EFFECTIVE PAGES

Page No.	Change in Effect	Page No.	Change in Effect	Page No.	Change in Effect	Page No.	Change in Effect
Title Page	Change 5	2C01-1-2-1, 2C01-1-2-2	Change 3	2C06-1-1-4 thru 2C06-1-1-14	Change 3	M203-1-2-3 thru M203-1-2-13	Change 4
ii thru iiB	Change 5	2C01-1-2-3, 2C01-1-2-4	Change 5	2C06-1-1-15, 2C06-1-1-16	Change 5	M203-1-2-14 thru M203-1-2-18	Change 3
Letter of Promulgation	Original	2C01-1-2-5 thru 2C01-1-2-21	Change 3	2C06-1-1-17 thru 2C06-1-1-24	Change 3	M203-1-3-1 thru M203-1-3-22	Change 3
iv	Original	2C01-1-2-22	Change 4	Tab Part M203	Change 3	M203-1-4-1 thru M203-1-4-6	Change 3
v	Change 3	2C01-1-2-23 thru 2C01-1-2-28	Change 3	M203-1-1	Change 4	M203-1-5-1, M203-1-5-2	Change 5
vi	Change 4	Tab Part 2C06	Change 3	M203-1-2	Change 3	M203-1-5-3 thru M203-1-5-5	Change 3
vii	Change 3	2C06-1-1, 2C06-1-2	Change 3	M203-1-1-1, M203-1-1-2	Change 5	M203-1-5-6, M203-1-5-7	Change 5
viii thru xxvi	Change 5	2C06-1-1-1 thru 2C06-1-1-3	Change 5	M203-1-1-3 thru M203-1-1-12	Change 3	M203-1-5-8	Change 3
Tab Part 2C01	Change 5			M203-1-2-1, M203-1-2-2	Change 5		
2C01-1-1, 2C01-1-2	Change 3						
2C01-1-1-1 thru 2C01-1-1-18	Change 5						

LIST OF EFFECTIVE PAGES (Continued)

Page No.	Change in Effect	Page No.	Change in Effect	Page No.	Change in Effect	Page No.	Change in Effect
M203-1-6-1 thru M203-1-6-4	Change 3						
M203-1-7-1 thru M203-1-7-6	Change 3						
(1) thru (18)	Change 5						
							iii

CHANGE RECORD

Number and Description of Change	Entered By	Date

COURSE LEARNING OBJECTIVES

Upon successful completion of this course, the trainees will acquire the following knowledge and skills and be able to:

Knowledge:

1. State the purpose, function, and location and describe the documentation of the:

    a. Torpedo Launching System.
    b. MK 48 Torpedo Ancillary Equipment
    c. Ordnance Handling Equipment

2. Describe the theory necessary to support and understand the performance of all operational tasks, and basic corrective maintenance without going into detailed logic, circuit analysis, individual program flow diagrams, or detailed mechanical component breakdown of the:

    a. Torpedo Launching System
    b. MK 48 Torpedo and Anclillary Equipment
    c. Ordnance Handling Equipment

Skills:

1. Perform all operational procedures with supervision on the:

    a. Torpedo Launching System
    b. MK 48 Torpedo and Related Equipment

        (1) OTTO fuel spill procedures
        (2) Hot Run

    c. Ordnance Handling Equipment

2. Perform documented fault isolation and repair procedures with supervision on the:

    a. MK 48 Torpedo and Related Equipment
    b. Torpedo Launching System
    c. Ordnance Handling Equipment

PART 2CO1

TORPEDO LAUNCHING SYSTEM

This part contains information from PPP tables 2CO1, 2CO6, and M2O3.

SECTION 1. THEORY AND OPERATION OF TORPEDO LAUNCHING SYSTEM
(T1,T2,O1,O2)

SECTION 1. THEORY AND OPERATION OF THE TORPEDO LAUNCHING SYSTEM. (TLS)

TOPIC 2. GENERAL, PHYSICAL, FUNCTIONAL INTERFACE, AND OPERATIONAL DESCRIPTION AND OPERATIONS OF THE TORPEDO LAUNCHING SYSTEM

Topic Learning Objectives

Upon successful completion of this topic, the trainee will be able to:

1. State the purpose of the Torpedo Launching System to support normal operation.

2. State the components of the Torpedo Launching System to support normal operation, including the function of each.

   a. MK 68 Torpedo Tube
   b. Defensive Weapons Launch Console (DWLC)
   c. MK 17 Torpedo Ejection Pump (TEP)
   d. Guidance Wire Streamed Detector System

3. State the security requirements for the Torpedo Launching System to support normal operation.

4. Define the abbreviations, terms, and symbols used with the Torpedo Launching System to support all operations.

5. State the operational characteristics, capabilities, and limitations of the Torpedo Launching System to support all:

   a. Modes of operation
   b. Types of weapons/devices

6. Describe all major and associated components of the Torpedo Launch System to support all operations.

   a. Barrel
   b. Breech door and breech door mechanism
   c. Muzzle door and muzzle door mechanism
   d. Slide valve
   e. Stop mechanism
   f. Interlock mechanism
   g. Turbine ejection system
   h. Control valves
   i. Shutter door assembly
   j. Port/stbd miscellaneous valve position panels
   k. Indicator panel
   l. Ejection pump fuse panel
   m. Port/stbd torpedo tube fuse panels
   n. Weapon Launch Console MK 96 Mod 0
   o. Port/stbd torpedo tube control panels
   p. Power supply sections
   r. Guidance wire streamed detector

TOPIC 2. GENERAL, PHYSICAL, FUNCTIONAL INTERFACE, AND OPERATIONAL DESCRIPTION AND OPERATIONS OF THE TORPEDO LAUNCHING SYSTEM (Continued)

7. Describe the functional operation of the Torpedo Launching System to support all operations, including control, sequential operation, and indications.

   a. Prelaunch
   b. Launch
   c. Postlaunch

8. Describe the function of each control, indicator, and actuator of the Torpedo Launching System in each position, condition, and color to support all operations. Include name, reference designator and indications.

