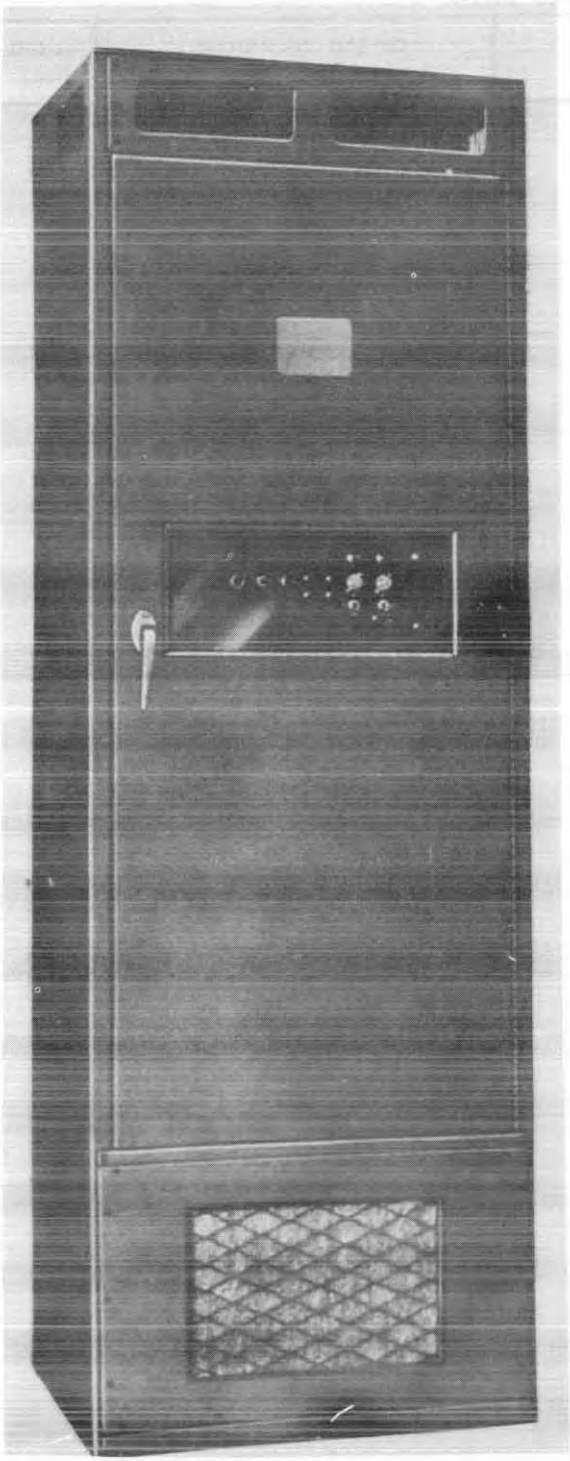
September 1956

MODULATOR-POWER SUPPLY

Radio-Auxillary

AN/FRA-16



Modulator-Power Supply AN/FRA-16

FUNCTIONAL DESCRIPTION

The AN/FRA-16 is used with the TZU Dual Ultra-High Frequency Fan Marker Transmitter. The power supply furnishes a high voltage, low voltage, and a bias voltage to the transmitter, as well as a 3,000 cycle amplified signal for modulating the transmitter carrier. Two Modulator Power Supplies are required for each dual transmitter, one of the power supplies and one of the transmitters being used as standby for emergency purposes.

No field changes in effect at time of preparation (14 June 1956).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER REQUIREMENTS: 93 to 127 v, 60 cps, 11 to 16 amp.

POWER OUTPUT

HIGH-VOLTAGE POWER SUPPLY: 1000 v DC, 400 ma.

LOW VOLTAGE POWER SUPPLY: 500 v DC, 200 ma.

BIAS POWER SUPPLY: -150 v, 100 ma.

TONE OSCILLATOR AND MODULATOR: 3000 cycle modulation tone.

MANUFACTURER'S OR CONTRACTOR'S DATA

Lewyt Manufacturing Corp., Brooklyn, N.Y.
Contract NObsr-64240
Approximate Cost: $6,000.00

TUBE AND/OR CRYSTAL COMPLEMENT

(2) OA2WA	(1) 5Y3WGTA	(2) 811
(4) 3B28	(2) 6005/6AQ5W	(2) 12AT7WA

Total Tubes: (13)

REFERENCE DATA AND LITERATURE

Technical Manual for Modulator-Power Supply AN/FRA-16.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	BuShips
PROCUREMENT COGNIZANCE	
STOCK NO.	

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
2	Modulator Power Supply	18 x 24 x 72	645
1	No. 10 AWG Wire, type RHL	420 ft lg	
1	No. 14 AWG Wire, type RHL	300 ft lg	
1	No. 14 AWG Wire, type RHL	150 ft lg	
1	Square Duct (Square D No. 20443)	4 x 4 x 60	
2	Elbow 90 degree, (Square D No. 20472)		
4	Trough Collar (Square D No. 20440)	4 x 4	

January 1958

Radio-Auxiliary

RADIO SET CONTROL GROUP AN/FRA-19(V)

FUNCTIONAL DESCRIPTION

The AN/FRA-19(V) Special Group "A" was designed to provide a much needed facility where conditions dictate the placement of a communications receiver or other device at a remote location to be controlled from a central point.

The equipment provides 6 vernier and 4 on/off control functions within the standard voice frequency band of 400 to 3000 cps. The vernier control is accomplished by means of audio tone carriers generated at the control site and adjusted ±42.5 cps around an assigned center frequency which in this group are 425, 595, 1275, 1445, 2125, and 2295 cps. The on/off control functions are accomplished by simply turning "on" or "off" the respective tones. The variation of each tone around its assigned center frequency produces a proportionate DC potential at the remote site which is used for control of the remote equipments. The employment of this frequency-dependent principle results in the system being virtually free of transmission line fluctuations and noise interference affects.

No field changes in effect at time of preparation (18 September 1957).

RELATION TO OTHER EQUIPMENT

The AN/FRA-19(V) SPECIAL GROUP "A" is a specific arrangement of types and quantities of component parts of AN/FRA-19(V).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TEMPERATURE RANGE: 0 to 65 deg C.
HUMIDITY: Up to 100%.
HFO TUNING: Will vary HFO of receiver not less than ±2 kc from 50 to 400 kc; not less than ±3 kc at 500 kc; ±2 kc per mc from 2 to 8 mc; ±1.5 kc per mc from 8 to 16 mc; not less than ±16 kc from 16 to 32 mc.
BFO TUNING: Will vary receiver BFO not less than 2.5 kc from center.
RF GAIN: Will vary RF gain from zero to full sensitivity.
BFO: Will switch receiver BFO on/off.
AVC: Will switch receiver AVC on/off.
AUDIO FILTER: Will effectively pass 500, 750, 1000, 1250 cps notes to assist monitoring remote receiver.
CONTROL TONES: 425, 595, 1275, 1445, 2125 and 2295 cps.
MUTTING: Rear panel control provides sidetone attenuation.

MANUFACTURER'S OR CONTRACTOR'S DATA

The Technical Material Corp, Mamaroneck, N. Y.
Contract NObsr-64820 and NObsr-71688.

TUBE AND/OR CRYSTAL COMPLEMENT

(20) 12AU7	(14) 12AT7
(9) 12AX7	(6) 0A2
(1) 6X4	(7) 0B2
(2) 6BA6	(4) 6C4
(6) 6AC5	(5) 5Y3GT

Total Tubes: (74)

REFERENCE DATA AND LITERATURE

NAVSHIPS 92600A, Technical Manual for Remote Control Receiver System Model RCR, AN/FRA-501 Receiver Control Group.
DD-146 for Radio Set Control Group AN/FRA-19(V) SPECIAL GROUP "A" FSN 5820-556-2435.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Amplifier A.F. AM-5028/FRA-501	6.5	15 X 24 X 27	67
1	Remote Control C-5027/FRA-501	2.44	11 X 15 X 27	65
1	Remote Control C-5028/FRA-501	2.44	11 X 15 X 27	65
1	Detector A.F. CV-5013/FRA-501	5.56	15 X 24 X 27	81
1	Detector A.F. CV-5014/FRA-501	5.56	15 X 24 X 27	81
1	Filter, Assembly F-5006/FRA-501	5.56	15 X 24 X 27	35
1	Filter, Assembly F-5007/FRA-501	5.56	15 X 24 X 27	35
1	Amplifier, A.F. AM-5027/FRA-501	5.56	15 X 24 X 27	66
5	Power Supply PP-5030/FRA-501	2.44	11 X 15 X 27	43

AN/FRA-19(V) RADIO SET CONTROL GROUP

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Control, Remote C-5027/FRA-501	7 x 7 x 19	15
1	Control, Remote C-5028/FRA-501	7 X 7 X 19	15
1	Filter Assembly F-5006/FRA-501	3-1/2 x 7 x 19	8
1	Filter Assembly F-5007/FRA-501	3-1/2 x 7 x 19	8
1	Amplifier AF AM-5027/FRA-501	7 x 8-3/4 x 19	16
1	Amplifier AF AM-5028/FRA-501	7 x 12-1/2 x 19	16
1	Detector, AF CV-5013/FRA-501	7 x 14-3/4 x 19	33
1	Detector, AF CV-5014/FRA-501	7 x 14-3/4 x 19	33
5	Power Supply PP-5030/FRA-501	3-1/2 x 8-1/2 x 19	16

October 1957

Radio-Auxiliary

ANTENNA GROUP AN/FRA-21

FUNCTIONAL DESCRIPTION

The AN/FRA-21 provides facilities for the transmission and reception of radio frequency energy in the frequency range of 755 to 985 mc. Used in Tropospheric Scatter Communications.

No field changes in effect at time of preparation (9 May 1957).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 755 to 985 mc.

MANUFACTURER'S OR CONTRACTOR'S DATA

Western Electric Co., New York, N.Y.
Contract AF33(600)-29717.

TUBE AND/OR CRYSTAL COMPLEMENT

Tubes and Crystals: Not Available.

REFERENCE DATA AND LITERATURE

Nomenclature Card for Antenna Group AN/FRA-21 dated 16 October 1956.

TYPE CLASSIFICATION
DESIGN COGNIZANCE USAF
PROCUREMENT COGNIZANCE
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Antenna Reflector AS-859/FRA-21		
1	Waveguide Horn AT-738/FRA-21		
1	Tower AB-512/FRA-21		
	Waveguide Assemblies		

January 1958

Radio-Auxiliary

ANTENNA GROUP AN/FRA-25

FUNCTIONAL DESCRIPTION

The AN/FRA-25 is a fixed 805 foot mast type antenna and ground system used for reception and transmission of wide band navigational pulses. Designed to withstand winds up to 109 knots with approximately 1 inch of ice.

The Antenna Mast consists of 41 sections, 40 each 20 ft long by 15 feet triangular cross section and 1 each 5 foot high base insulator; mast includes ladder and suitable lifting jacks for the antenna; includes obstruction lighting.

No field changes in effect at time of preparation (18 June 1957).

RELATION TO OTHER EQUIPMENT

Formerly Antenna Group OA-1112/FPN.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

HEIGHT OF MAST: 805 ft.
NUMBER OF SECTIONS: 41.
SIGNAL APPLICATION: wide band navigational pulses, reception and transmission.

TUBE AND/OR CRYSTAL COMPLEMENT

No electron tubes.

REFERENCE DATA AND LITERATURE

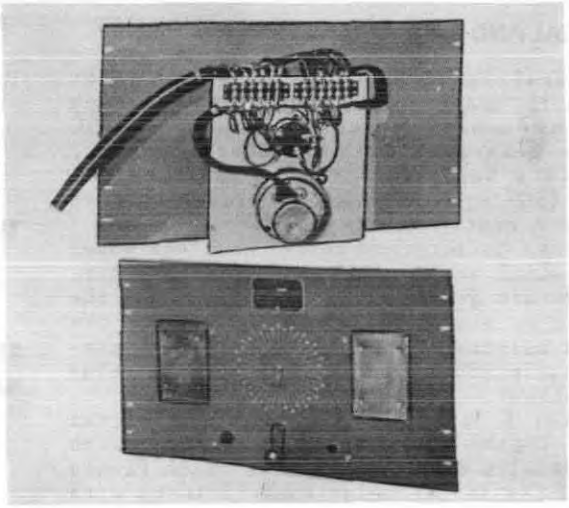
Nomenclature Card for Antenna Group AN/FRA-25, dated 19 November 1956.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Antenna Mast		
4	Primary Insulator		
6	Secondary Insulator		
1	Ground System C/O		
	Guy Wires		
	Anchor Rods		
	Guy anchors and link bars		

RADIO FREQUENCY SWITCHING GROUP AN/FRA-3



Radio Frequency Switching Group AN/FRA-3

FUNCTIONAL DESCRIPTION

The AN/FRA-3 allows the operator of a radio receiver to rapidly select any of forty antennae from his operating position at the receiver. The equipment consists of five complete systems, each of five receiver operators at five different locations may each select any one antenna from a remotely located group of forty. By means of a patching arrangement at the switching location the five remote control panels may be patched to control any one of the five (forty point) antenna selector switches. The five control, panels are located convenient to the receiver with which each is used. The five antenna selectors are located all together in a relay rack cabinet as near as is practical to the antenna groups. Mounted in the relay rack panel are two RF patch panels for patching any antenna switch to any receiver and to synchro control patch panels for patching the control of any antenna switch to any control panel.

The receiver operator by turning a hand crank on a control panel mounted at his position turns a synchro generator which is electrically connected to a synchro motor at the antenna switch location.

No field changes in effect at time of preparation (17 May 1956.)

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (1) Relay Rack Cabinet CY-597/G; (2) Radio Frequency Patch Panel J-239/G; (5) Radio Frequency Patch Cords 49122-B; Coaxial Cable RG-12/U and Multiconductor Cable MHFA-14.

AN/FRA-3 RADIO FREQUENCY SWITCHING GROUP

ELECTRICAL AND MECHANICAL CHARACTERISTICS

Control Panel consists of a 19 in. by 12-7/8 in. panel for standard relay rack mounting behind which are mounted a 5G Synchro Generator and a IF Synchro Motor, There is a hand crank on the shaft of the larger (5G) synchro which protrudes through the lower center of the panel.

Antenna Selector consists of a front panel behind which are mounted a 5F synchro motor, a IG synchro generator, a gear train and the antenna selector switch. All five of the antenna selectors which go to make up a complete equipment are mounted in the same relay rack cabinet.

RF Patch Panels J-239/G contains eleven NT-CIA-491388 Jack Switches five of which are partially used. Two of these Patch Panels are mounted in the relay rack cabinets with the antenna selectors.

Electrical Connector Assemblies J-435/G and J-436/G are mounted in the relay rack cabinet with the Antenna Selectors. They are used to patch the synchro control cables from the control panels to the Antenna Selector. The upper assembly (J-435/FRA-3 is connected to the Antenna Selectors, has female contact pins in the connectors while the lower assembly (J-436/FRA-3) has male pins.

MANUFACTURER'S OR CONTRACTOR'S DATA

Transcontinental Electronic Corp., New York, N. Y.
Contract NObsr-49003 dated 19 July 1949.
Approximate Cost: $4500.00.

TUBE COMPLEMENT

No Electron Tubes.

REFERENCE DATA AND LITERATURE

NAVSHIPS 91500: Technical Manual for Radio Frequency Switching Group AN/FRA-3.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUAER
PROCUREMENT COGNIZANCE
STOCK NO.

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (cu ft)	OVER-ALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	5 Antenna Selectors SA-256/FRA-3	14	14 X 21 X 82	300
1	5 Control Panels C-923/FRA-3 1 Electrical Connector Assy J-435/FRA-3 1 Electrical Connector Assy 1 Blank Panel	9	14 X 21 X 52	125
1	1 Box Equipment Spares 5 Synchro Control Patch Cords 2 Technical Manuals NAVSHIPS 91500 2 Sets Installation Drawings			

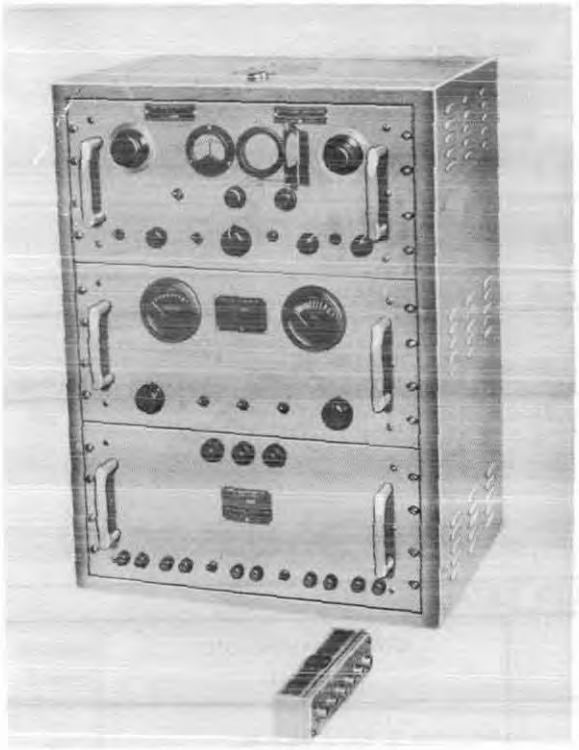
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVER-ALL DIMENSIONS (inches)	WEIGHT (lbs.)
5	Antenna Selector SA-256/FRA-3	12-7/32 X 15 X 19	47.5
5	Control Panel C-923/FRA-3	8-1/4 X 12-7/32 X 19	16
1	Electrical Connector Assembly J-435/FRA-3	2-1/4 X 3-15/32 X 19	2-1/4
1	Electrical Connector Assembly J-436/FRA-3	2-1/4 X 3-15/32 X 19	1-7/8
1	Blank Panel	3/16 X 5-7/32 X 19	4-5/8
5	Synchro Control Patch Cords		
2	Sets Installation Drawings		
1	Box Equipment Spares		
2	Technical Manual NAVSHIPS 91500		

April 1958

Radio-Auxiliary

FREQUENCY SHIFT CONVERTER GROUP AN/FRA-4



Frequency Shift Converter Group AN/FRA-4

FUNCTIONAL DESCRIPTION

The AN/FRA-4 is used in the shore-based portion of a radio-telegraph system and is designed to select the strongest of three frequency-shift signals from associated diversity receiving equipment and convert mark-space type frequency shifts into polar relay operation, keyed tone output, and keyed DC output; or to convert multiple-shift facsimile-type signals into amplitude-modulated tone output. The outputs are used to operate teletype printers, teletype tape recorders, remotely located telegraph or teletype terminal equipment, facsimile recorders or other similar equipment.

It uses the signals of the 50 kilocycle intermediate-frequency outputs from three receivers of Navy Model RBP or RCP Diversity Radio Receiving Equipment operating in diversity reception of frequency-shift transmissions.

No field changes in effect at time of preparation (20 May 1958).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (1) Diversity Radio Receiving Equipment Navy Model RBP or RCP, (1) Recording Equipment, Cable as Required.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY DATA
- CENTER FREQUENCY: 50 kc.
- BANDWIDTH
  - CHANNEL 1, 2, 3: 10 kc.
  - DISCRIMINATOR (VARIABLE)
    - NARROW-BAND: 375 to 2000 cps.
    - WIDE-BAND: 1000 to 10000 cps.
- TONE: 850 to 3750 cps.

RECEPTION
- TYPE SIGNAL: Frequency shift.
- MODULATION: Frequency.

OUTPUT DATA
- TONE: 10 v, 600 ohms impedance.
- DC SIGNAL: 90 v DC, 3000 ohms impedance.
- RELAY CONTACTS: 270 v DC, 200 ma.

INPUT DATA
- CHANNEL 1, 2, 3: 80 mv to 10 v, 1000 ohms.
- TONE: 1 v, 1000 ohm load.

KEYING SPEED: 100 wpm.

POWER REQUIREMENTS: 115 v, 60 cps, single ph, 227 W, 92.5% pf.

MANUFACTURER'S OR CONTRACTOR'S DATA

Hoffman Radio Corporation, Los Angeles, Calif.

Contract NObsr-43389, dated 15 June 1949.

Approximate Cost: $3035.00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 0C3W	(2) 0D3W
(1) 12AX7	(1) 2BP1
(1) 5U4G	(1) 5Y3WGTB
(2) 5726/6AL5W	(2) 6AC7WA
(2) 6AG7Y	(1) 6AK6
(1) 6AS7G	(2) 6H6
(1) 6SH7	(8) 6SJ7
(1) 6SL7WGT	(2) 6SN7WGTA
(3) 6V6GTY	

Total Tubes: (32)

Radio-Auxiliary

April 1958

AN/FRA-4 FREQUENCY SHIFT CONVERTER GROUP

(1) 1N34A
Total Crystals: (1)

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE CS-1207
STOCK NO.

REFERENCE DATA AND LITERATURE

NAVSHIPS 91496: Technical Manual for Frequency Shift Converter Group AN/FRA-4.

