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Chapter 1 : US Army TS Signals 3 The Outcome: Appendix: Signal Corps Equipment, World War II

3 Radio Set AN/TRC-7, simplified block diagram with remote control equipment 2 4 Radio Set AN/TRC-7, frequency spectrum chart 4 5 Radio Set AN/TRC-7, over-all illustration, whip antenna and battery in place 5.

Versions designed to give elevation also were SCR, , and Coastal defense and harbor surveillance: Version SCR was transportable. For coast defense, against surface vessels a. For air defense and AA batteries, against airborne targets a. It was a semiautomatic gun layer, requiring hand tracking. For aircraft, against airborne and surface targets a. AI, superior cm, 3, mc, microwave sets, but heavy, and pounds respectively. Airborne search and bombing: ASV, a microwave cm radar operating in the S-band at 3, mc. SCR radar bombsights, designed especially for launching airborne torpedoes. They performed well at high altitudes and showed ground features in considerable detail. Identification, friend or foe 1. Mark IV, American sets, involving equipment independent of any associated radars, giving instant response a. Ground interrogator-responsor SCR and No ground interrogator-responsor was needed. Ground interrogator-responsors, differing for each radar type. RC, , , , , etc.: Airborne transponders SCR and Mortar location, enabled by radar tracking of the trajectory of the mortar shells 1. For glide bombs Azon and Razon a. For power-driven bombs, such as rocket bombs and War Weary Willies, which were jalopy bombing planes loaded with explosives and directed by remote control against the enemy a. Tracking of robot bombs: The bearings, laid out on plotting boards at control centers, served to track the planes in flight and enabled groundcontrol officers to guide the planes by radio telephone. SCR, , and The operators at SCS control centers and at information, filter, and operation centers for aircraft warning required rapid communication facilities. These were supplied by extensive wire nets, sometimes supplemented by radio also. Direction-finding and intercept centrals: Sound, thermal, light A. Flash reception was at first accomplished by a photoelectric cell, later by an infrared detector. Bomb-control television, for remote control of flying bombs 1. Photoelectric bomb fuze MC The fuze contained a photoelectric cell which, on detecting a reduction in light intensity as the missile came within 60 feet of its target, detonated the bomb. Photoelectric and supersonic detectors, or sensory aids: This cell in turn modulated an audio signal, which the user detected in an earphone. The aid was unaffected by nonpulsed light, such as sunlight and ordinary electric light. Yet infrared equipment had proved useful in detection both of ships and aircraft, in searchlight directing and in early forms of the radar SCR It had been tried in , as the Thermopticon, aboard a B bomber and had detected a second B up to 1, feet away. Magnetic Magnetic airborne detector, or magnetometer RC A volt version was SCR Beacons operating on radio-directional principles 1. Ground Forces homing equipment a. Beacon attachments for radio transmitters 1 RC HF directional attachment, mile range, for vehicular radios SCR, , , , etc. DF attachments for radio receivers 1 RC and Ground radio range beacons for aircraft guidance a. Air-sea-rescue beacon and receiver a. Buoy beacons, locator and sonic, parachuted into the sea a. Navigational direction finders 1. Instrument approach and landing systems: Marker beacons and receivers 75 mc a. RC, 39, 43, and Localizer and glide-path sets a. The foregoing development culminated in SCS, an automatic instrument-approach radio system, which involved an airborne localizer, ground glide-path receivers, and a robot pilot. Altimeters airborne absolute altimeters or terrain clearance indicators 1. Locators developed for determining ground range and azimuth, used to locate a forward observer for fire control purposes. X-band sets, 10, mc. Transportable beacons having a mile line-of-sight range 1 SCR and Loran and Shoran 1. Blind approach systems 1. Intelligence, Security, and Countermeasures I. Radio intelligence RI equipment A.