9. Describe the physical and functional interface between the Torpedo Launching System and other equipment/subsystem and systems to support all operations to include:

   a. Power Sources
   b. Pneumatics
   c. Hydraulics
   d. Water
   e. Valves
   f. Manifolds

10. Describe authority, and regulations, and personnel and equipment safety precautions which are to be observed during all operations of the Torpedo Launching System. Include Electrostatic Discharge.

11. Describe normal operational tasks of the Torpedo Launching System as contained in applicable documentation.

    a. Prelaunch procedures
    b. Launch procedures
    c. Postlaunch procedures

12. Describe indications which should or may occur during all operations of the Torpedo Launching System as contained in applicable documentation, including alarms and indicators.

13. Describe tasks for casualty operation of the Torpedo Launching System as contained in applicable documentation.

14. Perform tasks for operation of the Torpedo Launching System to include prelaunch, launch, and postlaunch procedures to support normal operations.

15. Recognize and interpret all indications occurring during the performance of the operating procedures and perform appropriate operator actions to support all operations.

TOPIC 2. GENERAL, PHYSICAL, FUNCTIONAL INTERFACE, AND OPERATIONAL DESCRIPTION AND OPERATIONS OF THE TORPEDO LAUNCHING SYSTEM (Continued)

16. Perform tasks for casualty operation of the Torpedo Launching System.

17. Describe Training Safety to include Training Time Out (TTO).

Trainee Preparation

A. Trainee Support Material:

1. None

B. Reference Publications:

1. None

C. Reference Drawings:

1. None

Instructor Preparation

A. Review Assigned Trainee Material.

B. Reference Publications:

1. NAVSEA OD 44979, Vol. 4
2. NAVSEA OD 4288, Vol. 1
3. NAVSEA S9SSB-X9-SSM-BEO/(U)726V2P3C9 (SSM V2P3C9)
4. NAVSEA S9SSB-X9-SSM-RDO/(U)726V6P3B3B (SSM V6P3B3B)
5. NAVSEA 0987-LP-059-6010
6. OPNAVINST 5510.1 Series
7. NAVSEA OD 44979 Vol. 1, Part 1
8. COMSUBLANT/PACINST C8500.4 Series
9. NAVSEA SW282-DO-MMO-010/FCS MK 118/0
10. NAVSEA SW519-AA-MMA-010/TTCC
11. NAVSEA S9558-AA-MMA-030
12. NAVSEA S9558-AA-MMA-060
13. NAVSEA S9558-AA-MMA-100
14. NAVSEA 0947-LP-247-1010
15. CNTECHTRA-ST1, Vol. 39
16. CNETINST 1500.20

C. Training Materials Required:

1. ECG-W1

2. Publications:

a. NAVSEA OD 44979, Vol. 4
b. NAVSEA OP 4288, Vol. 1
c. NAVSEA S9SSB-X9-SSM-BEO/(U)726V2P3C9 (SSM V2P3C9)

TOPIC 2. GENERAL,PHYSICAL, FUNCTIONAL INTERFACE, AND OPERATIONAL DESCRIPTION AND OPERATIONS OF THE TORPEDO LAUNCHING SYSTEM (Continued)

d. NAVSEA S9SSB-X9-SSM-RDO/(U)726V6P3B3B (SSM V6P3B3B)
e. NAVSEA 0987-LP-059-6010
f. NAVSEA OD 44979, Vol. 1
g. NAVSEA SW519-AA-MMA-010/TTCC

3. Films:

a. MK17/0 Ejection System
b. Electrostatic Discharge (ESD)

4. Transparencies:

a. 2C01-1-1-1
b. 2C01-1-1-2
c. 2C01-1-1-3
d. 2C01-1-1-4
e. 2C01-1-1-5
f. 2C01-1-1-6
g. 2C01-1-1-7
h. 2C01-1-1-8
i. 2C01-1-1-9
j. 2C01-1-1-10
k. 2C01-1-1-11

5. Equipment:

a. Torpedo Tube Trainer Laboratory
b. Stop Watch
c. Simpson 260 or Fluke

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
11. Safety precautions	11. Refer to SSM V2P3C9, paragraph 3.1. Reference NAVSEA OP 4288 Vol. 1, pages xi and xii and CNETINST 1500.20.
a. Personnel	
(1) TTO signals (verbal/gestures) (2) Mishap Plan	
	NOTE Take class to lab to perform exercises in ECG-W1, insure required tools and equipment are in lab.
b. Equipment	
	NOTE Stress Safety.
12. Operation	

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
a. Startup/infrequent modes of operation	a. Refer to SSM V6P3B3B, OI V6P3B3B, OI 631-12. Direct trainee to perform ECG-W1 Exercises.
(1) Initial conditions	
(a) Recognize/interpret indications	NOTE: The RIA ties the Discussion Point to be covered to a specific procedure to be followed onboard (approved operational procedure) with the exercise being performed in the Lab/Trainer
(2) Startup	
(a) Recognize/interpret indications	