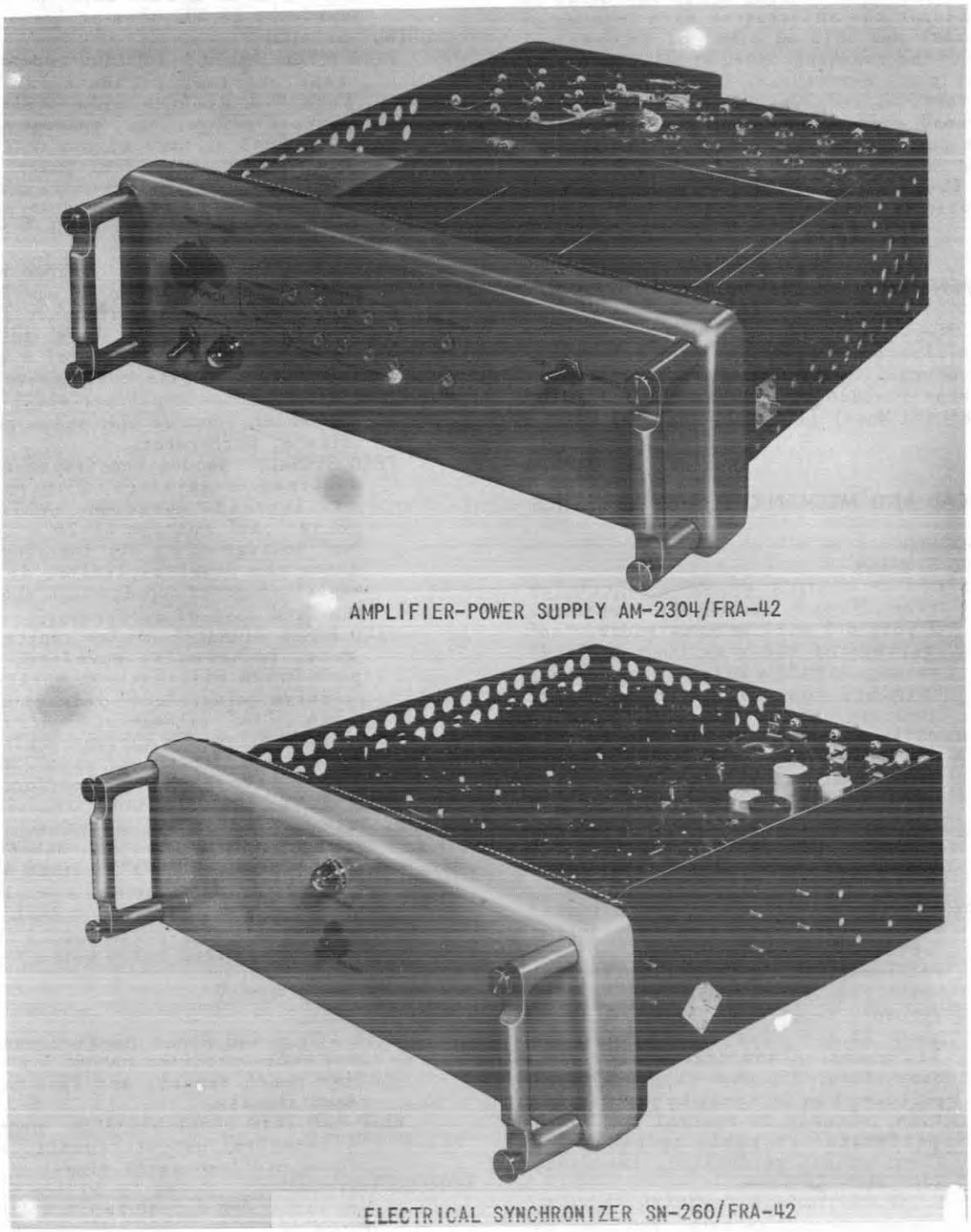
SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Frequency Shift Converter Group AN/FRA-4	21.9	28-1/2 X 32-1/2 X 41	244
1	Set of Equipment Spares	4.5	14-7/8 X 18-3/8 X 28-5/8	128

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Frequency Shift Converter Group AN/FRA-4 consisting of: Comparator CM-26/FRA-4, Keyer KY-60/FRA-4, Power Supply PP-561/FRA-4, Cabinet CY-831/FRA-4	17-1/16 X 28 X 28-3/8	159
1	Jack Box J-370/FRA-4	2-1/4 X 2-1/2 X 8	1.1
4	Cable Assembly		
24	Connector		
2	Cable Clamp		
1	Set of Equipment Spares	12-3/4 X 16-1/2 X 25	86
2	Technical Manual NAVSHIPS 91496	1/2 X 8-1/2 X 11	

TELETYPEWRITER CONTROL GROUP AN/FRA-42



Teletypewriter Control Group AN/FRA-42

Radio-Auxiliary

AN/FRA-42 TELETYPEWRITER CONTROL GROUP

FUNCTIONAL DESCRIPTION

Teletypewriter Control Group AN/FRA-42 is used to adapt the information rate (number of characters per unit of time) of an external system to the punching speed of the paper tape punches in the perforator. The AN/FRA-42 normally receives information at 200 characters per second and adapts this information rate to the punch rate of 240 punch cycles per second.

No field changes in effect at time of preparation (15 February 1961).

EQUIPMENT REQUIRED BUT NOT SUPPLIED

(1) RCA Senior Volt Ohmyst type WV-98A; (1) Oscilloscope AN/USM-109; (1) Pulse Generator General Radio type 1391-B; (1) Audio Oscillator TS-382A/U; (1) Power Supply Hewlett-Packard Model 712B; (1) Test Fixture.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

SYNCHRONIZER

INPUT SIGNALS

NEGATIVE CONTROL PULSE: Repetition rate, 200 pps; rectangular waveform, 2 porm 0.2 milliseconds width, "on" voltage of P70 v dc (max.), "off" voltage of P135 v dc (min.); function, timing; source impedance 33,000 ohms or less.

NEGATIVE SIGNAL GATE: Random repetition rate, pulse duration normally approximates the length of the information signal group; rectangular waveform, "on" voltage of P70 v dc (max.), "off" voltage of P135 v dc (min.); function, blank tape feed; source impedance 33,000 ohms or less.

SYNCHRONIZING SIGNAL: Differentiated rectangular pulse; repetition period between positive pulses is 4.16 milliseconds, repetition period between negative pulses is 4.16 milliseconds, repetition period will vary porm 5% and in a like manner for all positive and negative pulses; base width, 250 usec (approx.); amplitude, 4 to 20 v peak to peak; function, signals to control unit when perforator is ready to punch and feed; origin perforator; impedance 2000 ohms or less.

FIVE INFORMATION INPUT CHANNEL SIGNALS: Random repetition rate, 200 usec to 2 milliseconds duration, "on" voltage P135 v dc (min.), "off" voltage of P100 v dc (max.), function, carries intelligence in the form of live element Baudot teletype code; impedance 33,000 ohms or less.

OUTPUT SIGNALS

FIVE PUNCH SIGNALS: Random repetition rate, rectangular waveform 2.26 porm 0.1 milliseconds duration, positive going, "off" voltage of M44 v dc, "on" voltage of 0 v dc (when connected to amplifier-power supply); function, to drive the current amplifiers in the amplifier-power supply which control the punch coils of perforator.

FIVE PUNCH RESET SIGNALS: Random repetition rate, rectangular waveform, 1.91 porm 0.096 milliseconds duration, positive going, "off" voltage of M40 v dc, "on" voltage of 0 v dc; function, to drive the current amplifiers in the amplifier-power supply which control the punch reset coils of perforator.

FEED SIGNAL: Random repetition rate, rectangular waveform, 21 porm 0.5 milliseconds duration, positive going "off" voltage of 70 v min., "on" voltage of 0 v dc; function, to drive the power amplifiers in the amplifier-power supply which control the feed coil of perforator.

FEED RESET SIGNAL: Random repetition rate, rectangular waveform, 4.2 porm 0.126 milliseconds duration, positive going, "off" voltage of 70 v min., "on" voltage of 0 v dc; function, to drive the current amplifier in the amplifier-power supply which controls the feed coil of perforator.

FEED RESET SIGNAL: Random repetition rate, rectangular waveform, 4.2 porm 0.126 milliseconds duration, positive going, "off" voltage of 70 v min., "on" voltage of 0 v dc; function, to drive the current amplifier in the amplifier-power supply which controls the feed reset coil of perforator.

AMPLIFIER-POWER SUPPLY

INPUT SIGNALS

FIVE PUNCH AND PUNCH RESET SIGNALS: Same as Synchronizer output signals, five punch signals and five punch reset signals.

FEED AND FEED RESET SIGNALS: Same as Synchronizer output signals, feed signal and feed reset signal.

AMBIENT TEMPERATURE: 0 deg to 50 deg C (32 deg to 122 deg F), 40 to 95% relative humidity.

POWER REQUIREMENTS: 105, 115 or 125 v, 60 cyc, single ph.

June 1961

Radio-Auxiliary

TELETYPEWRITER CONTROL GROUP AN/FRA-42

MANUFACTURER'S OR CONTRACTOR'S DATA

Sylvania Electric Products Inc., Buffalo, N.Y.
Dwg no. 02-120-800.
Contract NObsr-75232.
Contract NObsr-75587.

TUBE AND OR CRYSTAL COMPLEMENT

(2) 6626/0A2	(1) 6625/0B2
(1) 5651	(9) 5670
(17) 5696	(2) 5725
(1) 5751	(8) 5814A
(1) 6080WA	(13) 6094

Total Tubes: (55)
No Crystals used.

SEMI-CONDUCTORS

(29) 1N458
Total Semi-Conductors: (29)

REFERENCE DATA AND LITERATURE

NAVSHIPS 93444: Technical Manual for TELETYPEWRITER CONTROL GROUP AN/FRA-42.

TYPE CLASSIFICATION (NAVY)
DESIGN COGNIZANCE USN, BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu. Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Electrical Synchronizer SN-260/FRA-42	13.2	19.75 x 31.5 x 36.75	125
1	Amplifier-Power Supply AM-2304/FRA-42	13.2	19.75 x 31.5 x 36.75	166

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Teletypewriter Control Group AN/FRA-42 includes:		
1	Electrical Synchronizer SN-260/FRA-42	5.125 x 17.25 x 23.06	
1	Amplifier-Power Supply AM-2304/FRA-42	5.125 x 17.25 x 23.06	

Cog Service:	FSN:	Functional Class:
	USA USN USAF	

TYPE CLASS:

MANUFACTURER'S NAME/CODE NUMBER: Collins Radio Company.

(No Illustration Available)

FUNCTIONAL DESCRIPTION:

The Modulator Group AN/FRA-45(XN-1) is designed to generate the transmitted frequency and modulates it in accordance with the modes and data rates selected.

No field changes in effect at time of preparation (12 May 1961).

TECHNICAL CHARACTERISTICS:

OPERATING POWER RQMT: 115 v ac, 60 cps, single ph.

RELATION TO OTHER EQUIPMENT:

The AN/FRA-45(XN-1) is designed as part of Multiplex Communication System AN/WRC-2.

The AN/FRA-45(XN-1) is designed to be used with, but not part of, VLF Shore radio transmitters and associated antennas.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Modulator Group AN/FRA-45(XN-1) consists of:			
1	Transmitter Modulator			
4	Teletypewriter Distributor-Transmitters (Synchronously stepped)			

REFERENCE DATA AND LITERATURE:

Nomenclature Card for Modulator Group AN/FRA-45(XN-1).

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Data not available.

CRYSTALS: Data not available.

SEMI-CONDUCTORS: Data not available.

AN/FRA-45(XN-1) MODULATOR GROUP

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE:
SPEC &/OR DWG:

DESIGN COG: Navy BuShips

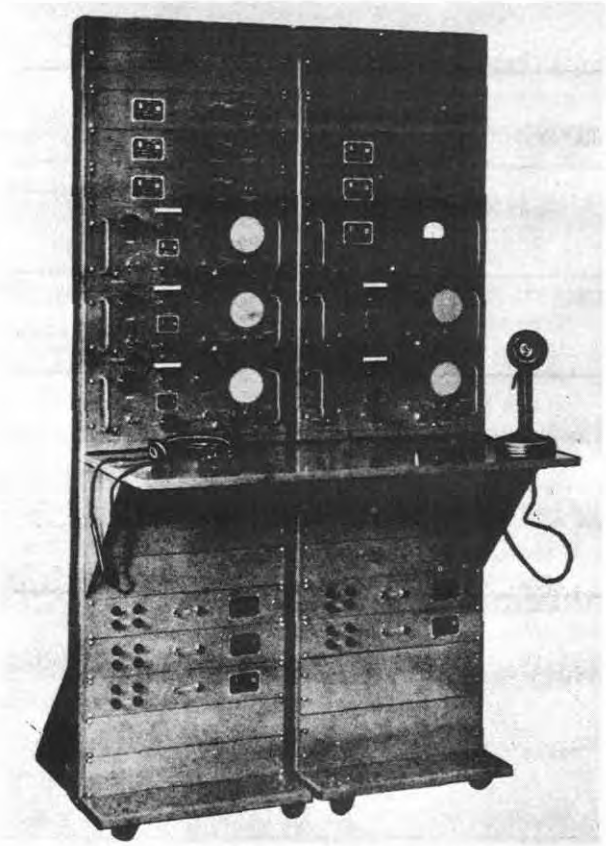
CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Collins Radio Company	Burbank, California	NObsr-72760, 20 March 1958	

October 1957

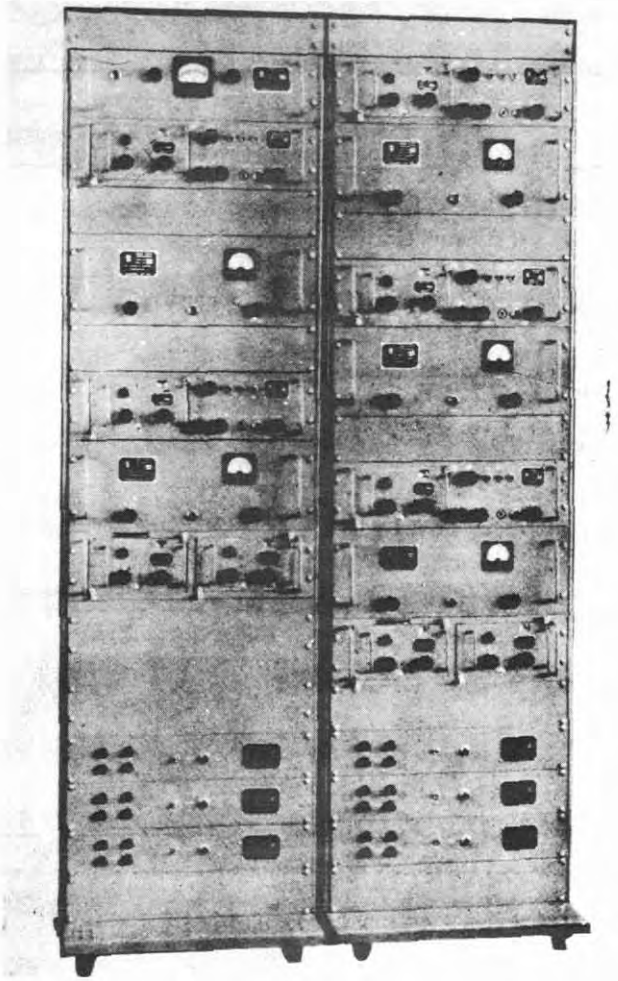
Radio-Auxiliary

RECEIVER CONTROL GROUP

AN/FRA-501



Control Terminal AN/FRA-501



Remote Terminal AN/FRC-501

FUNCTIONAL DESCRIPTION

The AN/FRA-501 is designed to provide a much needed facility where conditions dictate the placement of a communications receiver or other device at a remote location to be controlled from a central point.

The equipment provides up to 15 vernier and 10 on/off control functions within the standard voice frequency band of 400 to 3000 cps. The vernier control is accomplished by means of audio tone carriers generated at the control site and adjusted ±42 cps around an assigned center frequency. These carriers are standard 170 cycle tone frequencies. The on/off control functions are accomplished by simply turning "on" or "off" the respective tones. The variation of each tone around its assigned center frequency produces a proportionate DC potential at the remote site which is used for control of the remote equipments. The use of this frequency-dependent principal causes the system to be virtually unaffected by transmission line fluctuations and noise interference.

No field changes in effect at time of preparation (1 March 1957).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 400 to 3000 cps.
TEMPERATURE RANGE: 0 to 65° C.
HUMIDITY: Up to 100%.
LINES REQUIRED BETWEEN SITES: 6 - one for control, one each for audio return.
RACK SPACE: Two 72 in. racks per site.
HFO TUNING: Will vary receiver HFO not less than ±2 kc from center.
RF GAIN: Will vary RF gain from zero to full sensitivity.
BFO: Will switch receiver BFO on/off.
AVC: Will switch receiver AFC on/off.
AUDIO FILTER: Will effectively pass 500, 750,

Radio-Auxiliary

October 1957

AN/FRA-501 RECEIVER CONTROL GROUP

1000, 1250 cps notes to assist monitoring remote receiver.

MUTING: Rear panel control provides sidetone attenuation.

MANUFACTURER'S OR CONTRACTOR'S DATA

The Technical Material Corp., Mamaromeck, N.Y. and Ottawa, Ontario.

TUBE AND/OR CRYSTAL COMPLEMENT

(3) 6626-OA2WA
(1) OA3
(2) 6C4WA
(7) 12AT7WA
(4) 6627-OB2WA
(1) 5Y3WGTB
(1) 6X4WA
(3) 5725-6AL5W
(2) 5749-6BA6W
(13) 6189
(5) 5751
Total Tubes: (42)

REFERENCE DATA AND LITERATURE

NAVSHIPS - 92600A: Technical Manual for Remote Control Receiver System Model RCR-AN/FRA-501 Receiver and Control Group.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Amplifier A. F. AM-5028/FRA-501	6.50	15 X 24 X 27	67
5	Remote Control C-5027 thru C-5031/FRA-501	2.44	11 X 15 X 27	65 ea
5	Detector, A.F. CV-5013 thru CV-5017/FRA-501	5.56	15 X 24 X 27	81 ea
5	Filter, Assembly F-5006 thru F-5010/FRA-501	5.56	15 X 24 X 27	35 ea
1	Amplifier, A.F. AM-5027/FRA-501	5.56	15 X 24 X 27	66
11	Power Supply PP-5030/FR( )	2.44	11 X 15 X 27	43 ea

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
5	Remote System Control (1 per control)-C5027 thru C5031/FRA-501	7 X 7 X 19	15
5	Filter Assembly (one per control) F5006 thru F5010/FRA-501	3-1/2 X 7 X 19	8
5	Power Supply (one per control) PP-5030/FR( )	3-1/2 X 8-1/2 X 19	16
1	A.F. Amplifier AM-5027/FRA-501	7 X 8-3/4 X 19	16
5	Detector, AF (Discriminator) CV-5013 thru CV-5017/FRA-501	7 X 14-3/4 X 19	33
6	Power Supply (one per Detector, one per Amplifier) PP-5030/FR( )	3-1/2 X 8-1/2 X 19	16

April 1959

Radio-Auxiliary

RECEIVER CONTROL GROUP AN/FRA-501A

FUNCTIONAL DESCRIPTION

The AN/FRA-501A was designed to provide a much needed facility where conditions dictate the placement of a communications receiver or other device at a remote location to be controlled from a central point.

The AN/FRA-501A provides up to 15 vernier and 10 on/off control functions within the standard voice frequency band of 400 to 3000 cycles per second (cps). The vernier control is accomplished by means of audio tone carriers generated at the control site and adjusted plus or minus 42.5 cycles per second (cps) around an assigned center frequency. These carriers are standard 170 cycle tone frequencies. The on/off control functions are accomplished by simply turning "on" or "off" the respective tones. The variation of each tone around its assigned center frequency produces a proportionate direct current (DC) potential at the remote site which is used for control of the remote equipments. The use of this frequency dependent principal causes the system to be virtually unaffected by transmission line fluctuations and noise interference.

No field changes in effect at time of preparation (2 March 1959).

RELATION TO OTHER EQUIPMENT

The AN/FRA-501A is mechanically and electrically interchangeable with the AN/FRA-501 except that it differs in modified component and the input voltage of the power transformers has been raised from 220 volts to 230 volts.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TEMPERATURE RANGE: 0 to 65° C.
HUMIDITY: Up to 100%.
LINES REQUIRED BETWEEN SITES: 6-one for control, one each for audio return.
RACK SPACE: Two 72 in. racks per site.
HFO TUNING: Will vary receiver HFO not less than ±2 kc center.
RF GAIN: Will vary R.F. Gain from zero to full sensitivity.
BFO: Will switch receiver BFO on/off.
AVC: Will switch receiver AFC on/off.
AUDIO FILTER: Will effectively pass 500, 750, 1000, 1250 cps notes to assist monitoring remote receiver.
MUTING: Rear panel control provides side tone attenuation.
FREQUENCY RANGE: 400 to 3000 cps.
OPERATING POWER RQMT: 230 v, 60 cps, single ph.

