

APPENDIX I

TRAINING FILM LIST

Training films that are directly related to the information presented in this training course are listed below. Under each chapter number and title the training films are identified by Navy number and title and are briefly described. Other training films that may be of interest are listed in the United States Navy Film Catalog, NavPers 10000 (revised).

Chapter 2

ELECTRONICS SAFETY PRECAUTIONS

- MC 4597 For Safety's Sake. (13 min.—B&W—Sound—Unclassified—1945.) Explains necessary precautions in handling power tools with emphasis on drills, grinders, and electric saws. Stresses importance of wearing goggles, keeping equipment in good condition, and grounding equipment. Uses actual accidents to demonstrate results of carelessness.
- MN 6754 Safety Precautions For Electronics Personnel-Introduction. (15 min.—B&W—Sound—Unclassified—1951.) Shows electrical and mechanical hazards which electronics technicians encounter in normal work and stresses precautions which should be used to prevent accidents. Film content includes procedures for working on energized and deenergized circuits, handling of cathode-ray tubes, preventive measures aboard ship, and the hazards of carelessness and practical jokes. Stresses necessity for cultivation of safe working habits.
- MN 8990 115 Volts—Deadly Shipmate. (19 min.—Color—Sound—Unclassified—1960.) This film tells the story of Joe who is representative of all sailors and is based upon the reenactment of actual cases. It emphasizes the disastrous effects of low-voltage electrical shock when the basic rules of electrical safety are violated or ignored.
- SC 8358 This Will Kill You. (20 min.—Color—Sound—Unclassified.) Shows many of the casualties and fatalities; explains current, heat burns, first aid, difference between effects of a-c and d-c damage, and has a summary based upon a variety of case histories. All of the major "do's" and "don'ts" of electrical accidents are forcefully presented.

- SA 7810 Hazards of High Powered Radio Transmitters. (51 Frames—B&W—Silent—Unclassified—1951.) Emphasizes the ever-present danger of shock and burns from high-powered radio equipment.

Chapter 5

ELECTRONIC INSTALLATION

- MN-7848-E Search and Height Finding Radar—the AN/SPS-8 Introduction. (19 min. -B&W-Sound-Unclassified-1954.) General overall description of the AN/SPS-8 radar.
- MN-8099-A Radio Teletype Systems Afloat—General Principles of Operation. (15 min. -B&W-Sound-Unclassified-1956.) Explains the reasons for radio teletype systems afloat, and describes briefly two different systems of transmitting and receiving.
- MN-2565-A Transmission Lines—Maintenance of the Coaxial Line. (28 min. -B&W-Sound-Unclassified-1944.) Description of the construction and principles of replacing and repairing coaxial transmission lines.
- MN 6525-C Ground Aids to Air Navigation (Ship to shore). (19 min. -B&W-Sound-Unclassified 1955.) Shows the theory and operation of TACAN.

Chapter 6

APPLICATION OF TEST EQUIPMENT

- MA-7812A Circuit Testing with Meters and Multimeters—Theory. (35 min. -B&W—Sound—Unclassified—1951.) US Army TF11-1666. Describes the basic principles of meters and multimeters and illustrates their use in the operation and maintenance of communications equipment. Largely, through the medium of animation photography, the steps in building a meter are delineated. Included are voltmeter, vacuum tube voltmeter, ohmmeter, tube-tester, and wattmeter. The general purpose multimeter is described as a combination of several meters. In radio, telephone, and teletypewriter troubleshooting, the meter is the most important and useful tool available.
- MA-7812B Circuit Testing with Meters and Multimeters—Practical Applications. (33 min. -B&W—Sound—Unclassified—1951.) US Army TF11-1667. Meters and multimeters are indispensable in the operation, maintenance and repair of electronic equipment. The equipment described includes: Volt-Ohm-Milliammeters, the Wheatstone Bridge, decibel meter and the tube tester. A step by

step procedure for using these meters is shown, followed by a description of how they are used in testing transformers, capacitors, resistors, telephone loop circuits, etc. It is emphasized that the technicians should read the operating manuals for this equipment, and keep them handy for the reference purposes. Rigorous safety practices should be followed at all times. The film ends by stressing care of meters to preserve their accuracy.