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Technical Manual, TM , Directory of German Radar Equipment, 73 pages. Signal Equipment Directory, Power Units, pages. Radio Set SCR, 85 pages. Includes three supplements the last dated 25 October Technical Manual, TM A, Radio Set SCR, 62 pages. Radio Set SCR, pages. Charging Set SCR, pages. Maintenance Equipment MED, 22 pages. Test Equipment IEE, 7 pages. Allen Model E-2 Unitron Rectifier, 10 pages. Signal Generator I, 66 pages. Alignment Equipment ME, 33 pages. Triplett Model , 16 pages. Switchboard BD, 16 pages. The manual number is not given in the entry in BSIR. Converter M, 17 pages. Test Sets A, B, and C, 75 pages. Spiral-Four Cable, pages. Boehme Automatic Keying and Recording Equipment, 99 pages. Signal Lamp Equipment EE, 25 pages. Signal Lamp Equipment SE, 20 pages. Photographic Set PH, 41 pages. Training Film and Film Strip Projection, 79 pages. Identification Equipment PH, 47 pages. Projector Equipment PH, pages. Projector Equipment PHA, pages. Thermographs ML and ML, 22 pages. With Change 1, 14 November Target Range Communication Systems, 7 pages. Code Practice Equipment, pages. Time Control Equipment RC, 86 pages. Recorder BC, 96 pages. Keyer TGA, 57 pages. Training of Signal Communication Personnel, 74 pages. Shop Work, pages. Wire Telegraphy, pages. Common-Battery Telephone Equipment, pages. International Morse Code, Instructions, 74 pages. Truck Line Messenger Service, 29 pages. Radar Electronic Fundamentals, pages. Radar System Fundamentals, pages. Repair and Calibration of Electrical Measuring Instruments, 77 pages. Substation Installation, pages. Suppression of Radio Noises, 46 pages. Electrical Communication Systems Engineering, pages. Electronic Communication Systems Equipment, pages. With Change 1, 4 Dec Interphone Equipment RC, 30 pages. Interphone Equipment RC, 28 pages. Interphone Equipment RC, 27 pages. Radio Transmitting Equipment RC, pages. Radio Transmitter A, 41 pages. Radiotelegraph Transmitter T M, 76 pages. Radio Receiver BC B, 58 pages. Radio Receiver AY, 45 pages. Receiver-Transmitter BC, pages. Radio Receiver Hallicrafters S , 59 pages. Power Units PEF, pages. Power Unit PEA, 60 pages. Power Unit PEA, 41 pages. Power Unit PEC, pages. Power Unit PEL, pages. Power Unit PEM, pages. Power Unit PEA, pages. Power Unit PEB, pages. Power Unit PEF, pages. Power Unit PBB, pages. Dynamotor Unit BDC, 34 pages. Power Unit PEC, 45 pages. Motor-Generator MGA, 67 pages. Power Unit PE, pages. Power Unit PE, 90 pages. Power Unit PEC, 84 pages. Power Unit PED, pages. Power Unit PEB, 67 pages. Power Unit PEA, 46 pages. Power Unit PE, 77 pages. Rectifier RA, 39 pages. Rectifier RAB, 52 pages. Rectifier RA, 23 pages. Rectifier RA, 17 pages. Rectifier RAH, 81 pages. Rectifier RAB, 19 pages. Rectifier RAA, 12 pages. Rectifier RA, 35 pages. Trojan Rectifier Battery Eliminator, Model , 22 pages. Power Unit PEA, 80 pages. Battery Charger PE, 59 pages. Signal Generator IA, 24 pages. DuMont Laboratories, Passanic, N. Calibrator BCA, 60 pages. Range Calibrator I and IA, 51 pages. Trailer KD, 52 pages. Trainer BCA, 86 pages. Signal Generator I , 43 pages. Sweep Generator MIB, 31 pages. Antenna AN, 56 pages.

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Chapter 3 : Radio Set AN/TRC-7 (edition) | Open Library

CHAPTER 1 INTRODUCTION Section I. 1. Scope This manual describes Radio Sets AN/VRC (fig. 1) and AN/TRC (fig. 2) and covers the operation and operator's maintenance of.