MANUFACTURER'S OR CONTRACTOR'S DATA

The Technical Material Corp., Mamaroneck, N.Y. and Ottawa, Ontario.
Contract NObsr-75656.
Contract NObsr-75528

TUBE AND/OR CRYSTAL COMPLEMENT

(3) 6626-OA2WA	(1) OA3
(2) 6C4WA	(7) 12AT7WA
(4) 6627-OB2WA	(1) 5Y3WGTB
(3) 5725-6AL5W	(1) 6X4WA
(2) 5749-6BA6W	(5) 5751
(13) 6189	

Total Tubes: (42)

No Crystals used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 93238: Technical Manual for Receiver Group AN/FRA-501A.
NAVSHIPS 92600A: Technical Manual for Receiver Group AN/FRA-501.
Nomenclature Card AN/FRA-501A for Receiver Group.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	A.F. Amplifier AM-5028A/FRA-501	6.50	15 X 24 X 27	67

Radio-Auxiliary

AN/FRA-501A RECEIVER CONTROL GROUP

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
5	Remote Control C-5027A thru C-5031A/FRA-501	2.44	11 X 15 X 27	65
5	A.F. Detector CV-5013A thru CV-5017A/FRA-501	5.56	15 X 24 X 27	81
5	Filter Ass'y F-5006A thru F-5010A/FRA-501	5.56	15 X 24 X 27	35
1	A.F. Amplifier AM-5025A/FRA-501	5.56	15 X 24 X 27	66
11	Power Supply PP-5030A/FR ( )	2.44	11 X 15 X 27	43

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
5	Remote Control System C-5027A thru C-5031A/FRA-501	7 X 7 X 19	15
5	Filter Ass'y F5006A thru F5010A/FRA-501	3-1/2 X 7 X 19	8
11	Power Supply PP-5030A/FR	3-1/2 X 8-1/2 X 19	16
1	A.F. Amplifier AM-5027A/FRA-501	7 X 8-3/4 X 19	16
5	A.F. Detector (Discriminator) CV-5013A thru CV-5017A/FRA-501	7 X 14-3/4 X 19	33

April 1958

Radio-Auxiliary

CONTROL-MONITOR GROUP AN/FRA-6

Control-Monitor Group AN/FRA-6

FUNCTIONAL DESCRIPTION

The AN/FRA-6 is an airport control tower console designed for the remote operation of one to ten remotely located transmitters and for selection and control of the output of one to ten remotely located receivers. When required, two Control-Monitor Groups AN/FRA-6 can be connected in multiple to share any or all the remote equipment available. Selection of the desired transmitter and receiver channels is made by individual lever-type switches (one for each transmitter and receiver channel) located on the control panel mounted on the top of the console. These switches control relays in Relay Assy RE-139/FRA-6, which in turn control the remote equipment. All audio lines to and from the console are of 600 ohms impedance.

No field changes in effect at time of preparation (29 January 1958).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (10) Radio Transmitters, (10) Audio Lines, (10) Transmitter Control Lines, (1) Relay Rack, (1) Standard Abbreviations Handbook Jan-Std-12.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

NUMBER CONTROLLED RECEIVER CHANNELS: 10 max.
NUMBER CONTROLLED TRANSMITTER CHANNELS: 10 max.
RECEIVER MONITORS: 2 loudspeakers.
TRANSMITTER AND RECEIVER LINE IMPEDANCE: 150 or 600 ohms.
MICROPHONE INPUT IMPEDANCE: 50 ohms.
AM-728/FRA-6 (Audio Frequency Amplifier)
- POWER SOURCE REQUIRED: 105 to 125 v, 50/60 cps, single ph, 50 W.
- FREQUENCY RESPONSE: Within ±2 db. 200 to 5000 cps.
- INPUT IMPEDANCE: 50 to 600 ohms.
- OUTPUT IMPEDANCE: 600 ohms.
- POWER GAIN: 70 db max.
- POWER GAIN: 50 db min.
- LIMITING: 20 db min.
- POWER OUTPUT (CONSTANT WITHIN ±2 DB): 1W.
- HARMONIC DISTORTION: 5% max.
- NOISE OUTPUT: 20 dbm max.

AM-744/FRA-6 (Amplifier Assy)
- POWER SOURCE REQUIRED: 105 to 125 v, 50/60 cps, single ph, 50 W.

PP-851/FRA-6 (Power Supply)
- POWER SOURCE REQUIRED: 105 to 125 v, 50/60 cps, single ph, 150 W.
- DC VOLTAGE OUTPUT: 48 v.
- DC CURRENT: 2 amp max.

C-1126/FR (Transmitter Control)
- DC VOLTAGE OUTPUT (TAPPED): 20, 40, 60, 80, 100, 120 v.
- DC CURRENT: 100 ma max.

RELAY
- COIL OPERATING VOLTAGE: 20 to 120 v dc.
- COIL OPERATING CURRENT: 15 ma min.
- COIL RESISTANCE, DC: 1300 ohms.
- CONTACT VOLTAGE: 230 v AC max.
- CONTACT CURRENT: 10 amp max.

LINE MATCHING TRANSFORMER
- IMPEDANCE
  - PRIMARY: 150 or 600 ohms.
  - SECONDARY: 50, 200 or 600 ohms.

POWER SOURCE REQUIRED (Complete equipment): 105 to 125 v, 50/60 cps, single ph, 500 W.
POWER FACTOR: 90%.

Radio-Auxiliary

AN/FRA-6 CONTROL-MONITOR GROUP

April 1958

MANUFACTURER'S OR CONTRACTOR'S DATA

Wickes Engineering and Construction Co, Camden, N.J.
Contract NObsr-52655, dated 26 June 1951.

REFERENCE DATA AND LITERATURE

NAVSHIPS 91816(A): Technical Manual for Control-Monitor Group AN/FRA-6.

TUBE AND/OR CRYSTAL COMPLEMENT

(10) 5670	(4) 6SK7W	(4) 6SJ7
(4) 6V6GT	(4) 6H6	(4) 5Y3GT

Total Tubes: (30)

No Crystals.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE MIL-C-16279
STOCK NO.

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Communication Control Console OA-408/FRA-6	24.6	24-5/8 X 35 X 46	440
2	Transmitter Control C-1126/FR	6.7	12 X 23-1/2 X 39-1/2	124
1	Spare Parts	1.2	10 X 14 X 14-3/4	17

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Communication Control Console OA-408/FRA-6 Consisting of:		310
1	Communication Control Cabinet CY-1224/FRA-6	19-1/2 X 36 X 40	
1	Relay Assy RE-139/FRA-6	5-1/4 X 17-7/16 X 17-1/2	
4	Audio Frequency Amplifier AM-728/FRA-6	2-7/8 X 8 X 17-7/16	
1	Amplifier Assy AM-744/FRA-6	5-3/4 X 8 X 17-7/16	
1	Transformer Assy TF-166/FRA-6	6-3/8 X 7 X 17-1/2	
2	Power Supply PP-851/FRA-6	7-1/4 X 8-5/8 X 10-7/8	
1	Dynamic Microphone M-39/U	5 X 5 X 8	
10	Transmitter Control C-1126/FR	3-1/2 X 5-7/8 X 19	15
2	Technical Manual		

January 1958

Radio-Auxiliary

BROADCASTING STUDIO EQUIPMENT AN/FRA-8

FUNCTIONAL DESCRIPTION

The AN/FRA-8 is an assemblage of equipment which will provide facilities to conduct a studio type radio broadcasting program operation.

No field changes in effect at time of preparation (9 May 1957).

RELATION TO OTHER EQUIPMENT

Used with but not part of AN/MRT-5.

TUBE AND/OR CRYSTAL COMPLEMENT

Tubes and Crystals: Not Available.

REFERENCE DATA AND LITERATURE

Nomenclature Card for Broadcasting Studio Equipment AN/FRA-8.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Console		
1	Mixing Cabinet		
1	Desk		
1	Floor Microphone Stand		
8	Quartermaster Clocks		
4	Chairs		
1	Speaker		
4	Speakers		
1	Cabinet		
2	Recorders		
2	Amplifiers		
1	Desk		
1	Switching Panel		
1	Cutter-Splicer		
1	Magnetic Tape Eraser		
4	Warning Lights		
6	Floor Microphone Stands		
2	Desk Microphone Stands		
12	Microphone Assemblies		
2	Turntables		
2	Turret Head Arms		
2	Amplifiers		
4	Amplifiers		
4	Amplifiers		
4	Headsets H-16/U		
1	Filter		
2	Turntables		
2	Amplifiers		
5	Transformers		
2	Recorders		
2	Amplifiers		

11 January 1962 — DIRECTION FINDER SET AN/FRD-10(XN-1)

Cog Service: **FSN:** **Functional Class:**

USA **USN** **USAF**

TYPE CLASS:

MANUFACTURER'S NAME/CODE NUMBER: Federal Telecommunication Laboratory.

(No Illustration Available)

FUNCTIONAL DESCRIPTION:

The Direction Finder Set AN/FRD-10(XN-1) is a fixed installation which indicates the horizontal azimuth direction of arrival of a radio frequency wave.

No field changes in effect at time of preparation (12 May 1961).

TECHNICAL CHARACTERISTICS:

TYPE OF INSTALLATION: Fixed.
TYPE OF EMISSION: A0, A1, A2, A3.
TYPE OF INDICATOR: Cathode ray tube type (Dumont K1482-P7).
NUMBER OF BANDS: 2 bands.
FREQUENCY RANGE: 4 to 8 mc and 8 to 16 mc.
OPERATING POWER RQMT: 105/115/125 v ac, 50 to 60 cps, single ph.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Direction Finder Set AN/FRD-10(XN-1) consists of:			
1	Antenna Group			
2	Control, Indicator			
2	Indicator, Azimuth			
1	Radio Receiver			
1	Scanner, Antenna Phasing			
1	Switch, Radio Frequency Transmission Line			

REFERENCE DATA AND LITERATURE:

Nomenclature Card for Direction Finder Set AN/FRD-10(XN-1).

AN/FRD-10(XN-1) DIRECTION FINDER SET

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Data not available.

CRYSTALS: Data not available.

SEMI-CONDUCTORS: Data not available.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

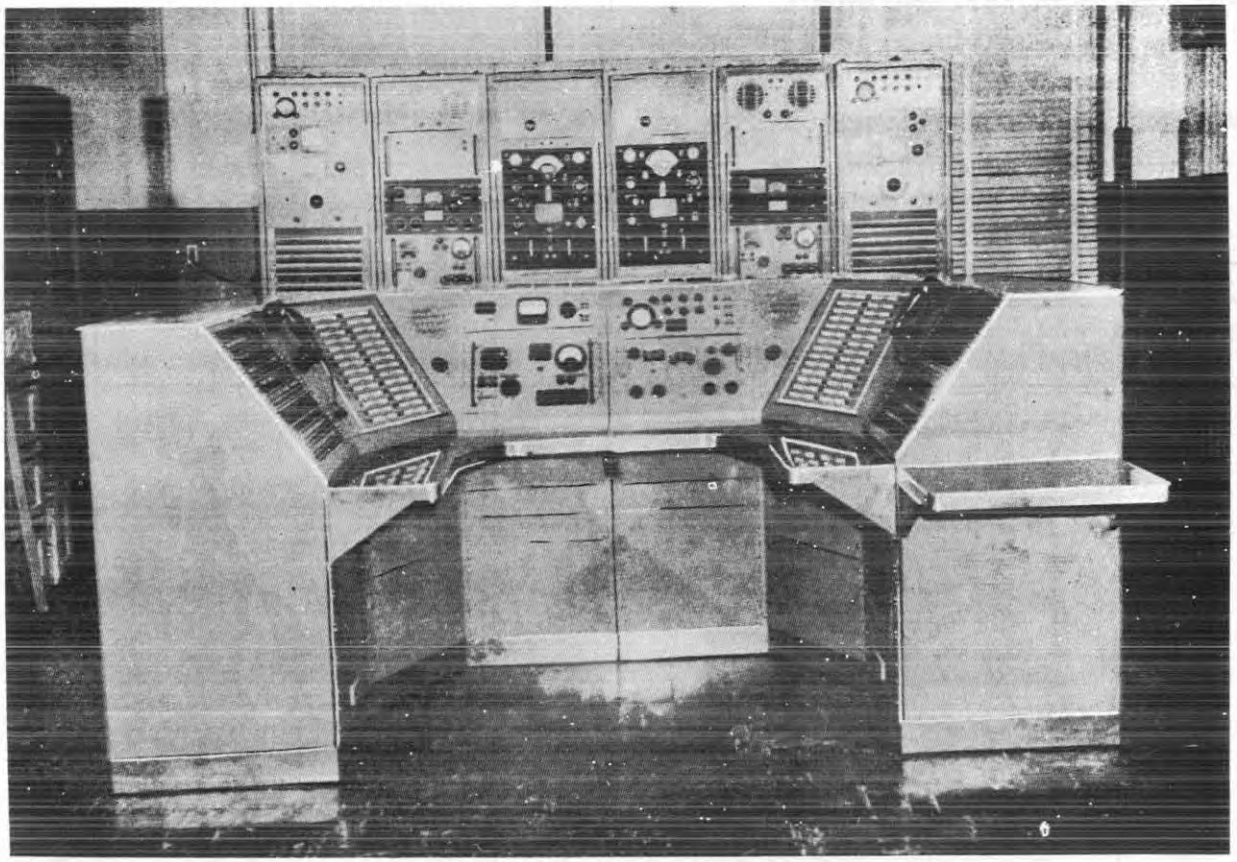
PROCURING SERVICE: DESIGN COG: Navy BuShips
SPEC &/OR DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Federal Telecommunication Laboratory	Nutley, New Jersey	NObsr-49280	

June 1957

Radio-Auxiliary

TRANSMITTER CONTROL-MONITOR GROUP AN/FRQ-3



Transmitter Control-Monitor Group AN/FRQ-3

FUNCTIONAL DESCRIPTION

The Navy Transmitter Control Console and Frequency Monitoring Equipment Model AN/FRQ-3 is a standard RF and AF manually operated switching and monitoring equipment for use in shore transmitter stations.

The equipment permits standardization of components, methods of installation and wiring and provides maximum operational flexibility when installed.

No field changes in effect at time of preparation (28 November 1956).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

JACK POSITIONS: 78.
SWITCHING PANEL LINE AND EQUIPMENT CIRCUITS: 20.
OSCILLOSCOPE PRR: 7 to 30,000 cps.
RECEIVING EQUIPMENT
  FREQUENCY RANGE: 80 to 560 kc and 1.9 to 24 mc.
  RECEPTION: Phone, CW or MCW.
AUDIO OSCILLATOR OUTPUT IMPEDANCE: 600 ohms.
  VOLTAGE: 24.5 v.
  FREQUENCY RANGE: 20 to 40,000 cps.
MONITORING RF JACK SWITCHES: 80.
MISCELLANEOUS SWITCHES RF: 52.
AF JACK POSITIONS, MONITORING: 156.
RF AND AF SWITCH PANEL POSITIONS: 60 ea.
ANTENNA COUPLER CHARACTERISTICS
  IMPEDANCE: 70 ohms
  FREQUENCY RANGE: 2 to 32 mc.
FREQUENCY METER CHARACTERISTICS
  FREQUENCY RANGE: 160 to 30,000 kc.
POWER SOURCE REQUIRED: 110 v, 60 cps, single ph.

MANUFACTURER'S OR CONTRACTOR'S DATA

Electronics Divisions, U.S. Naval Gun Factory.

Radio-Auxiliary

June 1957

AN/FRQ-3 TRANSMITTER CONTROL-MONITOR GROUP

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

REFERENCE DATA AND LITERATURE

NAVSHIPS 92228: Technical Manual for Transmitter Control-Monitor Model AN/FRQ-3.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

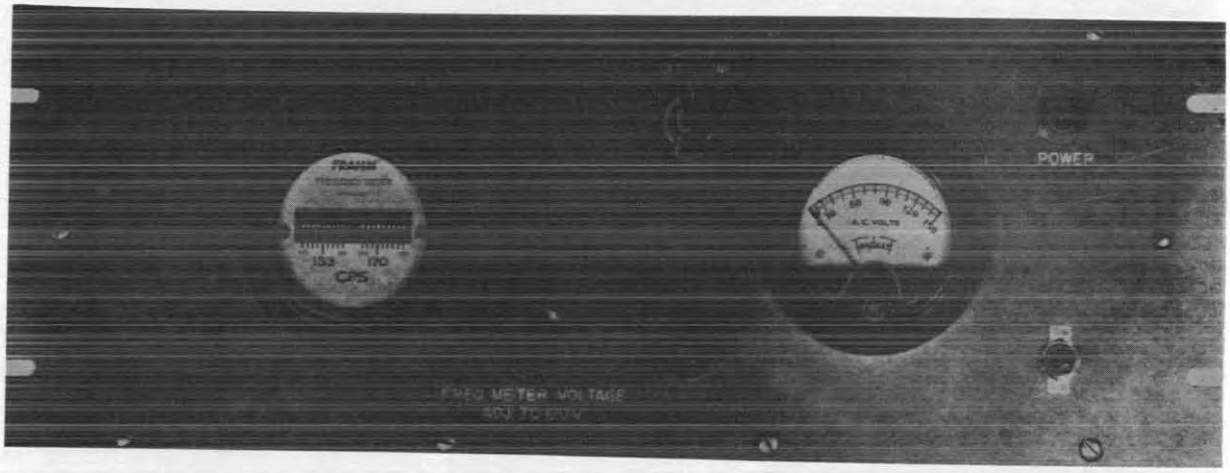
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Transmitter Control Console OA-490/FRQ-3 C/O		
	2 Jack Panels		
	2 Switching Panels		
	1 Volume level Indicator TS-629/U		
	1 Volt-Ohm-Millammeter OBQ-4		
	1 Audio Oscillator Hewlett-Packard Type 200 AB		
	1 Oscilloscope OBL-3a		
	1 Receiver RCH		
	2 Loudspeakers		
	Monitoring Group OA-489/FRQ-3 C/O		
	2 RF/AF Jack Positions		
	1 RF/AF Switching Positions		
	2 Oscilloscopes OBL-3a		
	2 Audio Oscillator EL-Tronics Model TE-200k		
	2 Antenna Couplers CU-168/FRR		
	2 Radio Receivers RCH		
	2 Frequency Shift Converters CV-60/URR		
	2 Speaker Panels LS-139/G		
	1 Frequency Meter LR-1 or FR/36U		
	1 Desk FN-28/G		

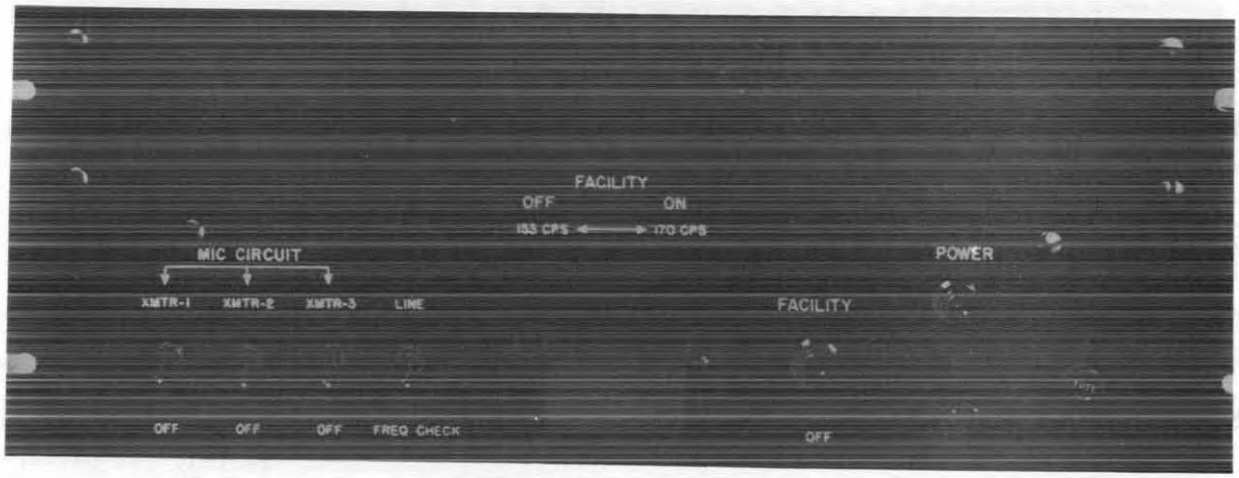
SWITCHING SYSTEM, RADIO

AN/FRQ-8(V)

Control-Transmitter C-2593/FRQ-8



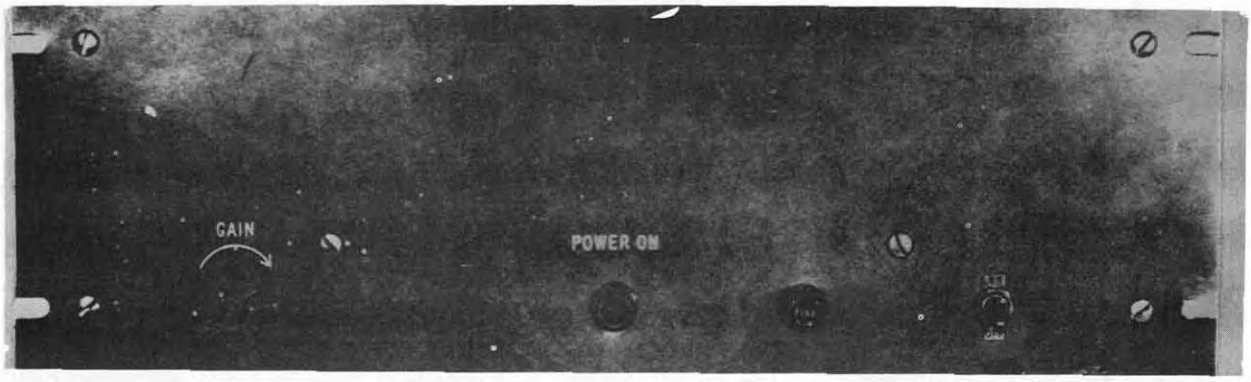
Monitor, AF ID-714/FRQ-8



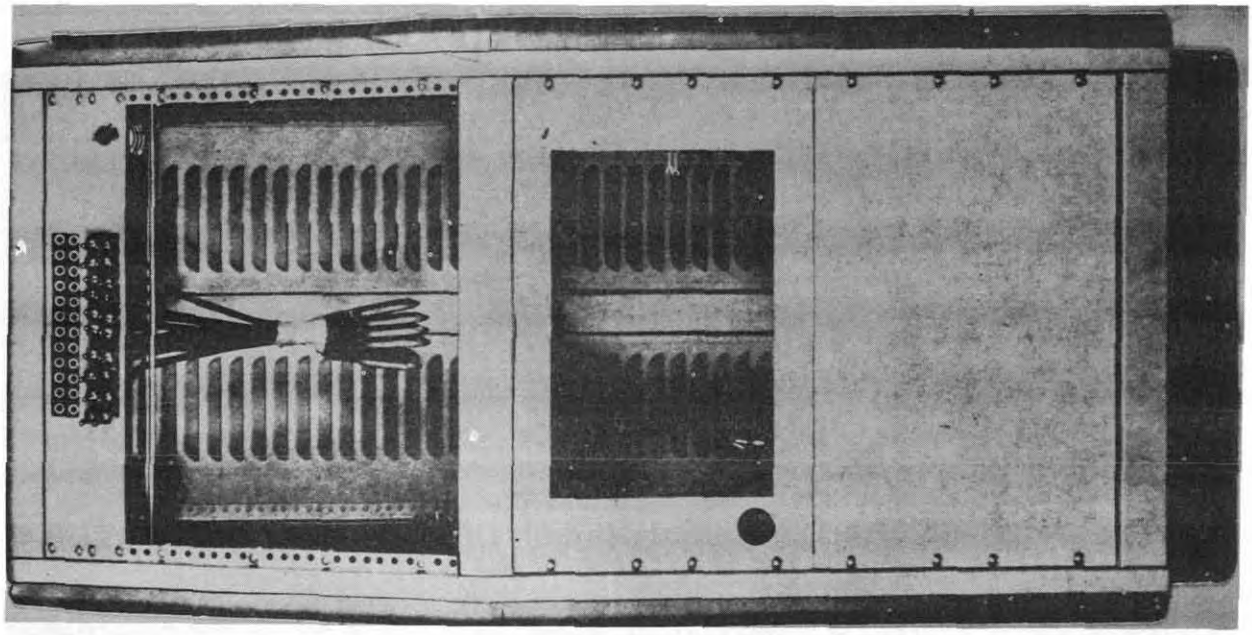
Oscillator, AF O-561/FRQ-8

Radio-Auxiliary

AN/FRQ-8(V) SWITCHING SYSTEM, RADIO



Amplifier, AF AM-2009/FRQ-8



Cabinet, Electrical Eqpt CY-2455/FRQ-8

FUNCTIONAL DESCRIPTION

The AN/FRQ-8(V) is a tone channel device, designed to provide remote switching of navigational aids via radio and/or landlines.