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(a) Recognize/interpret indications	(a) Direct trainees to perform ECG-W1 Exercises.
c. Casualty	
(1) Jettison	(1) Refer to NAVSEA OD 44979, Vol. 4, OPs 3.5 9.2. and Direct trainees to perform ECG-W1 Exercises.
(a) Recognize/inter-pret indications	

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
13. Review and summary	
14. Critique	

MASTER MATERIALS LIST

Course: Defensive Weapons Ordnance Subsystem Replacement

Class Size:As per the Formal Schools Catalog

A. TEXTS

Navy No.	Title	Per Man	Per Inst.	Per Cl.
A-123-0001	Torpedoman Training IG		1	
ECG-W1	**Exercise Controller Guide ECG**		1	

B. REFERENCES

Navy No.	Title	Per Man	Per Inst.	Per Cl.
CNETINST 1500.20	(CNETINST 1500.20 Title)		1	
COMSUBPACINST 4855.1	Quality Assurance Manual		1	1
COMSUBLANT/PACINST C8500.4	Convention Weapons Manual		1	
TTF-9112/TTF-8203	Instructor/Maintenance Handbook for Torpedo Tube Trainer Laboratory		1 of each	
MIP 7500 series MRCs	Torpedo Mk 48		1	1
CNTECHTRA - ST1, Vol. 39	Fault Insertion Guide - Torpedo Launching System		1	
NWP 72-1 (C)	Submarine Torpedo Reference Manual		1	

(1)

MASTER MATERIALS LIST (Continued)

E. GRAPHICS (Continued)

Transparency No.	Title	Per Cl.	Source	Figure No.
M203-1-3-3	Hydraulics	1	NAVSEA OP 4023	8-2
M203-1-3-4	Tube Exit	1	NAVSEA OP 4020	3-11
M203-1-3-5	Warhead arming (C)	1	NAVSEA OP 4020	3-1
M203-1-3-6	Pre-enable run (C)	1	NAVSEA OP 4020	3-13
M203-1-3-7	MK 21 Safing Exploder Top	1	TTF Original	

2. Wall Charts

Wall Chart No.	Description	Per Cl.	Source	Figure No.

None

F. SUPPORT MATERIALS

1. ECG-W1 Exercises. All instruction sheets (i.e. Problem Sheets, Information Sheets, etc.) are A-123-0001, series. (All instruction sheets for this course are contained within problem guide, A-123-0001).

(13)

PROFILE ITEM-TO-TOPIC OBJECTIVE ASSIGMENT CHART

TABLE	ITEM	TOS	VOL	PART	SECT		LRNG OBJ
2C01	1-1-1	T1		2C01	1	2	1
	1-1-2	T1			1	2	2
	1-1-3	T1			1	2	4
	1-1-3	T2			1	2	4
	1-1-4	T1			1	2	5
	1-1-4	T2			1	2	5
	1-1-5	T1			1	2	3
	1-2-1	T1			1	2	6
	1-2-1	T2			1	2	6
	1-2-2	T1			1	2	8
	1-2-2	T2			1	2	8
	1-3-1	T1			1	2	7
	1-3-1	T2			1	2	7
	1-3-2	T1			1	2	8
	1-3-2	T2			1	2	8
	1-4-1d	T1			1	2	9
	1-4-1d	T2			1	2	9
	1-4-1e	T1			1	2	9
	1-4-1e	T2			1	2	9
	1-4-2a	T1			1	2	9
	1-4-2a	T2			1	2	9
	1-4-2d	T1			1	2	9
	1-4-2d	T2			1	2	9
	1-4-2e	T1			1	2	9
	1-4-2e	T1			1	2	9
	1-4-2f	T1			1	2	9
	1-5-1	T1			1	2	10
	1-5-1	T2			1	2	10

TABLE	ITEM	TOS	VOL	PART	SECT	TOPIC	LRNG OBJ
2CO1 (Cont)	1-5-2	T1			1	2	11
	1-5-3	T1			1	2	12
	1-5-3	T2			1	2	12
	1-5-4	T2			1	2	13
	1-5-6	T1			1	2	10
	1-5-6	T2			1	2	10
	1-7-1	T1			1	1	1
	2-1-1	**01**			**1**	**2**	**14**
	2-1-2	**01**			**1**	**2**	**15**
	2-1-2	**02**			**1**	**2**	**15**
	2-1-3	**02**			**1**	**2**	**16**
	2-1-5	01			1	2	17
	2-1-5	02			1	2	17
2CO6	1-1-1	T1		2CO6	1	1	1
	1-1-2c	T1			1	1	2
	1-1-2d	T1			1	1	2
	1-1-2e	T1			1	1	2
	1-1-2f	T1			1	1	2
	1-1-3	T1			1	1	3
	1-1-3	T2			1	1	3
	1-1-4	T1			1	1	4
	1-1-4	T2			1	1	4
	1-1-5	T1			1	1	5
	1-2-1c	T1			1	1	2
	1-2-1c	T2			1	1	2
	1-2-1d	T1			1	1	2
	1-2-1d	T2			1	1	2
	1-2-1d	T1			1	1	2

(15)

TORPEDOMAN TRAINING

EXERCISE CONTROLLER GUIDE

1 JUNE 1996

PUBLISHED BY DIRECTOR OF SHORE/TECHNICAL TRAINING (CNET T2)

LIST OF EFFECTIVE PAGES

Page No.	Change in Effect	Page No.	Change in Effect	Page No.	Change in Effect	Page No.	Change in Effect
Title Page	Change 5	(1), (2)	Change 3				
ii	Change 5	(3) thru (6)	Change 5				
Letter of Promulgation	Original	(7)	Change 3				
iv thru vi	Change 3						
vii thru xii	Change 5						
1 thru 4	Change 3						
5, 6	Change 5						
7	Change 3						
8	Change 5						
W2CO2-1	Change 3						
W2C02-3	Change 5						
W2CO1-1	Change 3						
W2CO2-2	Change 3						

HAZARD AWARENESS NOTICE

All personnel involved in operation or maintenance of electronic equipment must be thoroughly familiar with the electronic equipment safety precautions contained in Electronic Installation and Maintenance Book NAVSEA 0967-LP-000-0100, section 3, and NSTM, Electronics, chapter 400, NAVSEA S9086-ND-STM-000/CH 400, section 2. In addition, attention is directed to the Accident Prevention Manual, OPNAVINST 5101.2 series, and Safety procedures for Conducting training in arduous or potentially high risk activities, CNETINST 1500.20.