Medium- and long-range command sets 1. HF sets mc operating on and volt airplane batteries respectively and providing continuous wave, tone, and voice for miles between planes; miles plane to ground. Designed in on mc and intended to replace SCR and HF, up to 9 mc VHF later added , 75 miles on voice, miles on continuous wave. A version designed to operate on volt batteries was SCR SCR, , , and SCR, , and Long-range liaison sets 1. The set became standard for AAF ground liaison. Short-range paratroop and glider sets 1. Panels and panel sets: Lamps, to transmit blinker code by night or day 1. It could also serve as blinker signal lamp. Lofts, transportable, for housing large numbers of birds 1. Pigeon equipment including containers for carrying a few birds 1. Message holders to fasten to the legs of the birds 1. PG, 53, 54, and Public address sets 1. PA-1, 2, 3, 4, 5, and 6: Recorders and reproducers of sound 1. RC and were used in radio intercept work to record any type of signal. Facsimile Page 1. Versions designed to give elevation also were SCR, , and Coastal defense and harbor surveillance: Version SCR was transportable. For coast defense, against surface vessels a. For air defense and AA batteries, against airborne targets a. It was a semiautomatic gun layer, requiring hand tracking. For aircraft, against airborne and surface targets a. AI, superior cm, 3, mc, microwave sets, but heavy, and pounds respectively. Airborne search and bombing: ASV, a microwave cm radar operating in the S-band at 3, mc. SCR radar bombsights, designed especially for launching airborne torpedoes. They performed well at high altitudes and showed ground features in considerable detail. Identification, friend or foe 1. Mark IV, American sets, involving equipment independent of any associated radars, giving instant response a. Ground interrogator-responsor SCR and No ground interrogator-responsor was needed. Ground interrogator-responsors, differing for each radar type. RC, , , , , etc.: Airborne transponders SCR and The including also G-band, mc, for benefit of long-wave GCI radars. SCR was also much used in radar beaconry see under Navigation, Radar. Mortar location, enabled by radar tracking of the trajectory of the mortar shells 1. For glide bombs Azon and Razon a. For power-driven bombs, such as rocket bombs and War Weary Willies, which were jalopy bombing planes loaded with explosives and directed by remote control against the enemy a. Tracking of robot bombs: The bearings, laid out on plotting boards at control centers, served to track the planes in flight and enabled ground-control officers to guide the planes by radio telephone. The operators at SGS control centers and at information, filter, and operation centers for aircraft warning required rapid communication facilities. These were supplied by extensive wire nets, sometimes supplemented by radio also. Direction-finding and intercept centrals: Sound, thermal, light A. Flash reception was at first accomplished by a photoelectric cell, later by an infrared detector. Bomb-control television, for remote control of flying bombs 1. Photoelectric bomb fuze MC The fuze contained a photoelectric cell which, on detecting a reduction in light intensity as the missile came within 60 feet of its target, detonated the bomb. Photoelectric and supersonic detectors, or sensory aids: This cell in turn modulated an audio signal, which the user detected in an earphone. The aid was unaffected by nonpulsed light, such as sunlight and ordinary electric light. Thermal equipment, utilizing infrared or heat radiations, largely occupied Signal Corps laboratories in the early s at the beginning of radar development, which soon displaced infrared research. Yet infrared equipment had proved useful in detection both of ships and aircraft, in searchlight directing and in early forms of the radar SCR It had been tried in , as the Thermopticon, aboard a B bomber and had detected a second B up to 1, feet away. Magnetic Magnetic airborne detector, or magnetometer RC A volt version was SCR Beacons operating on radio-directional principles 1. Ground Forces homing equipment a. Beacon attachments for radio transmitters 1 RG HF directional attachment, mile range, for vehicular radios SCR, , , , etc. DF attachments for radio receivers 1 RC and Ground radio range beacons for aircraft guidance a. Air-sea-rescue beacon and receiver a. Buoy beacons, locator and sonic, parachuted into the sea a. Navigational direction finders 1. Instrument