No field changes in effect at time of preparation (20 September 1960).

RELATION TO OTHER EQUIPMENT

The AN/FRQ-8(V) is designed to be used with but not part of various Navy Navigational Aids and Radio Sets.

EQUIPMENT REQUIRED BUT NOT SUPPLIED

(1) Receiver (Frequency range and type to be determined by operational requirements), (1) Antenna-Receiving (Type to be determined by installing activity), (1) Transmitter (Frequency range and type to be determined by operational requirements), (1) Antenna (Type to be determined by installing activity).

June 1961

Radio-Auxiliary

SWITCHING SYSTEM, RADIO AN/FRQ-8(V)

ELECTRICAL AND MECHANICAL CHARACTERISTICS

OSCILLATOR, AUDIO FREQUENCY
- OUTPUT IMPEDANCE: 600 ohms.
- FREQUENCY
  - NOMINAL RANGE: 153 to 170 cps.
  - ADJUSTABLE RANGE: From 130 to 169 cps and from 140 to 180 cps respectively.
- BANDWIDTH: Porm 2 cps from nominal center frequency.

AMPLIFIER AUDIO FREQUENCY
- INPUT IMPEDANCE: 600 ohms.
- OUTPUT IMPEDANCE: 500 ohms.
- FREQUENCY RANGE: Nominally 130 to 180 cps.

MONITOR, AUDIO FREQUENCY
- INPUT IMPEDANCE: 600 ohms.
- RESPONSE: 145 to 180 cps.
- POWER OUTPUT: 0 to 10 W.

OPERATING POWER RQMT
- CONTROL POSITION: 115 v ac, 50 to 60 cps, single ph, 75 W.
- REMOTE POSITION: 115 v ac, 50 to 60 cps, single ph, 45 W.

TUBE AND/OR CRYSTAL COMPLEMENT

(2) 6AX5
(1) 6J5
(1) 6SN7
(1) 6K6

Total Tubes: (5)

TRANSISTORS
(1) 2N180
(2) 2N256
(1) 2N255

Total Transistors: (4)

No Crystals used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 93276: Technical Manual for Radio Switching System AN/FRQ-8(V).

MANUFACTURER'S OR CONTRACTOR'S DATA

U.S. Naval Gun Factory, Washington, D.C.
Contract BuShips Allotment No. 32620.

TYPE CLASSIFICATION (NAVY)
DESIGN COGNIZANCE NAVY BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Oscillator O-561/FRQ-8	2.2	10-5/8 x 14 x 23	40
1	Monitor ID-714/FRQ-8	2.2	10-5/8 x 14 x 23	30
1	Amplifier AM-2009/FRQ-8	2.2	10-5/8 x 14 x 23	30
1	Control C-2593/FRQ-8	2.2	10-5/8 x 14 x 23	30
1	Cabinet CY-2455/FRQ-8 including: Receiver Mount	28.0	27-1/2 x 29-1/4 x 56-7/8	290

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Oscillator O-561/FRQ-8	7 x 8-1/4 x 19	25
1	Monitor ID-714/FRQ-8	7 x 8 x 19	13
1	Amplifier AM-2009/FRQ-8	7 x 7-1/8 x 19	23
1	Control C-2593/FRQ-8	7 x 7-1/8 x 19	17
1	Cabinet CY-2455/FRQ-8 including: TCS Receiver Mounting Panel	22 x 24 x 50	147

Radio-Auxiliary

MONITOR SET, COMMUNICATIONS AN/FRQ-9(V)

FUNCTIONAL DESCRIPTION

The AN/FRQ-9(v) is designed to provide Direct Current audio and Radio Frequency (RF) monitoring facilities at radio receiver stations. It is an aid for the selection of the best antenna for reception of signals and gives relative strength indications of signal levels.

No field changes in effect at time of preparation (21 September 1960).

RELATION TO OTHER EQUIPMENT

The AN/FRQ-9(v) is designed to be used with but not part of various Navy Communication Equipment.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

COMMUNICATION MONITORING DATA: 26 TTY lines, 60 audio lines, 19 intercommunication station lines.

OPERATING POWER RQMT: 110 v ac, 60 cps, single ph.

MANUFACTURER'S OR CONTRACTOR'S DATA

U. S. Naval Gun Factory, Washington, D. C.
Dwg No. RW6D526-1.
Contract CNO Project Order No. 50924.

TUBE AND/OR CRYSTAL COMPLEMENT

Electron Tube and/or Crystal data not available.

REFERENCE DATA AND LITERATURE

NAVSHIPS 93400: Preliminary Data Form for Monitoring Set, Communications AN/FRQ-9(v).

TYPE CLASSIFICATION (NAVY)
DESIGN COGNIZANCE NAVY BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Monitoring Set, Communications AN/FRQ-9(v) (in six section frames) consists of:	62-3/4 dia x 112 (doors closed) 97-1/4 dia x 149 (doors open)	
1	Frame No. 1 consists of:		
1	Line Current Indicator		
1	Extension Jack and Meter Box TS-611/FG Remote Indicator	12 x 21-1/2 x 84	
1	Dumont Oscillograph 304-AR		
1	NGF Switch Panel		
1	NGF Intercom		
1	Frame No. 2 consists of:		
1	Volume Level Indicator TS-629/U		15
1	Receiver, Radio R-390A/URR(v)	10-15/32 x 16-19/32 x 19	
1	Frame No. 3 consists of:		
2	AF Switch Panel SA-135/G	5-7/32 x 11-11/16 x 19	9.4
1	Hewlett-Packard Audio Oscillator Model 200D(v)		
1	Line Amplifier AM-413/G	5-1/4 x 7 x 19	
1	Frame No. 4 consists of:		
1	Technical Materials Corp. RF Oscillator VOX (v)		
1	Dumont Oscillograph 304-AR(v)		

AN/FRQ-9(V) MONITOR SET, COMMUNICATIONS

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Frame No. 5 consists of:		
1	RF Jack Panel J-239/G(v)		
1	Receiver, Radio R-390/URR(v)	10-15/32 x 16-19/32 x 19	
1	RF Jack Panel N. T. 491388(v)	1-7/32 x 1-45/64 x 4-7/32	
1	NGF-Type Rack-Dow-Kay Relay Type DKC Coaxial Relay Rack NGE		
1	Frame No. 6 consists of:		
1	NGF Video Indicator		
1	NGF Power Supply and Amplifier Chasis		
1	NGF Scanning Unit		

January 1958

Radio-Auxiliary

CONSOLE, AIRPORT CONTROL TOWER AN/FSA-18

FUNCTIONAL DESCRIPTION

The AN/FSA-18 provides control of aircraft traffic from an airfield control tower. This console provides complete coordination of visual aid operation, radio telephone transmission, radio telephone reception, message recording, crash-alarm emergency and intercommunication. The equipment contains facilities for obtaining such information as flight progress, weather and field conditions, wind direction and speed, altimeter readings and time.

No field changes in effect at time of preparation (7 May 1957).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

MICROPHONE POSITIONS: 2.
COMMUNICATION FACILITIES DATA.
LOUDSPEAKERS: 4.
NUMBER OF TRANSMITTERS CONTROLLED: 12.

TUBE AND/OR CRYSTAL COMPLEMENT

Tubes and Crystals: Not Available.

REFERENCE DATA AND LITERATURE

Nomenclature Card for Console, Airport Control Tower AN/FSA-18 dated 31 January 1957.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Console, Airport Control Tower AN/FSA-18		

10 January 1962 — CONSOLE GROUP, COMMUNICATION CONTROL AN/FSA-22(V)

Cog Service: | FSN: | Functional Class:

USA | USN | USAF

TYPE CLASS:

MANUFACTURER'S NAME/CODE NUMBER: Federal Television Corporation.

(No Illustration Available)

FUNCTIONAL DESCRIPTION:

The Console Group, Communication Group AN/FSA-22(V), is designed to control the flight of aircraft within a certain radius of an airport. Each operation may be assigned override capability (seizure of one radiophone channel from some other operator). There is a "control alarm system", if any power supply circuit or the individual power supply should fail.

No field changes in effect at time of preparation (6 April 1961).

TECHNICAL CHARACTERISTICS:

TYPE OF INSTALLATION: Fixed.
OPERATING POWER RQMT: 115 v ac, 60 cps, single ph.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Console Group, Communication Control AN/FSA-22(V) consists of:			
1	Selector Group, Operator-Transmit OA-2976/FSA-22(V)			
1	Patching Panel Group OA-2977/FSA-22(V)			
1	Amplifier-Indicator Group OA-2978/FSA-22(V)			
1	Patching Panel & Distribution Group OA-2979/FSA-22(V)			
1	Power Supply Group OA-2980/FSA-22(V)			
2	Flight Data Console OA-2981/FSA-22(V)			
5	Flight Data Console OA-2983/FSA-22(V)			
1	Console, Communication Control OA-2984/FSA-22(V)			
1	Desk FN-120/FSA-22(V)		29-1/4 x 30-1/4 x 60	

AN/FSA-22(V) CONSOLE GROUP, COMMUNICATION CONTROL

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
16	Foot Switch SA-749/FSA-22(V)		1-13/16 x 5-1/2 x 7	
16	Headset Microphone H-192/U			
1	Amplifier Group OA-2988/FSA-22(V)			
1	Power Supply Group OA-2989/FSA-22(V)			
1	Power Supply Group OA-2987/FSA-22(V)			
1	Amplifier Group OA-2988/FSA-22(V)			
17	Loudspeaker LS-466/U		4-1/4 dia x 4-1/2 lg	

REFERENCE DATA AND LITERATURE:

NAVSHIPS 93400: Preliminary Data Form for Console Group, Communication Control AN/FSA-22(V).

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Data not available.

CRYSTALS: Data not available.

SEMI-CONDUCTORS: Data not available.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: DESIGN COG: Navy BuShips

SPEC &/OR DWG: MIL-C-21434 Amend 2

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Federal Television Corp. Dwg no. FTC-235-220	Long Island City, New York	NObsr-75880	

25 July 1962 RECORDER-REPRODUCER SET, SIGNAL DATA AN/FSH-2(XN-1)

Cog Service: USN **FSN:** **Functional Class:**

USA	USN	USAF
Used by	Used by	

TYPE CLASS:

MANUFACTURER'S NAME/CODE NUMBER: Westlex Co., Recording Equipment Div., Litton System, Inc., (01255).

Recorder-Reproducer Set, Signal Data AN/FSH-2(XN-1)

FUNCTIONAL DESCRIPTION:

The Recorder-Reproducer Set, Signal Data AN/FSH-2(XN-1) is designed to record facsimile signals on magnetic film at 120 scans per minute and reproduces the recorded signals either at 120 scans per minute or at 60 scans per minute. The set records and reproduces a single-track signal on 16 mm double-perforated, magnetic coated film.

No field changes in effect at time of preparation (20 March 1962).

TECHNICAL CHARACTERISTICS:

TYPE OF FILM: 16 mm, double-perforated, magnetic coated film.
REEL SIZE: 15 in. dia containing 2300 ft of film.
OPERATING TIME: 30 minutes per reel at 120 scans per minute.
FILM SPEED: 144 in. per second (72 fpm) corresponding to facsimile scan speed of 120 scans per minute, 7.2 in. per second (36 fpm) corresponding to facsimile scan speed of 60 scans

per minute.

FREQUENCY RESPONSE

AT 14.4 IN. PER SECOND: 100 cps to 10,000 cps porm 2 db.

AT 7.2 IN. PER SECOND: 100 cps to 6,000 cps porm 2 db.

INPUT AND OUTPUT IMPEDANCE: 600 ohms resistive, balanced to ground.

INPUT LEVEL: M25 dbm to P10 dbm.

OUTPUT LEVEL: 9 dbm.

BIAS FREQUENCY: 60 kc.

SIGNAL TO NOISE RATIO: At least 40 db between 1,000 cps signal recorder at 5% distortion level and tape noise level.

LINE POWER

MOTOR OFF: 275 W.

AT 120 SCANS PER MINUTE: 400 W.

OPERATING POWER RQMT: 110 v ac, 60 cps, single ph.

RELATION TO OTHER EQUIPMENT:

The AN/FSH-2(XN-1) is designed to be used with, but not part of facsimile transmission and reception equipment.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Recorder-Reproducer Set Signal Data AN/FSH-2(XN-1) consists of:		15 x 21-1/2 x 83	
1	Amplifier Type RA-1554 (Westrex)		2-15/16 x 5-1/2 x 8-5/8	
1	Oscillator Type RA-14-77 (Westrex)		2-23/32 x 4-1/16 x 6-15/16	
1	Amplifier Type RA-1556 (Westrex)		2-15/16 x 5-1/2 x 8-5/8	
1	Power Amplifier Model MI-200AB (McIntosh Laboratories)			140
1	Power Supply Type RA-1599-A (Westrex)		5-1/8 x 8-1/2 x 9-3/4	
1	Degausser Type 9205-A (Cinema Engineering)		4-1/8 x 12 x 14	32

REFERENCE DATA AND LITERATURE:

NAVSHIPS 365-2762: Technical Manual for Recorder-Reproducer Set, Signal Data AN/FSN-2(XN-1).

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (2) 12AY7 (2) 12AU7 (2) 12AX7 (1) 12BH7 (1) 2C51 (1) GZ-34 (4) 5U4
(2) 5Y3 (1) 5651 (2) 6AV5 (2) 6BX7 (1) 6080 (2) 8005

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: USN DESIGN COG: USN, BuShips
SPEC &/OR DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Westlex Co., Recording Equipment Div., Litton System, Inc.	Beverly Hills, Calif.	NObs(24-126)84229, 31 January 1962	$12,326.00

OPERATIONS CENTRAL AN/FSQ-14

FUNCTIONAL DESCRIPTION

The AN/FSQ-14 provides target detection identification, teletyped surveillance messages (with built-in monitoring facilities), voice and wire communications, weather information, and general console functions.

No field changes in effect at time of preparation (10 May 1957).

RELATION TO OTHER EQUIPMENT

Used with but not part of AN/FPS-19, AN/GPX-26.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER SOURCE REQUIRED: 48 v, 130 v DC.

TUBE AND/OR CRYSTAL COMPLEMENT

Tubes and Crystals: Not Available.

REFERENCE DATA AND LITERATURE

Nomenclature Card for Operation Central AN/FSQ-14 dated 3 October 1956.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Console, Communication Control AN/FSA-14		
1	Antenna Alarm Unit		
6	Plating Boards		
2	Intercommunications Unit		
4	Message Concentrator		
1	Delay Network		
2	Master Patching Units		
1	Weather Indicator Unit		
1	Teletype Switchboard Group		
1	Teletype Signal Indicator		
1	Teletype Patching Unit		
1	Order Wire Interconnecting Unit		
1	Power Supply 48 v		
1	Power Supply 130 v		
	Cabinets		
	Racks		
	Interconnecting Cable Assemblies		
2	Public Switchboard Exchange		
1	Paging System Amplifier		
1	Teletypewriter Distributer-Transmitting Set AN/FGT-3		

September 1956

CONTROL-MONITOR SET

Radio Auxiliary

AN/FSW-2

FUNCTIONAL DESCRIPTION

The AN/FSW-2 is designed to allow remote control of certain functions at a remote point, and to obtain from this point continuous indications of the status of certain equipments. The control and status information shall be transmitted over telephone lines.

No field changes in effect at time of preparation (30 July 1956).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER SOURCE REQUIRED: 120 v AC, 60 cps, single ph.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

REFERENCE DATA AND LITERATURE

Nomenclature Card for Control-Monitor Set AN/FSW-2.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	
PROCUREMENT COGNIZANCE	
STOCK NO.	

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Control-Monitor Set AN/FSW-2		

January 1958

Radio-Auxiliary

TELEPHONE CENTRAL OFFICE GROUP, MANUAL

AN/FTA-13

FUNCTIONAL DESCRIPTION

The AN/FTA-13 is a lightweight telephone communications system, commercial design, for use in Air Defense Command Network. Provides radio remote control communications between ground operations personnel and aircraft. 20 radio remote control circuits are provided for control of UHF transmitters and receivers. Provides for HF point to point radio facility. The equipment is so designed to expand this facility if so desired. May be used to provide intercommunications for operations room requirements, radar shelters, and outside points. This system in its present form provides 60 ring down circuits and may be expanded if desired. Provides 400 keys in operations room for interconnection to either ring down lines, ground-air lines or intercommunication lines.

No field changes in effect at time of preparation (10 May 1957).

RELATION TO OTHER EQUIPMENT

Used with but not part of various radar sets.

Equipment Required but not Supplied: (1) Main Distributing Frame-Telephone Circuit Group OA-1312/FTA-13 or OA-1313/FTA-13.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TOTAL LOCAL LINE CAPACITY: 300.
LOCAL LINES EQUIPPED FOR OPERATION: 150.
SWITCHBOARD TYPE: Common battery.
OPERATOR POSITIONS: 1.
COMMON BATTERY VOLTAGE: 24 v.
NUMBER OF TRUNK LINES: 10.
NUMBER OF RADIO REMOTE CONTROL CIRCUITS: 20.
RING DOWN CIRCUITS: 60.
OPERATIONS ROOM KEYS: 400.

MANUFACTURER'S OR CONTRACTOR'S DATA

Stromberg-Carlson, Rochester, N.Y.
Contract AF30(635)-2572.

TUBE AND/OR CRYSTAL COMPLEMENT

Tubes and Crystals: Not Available.