This equipment employs voltages which are dangerous and may be fatal if contacted by operating or maintenance personnel. Extreme caution must be exercised when working with this equipment. Hazard awareness dictates that this equipment must always be viewed as integral part of a system and not as a component. While every practical precaution has been incorporated into this equipment, it is not possible or practical to try to list every condition or hazard that you may encounter. Therefore, all operating or maintenance personnel must at all times observe as a minimum, the following:

DON'T SERVICE OR ADJUST ALONE

Under no circumstances will a person operate or maintain equipment without the immediate presence or assistance of another person capable of rendering aid. Unless under direct supervision of a qualified person, no person shall operate or maintain equipment for which he is not qualified.

DON'T TAMPER WITH INTERLOCKS

Reliance on interlock circuits to remove power from the equipment is never to be assumed. Until operation of the interlock is verified, equipment is assumed to be in the hazardous mode of operation. Under no circumstances will any access gate, door, or interlock switch be removed, bypassed or modified in any way by other than authorized maintenance personnel and then only after observing proper tag-out procedures.

HAZARD AWARENESS NOTICE (Continued)

REPORT ALL HAZARDS

If at any time you detect a hazard, it is your responsibility to report the hazard to ensure that it is corrected. If at any time you detect a "new" or "suspected new" hazard, particularly due to equipment installation modification or repair, it is your responsibility to ensure that a SAFETYGRAM is submitted to the Naval Safety Center, Norfolk, VA, in accordance with OPNAVINST 5102.1 series. This will ensure that this hazard will be investigated, publicized, or corrected, as required.

SAFETY SUMMARY

The following paragraphs summarize, for the benefit of the Weapons Department and qualified launcher personnel, the safety rules and general safety precautions for the operation of pyrotechnics, countermeasures, evasion devices, and their launcher systems. Familiarity with and adherence to the applicable safety rules and safety precautions are mandatory for all personnel involved in the operation and maintenance of the system. Specific safety precautions are contained in the checklists and operating procedures, as appropriate.

1. SAFETY STANDARDS

The following safety standards apply to all phases of operations involving the devices and their launcher systems. The controls and rules are designed to provide positive measures to:

a. Ensure that a launched device is precluded from striking the firing ship.

b. Prevent an inadvertent/accidental launching.

c. Ensure that the disposition, handling, launching, and aborting operations of the device launcher system will be such as to minimize the risk of injury to personnel and or equipment.

2. MK 48 SAFETY PRECAUTIONS

a. Explosive Precautions

HAZARD AWARENESS NOTICE (Continued)

(1) These units contain high explosives. Do not strike or drop high explosive components. No sparks, open flames, or other sources of ignition are to be present when working with high explosives.

(2) The arming device contains an explosive charge and must be handled with care. The explosive charge is relatively insensitive, but the arming device should not be subjected to physical shocks or unnecessary handling.

(3) The warhead contains high explosives. Observe all precautions for handling explosives. An armed exploder must NOT be removed from the torpedo. If the exploder is armed, it must be removed by EOD personnel only. (Refer to NWP-72-1.)

(4) If the exploder tube feeler index is not in the SAFE position and flush with the exploder head, rotate the Manual Safing Switch to the RECOVER position and notify EOD personnel.

(5) A safety screw can be installed in the exploder only if the tube feeler is in the SAFE position. If the safety screw is not available or cannot be installed, reject the exploder.

b. OTTO FUEL PRECAUTIONS

(1) For any OTTO fuel detector reading in excess of 0.2 ppm, OTTO fuel spill procedures must be implemented.

(2) Food, drink, and tobacco are not permitted in OTTO fuel spill areas.

(3) Organic cartridge respirators or oxygen breathing apparatus are not to be used in combatting OTTO fuel-associated casualties, including cleanup of spills or combustion by-products.

(4) A minimum of two people will be present during operations involving OTTO fuel.

HAZARD AWARENESS NOTICE (Continued)

(5) OTTO fuel, a monopropellant, has a flash point of 265° F and does not require oxygen to sustain ignition.

(6) (MK 48) Exhaust gases from a HOT RUN MK 48 are extremely toxic and constitute personnel hazards by inhalation, ingestion, and skin absorption.

c. ADDITIONAL MK 48 SAFETY PRECAUTIONS

(1) Mechanical Precautions. To preclude the possibility of the torpedo engine lubricating oil draining out of the sump, the MK 48 torpedo shall not be rotated in excess of 90 degrees, except for defueling.

(2) Operating Precautions. Under no circumstances will fire control transmission checks be conducted on a MK 48 torpedo outside the torpedo tube.