- MN-8687B Reading Multimeter Scales. (6 min.—B&W—Sound—Unclassified—1956.) US Army TF11-2392. Multimeter scales must be read correctly for effective use of the instrument in radio repair. All multimeters have similar scales. Using a typical multimeter, this film demonstrates how to read the scales to measure direct current, DC voltage, AC voltage, and resistance.
- MA-8688 Use of Signal Generator AN/URM-25D. (7 min.—B&W—Sound—Unclassified—1957.) US Army TF11-2441. The signal generator is an instrument designed to generate AC signals suitable for test purposes. It is used for trouble shooting or aligning signal communication equipment. This film explains and demonstrates the correct use of Signal Generator AN/URM-25D.
- MN-1540Q Radio Technician Training—Signal Generator Operation. (9 min.—B&W—Sound—Unclassified—1945.) Use of signal generator in receiver alignment is subject of the picture. Use of modulation switch, adjustments needed to secure various frequencies (for example 456kc and 87MC) and use of alternator switch is shown. Voltmeter gives visual check of adjustments while earphones provide audio alignment check.
- MN-1540P Radio Technician Training—Tube Tester Operation. (9 min.—B&W—Sound—Unclassified—1944.) Shows testers designed to check (1) cathode emission, and (2) dynamic mutual conductance of tube. Emphasize use of instruction book supplied with tester and of the tube manual. Testers are practically fool proof. Simply turn index scale to number of tube being tested and follow lines to operate appropriate control of push button.
- MN-1540R Radio Technician Training—Audio Oscillator Operation. (9 min.—B&W—Sound—Unclassified—1945.) Explains operation of audio oscillator and demonstrates use. Performance of audio oscillator is shown by checking an amplifier with the audio oscillator and "A" scope illustrates and explains all knob turning.
- SN-658 Making Frequency Measurements with the CFI. (39 frames—B&W—Silent—Unclassified—1942.) Describes steps in measuring radio wave frequency with the LM-CF1.

Chapter 7

USE OF EQUIPMENT

- MN 2104B The Cathode Ray Oscilloscope. (23 min.—B&W—Sound—Unclassified—1944.) Explains wide application of the cathode ray in making instantaneous graphs of the wave form of an electric current. Shows use of vertical amplifiers, horizontal amplifier, sweep generator which furnishes the time base cathode ray tube, and power supply. Illustrates the use of the coarse and fine sweep circuit to synchronize signals so that wave form is stationary.
- MN-2104A The Cathode Ray Tube-How it Works. (15 min.—B&W—Sound—Unclassified—1943.) Demonstrates construction and function of each part of the cathode ray tube and how it produces visual images on a screen. Explains electrostatic deflection, electro-magnetic deflection, and how varied currents affect position of the spot of light on the scope.
- SN-657 Calibrating the Type LM Crystal Frequency Indicator. (42 frames—B&W—Silent—Unclassified—1942.) Demonstrates calibration of type LM Crystal Frequency Indicator.
- MN-1540S Radio Technician Training—Volt-Ohmmeter Operation. (15 min.—B&W—Sound—Unclassified—1944.) Demonstrates use of various types of volt-ohmmeters, (including the electronic meter) and gives cautions to be followed, such as using the large scale first, (R x 1000; R x 10; R ranges available) and connecting the voltmeter in parallel (Scales; 600, 300, 30, 3 volts).

Chapter 8

SWITCHES, SWITCHBOARDS, AND SWITCHING SYSTEMS

- MN-6836 Shipboard Radio Communications-Remote Control transfer Switchboards. (11 min. B&W-sound-unclassified-1955.) Describes communication switch type remote control transfer switchboards.

Chapter 9

COMMON OPERATING ADJUSTMENTS—RADIO TRANSMITTING AND RECEIVING

- MN-8086A Radio Transmitting Sets AN/URT 2,3,4—Introduction. (15 min.—B&W—Sound—Unclassified—1955.) Shows the units that comprise the three transmitters, the capabilities of each and how they are operated in a normal automatic condition including the setting up of ten channel frequencies. Procedures for semi-automatic and manual tuning are also shown.

- MN-8086B Radio Transmitting Sets AN/URT 2, 3, 4—The RF Oscillator. (17 min.—B&W—Sound—Unclassified—1955.) Shows how the AN/URT series of transmitters generate and modulate carrier frequencies. Describes how the various circuits multiply, add, and subtract frequencies to produce the final carrier frequency, and how the frequency is amplified in the RF Amplifier and modulated in the Low Level Radio Modulator for voice or key modulation.
- MN-8086C Radio Transmitting Sets AN/URT 2, 3, 4—The RF Amplifier and Modulator. (7 min.—B&W—Sound—Unclassified—1955.) Shows how the frequency is amplified in the RF Amplifier and modulated in the Low Level Radio Modulator for both voice and various types of keying modulation.
- MN-8086D Radio Transmitting Sets, AN/URT 2, 3, 4—Automatic Frequency Selection. (14 min.—B&W—Sound—Unclassified—1955.) Shows how the telephone-type dial controls the automatic frequency-selection circuit for switching the R-F Oscillator to the pre-set frequency.
- MN-8086E Radio Transmitting Sets, AN/URT 2, 3, 4—Automatic Bandswitching. (7 min.—B&W—Sound—Unclassified—1955.) Shows how the Radio Frequency Amplifier divides the frequency range into six different bands and how the bandswitch motor automatically selects the band that includes the carrier frequency.
- MN-8086F Radio Transmitting Sets, AN/URT 2, 3, 4—Automatic Amplifier Tuning. (18 min.—B & W—Sound—Unclassified—1955.) Shows how the automatic amplifier tuning circuits tune the Intermediate Power Amplifier and the Power Amplifier.
- MN-8086G Radio Transmitting Sets, AN/URT 2, 3, 4—Automatic Antenna Tuning. (18 min.—B & W—Sound—Unclassified—1955.) Shows how the RF tuner and capacitor assembly automatically tunes the antenna to the frequency that has been selected for transmitting. This is the last of four automatic tuning operations that take place when a new transmitting frequency has been selected.