REFERENCE DATA AND LITERATURE

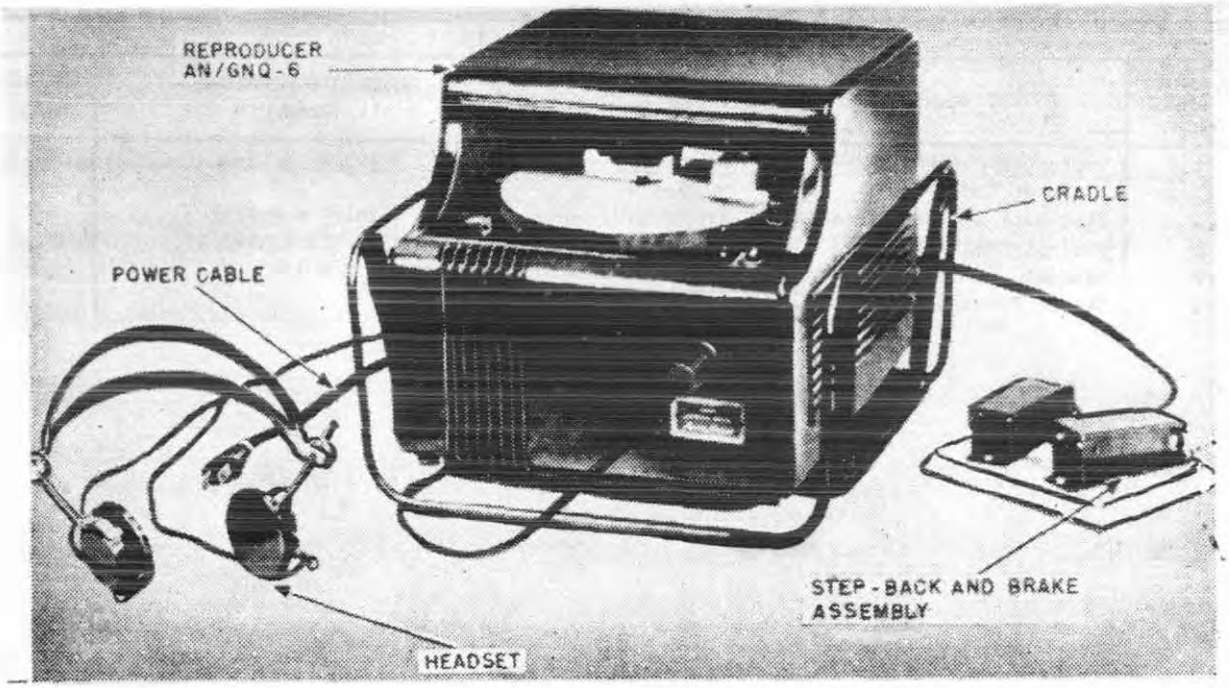
Nomenclature Card for Telephone Central Office Group, Manual AN/FTA-13.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Telephone Main Distributing Frame TA-317/FTA-13		
1	Telephone Test Set TS-925/FTA-13		
1	Telephone Line Control C-1421B/GTA-6		
1	Power Supply PP-1408/FTA-13		
1	Handset H-124/FTA-13		
2	Telephones TA-168C/GT		
1	Manual Telephone Switchboard SB-503/FTA-13		
30	Handset-Headset H-108/U		
5	Telephone EE-8		
3	Ground Rods GP-26		
	Interconnecting Wire and Cords		

REPRODUCER AN/GNQ-6



Reproducer AN/GNQ-6

FUNCTIONAL DESCRIPTION

The AN/GNQ-6 is a portable sound-reproducing equipment for transcribing from a disk record. It reproduces through a headset and is provided with a step-back and brake mechanism permitting control of the record while transcribing.

No field changes in effect at time of preparation (1 May 1957).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 200 to 3000 cps flat within 6 db.
POWER OUTPUT: 3 W.
OVERALL GAIN: 110 db.
POWER INPUT: 50 W.
IMPEDANCE
REPRODUCER HEAD: 50 ohms.
HEADSET: 500 ohms.
POWER REQUIREMENTS: 115 v, 60 cps.

TUBE AND/OR CRYSTAL COMPLEMENT

(2) 12SC7 (2) 35L6 (1) 35Z5

Total Tubes: (5)

REFERENCE DATA AND LITERATURE

TM11-2511: Technical Manual for Reproducer AN/GNQ-6 and Recorder Reproducer AN/GNQ-7, AB/GNQ-7A and AN/GNQ-8.

TYPE CLASSIFICATION
DESIGN COGNIZANCE
PROCUREMENT COGNIZANCE
STOCK NO.

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Reproducer AN/GNQ-6	6.1	19 x 19 x 29	91

AN/GNQ-6 REPRODUCER

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Reproducer including: Power Cable	8-1/2 x 10-1/4 x 12-1/2 120 lg	17
1	Step-Back and Brakefoot Switch Assembly	2-1/2 x 5-1/4 x 8-1/4	1.5
1	Cabinet Cradle	6-1/4 x 11-3/4 x 11-3/4	2
2	Headset	2 x 6-1/4 x 6-1/4	0.5
1	Set of Running Spares		

October 1957

Radio-Auxiliary

DIRECTION FINDER ASSEMBLY AN/GRA-2

FUNCTIONAL DESCRIPTION

The AN/GRA-2 is a loop direction finder attachment for any AM receiver operating in the frequency range of 18 to 65 mc. It consists of a control box and loop to cover the frequency range, as well as cables and accessories for connection to the radio receiver.

No field changes in effect at time of preparation (8 April 1957).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 18 to 65 mc.

TUBE AND/OR CRYSTAL COMPLEMENT

Tubes and Crystals: Not Available.

REFERENCE DATA AND LITERATURE

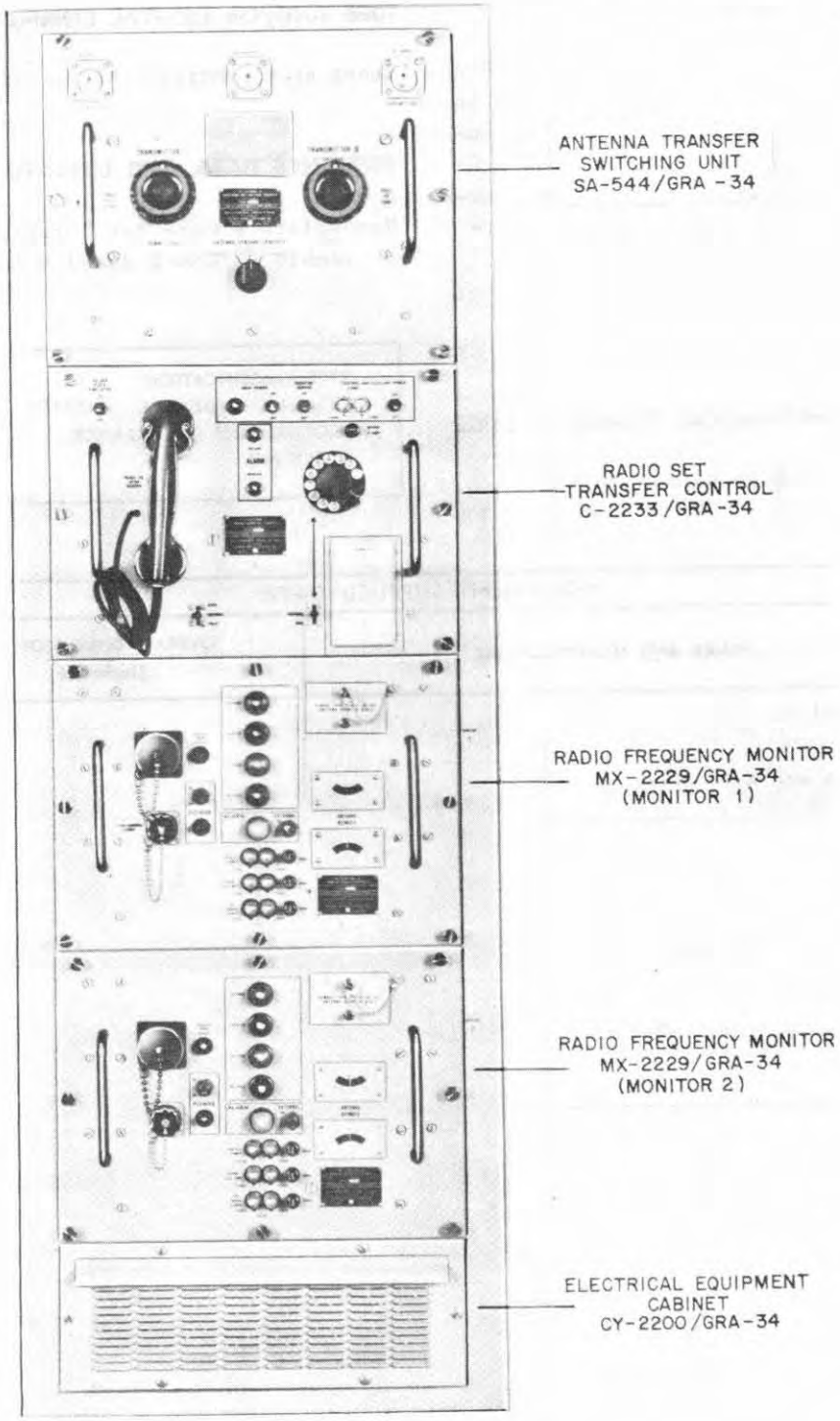
Nomenclature Card for Direction Finder Assembly AN/GRA-2 dated 9 September 1944.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Control Box		
1	Loop		
	Cables and Accessories		

CONTROL MONITOR GROUP



Control Monitor Group AN/GRA-34

Radio-Auxiliary

August 1960

AN/GRA-34 CONTROL MONITOR GROUP

FUNCTIONAL DESCRIPTION

The AN/GRA-34 is designed primarily to permit the unattended and automatic operation of one or two TACAN (Radio Set AN/URN-3 or AN/GRN-9, 9A shore equipments). In case of fault indication by the monitor this group provides automatic transfer to stand-by equipment.

No field changes in effect at time of preparation (27 January 1960).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TEMPERATURE RANGE: The unit operates within the previously mentioned operational limits in an ambient temperature range of -54° C (-65° F) to +65° C (+149° F).

HUMIDITY: Up to 95%.

ANTENNA TRANSFER SWITCHING UNIT

FREQUENCY RANGE: 960 to 1215 mc.

OVER-ALL VOLTAGE STANDING WAVE RATIO: 2.5 max.

OVER-ALL INSERTION LOSS: 1.8 db max.

CHARACTERISTIC IMPEDANCE: 50 ohms nominal.

AVERAGE R.F. POWER RATING: 250 W max.

PEAK R.F. POWER RATING: 10 kilowatts max.

OPERATING POWER RQMT: 120 v AC ±10%, 60 cps, single ph.

POWER CONSUMPTION

LOCAL: 500 watts.

REMOTE: 30 watts.

MANUFACTURER'S OR CONTRACTOR'S DATA

Olympic Radio and Television, Long Island City, New York.
Contract NObsr-71539.

TUBE AND/OR CRYSTAL COMPLEMENT

(2) OA2	(2) OB2WA	(2) 2C39A
(2) 5R4WGB	(7) 6AU6WA	(2) 6J4WA
(2) 6X4W	(14) 12AT7WA	(8) 5670
(6) 5726/6AL5W	(13) 5814A	(10) 5654/6AK5W
(14) 5751	(2) 6080WA	(14) 5725/6AS6W

Total Tubes: (102)

(2) 1N21B	(2) 1N25	(10) 1N69

Total Crystals: (14)

REFERENCE DATA AND LITERATURE

NAVSHIPS 93121(A): Technical Manual for Control Monitor Group AN/GRA-34 and Remote Switching Control C-2234/GRA-34.

TYPE CLASSIFICATION (NAVY)
DESIGN COGNIZANCE USN, BUSHIPS
PROCUREMENT COGNIZANCE SPEC: MIL-M-19347 (SHIPS)
STOCK NO.
R.D.B. IDENT. NO. 12.12

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Control-Monitor Group AN/GRA-34	4.0	27 X 34 X 74	700
2	Antenna AT-592/URN-3			
1	Remote Switching Control C-2234/GRA-34	4.1	17 X 18 X 23	40

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Control Monitor Group AN/GRA-34 Includes:	23 X 38 X 70	520
1	Electrical Equipment Cabinet CY-2200/GRA-34	23 X 30 X 70-3/16	260

Radio-Auxiliary

CONTROL MONITOR GROUP AN/GRA-34

EQUIPMENT SUPPLIED DATA

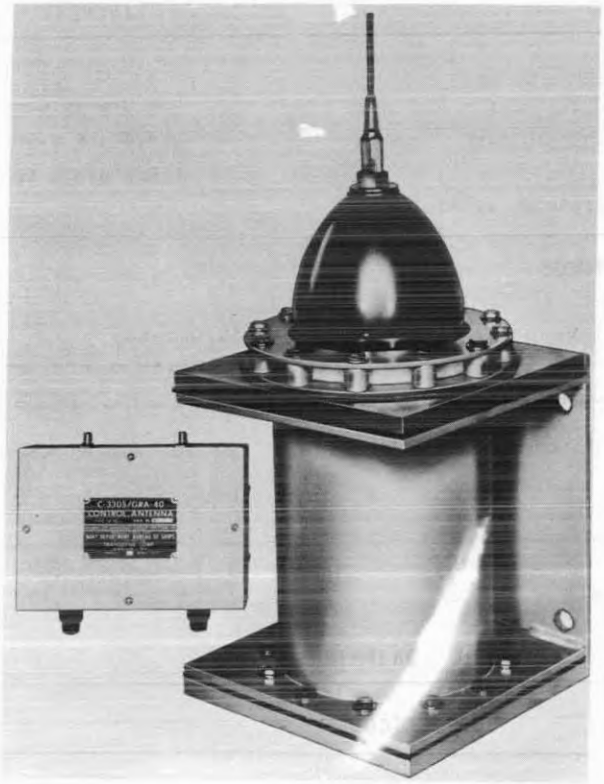
QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Antenna Transfer Switching Unit SA-544/GRA-34	16 X 19 X 23-3/4	51
1	Radio Set Transfer Control C-2233/GRA-34	14 X 19 X 23-1/2	42
2	Radio Frequency Monitor MX-2229/GRA-34	14 X 19 X 20-1/2	72
2	Monitor Antenna AT-592/URN-3	4-1/2 X 12-1/2 X 12-1/2	2-1/2
1	Connector UG-707A/U		
3	Connector UG-216B/U		
8	Connector UG-943A/U		
3	Connector UG-154A/U		
2	Rear Mounting Bracket	3 X 3-1/2 X 6	1-1/2
2	Technical Manual NAVSHIPS 93121(A)	1/2 X 8-3/4 X 11	

22 June 1962

Cog Service:	FSN:	Functional Class: ANTENNA GROUP AN/GRA-40
	USA	USN	USAF

TYPE CLASS:

MANUFACTURER'S NAME/CODE NUMBER: Transdyne Corporation.



Antenna Group AN/GRA-40

FUNCTIONAL DESCRIPTION:

Antenna Group AN/GRA-40 is designed, basically, to function as a motor controlled (antenna control), tuned (rf tuner) probe (antenna unit). The antenna is mounted topside in close proximity to the ship's mast or superstructure and samples the voltages induced in these structures, and conducts them to the Loran receivers.

No field changes in effect at time of preparation (20 April 1962).

TECHNICAL CHARACTERISTICS:

POWER REQUIREMENTS: 115 v, 60 cyc, single ph, 15 W.
FREQUENCY RANGE: 1700 to 2350 kc.
FREQUENCY CONTROL: Remotely controlled motor driven capacitor.
INPUT: Directly fed whip antenna.
OUTPUT: Series "C" coaxial connector for RG-8/U or RG-10/U transmission line to Loran receivers.

AN/GRA-40 ANTENNA GROUP

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Antenna Group AN/GRA-40 includes:			
1	Radio Frequency Tuning Unit		8 x 8.25 x 13	34
1	Antenna Control C-3305/GRA-40		2.0 x 5.6 x 7.2	2
1	Antenna Unit		0.2 dia x 60	
2	Technical Manual NAVSHIPS 93595			

REFERENCE DATA AND LITERATURE:

NAVSHIPS 93595: Technical Manual for Antenna Group AN/GRA-40.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	2.7	40
1		

PROCUREMENT DATA

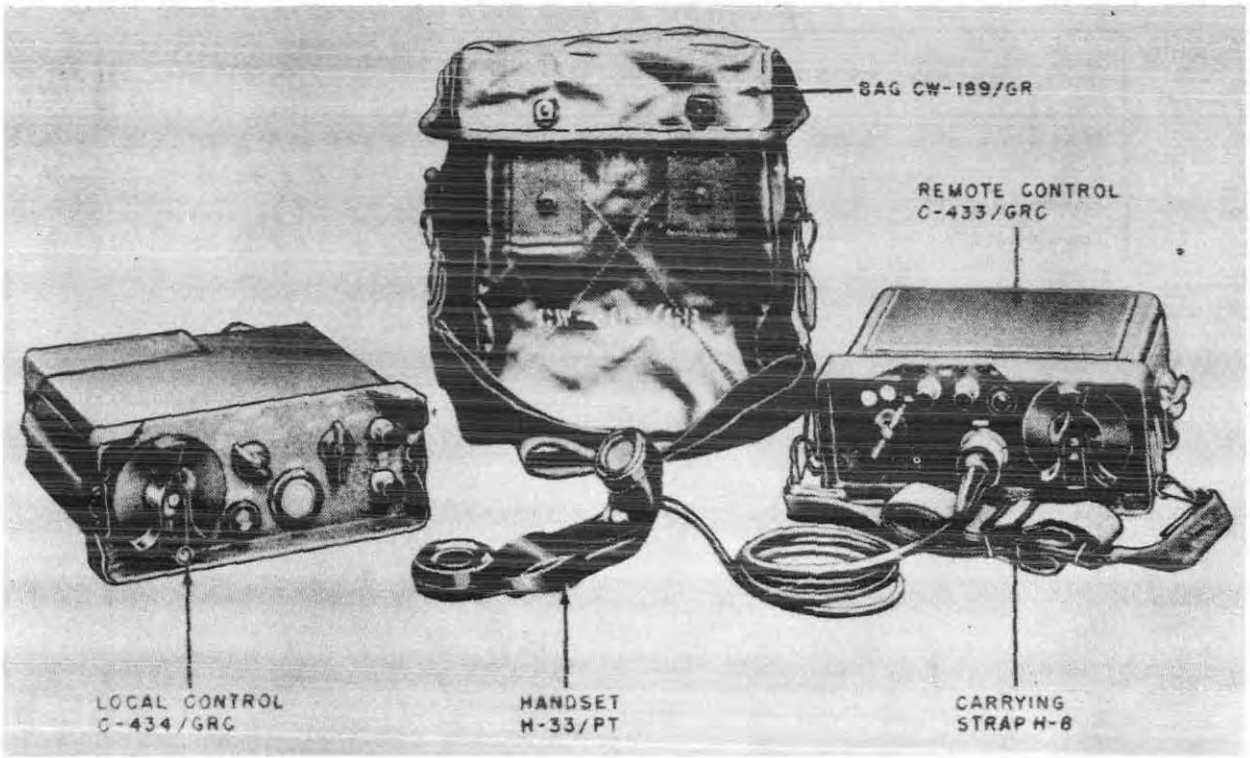
PROCURING SERVICE: DESIGN COG: USN, BuShips
SPEC &/OR DWG: SHIPS-A-3251

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Transdyne Corporation	Albertson, New York	NObsr-75771	$144.60

October 1957

Radio-Auxiliary

CONTROL GROUP AN/GRA-6



Control Group AN/GRA-6

FUNCTIONAL DESCRIPTION

The AN/GRA-6 can be used to provide local or remote monitoring and push-to-talk control of the radio sets, and includes provisions for telephone communication between local and remote control stations.

No field changes in effect at time of preparation (2 April 1957).

RELATION TO OTHER EQUIPMENT

Part of Radio Sets AN/GRC-3() thru 8(); AN/VRQ-1() thru 3(), and AN/VRC-7() thru 10().

ELECTRICAL AND MECHANICAL CHARACTERISTICS

OPERATION: local and remote control
OPERATING POWER:
C-433/GRC: two 1.5 v batteries BA-30.
C-434/GRC: two 1.5 v batteries BA-30.

MANUFACTURER'S OR CONTRACTOR'S DATA

Federal Telephone and Radio, Order No. 18651-Phila-49-7.

TUBE AND/OR CRYSTAL COMPLEMENT

Tubes and Crystals: Not Available.

REFERENCE DATA AND LITERATURE

TM11-611: Technical Manual for RADIO SETS AN/VRC-16, 17 and 18
Nomenclature Card for Control Group AN/GRA-6 dated 30 Aug 1949.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	TASSA
PROCUREMENT COGNIZANCE	71-3329
STOCK NO.	

Radio-Auxiliary

AN/GRA-6 CONTROL GROUP

October 1957

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Remote Control C-433/GRC	3-1/2 x 7 x 9-3/8	5
1	Local Control C-434/GRC	3-1/2 x 8-3/4 x 10-1/2	8
1	Handset H-33/PT	2-1/16 x 3 x 3	2
1	Bag CW-189/GR	7-3/4 x 10-5/8 x 11	1

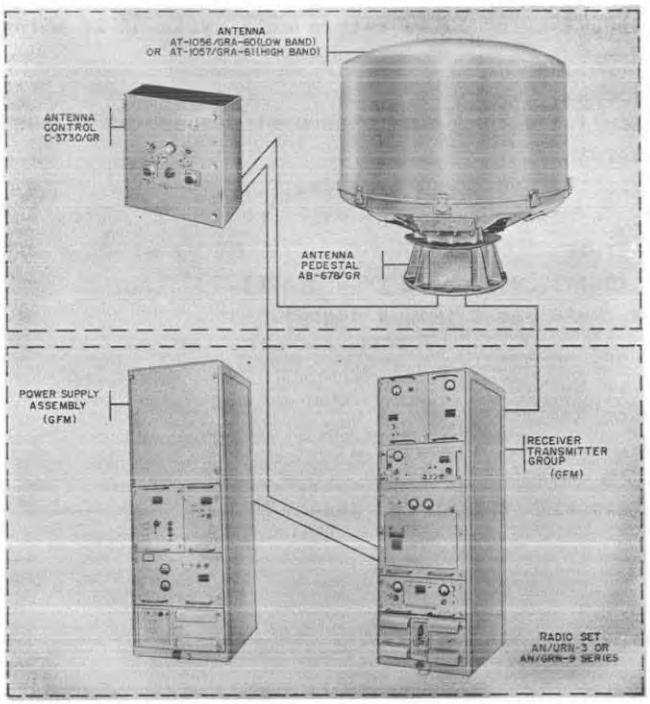
22 June 1962 ANTENNA GROUP AN/GRA-60

Cog Service: USN FSN: 5985-893-4919 Functional Class:

USA	USN	USAF

TYPE CLASS: Used by Used by

MANUFACTURER'S NAME/CODE NUMBER: ITT Federal Laboratories, Div., of International Telephone & Telegraph Corp., (90348).