3. HANDLING PRECAUTIONS

a. Handling equipment shall never be loaded to its maximum rated capacity and must be inspected prior to use.

b. Hooks used in handling procedures must have safety latches or be moused.

c. Do not allow weapon to be unrestrained, in any direction, at any time.

d. At no time will a device be unloaded through the breech without specific permission of the commanding officer.

HAZARD AWARENESS NOTICE (Continued)

4. ELECTRICAL PRECAUTIONS

a. Personnel must be grounded immediately prior to touching an electrical connector or wire connected to the weapon. Personnel must momentarily ground themselves by making bare skin-to-metal contact with the weapon.

b. Personnel working with or near high voltages should be familiar with the methods of artificial respiration.

c. Inspect all electrical connectors for bent pins and other physical damages. Always engage and disengage electrical connectors by holding the connector, never the wire.

d. Operating personnel must at all times observe all safety regulations. Do not replace components or make adjustments inside the equipment with the high-voltage supply turned on. Under certain conditions, dangerous potentials may exist when the power control is in the OFF position, due to charges retained by capacitors. To avoid casualties, always remove power and discharge and ground a circuit before touching it.

e. Under no circumstances should any person reach into or enter the enclosure for the purpose of servicing or adjusting the equipment, except in the presence of someone who is capable of rendering aid.

5. HIGH PRESSURE AIR PRECAUTIONS

(1) Pressurized air leaks produce a jet of high velocity air which normally cannot be seen. Care must be taken to avoid the path of one of these jets. Exposing any part of the body to high velocity air can cause serious bodily injury.

(2) Do not stand in the way of relief valve or bleed discharge ports. Exposing any part of the body to high velocity air can cause serious bodily injury.

HAZARD AWARENESS NOTICE (Continued)

(3) Open all HP air valves slowly whenever the differential pressure across the valve exceeds 200 psig. Avoid a pressurization rate in excess of 200 psig per minute to prevent the possibility of compression ignition or a shock wave that could rapture a pipe or fitting.

6. TOXIC MATERIAL PRECAUTIONS

a. Vapors of most cleaning agents are toxic if inhaled in large quantities for extended periods. Use toxic cleaning agents sparingly and in well-ventilated areas. Be sure that cleaning agent containers are kept closed, except when actually in use. Wash hands thoroughly with soap and warm water after using cleaning agents.

b. Use flammable cleaning agents and paints sparingly and only in well-ventilated areas. Be sure no sparks, open flames, or other source of ignition are present when materials which are flammable are being used.

7. GENERAL GUIDANCE

Use of personnel listed in personnel tables is not required, unless so indicated. The combined tasks of Supervisor, Reader, Tool Handler, and Workers may be performed by a minimum of two personnel, providing procedures are performed properly and the Reader/Worker Routine will be enforced when applicable. Upon completion of an evolution, complete work-log/form entries as required by the Type Commander.

8. WARNINGS

The following WARNINGS are repeated from the technical documentation for protection of personnel.

WARNING

ALL HOOKS WITHOUT SAFETY LATCHES MUST BE MOUSED.

x

HAZARD AWARENESS NOTICE (Continued)

WARNING

WEAPON MUST BE RESTRAINED AT ALL TIMES.

WARNING

VERIFY OTTO FUEL DETECTOR IS RUNNING FOR THIS OP. (OP1.20)

WARNING

THE MK 15 OTTO FUEL DETECTOR SHALL OPERATE CONTINUOUSLY DURING ALL MK 48 TORPEDO HANDLING EVOLUTIONS.

WARNING

IF THE PRESENCE OF OTTO FUEL IS DETECTED, DISCONTINUE EVOLUTION.

WARNING

WHEN OPERATING RAMMER, VERIFY ALL PERSONNEL ARE CLEAR OF AREA AND ARE AWARE RAMMER IS IN MOTION.

TABLE OF CONTENTS

INTRODUCTION

1. INTRODUCTION TO TRAINING SYSTEM

1-1 THE FUNCTIONAL OBJECTIVE OF THE TORPEDOMAN

Team Trainer is to provide refresher training in Normal, and Casualty Operations, During Battlestations Torpedo and Battlestations Missile.

The purpose of this training is to refine and integrate individual Team Member performance into a concerted performance. This is accomplished by emphasizing previously acquired individual Skills/ Knowledge, interteam communication. Recognition of Emergency situations that threaten the ships ability to defend itself.

1-2 TRAINING SYSTEM DISCUSSION

The Training System for the Torpedoman Team Trainer consists of (1) Torpedo Tube Lab, (2) MK 48s, MK 70 Moss System, IG, PG, and ECG. The following paragraphs describe capabilities and limitations of the Torpedo Tube Lab. Summarizes ECG composition, organization, use, maintenance, and describes associated training matter duties.

1-2.1 TORPEDO TUBE LAB

The purpose of the Torpedo Tube trainer is to provide a simulated Torpedo environment in which Battlestations can be conducted.

Intended use is to refresh Reload Party and Torpedoman on procedures and working as a team. Recognition of Casualties, Communications, and decision making.

1-2.2 DISCUSSION

To achieve optimum training and evaluation of the Torpedomen and Reload Party. The training simulates actual operation and equipment necessary in developing, and refining Reload in torpedo tube casualty skills.

The Trainer consists of the following Major Areas:

a. Torpedo Tube
b. Handling Platform
c. Classroom

INTRODUCTION (CON'T)

1-2.2 (con't)

The Instructor Panel in the training area enables the Instructor to control problem fault modules and monitor operations.

2. EXERCISE SECTION

2-1 BACKGROUND

This section presents a procedure for selection of Training Exercise contained in this volume. the Exercise Selection Index provides a matrix of training considerations within a specific Exercise.