approach and landing systems: Marker beacons and receivers 75 mc a. RC, 39, 43, and Localizer and glide-path sets a. The foregoing development culminated in SCS, an automatic instrument-approach radio system, which involved an airborne localizer, ground glide-path receivers, and a robot pilot. Altimeters airborne absolute altimeters or terrain clearance indicators 1. Locators developed for determining ground range and azimuth, used to locate a forward observer for fire control purposes. X-band sets, 10, mc. Transportable beacons having a mile line-of-sight range 1 SCR and Loran and shoran 1. Blind approach systems 1. Intelligence, Security, and Countermeasures I. Radio intelligence RI equipment A. Radio monitoring sets 1. SCR, , , , and Short- and medium-range a. Long-range, semifixed, and transportable a. HF sets having large rotatable H-Adcock Page antennas dipoles 12 feet long for taking bearings on sky waves. Also used by AAF for navigational purposes. Combined intercept and DF assemblies 1. Security equipment, for rendering communications unintelligible, scrambling them at the place of transmission and unscrambling them at the place of reception 1. Cryptographic machines, enciphering and deciphering message texts mechanically a. Search receivers, airborne equivalents of ground RI sets a. They could be used with radar scope indicators or with panoramic and photographic adapters. Jammers, both ground and airborne, often used with search receivers a. CRT-2 was an airborne parachute set.

Chapter 4 : Operating instructions | www.nxgvision.com

TM www.nxgvision.com SECTION X. Moistureproofing and fungiproofing. Moistureproofing and fungiproof- ing Radio Set AN/TRC-7 71

Organizational tools and equipment ,21 Trouble shooting at field maintenance level Repairs , Alignment procedures , V. Shipment and limited storage Forward comments on this publication directly to: Forms and Records a. Unsatis[acto1 y Equipment Reports. Damaged o1 mproper Shipment. Purpose and Use fig. Highly accurate bearings generally are not required for homing; therefore, an azimuth scale is not provided. When desired, approximate azimuth readings can be obtained by sighting a pocket compass in the direction of the indicated bearing. This enables the operator to manipulate the controls of the antenna with one hand while holding the antenna in his other hand. Technical Characteristics 4 a. Frequency range Continuously tunable from 38 to Output control Five position pi-network type attenuator providing 0, 5, 15, 25 and 35 db attenuation. Frequency range Continuously tunable: Type of antenna Unshielded loop. This list is for gener al information only. See appropriate supply publications f or information prut aining to requisition of spare parts. The loop is tuned to the operating frequency by means of the tuning control on the case. The antenna case is a waterproof inclosure made of hard weather-resistant plastic. The lower part of the case forms a handle by which the antenna is held. A shoulder strap is provided with snap hook fastenings. The clip can be swiveled so that the handset may be adjusted for a comfortable position of the mouthpiece. These obstacles block or deflect the signals from the homing station and make homing difficult or impossible. The equipment should not be near telephone and power lines. The best sites are high locations that give a clear view of the surrounding terrain. Figure 3 illustrates typical good and poor locations for the operation of this equipment. Each component is individually cushioned and wrapped, then placed in moisture-vaporproof containers and sealed. The bag is placed in a waterproof container. Twenty of these boxes are placed in a wooden export crate. The crate is approximately 35 inches long, 25 inches wide, and 17 inches deep. Equipment may be shipped in oversea packing cases or in domestic packing cases. Uncrating instructions are given below. Be careful when uncrating, unpacking, and handling the equipment; it is easily damaged. Remove the top and one side of the packing case. Antenna packaging diag1 am. Remove the equipment from the carrying bag. Erect the collapsed loop antenna by extending the two arms as far as they will go. Fit the two sections together to complete the diamond form as shown in figure 7. Connect it to the loop antenna connector. Service upon Receipt of Used or Reconditioned Equipment a. Follow the instructions in paragraph 9 for uncrating, unpacking, and checking the equipment. Check the used or reconditioned equipment for tags or other indications that pertain to changes in the wiring of the equipment. Check the operating controls for ease of r6tation. Check the joints of the loop for tightness. This is necessary for good connection. Do not jam the screw so that excessive force is necessary to move elements. Perform the installation procedure given in paragraph General Section. The actual operation of the equipment is explained in paragraphs 14 and Antenna Controls The following chart lists the controls and their functions fig. Attenuator control marked 0, 1, 2, Decrease strength of signal fed to 3, 4 receiver as the attenuator is set to a higher number. Direction Finding with Modulated Carrier t is recommended that a minimum of 8 hours of training in the use of the antennas be completed before an operator is assigned field use of this equipment. Direction finding can be performed by using either modulated carrier or unmodulated carrier. The term maximum position or maximum is used to define the position in which the antenna is oriented when the greatest signal response loudest signal is obtained. This occurs when the edge of the loop is pointing toward the transmitting station. The term null position or null is used to define the position in which the antenna is oriented when minimum or no signal response is obtained. This occurs when either flat side of the loop faces toward the transmitting station. Do not attempt to use null opemtion when this switch is in the SENSE position because a false null indication may be 1 eceived. Transmitter Signal M adulation. The transmitting operator can give a long count or speak in a