Antenna Group AN/GRA-60

FUNCTIONAL DESCRIPTION:

The Antenna Group AN/GRA-60 is a shore antenna system intended for use with the AN/URN-3 or AN/GRN series Radio Set. The antenna group and the radio set together function as a radio beacon that provides navigational information for up to 100 aircraft within a 200-mile radius of the radio beacon. This radio beacon is part of the tactical air navigation system known as TACAN.

The antenna group performs the following functions as the antenna system of a shore-based TACAN radio beacon: (a) Transmits the rf output signal of Radio Set AN/URN-3 or AN/GRN-9 series; (b) Receives distance interrogation signals from aircraft equipped with Radio Set AN/ARN-21 or equivalent; (c) Modulates the beacon rf output so that the envelope of the rf signal, as received by each aircraft, is modulated in amplitude at 15-cps and 135-cps rates; (d) Provides trigger pulses that time the generation of bearing reference pulse groups by the radio set.

No field changes in effect at time of preparation (24 April 1962).

TECHNICAL CHARACTERISTICS:

TYPE OF INSTALLATION: Shore installed.
FREQUENCY RANGE
ANTENNA AT-1056/GRA-60 (Low Band)
TRANSMISSION: 962 to 1024 mc.
RECEPTION: 1025 to 1087 mc.
VOLTAGE STANDING WAVE RATIO: 2 to 1 for the antenna and 5 ft of low-loss coaxial cable over the specified transmission band.
RF POWER: Peak power capability of 20 kw with a duty cycle of 2% with a safety factor of 2.
ANTENNA IMPEDANCE: 50 ohms.
POLARIZATION: Vertical.
HORIZONTAL PATTERN: A scalloped cardioid rotated at a speed of 15 cps (900 rpm).
MAXIMUM OPERATING TEMPERATURE
ANTENNA AND PEDESTAL ASS'Y: 65 deg C (149 deg F).
ANTENNA CONTROL UNIT: 65 deg C (M149 deg F).
MINIMUM OPERATING TEMPERATURE
ANTENNA AND PEDESTAL ASS'Y: M40 deg C (M40 deg F).
ANTENNA CONTROL GROUP: M28 deg C (M18.4 deg F).
OPERATING POWER RQMT
VOLTAGE: 208 v ac.
PHASE: 3 ph (3 wire).
FREQUENCY: 60 cps.
STARTING CURRENT: 5 amps per phase.
NORMAL OPERATING CURRENT: 4 amps per phase.
VOLTAGE: 120 v ac.
PHASE: Single.
FREQUENCY: 60 cps.
POWER FACTOR: 90%.
MAXIMUM CURRENT: 5 amps.
CONVENIENCE OUTLETS
VOLTAGE: 120 v ac.
PHASE: Single.
FREQUENCY: 60 cps.
MAXIMUM CURRENT: 8 amps.

RELATION TO OTHER EQUIPMENT:

The AN/GRA-60 is designed to be used with, but not part of Radio Sets AN/URN-3 and AN/GRN-9 series.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Radio Set AN/URN-3 or AN/GRN-9 series; (1) Oscilloscope OS-54/URN-3; (1) Technical Manual NAVSHIPS 92778 for OS-54/URN-3; (1) Monitor MX-1627/URN-3; (1) Technical Manual NAVSHIPS 92975(A) for MX-1627/URN-3; (1) Technical Manual NAVSHIPS 92348(A) for AN/URN-3 or NAVSHIPS 92986 for AN/GRN-9 or NAVSHIPS 92986(A) for AN/GRN-9A or NAVSHIPS 93177(A) for AN/GRN-9B or NAVSHIPS 93208(A) for AN/GRN-9C or NAVSHIPS 93881 for AN/GRN-9D; (1) Multimeter AN/PSM 4 or equivalent; (1) Switch Adapter SA-420/URN-3; (1) Crystal Detector F-1152; (1) BNC Type 50 Ohm Termination MX-554/U; (1) BNC Type "T" Connector UG-274A/U.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Antenna & Pedestal Ass'y (Less Antenna Adapter) consists of:		31.9 x 36	237
1	Antenna (Low Band) AT-1056/GRA-60			
1	Pedestal, Antenna AB-678/GR			
1	Control, Antenna (Less Mtg Bracket) C-3730/GR		12-1/2 x 17 x 19-3/4	84
1	Amplifier Electronic Control (Speed Control) AM-3022/GR		9-1/2 x 15-19/32 x 16-39/64	
2	Technical Manual NAVSHIPS 94118		1/2 x 8-1/2 x 11	
1	Maintenance Standards Book NAVSHIPS 94118-42		1/4 x 8-1/2 x 11	
1	Performance Standard Sheet NAVSHIPS 94118.32		1/8 x 8-1/2 x 11	
1	Operating Instructions NAVSHIPS 94118.21		1/4 x 8-1/2 x 11	

REFERENCE DATA AND LITERATURE:

NAVSHIPS 94118: Technical Manual for Antenna Group AN/GRA-60 and Antenna Group AN/GRA-61.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: (1) 1N459 (8) 1N538 (4) 1N540 (2) 1N1341

TRANSISTORS: (1) 2N1537A

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	45	357
1		
1		
2	5	113

PROCUREMENT DATA

PROCURING SERVICE: USN DESIGN COG: USN, BuShips

SPEC &/OR DWG: MIL-E-16400B & SHIPS-S-3369

AN/GRA-60 ANTENNA GROUP

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
ITT Federal Laboratories, Div. of International Telephone & Telegraph Corp.	Nutley, N. J.	NObsr-81179 NObsr-85117	

April 1959

Radio-Auxiliary

DIRECTION FINDER GROUP AN/GRA-9

FUNCTIONAL DESCRIPTION

The AN/GRA-9 when operated in conjunction with associated surveillance radar sets and the applicable modification kit, is used to determine the azimuth bearing of radio communication transmission and to indicate such azimuth bearing directly on the search indicator of the associated radar set. Its frequency coverage is 100 to 156 megacycles and 224 to 400 megacycles (mc).

The frequency coverage of the AN/GRA-9 can be extended to 3 to 9 megacycles without modification by adding Antenna Control Group AS-440/GRD and Receiver Group OA-94/GRD.

No field changes in effect at time of preparation (1 December 1958).

RELATION TO OTHER EQUIPMENT

The AN/GRA-9 is used with but not part of the AN/CPN-4, AN/CPN-18, AN/CPS-6B, AN/FPS-3, AN/FPS-8, AN/MPS-11 and AN/TPS-1D.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF RECEPTION: A3.
NUMBER OF BANDS: 1.
NUMBER OF CHANNELS: 1750.
CHANNEL SPACING: 100 kc.
FREQUENCY RANGE: 100 to 156 mc and 224 to 400 mc.
POWER SUPPLY REQUIREMENT
OUTPUT DATA: 350 v DC, 200 ma unregulated; 6.3 v AC, 5 amp; 6.3 v AC, 2 amp.
INPUT DATA: 117 v AC, 60 cps, single ph.

MANUFACTURER'S OR CONTRACTOR'S DATA

Raytheon Mfg Co., Waltham, Mass.
Contract AF33(038)-30605, dated 24 July 1952.

TUBE AND/OR CRYSTAL COMPLEMENT

(3) OA2WA	(1) OA3
(3) OB2WA	(5) 12AT7WA
(4) 12AU7	(2) 12AX7
(2) 5R4WGB	(1) 5Y3WGTB
(12) 5654-6AK5W	(2) 5725-6AS6W
(3) 5726-6AL5W	(9) 5749-6BA6W
(5) 5751	(9) 5814A
(2) 6AK6	(1) 6AT6
(2) 6AU6WA	(1) 6C4WA
(5) 6J4WA	(1) 6J6WA
(5) 6SN7WGTA	(1) 6X4WA

Total Tubes: (79)
(2) 1N70
Total Crystals: (2)

REFERENCE DATA AND LITERATURE

Nomenclature Card AN/GRA-9 for the Direction Finder Group.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUAER
PROCUREMENT COGNIZANCE
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Direction Finder Group AN/GRA-9 including:		
1	Antenna AS-439/GRD	25 X 25 X 36	
2	Antenna AS-449/GRD		
2	Antenna Case CY-1178/GRD-6	14-7/32 X 14-1/2 X 53	
1	Comparator CM-23/GR	8-21/32 X 13-15/16 X 19	
1	Case Signal Comparator CY-1174/GRD-6	11-3/4 X 16 X 21	
1	Electrical Filter Ass'y F-103/GRA-9	8 X 12-1/4 X 15	
1	Power Supply PP-383/GRD	7-7/8 X 12-1/4 X 15	
2	Hazard Light Ass'y		
1	Radio Receiver R-264/GRD	8 X 12 X 13	

Radio-Auxiliary

AN/GRA-9 DIRECTION FINDER GROUP

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Radio Receiver R-278B/GR	12-1/4 X 19 X 21	
1	Cord CG-92/U (100 ft)	1200 lg	
2	Cable Ass'y Power Electrical CX-2616/U( )		
2	Cable Ass'y Radio Frequency CG-911/U( )		
1	Power Cable Ass'y CX-1111/U (( ))		
2	Cable Ass'y Radio Frequency CG-898( )		
1	Special Purpose Cable Ass'y CX-1107/U( )		
1	Special Purpose Cable Ass'y CX-1108/U( )		
9	Crystal Unit CR-23/U		
1	Power Supply Amplifier PP-385A/GRD	8-7/8 X 12-3/16 X 14-15/16	
*1	Antenna Control Group AS-440/GRD		
*1	Receiver Group OA-94/GRD		

NOTE: *These Components are added to extend the frequency Cover to 3 to 9 mc.

January 1958

Radio-Auxiliary

DIRECTION FINDER GROUP AN/GRA-9A

FUNCTIONAL DESCRIPTION

The AN/GRA-9A when operated in conjunction with associated surveillance radar sets and the applicable Modification Kit, this group is used to determine the azimuth bearing of radio communication transmission and to indicate such azimuth bearing directly on the search indicator of the associated radar set.

No field changes in effect at time of preparation (8 May 1957).

RELATION TO OTHER EQUIPMENT

Same as Direction Finder Group AN/GRA-9 except for modification by Mare Island of Radio Receiver R-449/GRD-5 to Radio Receiver R-264A/GRD and the Substitution of Antenna AS-575A/GRD-5 for Antenna AS-439/GRD.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGES: 100 to 156 mc and 224 to 400 mc.

SPECIAL FEATURE: Frequency coverage may be extended to 30 to 9 mc range w/o modification by adding Antenna Control Group AS-440/GRD and Receiver Group OA-94/GRD.

TUBE AND/OR CRYSTAL COMPLEMENT

Tubes and Crystals: Not Available.

REFERENCE DATA AND LITERATURE

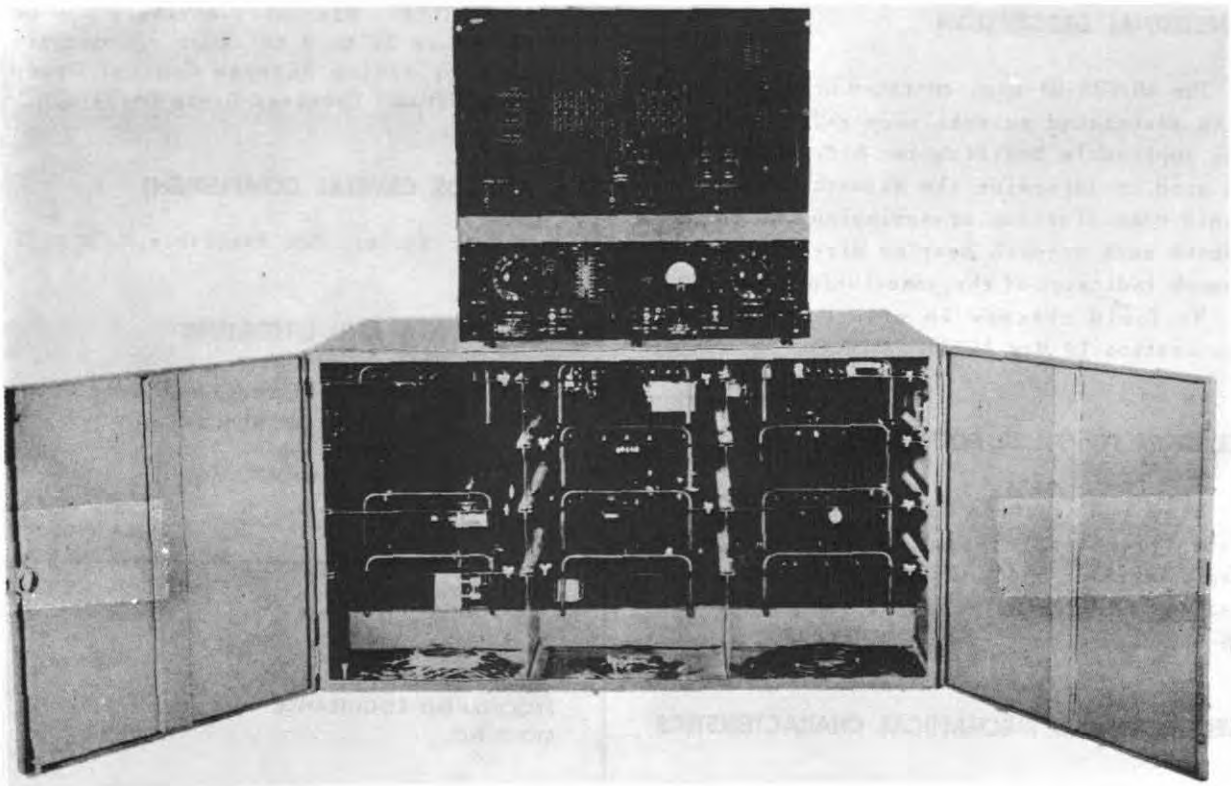
Nomenclature Card for Direction Finder Group AN/GRA-9A dated 23 October 1956.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	BUAER
PROCUREMENT COGNIZANCE	
STOCK NO.	

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
2	Antenna AS-449/GRD		
1	Antenna AS-575A/GRD-5		
2	Antenna Cases CY-1178/GRD-6		
1	Comparator CM-23/GR		
1	Signal Comparator Case CY-1174/CRD-6		
1	Electrical Filter Assembly F-103/GRA-9		
1	Power Supply PP-383/GRD		
1	Radio Receiver R-264A/GRD		
1	Radio Receiver R-278B/GR		
1	Power Supply Amplifier PP-385A/GRD		
	Cable Assemblies and Cord		
1	*Antenna Control Group AS-440/GRD		
1	*Receiver Group OA-94/GRD		

NOTE: *Added for frequency extension to 3 to 9 mc range.



Trainer AN/GRQ-T1

FUNCTIONAL DESCRIPTION

The AN/GRQ-T1 is used for instruction of trainees in basic principles of electronics by provision of means to readily construct basic circuits, to enable the building of these electrical circuits quickly by plugging in patch cords without the use of tools and permit the various components to be reused a number of times without destroying or damaging them.

No field changes in effect at time of preparation (18 June 1956).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (1) AF Signal Generator, (1) Oscilloscope, (1) Voltmeter OE, (1) Frequency Meter (1) AC and DC Voltmeter, (1) RF Signal Generator, (1) Vacuum Tube Voltmeter, (1) Volt-Ohm-Milliammeter.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

OPERATING VOLTAGE AND FREQUENCY: 105 to 125 v, 50 to 60 cps, single ph.
MAXIMUM OPERATING CURRENT: 2 amp.
TYPE OF CONTROL: Continuously tuned or crystal.
OSCILLATOR FREQUENCY: 1600 to 3000kc.

MANUFACTURER'S OR CONTRACTOR'S DATA

A.F. Smuckler & Co., Inc. Brooklyn, N.Y.
Contract: NObsr-43406, dated 17 June 1949.

TUBE AND/OR CRYSTAL COMPLEMENT

(3) 5U4G (1) 6SK7 (1) 83

AN/GRQ-T1 TRAINER

(4) 6V6/6F6 (1) VR-75 (5) 6C5/6J5
(1) 6SJ7 (2) 6L6 (1) 6H6
(1) 6K6 (1) 6SN7/6SL7
Total Tubes: (21)

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

REFERENCE DATA AND LITERATURE

NAVSHIPS 91336: Technical Manual Trainer AN/GRQ-T1.

SHIPPING DATA

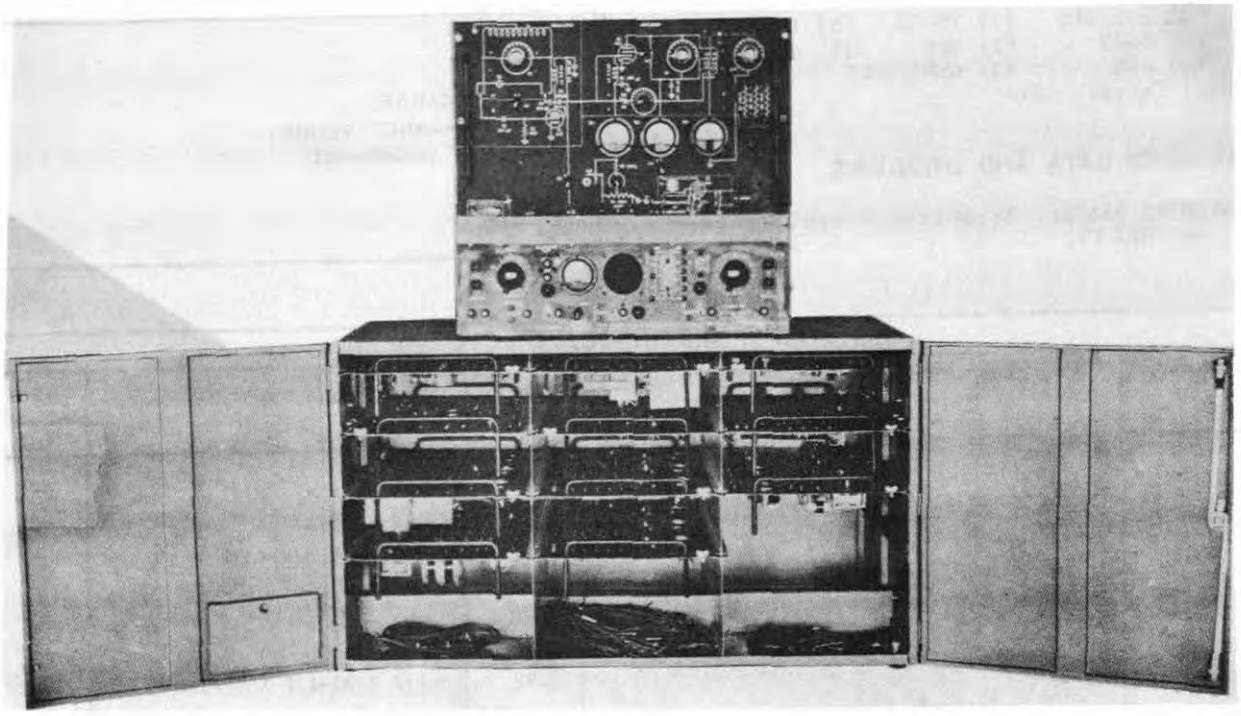
NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Cabinet CY-796/GRT-T1	7.5	13-3/4 X 29 X 32-1/2	62
1	Cabinet (Storage) CY-797/GRQ-T1	38.0	32-1/2 X 35-1/4 X 57-1/2	371
1	Power Supply PP-535/GRQ-T1	3.38	11-1/2 X 15-3/4 X 32-1/2	82
1	Group I (consisting of Circuit Demonstration Panels #1,#2,#3,#4) MX-1041/GRQ-T1 through MX-1044/GRQ-T1	9.49	18-1/2 X 27-1/2 X 32-1/4	101
1	Group II (consisting of Circuit Demonstration Panels #5,#6,#7,#8). MX-1045/GRQ-T1 through MX-1048/GRQ-T1	9.49	18-1/2 X 27-1/2 X 32-1/4	119
1	Group III (consisting of Circuit Demonstration Panels #9,#10,#11,#12) MX-1051/GRQ-T1 through MX-1052/GRQ-T1	9.49	18-1/2 X 22-1/2 X 32-1/4	99
1	Spare Parts Box	0.33	8 X 6 X 12	16

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Power Supply PP-535/GRQ-T1	8 X 13-7/16 X 29-7/8	58
1	Cabinet CY-796/GRQ-T1	12-5/16 X 27-3/4 X 31-1/2	27
1	Cabinet CY-797/GRQ-T1	29-1/2 X 32-5/8 X 53-3/4	240
1	Circuit Demonstration Panel MX-1041/GRQ-T1	5-1/4 X 17 X 29-7/8	11
1	Circuit Demonstration Panel MX-1042/GRQ-T1	5-1/4 X 17 X 29-7/8	8-1/2
1	Circuit Demonstration Panel MX-1043/GRQ-T1	5-1/4 X 17 X 29-7/8	20
1	Circuit Demonstration Panel MX-1044/GRQ-T1	5-1/4 X 17 X 29-7/8	10-1/2
1	Circuit Demonstration Panel MX-1045/GRQ-T1	5-1/4 X 17 X 29-7/8	26
1	Circuit Demonstration Panel MX-1046/GRQ-T1	5-1/4 X 17 X 29-7/8	8
1	Circuit Demonstration Panel MX-1047/GRQ-T1	5-1/4 X 17 X 29-7/8	11
1	Circuit Demonstration Panel MX-1048/GRQ-T1	5-1/4 X 17 X 29-7/8	11-1/2
1	Circuit Demonstration Pa el MX-1049/GRQ-T1	5-1/4 X 17 X 29-7/8	9-1/2
1	Circuit Demonstration Panel MX-1050/GRQ-T1	5-1/4 X 17 X 29-7/8	10-1/2
1	Circuit Demonstration Panel MX-1051/GRQ-T1	5-1/4 X 17 X 29-7/8	11-1/2
1	Circuit Demonstration Panel MX-1052/GRQ-T1	5-1/4 X 17 X 29-7/8	16

September 1956

TRAINER AN/GRQ-T1A



Trainer AN/GRQ-T1A

FUNCTIONAL DESCRIPTION

The AN/GRQ-T1A is used for instruction of trainees in basic principles of electronics by provision of means to readily construct basic circuits, to enable the building of these electrical circuits quickly by plugging in patch cords without the use of tools and permit the various components to be reused a number of times without destroying or damaging them.