2.2 DISCUSSION

The details regarding the specific procedures for Exercise Selection are as follows:

2-2.1 EXERCISE SELECTION BY INDEX

Exercise Selection utilizing the Index is the method for selecting the exercise for a training session. With the Index criteria presented, specific Indexing criteria follow with a brief explanation of each Indexing criterion:

a. The exercise Objective specifies the detailed purpose of the particular Exercise with regards to the Torpedo Team Trainer proficiency.

b. The Exercise Scenario column provides synopsis of conditions under which the Exercise is to be performed.

c. The System/Subsystem configuration column specifies the equipment line-up readiness condition or mode of operation required to conduct the exercise.

d. Exercise Length is a guideline only, safety procedures are of utmost concern and Exercise Length is variable.

e. The Training Level (TOS) column specifies the TOS for each Exercise.

f. The Difficulty Index indicates the degree of exercise difficulty relative to the appropriate TOS. It is helpful in selecting exercises appropriate to the proficiency of the Torpedo Room Team Members.

2.

INTRODUCTION (CON'T)

3. LOCALLY PREPARED EXERCISE

3-1 BACKGROUND

This section presents procedures for local development of the training exercises. This volume provides a cross section of training exercises ready for immediate use within the Training Plan. Optimal use of training system may result in the need for additional materials beyond the limit number of training exercises provided. A portion of this need can be resolved through local training exercise development. This will accomplish two functions: tailor exercises to specific training requirements, and increase the initial exercise library.

3-2 DISCUSSION

Locally prepared exercise should make a significant contribution to the effectiveness of the Torpedo Team training and extend the versatility of the training system. Exercise must be carefully developed by using an organized approach based on a structure to achieve training. The exercise presented involves extensive developmental and background efforts.

The component parts with exercises are:

a. Exercise objectives.
b. Set-up Requirements.
c. Exercise Scenario and Tactical Background.
d. Exercise Events.

An overall consideration which determines these components are used with an exercise, and where training should be emphasized, is the training approach. This relationship between the training approach and the component parts of an exercise will be defined in the paragraph following. For uniformity, it is highly recommended that the format of exercises in this ECG be used for locally prepared exercises.

3-3 EXERCISE DEVELOPMENT

The following guidelines for specific exercises development explain the training approach concept and its role in developing the components within the exercise.

INTRODUCTION (CON'T)

3-3 (con't)

For each exercise, a training approach must be defined which tells the Instructor exactly how he will administer the exercise. The exercise objective must be determined coincident with the selection of a training approach. The exercise objective defines the well as the object of the training. Exactly what training as to be accomplished must be defined. It is not advisable to include other training aspects within the same training, but to concentrate the objective to the need.

3-3.1 EXERCISE SET-UP

Once the training approach and the exercise objective have been defined, the actual exercise set-up must be developed. this includes such consideration as:

a. Exercise length - Expected time to accomplish the objective
b. Own ship limitations
c. Student expertise

3-3.2 EXERCISE SCENARIO

The tactical situation and environment provides the setting in which the training will occur, and must complement the exercise objective. In establishing the exercise environment, it must be kept in mind how the actual external environment (depth, Speed, Trim) is expected to affect the training, and what limits should be established for this.

Exercise Scenario should include:

a. Assumed OpArea or location.

b. Assumed ship operation or evolution

3-3.3 EXERCISE EVENTS

The exercise events are the logical step-by-step method by which the exercise presents the training problem to the operators. They include:

a. Precomex events which are normally for briefing the operators on the assumed tactical situation versus the training problem, setting up equipment and trainer inputs, and performing items such as placing damage control gear in the trainer.

INTRODUCTION (CON'T)

3-3.3 (con't)

b. Comex is a point in the exercise at which the trainer function is started and target injection occurs.

c. Training Events are the principal events required to accomplish the intended training. The specific number of events is based on the requirements of the objectives.

d. Finex is when the trainer is secured, and no further exercises occur.

e. Review occurs upon completion of the training section. The specifics of this review are a function of the Training approach for the particular exercise.

Generally, the instructor may review what training was considered important, how it was or was not achieved, and the approach to correct less-then-effective areas of operation. A question and answer period may also occur at this time.

3-3.4 EXERCISE SUBMITTAL

When developing exercises specific to individual training devices, include trainer type in requirements section of the Exercise Title Sheet. submit proposed Exercise to Course Curriculum model Manager for approval and issue of Interim Change to incorporate. All Interim Changes will be included in the next Change or Revision.

4. OPERATIONAL TRAINER SAFETY INSTRUCTIONS

4-1 SAFETY DISCUSSION

Safety is the utmost importance in the operation of the training device. Trainees are encouraged to work quickly, but carefully in the trainer to avoid injuries, all trainees will be briefed on trainer safety precautions prior to the training session.

4-1.1 TRAINER SAFETY GUIDELINES

Trainer safety is of the utmost importance, and as such, the following requirements will be adhearded to.

5.

INTRODUCTION (CON'T)

4-1.1 (con't)

a. All personnel involved in the operation of the trainer will complete the following.

(1) Know the location of the first aid equipment.

(2) Complete the basic first aid course.

(3) Be qualified to perform cardiopulmonary recitation.

b. All operators will complete a qualification program for the trainer operation.

c. A minimum of one operator will be present for all training sessions.

d. All students attending the 5 day trainer session will complete the course in its entirety.

e. Prior to students training, an orientation brief and walk-through of the trainer will be conducted by the instructor and cover at a minimum, the following:

(1) Drop On Request (DOR)

(2) Training Time Out (TTO)

(3) Location of all first aid equipment.