continuous tone at a constant level to provide the necessary signal modulation. Tun2ng and nitially Locating Signal. Adjust the tuning control for maximum response. These points are the nulls. They occur revolution apart when the plane of the loop is broadside to the direction from which the signal is coming. Because there are two nulls, the null indication alone does not provide sufficient information for the operator to determine whether the transmitting source is in front of, or behind the loop. Therefore, to find the actual direction to the transmitting source, it is necessary to determine the sense of the bearing. The sensing procedure is as follows: The antenna should be broadside to the signal source. The signal should be louder. Compare the signal strength now with the other signal. The arrow on the case fig. On a weaker signal, the width of the null may increase to 30 or The center of this null area is the correct bearing. As soon as sense has been determined, throw the switch back to NORMAL and proceed toward the target transmitter by keeping the loop in the null position. However, if the 16 18 transmitter cannot be seen and a very strong signal tends to obscure the bearings, advance the attenuator switch to position 1, 2, 3, or 4 as necessary, to reduce the received signal strength to the point where the null becomes clear. When the attenuator is used, it is generally not necessary to retune the antenna after switching to the various positions. However, if the nulls seem very broad or are not evident, readjust the tuning control for maximum signal with the attenuator switch in the position in which it is to be used. The position of least attenuation that will permit sense and bearing determination should be used. Operation in attenuator position 4 is not required except in the immedate vicinity of the transmitting station to yards. Accurate sense indication may be difficult to obtain in this position but this should not present any operating difficulties, since the general direction of travel has been previously established and the null bearing indication should be sufficient to permit finding the transmitter. To home on a signal, ot to find the transmitting station, do the following: Select the center of the null and proceed on a line through the center of this null until the transmitting station is reached. Direction Finding with Unmodulated Carrier a. The term maximum carrier signal is used to define the position in which the antenna is oriented when the greatest signal response maximum quieting action of carrier over noise is obtained. This occurs when the edge of the loop is 17 19 pointing toward the transmitting station. The term null position or null is used to define the position in which the antenna is oriented when minimum quieting maximum noise action is obtained. The null minimum quieting occurs when either flat side of the loop faces toward the transmitting station. Do not attempt to us e null operation when this switch is in the SENSE position because a false null indication may be received. When direction-finding operation is required, the operator asks the transmitting station for a definite period of unmodulated carrier operation. The transmitting station turns its carrier on the air for that period. No buzzer, audio oscillator, or speech is required. The carrier itself provides the information for direction finding. Tuning and nitially Locating Signal. Rotate the antenna about a vertical axis until a signal is received. Adjust the tuning control for maximum response maximum quieting on station. These are the null positions. The procedure is the same as with a modulated carrier except for the following differences in 2 , 3 , 4 and 5 of paragraph 14 f: The quieting action should be much greater. Compare the maximum carrier signal now with the signal before.

Chapter 5 : US Army TS Signals 1 The Emergency: Appendix: Signal Corps Equipment, World War II

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Chapter 6 : New and Used Car Reviews, Comparisons and News | Driving

II WAR DEPARTMENT, WASHINGTON 25, D. c., 7 November, TM , Radio Receivers (Wilcox Electric types CW3 and F3) and Receiver Bay (Wilcox Electric type A) is published for the information and guidance of all concerned.

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Chapter 7 : Full text of "TM Radio Set AN/TRC-7, "

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Chapter 8 : TM SCR | www.nxgvision.com

The telegraph set can also be used as a tone keyer for voice-modulated radio sets, permitting transmission of International Morse Code over radio sets originally designed for voice operation only. G. "When used on metallic or ground return lines, two telegraph sets may be connesets.

Chapter 9 : Para Research Team (c) - History Awaits ! - US Manuals WW2 Masterlist

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