No field changes in effect at time of preparation (18 June 1956).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (1) A.F. Signal Generator, (1) R.F. Signal Generator, (1) Oscilloscope, (1) AC and DC Voltmeter, (1) Vacuum Tube Voltmeter, (1) Volt-Ohm-Milliammeter.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

OPERATING VOLTAGE AND FREQUENCY: 105 to 125 *v, 50 to 60 cps, single ph.*
MAXIMUM OPERATING CURRENT: 2 amp.

MANUFACTURER'S OR CONTRACTOR'S DATA

Willor Manufacturing Corp., New York, N. Y.
Contract: NObsr-52680 dated 28 August 1951.
Approximate Cost: $1149.21

TUBE AND/OR CRYSTAL COMPLEMENT

(3) 5U4G	(1) 6SK7	(3) 6C5/6J5
(1) 83	(1) VR-75	(1) 6J5
(1) 6SJ7	(1) 6H6	(1) 6K6
(1) 6V6	(2) 6L6	(1) 6F6/6V6

Total Tubes: (17)

REFERENCE DATA AND LITERATURE

NAVSHIPS 91705: Technical Manual for Trainer AN/GRQ-T1A

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

AN/GRQ-T1A TRAINER

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Cabinet (Equipment) CY-796/GRQ-T1	8.8	14-1/2 x 30 x 35	75
1	Cabinet (Storage) CY-797/GRQ-T1	39.0	34-1/4 x 35-1/4 x 57-1/2	380
1	Power Supply PP-535A/GRQ-T1	2.9	9-3/4 x 15-3/4 x 33	86
1	Group I (consisting of Circuit Demonstration (Panels #1, 2, 3, 4) MX-1041A/GRQ-T1 through MX-1044A/GRQ-T1	9.7	19-1/4 x 26 x 34	107
1	Group II (consisting of Circuit Demonstration Panels #5, 6, 7, 8) MX-1045A/GRQ-T1 through MX-1048A/GRQ-T1	9.7	19-1/4 x 26 x 34	117
1	Group III (consisting of Circuit Demonstration Panels #9, 10, 11, 12) MX-1049A/GRQ-T1 through MX-1052A/GRQ-T1	9.7	19-1/4 x 26 x 34	104

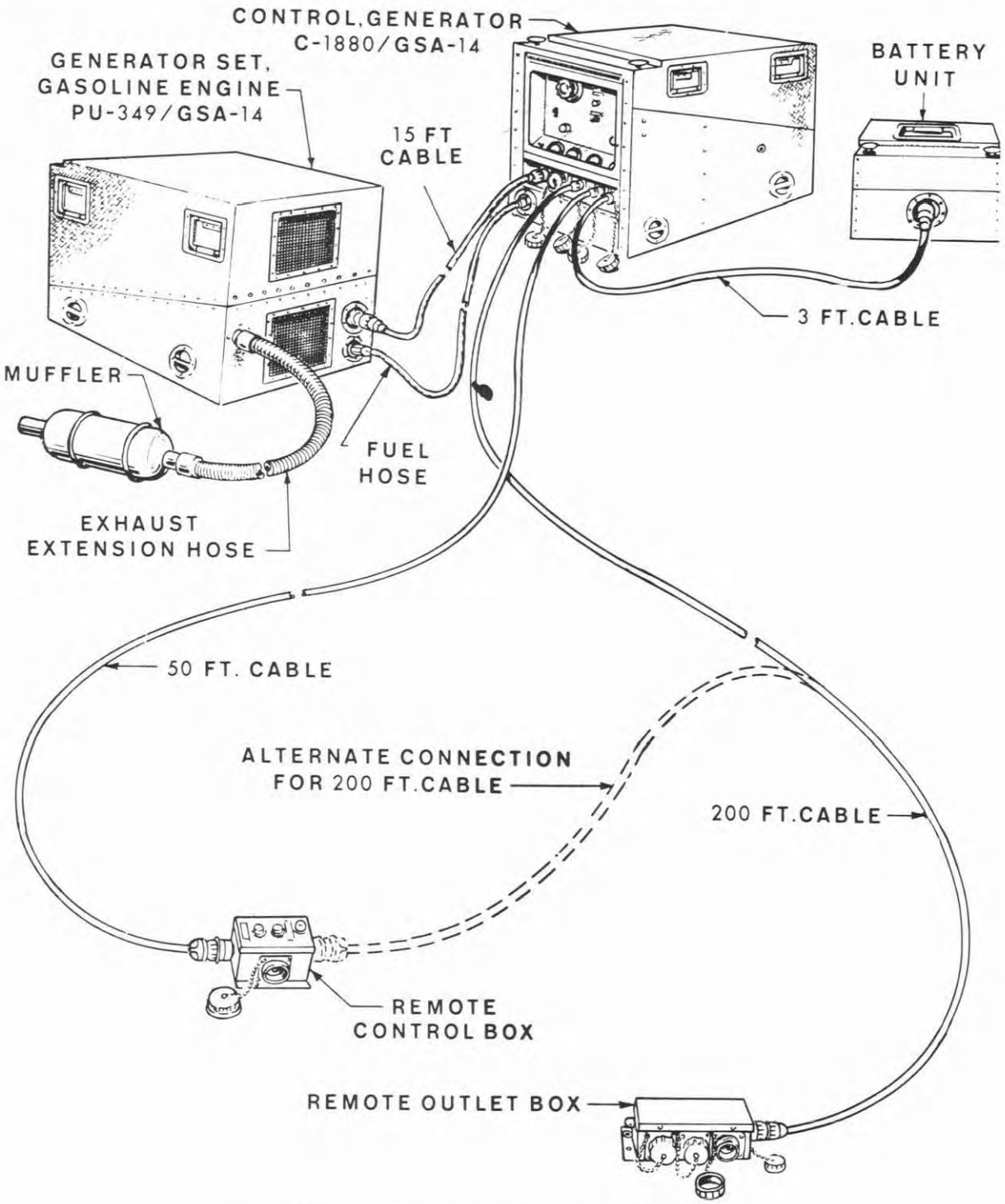
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Power Supply PP-535A/GRQ-T1	8 x 13-7/16 x 29-7/8	63
1	Cabinet CY-796/GRQ-T1	12-5/16 x 27-3/4 x 31-1/2	27
1	Cabinet CY-797/GRQ-T1	29-1/2 x 32-5/8 x 53-3/4	240
1	Circuit Demonstration Panel MX-1041A/GRQ-T1	5-1/4 x 17 x 29-7/8	11
1	Circuit Demonstration Panel MX-1042A/GRQ-T1	5-1/4 x 17 x 29-7/8	9-1/2
1	Circuit Demonstration Panel MX-1043A/GRQ-T1	5-1/4 x 17 x 29-7/8	22
1	Circuit Demonstration Panel MX-1044A/GRQ-T1	5-1/4 x 17 x 29-7/8	10-1/2
1	Circuit Demonstration Panel MX-1045A/GRQ-T1	5-1/4 x 17 x 29-7/8	30
1	Circuit Demonstration Panel MX-1046A/GRQ-T1	5-1/4 x 17 x 29-7/8	8
1	Circuit Demonstration Panel MX-1047A/GRQ-T1	5-1/4 x 17 x 29-7/8	11
1	Circuit Demonstration Panel MX-1048A/GRQ-T1	5-1/4 x 17 x 29-7/8	12-1/2
1	Circuit Demonstration Panel MX-1049A/GRQ-T1	5-1/4 x 17 x 29-7/8	10
1	Circuit Demonstration Panel MX-1050A/GRQ-T1	5-1/4 x 17 x 29-7/8	12
1	Circuit Demonstration Panel MX-1051A/GRQ-T1	5-1/4 x 17 x 29-7/8	12
1	Circuit Demonstration Panel MX-1052A/GRQ-T1	5-1/4 x 17 x 29-7/8	16

April 1959

Radio-Auxiliary

GENERATOR SET GASOLINE ENGINE AN/GSA-14



Generator Set, Gasoline Engine AN/GSA-14

Radio-Auxiliary

April 1959

AN/GSA-14 GENERATOR SET GASOLINE ENGINE

FUNCTIONAL DESCRIPTION

The AN/GSA-14 is designed as a complete electric power plant, consisting of three (3) main units; a gasoline engine-generator, a control unit with connecting cables, and a battery unit. The power plant supplies 600 watts of alternating current at 115 volts, single phase, 60 cycles. The power plant is radio interference free, and is designed primarily for use with radio noise suppression test equipment.

No field changes in effect at time of preparation (8 April 1959).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF ENGINE: Gasoline burning.
TYPE OF CYLINDER: Vertical single cylinder.
TYPE OF HEAD: L head.
TYPE OF COOLING: Air cooled.
TEMPERATURE DATA
OPERATING AMBIENT LIMITS: 18° C to 51.7° C (0° F to 125° F).
GENERATOR MAXIMUM TEMPERATURE RISE: 60° C (140° F).
FREQUENCY DATA
RANGE: 59 to 62 cycles, full load to no load.
STABILITY: 0.3 cycles, constant load.
VOLTAGE DATA
RANGE: AC adjustable 90 or 135 volts at full load; DC adjustable to give 2 or 10 amp battery charge rate.
STABILITY: 10 to 12% from no load to full load.
OPERATING POWER RQMT: 115 v AC, 60 cps, single ph, 600 watts; direct current, 15 v, 10 amps.

MANUFACTURER'S OR CONTRACTOR'S DATA

D. W. Onan and Sons Inc., Minneapolis, Minnesota.
Contract NObsr-64632, dated 31 January 1955.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes or Crystals used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 93128: Technical Manual for Gasoline Engine Generator Set AN/GSA-14.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Engine Generator	12.0	23 X 24 X 37	280
1	Control Unit	12.0	23 X 24 X 37	215
1	Battery Unit	1.9	13 X 14 X 18	83
1	Electrolyte	0.7	9 X 11-1/2 X 13	20

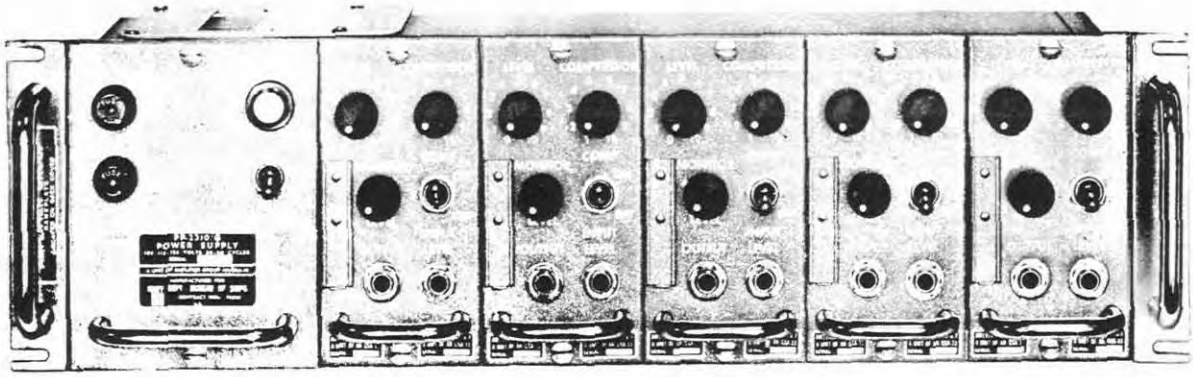
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Engine Generator W/Enclosure	19-1/4 X 20 X 32	225
1	Control Unit	20 X 20 X 32	160
1	Battery Unit	9-1/4 X 11-1/8 X 13-1/4	42
1	Battery	6-3/4 X 10-5/32 X 11-3/4	30
1	Electrolyte		10.7

June 1961

Radio-Auxiliary

AMPLIFIER GROUP AN/GSA-33



Amplifier Group AN/GSA-33

FUNCTIONAL DESCRIPTION

The AN/GSA-33 is designed to provide audio amplification, peak-signal limiting and signal compression of the audio output of five (5) audio channels. It employs Transistors and other Semi-Conductors exclusively; no vacuum tubes are used.

No field changes in effect at time of preparation (11 August 1960).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

DISTORTION: Less than 7% at rated output.
INPUT IMPEDANCE: 600 ohms balanced, each channel.
OUTPUT IMPEDANCE
600 OHM OUTPUT TERMINALS: 600 ohms balanced.
OUTPUT LEVEL JACK: 600 ohms unbalanced.
INPUT RANGE: 0.001 to 6 mw (0.0245 to 1.9 v).
POWER OUTPUT (EACH CHANNEL).
600 OHM OUTPUT TERMINALS (1.9 V): 6 mw.
OUTPUT LEVEL JACK (0.0775 V): 1 mw.
FREQUENCY RESPONSE (EACH CHANNEL): Porm 2 db from 200 to 5,000 cps.
OPERATING POWER RQMT: 105/115/125 v ac, 50 to 60 cps, 1 ph, 20 W max.

MANUFACTURER'S OR CONTRACTOR'S DATA

Stromberg Carlson Co., Div General Dynamics Corp., Rochester, New York.
Contract NObsr-75538.

TUBE AND/OR CRYSTAL COMPLEMENT

No Tubes or Crystals used.

SEMI-CONDUCTORS

(3) 1N538 (1) 1N1964A
(1) 1N1882A
Total Semi-Conductors: (5)

TRANSISTORS

(7) 2N461 (1) 2N297A
Total Transistors: (8)

REFERENCE DATA AND LITERATURE

NAVSHIPS 93443: Tehcnical Manual for Amplifier Group AN/GSA-33.

TYPE CLASSIFICATION (NAVY)
DESIGN COGNIZANCE NAVY BUSHIPS
PROCUREMENT COGNIZANCE MIL-A-21319
STOCK NO.
R.D.B. IDENT. NO.

AN/GSA-33 AMPLIFIER GROUP

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Amplifier AN/GSA-33	1.25	7 X 15 X 20.5	38.5

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Amplifier Group AN/GSA-33 includes:	5-7/32 X 8 X 19-1/4	32
1	Power-Supply PP-2310/G	4-1/16 X 5-7/32 X 6-3/8	6.25
5	Compressor Amplifier AM-1910/G	2-21/32 X 5-7/32 X 6-3/8	3
2	Technical Manual NAVSHIPS 93443	1/2 X 8-3/4 X 11-1/2	9 oz

June 1961

Radio-Auxiliary

CONSOLE, AIR TRAFFIC CONTROL AN/GSA-35(V)

FUNCTIONAL DESCRIPTION

The Console Air Traffic Control AN/GSA-35 (V), is designed to consolidate the remote controls of AN/FRQ-8(V), AN/GRA-34, AN/FRN-12A, and AN/FRN-24 NAVAID equipments into one composite console. Various combinations of the variable (V) units listed are employed depending upon the number of basic equipments in use at a particular station.

No field changes in effect at time of preparation (7 April 1961).

RELATION TO OTHER EQUIPMENT

The AN/GSA-35(V) is designed to be used with, but is not a part of AN/FRQ-8(V) (CONELRAD), AN/GRA-34(TACAN), AN/FRN-12A (VOR), and AN/FRN-24(UHF HOMER).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF INSTALLATION: Fixed.
OPERATING POWER RQMT: 110 v ac, 60 cps, single ph.

MANUFACTURER'S OR CONTRACTOR'S DATA

Industrial Manager, New Orleans, La.
BuShips Allotment 145P50.
BuShips Appropriation 17X1319.2401, RDT&E Navy 1960.

TUBE AND/OR CRYSTAL COMPLEMENT

Electron Tube, Crystal and/or Semi-Conductor Device data not available.

REFERENCE DATA AND LITERATURE

Nomenclature Card for Console, Air Traffic Control AN/GSA-35(V).

TYPE CLASSIFICATION (NAVY)
DESIGN COGNIZANCE NAVY BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Air Traffic Control, Console AN/GSA-35(V) consists of:	22 x 22-1/2 x 40	
1	Cabinet, Electrical Equipment		
1	Power Supply (28 v dc)		
1	Amplifier, Audio Frequency		
1	Remote Control (for AN/FRQ-8(V))		
1	Remote Control (for AN/GRA-34)		
1	Remote Control (for AN/FRN-12A)		
1	Remote Control (for AN/FRN-24)		
(V)	A. F. Oscillator O-561/FRQ-8	7 x 8 x 19	
(V)	Control, Remote Switching C-2234/GRA-34	13 x 14 x 19	
(V)	Amplifier-Monitor Group OA-162/FRN-12		
(V)	Control, Transmitter C-2517/FRN-24	12 x 12-1/4 x 19	

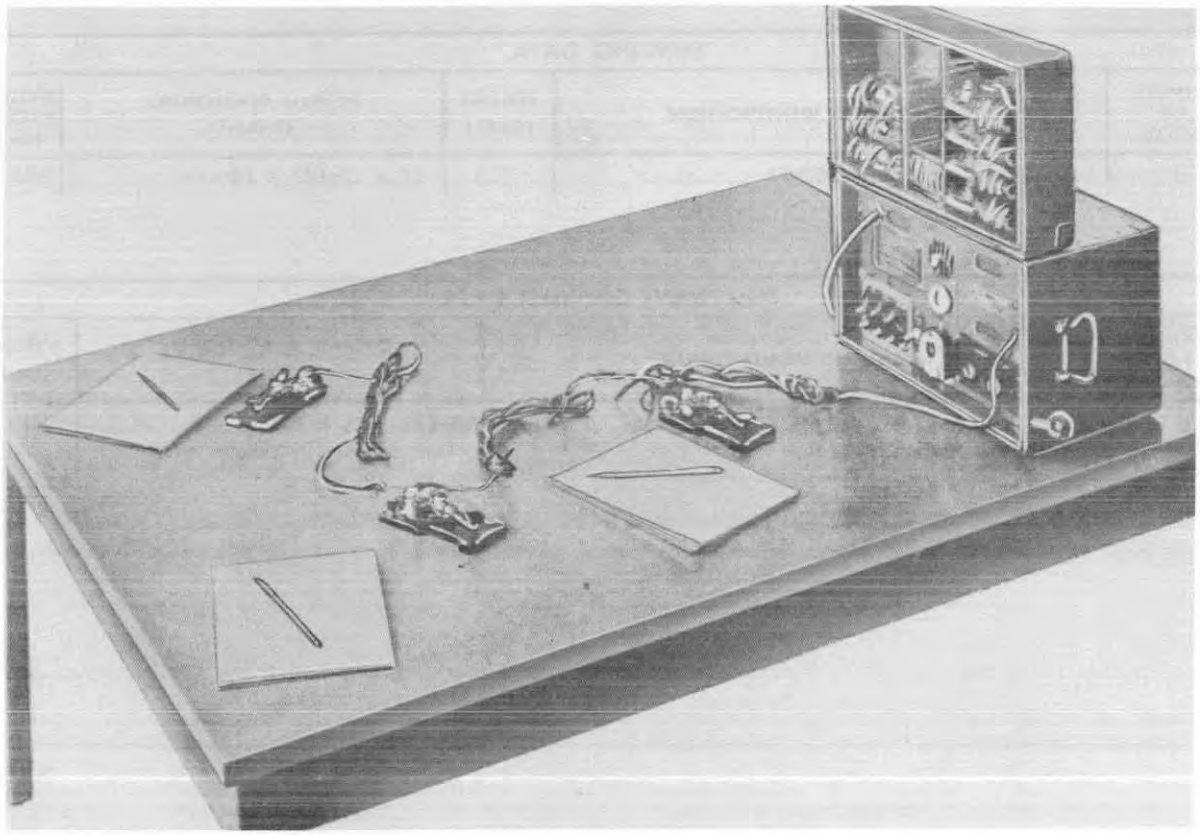
Note: (V) Indicates variable number of units required for certain installations.

April 1958

Radio-Auxiliary

CODE TRAINING SET

AN/GSC-T1



Code Training Set AN/GSC-T1

FUNCTIONAL DESCRIPTION

The AN/GSC-T1 is designed to provide student operators with a device for practicing transmission and reception of International Morse Code signals by audio or visual methods. It may be used as far as 40 feet distant from the practice groups, provided the surrounding noise levels do not exceed 60 decibels. It includes ten telegraph keys which may all be connected to the main unit at the same time.

No field changes in effect at time of preparation (18 October 1957).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER REQUIREMENTS: 6, 12, 24, or 115 v DC or 115 or 230 v, 60 cps, single ph.