(4) Casualty plan for injured.

(5) Location of communication equipment.

(6) Location and responsibility of supervisor, operators safety observers.

(7) All safety precautions associated with the handling of hazerdous materials.

f. All students will wear steal-toe shoes during the trainer section.

g. Operators review system line-up checks for all normal and emergency systems necessary to support safe training.

h. Operators review prior to each training section, all actions required in the event of personnel casualty, to include first aid, notification of appropriate supervisors, and personal evacuation methods and routes.

INTRODUCTION (CON'T)

i. At the minimum, whenever any of the following conditions exsist, the operator and/or safety observer will terminate the training section until the unsafe conditions are corrected.

7.

EXERCISE SELECTION GUIDE

EXERCISE NUMBER	EXERCISE OBJECTIVES	EXERCISE SCENARIO	SYS/SUB CONFIG.	EXERCISE LENG.(MIN)	TRAIN. LEV.(TOS)	DIFFICULTY INDEX
W2C02-1	PROVIDE TRAINING IN CASUALTY PROCEDURES DURING BATTLESTATION TORPEDO ON MK 48 TORPEDO.	OTTO FUEL LEAK FROM MK 48	N/A	VARIABLE 120 MINS. MAX.	O2	INTERMEDIATE
W2C02-3	PROVIDE TRAINING IN MK-48 HOT RUN CASUALTIES OPERATIONS.	START AT BATTLESTATIONS MISSILE PROCEDURES		VARIABLE 120 MINS. MAX.	O2	AVERAGE
W2CO1-1	PROVIDE TRAINING IN TORPEDO TUBE LOADING	START AT BATTLESTATION MISSILE	N/A	VARIABLE 120 MINS. MAX.	O2	AVERAGE
W2CO2-2	PROVIDE TRAINING IN TORPEDO A-CABLE REPLACEMENT.	LARGE WARSHIP CLOSING FIRING POINT PROCED-URES.	N/A	VARIABLE 120 MINS. MAX.	C1	AVERAGE

8.

EXERCISE TITLE SHEET

EXERCISE NO. W2CO1-1	TITLE: TORPEDO TUBE OPERATIONS	Sheet 1 of 3
OBJECTIVE: TO PROVIDE TORPEDO ROOM TRAINING ON TORPEDO TUBES AND HANDLING		EXERCISE LENGTH: (MIN) 60 MIN
		TRAINING LEVEL (TOS) 02
		DIFFICULTY INDEX AVERAGE

REQUIREMENTS:

1. EQUIPMENT
   a. TORPEDO LAB
   b. Mk 48 w/s
   c. MANUAL HANDLING EQUIPMENT

APPROACH:

TO PROVIDE HANDS ON TORPEDO TUBE AND MANUAL HANDLING PROCEDURES

SPECIAL INSTRUCTIONS:

MONITOR SAFETY DURING MANUAL LOADING PROCEDURES. SPECIAL ATTENTION SMOOTHNESS OF GRIP HOIST OPERATIONS.

EXERCISE TITLE SHEET

EXERCISE NO. W2C01-1	TITLE: TORPEDO TUBE OPERATIONS	Sheet 2 of 3

TIME	EVENT	CONTROLLER ACTIVITY	OPERATOR ACTIVITY
PRECOMEX	1. TORPEDO LAB SET-UP	1. TORPEDO TUBE LAB READY FOR OPERATION AS PER OPERATING INSTRUCTIONS.	1. READ SAFETY SUMMARY
PRECOMEX	2. SCENERIO BACKGROUND	2. BRIEF TEAM SHIP AT ALERT BATTLESTATION MISSLE . TONALS IN THE WATER.	2. TEAM IN THE CLASSROOM
PERCOMEX	3. SCENERIO SET-UP	3. TMD IN TORPEDO TUBE # 1. TT# 1 AND 2 READY IN ALL RESPECTS. STATION UNDER-WAY WATCH 1,2,OR 3.	3. TMOW MANNED ALL BOOKS IN LAB AND TOOLS SET-UP FOR UNDERWAY.
T+0	4. BATTLESTATIONS MISSLE	4. MAN BATTLESTATION MISSLE. TONALS IN THE WATER.	4. TORPEDO RELOAD PARTY STANDING BY. TT# 1 AND 2 READY.
T+5	5. FIRING POINT PRECEDURES	5. WARM UP POWER FIRING POINT PRECEDURES	5. TORPEDO ROOM READY
T+10	6. LAUNCH TT# 2	6. LAUNCH TT# 2. TORPEDO IN THE WATER.	6. ROOM SUPERIVISOR: DIRECTS RIGGING OF THE TORPEDO ROOM.
T+15	7. TORPEDO IMPACT	7. TORPEDO IMPACT. LOSS OF HYD. LAUNCH TT# 1 (SECURE HYD. SUPPLY AS PER VALVE LINE-UP INSTRUCTION.	7. ROOM SUPERIVISOR ACTIONS RECOGN-OF LOSS OF HYDS. AND RECOMMENDA-TIONS.

EXERCISE TITLE SHEET

EXERCISE NO. W2C01-1	TITLE: TORPEDO TUBE OPERATIONS		Sheet 3 of 3
TIME	EVENT	CONTROLLER ACTIVITY	OPERATOR ACTIVITY
T+20	8. RELOAD	8. RELOAD TT# 1.	8. TORPEDO RELOADS ABILITY TO RELOAD WITHOUT HYDS.
T+25	9. DISTANT EXPLOSION	9. DISTANT EXPLOSION HULL BREAK-UP.	9. NO ACTION.
FINEX	10. FINEX	10. UPON COMPLETION OF MANUAL TUBE LOADING. SECURE SCENERIO RESTOW ROOM AND CRITIQUE SCENERIO.	10. RELOAD PARTY RESTOW TORPEDO LAB.