Chapter 10

COMMON OPERATING ADJUSTMENTS—TELETYPE
AND FACSIMILE

- MN-8099A Radio Teletype Systems Afloat—General Principles of Operation. (15 min.—B&W—Sound—Unclassified—1956.) Explains the reason for radio teletype systems afloat and describes briefly two different systems of transmitting and receiving.

- MN-8099B Radio Teletype Systems Afloat—Tone Modulated System. (11 min.—B&W—Sound—Unclassified—1956.) Describes operation of the tone-modulated system for short range radio teletype transmitting and receiving system.
- MN-8099C Radio Teletype Systems Afloat—Carrier Frequency Shift Transmitting System. (6 min.—B&W—Sound—Unclassified—1956.) Describes the long-range Frequency Shift Transmitting System used in shipboard radio teletype systems.
- MN-8099D Radio Teletype Systems Afloat—Carrier Frequency Shift—Receiving System. (10 min.—B&W—Sound—Unclassified—1956.) Explains simply the reason and operation of radio frequency shift system for radio teletype systems afloat.

Chapter 11

COMMON OPERATING ADJUSTMENTS—RADAR AND LORAN

- SN-1083 Knob Turning—Radar No. 13. (53 frames—B&W—Silent—Unclassified—1942.) Illustrates how to turn on and properly tune equipment, set focus and brilliance controls, set antenna switches to homing, and proper method of reporting an object and turning off equipment.
- SN-2357D Loran—Principles of Operation. (70 frames—B&W—Sound—Unclassified—1944.) Describes the three basic parts of Loran: Transmitters on land; receiving and time measuring equipment; and plotting charts. Explains how the chart hyperbolas are constructed on the basis of a slave station emitting signals at definite time interval (somewhat more than 20,000 microseconds) after the master station emits its signal. Differentiates between ground waves (500-700 miles) and sky waves (1500 miles at night.)
- SN-2357E Loran—Alignment and Calibration. (66 frames—B&W—Silent—Unclassified—1944.) Shows checks on alignment to be made before takeoff and before taking readings. Also covers checks on calibration of the delay, coarse and fine signal adjustments.
- SN-2357F Loran—Taking a Reading and Plotting a Fix. (43 frames—B&W—Silent—Unclassified—1944.) Shows five steps in getting a time distance reading: selecting signals from one pair of stations; making the coarse delay adjustment; making the day fine delay adjustment; and recording data. Then selecting a pair of signals from two other stations. Finally finding the hyperbola for reading of the first pair; finding the same for the second pair; and interpolating. Corrections are applied for sky waves and security time delay.

Chapter 12

MAINTENANCE PROCEDURES AND TECHNIQUES--PART I

- MA-8927A Radio Interference-Part I. (23 min. --B&W--Sound--Unclassified-1958.) Explains the significance of radio interference and the manner in which it is produced.
- MA-8369 Calibrating and Tuning Radio Set AN/PRC-10. (9 min. --B&W--Sound--Unclassified-1955.) US Army TF 11-2181. Teaches the step-by-step procedure for calibrating and tuning Radio Set AN/PRC-10.
- MA-8862D Radio Set AN/GRC-26-Part 4--Setting up Receiver as Frequency Standard. (15 min. --B&W--Sound--Unclassified-1958.) US Army TF 11-2563. This film portrays the step-by-step procedure to set up Receiver "A" as a frequency standard. A demonstration frequency of 4280 kc is used.
- MA-8927B Radio Interference-Part II. (37 min. --B&W--Sound--Unclassified--1958.) Shows how sources of radio interference can be tracked down, and how various kinds of interference are suppressed.
- MA-8681A Environmental Factors Affecting Reliability of Electronic Equipment. (17 min. --B&W--Sound--Unclassified--1956.) Presents the effect of naval shipboard environments on the reliability of electronic equipments.

Chapter 13

MAINTENANCE PROCEDURES AND TECHNIQUES--PART II

- MN-8086H Radio Transmitting Sets AN/URT 2, 3, and 4--Troubleshooting. (12 min. --B&W--Sound--Unclassified--1955.) Shows how to determine the general location of trouble in the AN/URT series of transmitters. Describes the use of various lights and meters to locate trouble, the built-in test oscilloscope for testing the operation of the internal oscillators and finally the external test equipment.
- MN-8572 Moistureproofing Electrical "AN" Type Connectors. (20 min. --Color--Sound--Unclassified--1957.) Shows "potting" process.