EXERCISE TITLE SHEET

EXERCISE NO. W2CO2-1	TITLE: MK 48 CASUALTY OPERATIONS	Sheet 1 of 4
OBJECTIVE: TO PROVIDE TRAINING IN RECOGNITION OF MK 48 OTTO FUEL SPILL AND CLEAN-UP PROCEDURES		EXERCISE LENGTH: (MIN) 60 MIN TRAINING LEVEL (TOS) 02 DIFFICULTY INDEX INTERMEDIATE

REQUIREMENTS:

1. EQUIPMENT

    a. TORPEDO TUBE LAB
    b. Mk 48 EXERCISE (OTTO FUEL SPILL TRAINER)

APPROACH:

PROVIDE STUDENTS WITH BATTLESTATION PROCEDURES, VARIOUS TORPEDO TUBE AND HANDLING EVOLUTIONS. TO CONCLUDE WITH OTTO FUEL II SPILL.

SPECIAL INSTRUCTIONS:

Monitor phone communications to control, and Face To Face communications. Concentrate on Procedurel Compliance/Familiarity.

EXERCISE TITLE SHEET

EXERCISE NO. W2C02-1	TITLE: MK 48 CASUALTY OPERATIONS	Sheet 2 of 4

TIME	EVENT	CONTROLLER ACTIVITY	OPERATOR ACTIVITY
PRECOMEX	1. TORPEDO TUBE LAB SET-UP	1. TORPEDO TUBE LAB READY FOR OPERATION AS PER OPERATING PROCEDURES.	1. READ SAFETY SUMMARY
PRECOMEX	2. SCENARIO BACKGROUND	2. BRIEF TORPEDOMEN AND RELOAD PARTY SHIP IS ON ALERT RIGGED FOR ULTRA QUIET. TONALS IN THE WATER.	2. TEAM WILL BE IN THE CLASSROOM.
PERCOMEX	3. SCENARIO SET-UP	3. a. LOAD TMD IN THE TORPEDO TUBE #1 AS PER OD44979 VOL 7. b. SELECT 1,2,OR 3 UNDERWAY TORPEDO RM WATCH TO BE MANNED. c. SUPPLY TMOW WITH INFORMATION FOR TORPEDO ROOM STATUSBOARD.	3. TMOW MANNED AND UP-DATE STATUS-BOARD. SET-UP LAB TO SHIP.

EXERCISE TITLE SHEET

EXERCISE NO. W2C02-1	TITLE: MK 48 CASUALTY OPERATION		Sheet 3 of 4
TIME	EVENT	CONTROLLER ACTIVITY	OPERATOR ACTIVITY
T+0	4. COMEX	4. START EXERCISE AS FOLLOWS: PASS OVER PHONE RIG SHIP FOR ULTRA QUIET,TONALS IN THE WATER.	4. TMOW RIG FOR ULTRA QUIET AND MAKE REPORT.
T+5	5. BATTLESTATIONS	5. TORPEDO IN WATER, SNAPSHOT TT# 1. MONITOR TMOW ACTIONS FOR TUBE OPERATIONS.	5. TMOW PREPARE TORPEDO TUBE GIVE PROPER TURNOVER TO BATTLESTATION SUPERVISOR.
T+10	6. POSTLAUNCH	6. POSTLAUNCH TT# 1, RELOAD TT# 1 WITH MK 48 TORPEDO. MONITOR POSTLAUNCH PROCEDURES.	6. STBD. TORPEDO RELOAD PARTY POSTLAUNCH AND RELOAD TT#1.

EXERCISE TITLE SHEET

EXERCISE NO. W2C02-1	TITLE: MK 48 CASUALTY OPERATION	Sheet 4 of 4

TIME	EVENT	CONTROLLER ACTIVITY	OPERATOR ACTIVITY
T+15	7. OTTO FUEL SPILL	7. PASS THE WORD TORPEDO IMPACT,FLOODING IN THE ENGINE RM. a. AT THIS TIME SELECT A SPILL AREA FROM THE MK 48 OTTO FUEL SPILL TRAINER,GIVE COMMAND TO RELOAD TT# 1. CONDUCT OTTO FUEL SPILL DRILL.	7. OBSERVE SUPERVISOR ABILITY TO RUN CASUALTY AND CONTINUE TUBE LOADING PROCEDURES. a. OBSERVE RELOAD PARTY PORT IDENTIFIES PROPER LEAK POINTS, MAJOR OR MINOR SPILL AND OTTO FUEL SPILL PROCEDURES AND IMMEDIATE ACTIONS.
	8. OTTO FUEL SPILL CONTAINMENT AND FINAL CLEAN-UP DECONTAMINATION	8. UPON FINAL CLEAN-UP AND DECON TERMINATE THE DRILL.	8. CLEAN-UP TEAM DIDN'T CONTAMINATE THE REST OF THE BOAT CONTINUED RELOAD TT# 1.
	9. RESTOW	9. DIRECT TRAINEE TO RESTOW LAB AND HANDLING EQUIPMENT, OTTO FUEL SPILL BAG.	9. TRAINEE RESTOW LAB
	10. FINEX	10. FINEX a. BATTLESTATION SUPERVISOR CRITIQUE OVERALL EVALUATION.	10. FINEX- TEAM LEAVES TRAINER AND GOES INTO CLASSROOM FOR CRITIQUE.