TUBE AND/OR CRYSTAL COMPLEMENT

(2) 6G6G (1) 6X5GT
Total Tubes: (3)

REFERENCE DATA AND LITERATURE

TM11-437: Technical Manual for Code Training Set AN/GSC-T1.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE
STOCK NO.

Radio-Auxiliary

AN/GSC-T1 CODE TRAINING SET

April 1958

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Code Training Set AN/GSC-T1	3.5	17 x 17-1/2 x 20-1/2	100

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Code Training Set AN/GSC-T1 including: (10) Transmitting Keys	10-1/2 x 13 x 17	40

January 1958

Radio-Auxiliary

COMPARATOR-TRIANGULATION GROUP AN/MLA-3

FUNCTIONAL DESCRIPTION

The AN/MLA-3 provides facilities for determining coincidence of data received from up to five AN/TLQ-5 or AN/FLD-1 and computing a "fix" and altitude from this data.

No field changes in effect at time of preparation (8 May 1957).

RELATION TO OTHER EQUIPMENT

Used w/but not part of AN/TLQ-5 and AN/FLD-1.

TUBE AND/OR CRYSTAL COMPLEMENT

Tubes and Crystals: Not Available.

REFERENCE DATA AND LITERATURE

Nomenclature Card for Comparator-Triangulation Group AN/MLA-3 dated 24 August 1956.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	BUSHIPS
PROCUREMENT COGNIZANCE	
STOCK NO.	

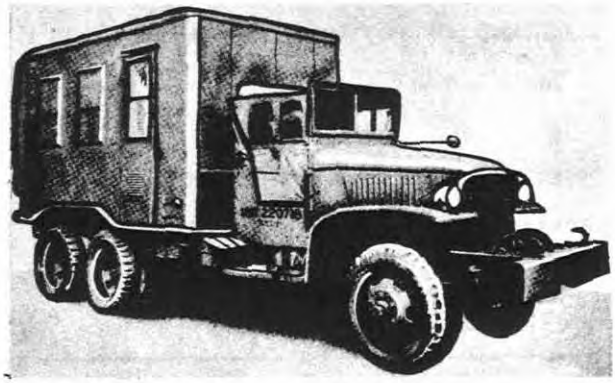
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Manual Entry Unit		
1	Computer Unit		
1	Triangulation Unit		
1	Output Translator		
1	Teletypewriter Set AN/FGC-20X		
1	Data Entry Unit		
1	Permanent Data Record Unit		
1	Data Comparison Unit		
1	Coincident Data Presentation Unit		
1	Trailer		
	Power Supplies		
	Rack		
	Cabinets		
	Interconnecting Cable Assemblies		

March 1957

RADIO CENTRAL

AN/MRC-25



Radio Central AN/MRC-25

FUNCTIONAL DESCRIPTION

The AN/MRC-25 is a truck which operates as a part of Communication Central AN/MSC-3. Its principal function is to provide spare-parts storage space and facilities for maintenance of the AN/MSC-3 communication system. In addition, radio transmitting and receiving equipment is provided to operate in conjunction with the associated vans.

No field changes in effect at time of preparation (15 August 1956).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE EMISSION: A2, A3.
FREQUENCY
TDZ: 225 to 4000 mc.
RDZ: 200 to 400 mc.
TDQ: 115 to 156 mc.
RCK: 115 to 156 mc.
OPERATING POWER: 115 v, 60 cps.

TUBE AND/OR CRYSTAL COMPLEMENT

(4) 2C39	(4) 6AC7
(4) 3C23	(2) 6AG7
(1) 5R4GY	(2) 6AK5
(3) 5U4G	(2) 6AQ5
(2) 563GT	(2) 6F4
(15) 6AB7	(4) 6H6
(3) 6J5	(3) 717A
(1) 6SG7	(6) 807
(2) 6SK7	(4) 829/829B
(2) 6SN7	(2) 956
(1) 6SN6W	(1) 9006
(4) 6V6GT	(1) OC3/VR150-30
(1) 6X5	(2) OD3/VR150-30
(6) 12AU7	

Total Tubes: (83)

REFERENCE DATA AND LITERATURE

NAVSHIPS 92158: Technical Manual for Communication Central AN/MSC-3. Nomenclature Card for Radio Central AN/MRC-25.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

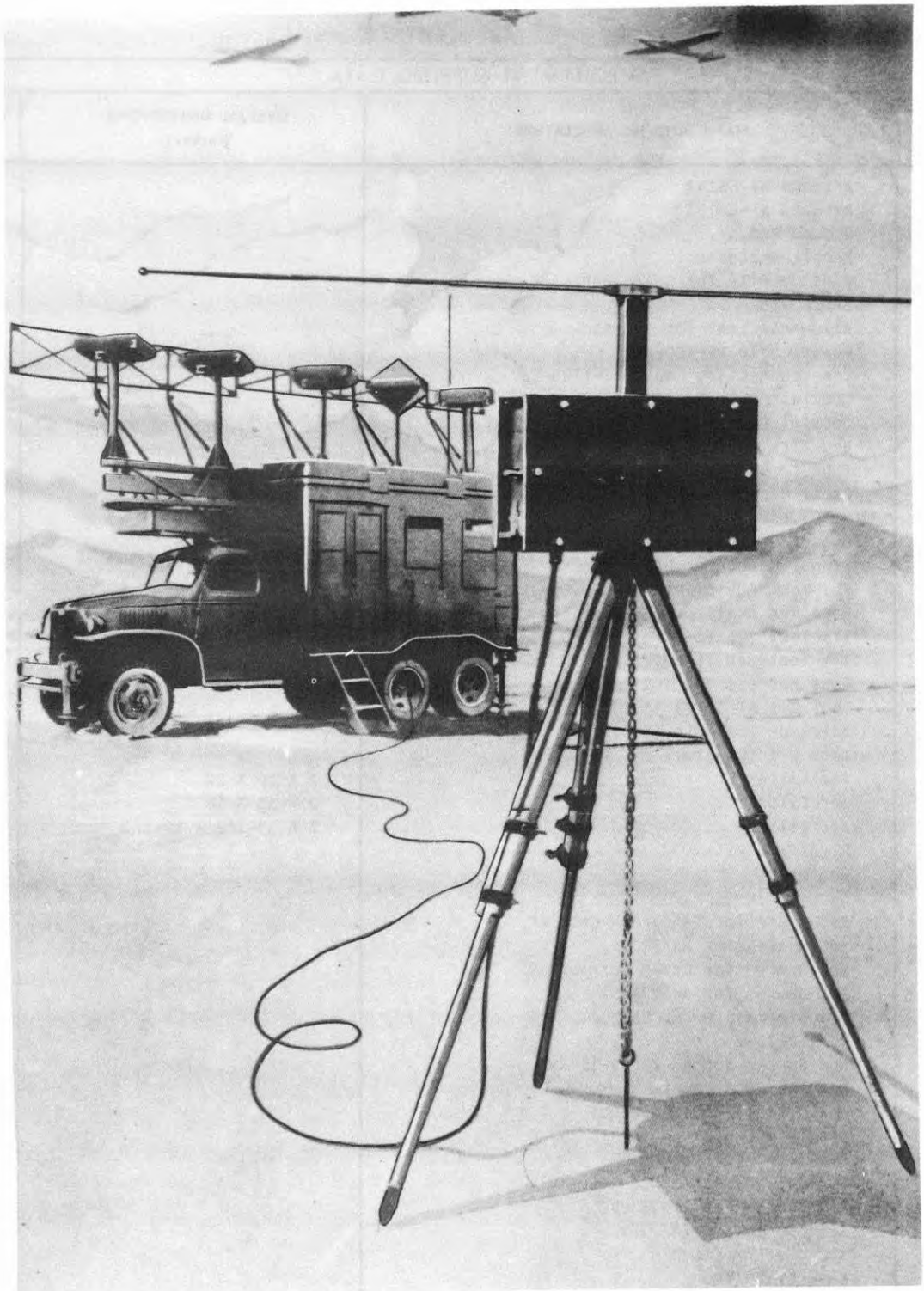
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Truck K-56 consists of:	93 X 121-1/2 X 259	
1	Gas Engine Generator NT-73029		
1	Radio Transmitting Equipment TDZ		
1	Radio Receiving Equipment RDZ		
1	Radio Transmitting Equipment TDQ		
1	Radio Receiving Equipment RCK		
2	Radio Teletype Terminal AN/SGC-1		
1	Power Distribution Panel 24-S		
1	Field Telephone EE-8		
1	Vent Blower B-12		
32	Spare Parts Cabinet, 4 Drawer, w/spare parts		
16	Spare Parts Cabinet, 8 Drawer, w/spare parts		
1	Set Blue Prints		
1	Box Instruction Books		
1	Box Miscellaneous Fuses, Jacks, Plugs, etc.		

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
2	Antenna NT-66147		
2	Antenna NT-66095		
1	Ground Rod		
1	Pencil Sharpener		
2	Visible File for Spare Parts		
1	Set Snits		
1	Allowance List for Spares		
1	Power Cable NT-TCOP-9		
1	Interconnecting Cable NT-TTRS-16		
2	Coaxial Cable RG-18/U		
2	Coaxial Cable RG-10/U		
5	Bag Tire Chains		
3	Tube Tester TV-3/U		
2	Oscilloscope OLB-1		
1	Multimeter ME-25/U		
1	Signal Generator LF series		
1	Signal Generator LAJ-2		
1	TTY Test Equipment I-208		
1	Receiver Analyzer OE-12		
1	TTY Test Set TS-659		
1	TTY Test Set TS-660		
1	Test Harness for TDZ		
4	Tool Kit NT-10223		
2	Teletype Tool Kit TE-50A		
1	Tool Kit (General)		
5	Air Filter	2 X 10 X 20	
1	Air Filter	2 X 10 X 14	
2	Air Filter	2 X 13-1/2 X 19-1/2	
5	First Aid Kit		
4	Heater P		
6	Lantern JK-25		
1	Set Spare for Telegraph Carrier		
1	Set Spares for AN/TRC-1		
1	Set Spares for Oct-3 Carrier		
1	Set Spares for AN/URA-8A		
1	Transformer, W. E. 85U390		
1	Bottle CO-2		
1	Box Spares for NT-73029-15-RW		
2	Bottles Electrolyte		
12	Box Miscellaneous Spares		
1	Set Technical Manuals		
1	Set Teletype Spares		
23	Box BUSANDA Furnished Material		
1	Set Spares for NT-23500		
1	Set Spares for AM/215V		
1	Mast for AN/TRC-1		
4	Case CY-29/TRC		
1	Spare Tire		

RADIO SET AN/MRN-1



Radio Set AN/MRN-1

AN/MRN-1 RADIO SET

September 1956

FUNCTIONAL DESCRIPTION

The AN/MRN-1 is a portable multi-frequency Instrument Landing Localizer. The equipment is entirely contained in a truck, and is therefore completely portable.

The equipment is made so as to radiate two intersecting field patterns, one of which is modulated at an audio frequency of 90 cps and the other at an audio frequency of 150 cps. The shape of the radiated patterns is such that they intersect in a vertical plane, called "Course", which can be orientated by positioning the truck to intersect the ground in a line which coincides with the center line of a landing runway. An airplane, equipped with receiving equipment which indicates the location of the intersection of these two field patterns, is thereby provided a course to be flown to a predetermined runway under conditions of poor visibility.

No field changes in effect at time of preparation (19 June 1956).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

RANGE: 40 miles at 2500 ft.
60 miles at 6000 ft.
70 miles at 10000 ft.
FREQUENCY RANGE: 108.3 to 110.3 mc.
PRESET FREQUENCIES: 6.
POWER INPUT: 115 v, 60 cps.
POWER OUTPUT: 100 W.

TUBE AND/OR CRYSTAL COMPLEMENT

(2) 1LN5
(1) 1R5
(1) 1S5
(2) 0D3W
(1) 3S4
(3) 4E27
(1) 5V46
(1) 6F6
(2) 6H6
(1) 6SN7WGTA
(1) 6K6GT
(1) 6SF5
(1) 6x5WGT
(4) 807
(4) 836
(1) 951
(2) 2051
(1) 9002

Total Tubes: (30)

(6) DC-17-A
Total Crystals: (6)

REFERENCE DATA AND LITERATURE

Technical Manual RADIO SET AN/MRN-1.

TYPE CLASSIFICATION
DESIGN COGNIZANCE USAF
PROCUREMENT COGNIZANCE
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Modulator and Bridge BC-752-A	22-1/4 x 32-1/4 x 46-1/8	330
1	Mounting FT-289-A	3-1/2 x 24-1/4 x 25-1/2	24.5
1	Mounting FT-290-A	3-1/4 x 19-1/4 x 25-1/2	19.5
1	Mounting FT-459-A	2-1/2 x 12 x 18	11.8
1	Mounting FT-460-A	1-3/8 x 13-1/4 x 20-1/4	8.5
1	Mounting FT-461-A	11 x 14-3/4 x 15	12.5
1	Obstacle Light Equipment MC-408-A consists of:		
2	Light Assemblies (incl combat hood)	6 dia x 6	1.5
1	Cord CD-776	3000 (lg)	17.8
1	Cord CD-777	210 (lg)	1.2
1	Cord CD-779	150 (lg)	1.0
1	Cord CD-780	72 (lg)	0.5
1	Plug AN-3106-22-8S		
1	Plug AN-3106-28-9S		
1	Plug AN-3108-18-9P		
1	Power Unit PE-141-A	21 x 36-1/4 x 49	804
1	Radio Transmitter BC-751-A	27-1/2 x 30-3/4 x 46-1/8	549
6	Range Pole M-382-A	1/2 dia x 72	4
2	Reel RL-53-A	16 dia x 6	6.5
1	Set of Installation Components		

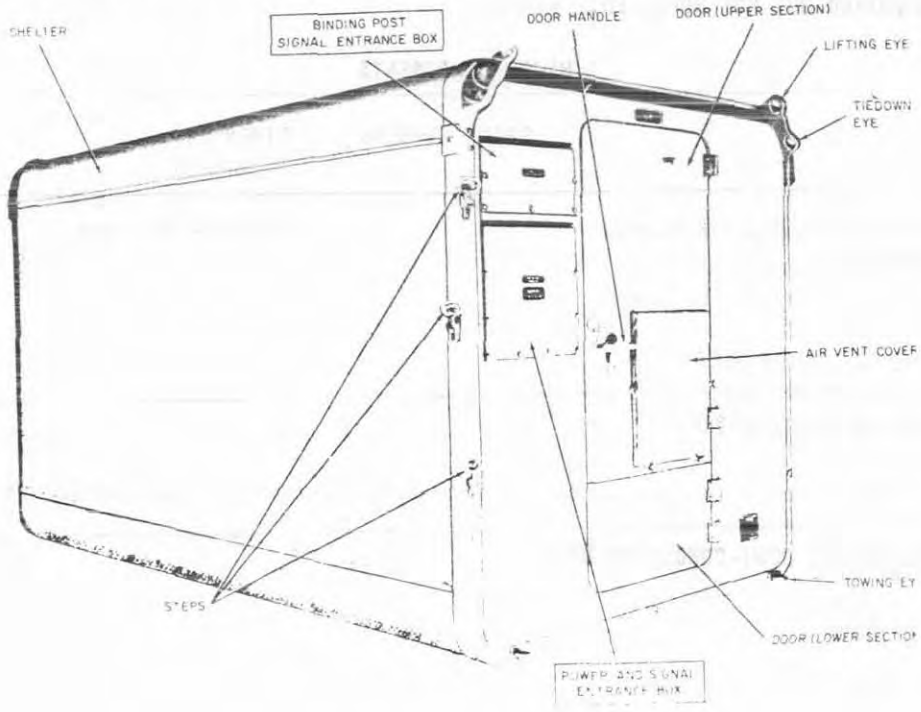
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Socket AN-97-5107-18-9S		
1	Tape (100 ft metal)	4-1/2 dia x 3/4	1.2
1	Tool Equipment (part of chest CH-181A)	5-3/4 x 10-3/4 x 17	23.5
1	Tripod LG-27-A	5 dia x 56	13.8
1	Truck K-53-D	92-1/2 x 116 x 252	11700
1	Voltmeter IS-176-A	4-1/4 x 4-3/4 x 15-1/4	2
1	Radio Set SCR-610-A		
1	Cord CD-811-A	2700 (lg)	23.5
2	Cord CD-817-A (incl 1 spare)	72 (lg)	4.2
1	Course Detector BC-753-A	12-3/4 x 19-1/2 x 21-3/4	65
1	Course Detector BC-754-A	8 x 10 x 32	24
1	Fuel Pump	6 dia x 22	12.8
1	Heater M-321-A	13 x 14 x 68-1/2	120
1	Indicator Box BC-777-A	12-1/2 x 13-1/4 x 18-1/2	60
2	Technical Manuals		
1	Junction Box JB-58-A	3-1/4 x 9-1/2 x 14-1/2	8
1	Junction Box J-7/MRN-1	2-1/4 x 6 x 6-1/2	2.2
1	Lead-In Bushing (for Radio Set SCR-610-A)	1-3/4 dia x 5	0.5
1	Leg LG-16-A	1-1/4 x 1-1/4 x 65	3
1	Set Maintenance Parts		850.5
1	Anchor AH-12A (includes chain)	69 (lg)	2.2
1	Antenna Equipment RC-109-A consists of:		
6	Loop LP-24-A (incl 1 spare)	7 x 33-1/2 x 33-1/2	26.7
6	Mast MA-5-A (incl 1 spare)	10 x 11-1/2 x 49-1/2	17.3
1	Mounting Base MP-79-A (2 sections)	6 x 14 x 226	300
2	Cord CD-812-A (incl 1 spare)	162 (lg)	7
7	Cord CD-813-A (incl 2 spare)	58 (lg)	3
2	Cord CD-814-A (incl 1 spare)	166 (lg)	13
2	Cord CD-816-A (incl 1 spare)	180 (lg)	11.1
1	Can, Gasoline, 5 gal	11-1/2 dia x 18	9
1	Can, Oil, 1 gal	7-1/8 dia x 12	4
1	Chart MC-435	1/16 x 7-1/8 x 14-1/4	
1	Chest CH-181-A	21-1/2 x 36-3/8 x 65	366
1	Control Box BC-915-A	7-1/2 x 14 x 23-1/2	49
1	Antenna Reflector MC-528 consists of:		
1	Reflector Screen Z-2004	2-1/8 x 30 x 139	
1	Reflector Screen Z-2005	2-1/8 x 18 x 184	
1	Screen Support Z-2000	2-1/8 x 65-1/8 x 66-3/8	
1	Screen Support Z-2001	2-1/8 x 28-1/2 x 67	
1	Screen Support Z-2002	2-1/8 x 28-1/2 x 67	
1	Screen Support Z-2003	2-1/8 x 28-1/2 x 67	
1	Screen Support Z-2014	2-1/8 x 28-1/2 x 73	
1	Diagonal Support Brace Z-2016	1 x 2 x 60	
1	Cover CW-40/UR		

Cog Service:	FSN:	Functional Class:
USA	USN	USAF

TYPE CLASS:

MANUFACTURER'S NAME/CODE NUMBER: Stromberg-Carlson.



Electronic Shop, Shelter Mounted AN/MSM-16

FUNCTIONAL DESCRIPTION:

The Electronic Shop, Shelter Mounted AN/MSM-16 is an air or vehicular-transportable field (third echelon) maintenance shop. Test equipments and repair tools as authorized by the using organization's table of allowances can be installed and operated in the AN/MSM-16 to accomplish field maintenance on area-type communications equipments. It contains one local telephone circuit, and facilities for connecting test circuits from other area equipments.

No field changes in effect at time of preparation (31 July 1961).

TECHNICAL CHARACTERISTICS:

OPERATING POWER RQMT: 115 v ac, 60 cps, 1 ph, 3 wire.
POWER CONSUMPTION
FLUORESCENT LIGHTS: 160 W.
EXHAUST BLOWERS: 300 W.

AN/MSM-16 ELECTRONIC SHOP, SHELTER MOUNTED

ELECTRIC HEATERS: 3,000 W.
AIR COMPRESSORS: 200 W.
ELECTRIC DRILL: 150 W.
DROPLIGHT: 75 W.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Electronic Shop, Shelter Mounted AN/MSM-16 consists of:		77-1/2 x 80 x 138	2000
1	Shelter, Electrical Equipment S-141/G			
1	Telephone Set TA-312/PT			

REFERENCE DATA AND LITERATURE:

TM-11-4940-202-15: Technical Manual for Electronic Shop, Shelter Mounted AN/MSM-16.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE:
SPEC &/OR DWG:
DESIGN COG: TASSA

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Stromberg-Carlson Pt no. 666146-001	Rochester, New York	PROC-3131-PP-59-54-54	

October 1957

Radio-Auxiliary

ELECTRONIC SHOP, TRAILER MOUNTED AN/MSM-6

FUNCTIONAL DESCRIPTION

The AN/MSM-6 is a mobile-air transportable maintenance shop for maintenance of Numbered Tactical Air Force and Wing Headquarters equipment.

No field changes in effect at time of preparation (7 June 1957).

RELATION TO OTHER EQUIPMENT

Part of AN/MSC-4 and AN/MSC-7.

TUBE AND/OR CRYSTAL COMPLEMENT

Tubes and Crystals: Not Available.

REFERENCE DATA AND LITERATURE

Nomenclature Card for Electronic Shop, Trailer Mounted dated 27 November 1956.

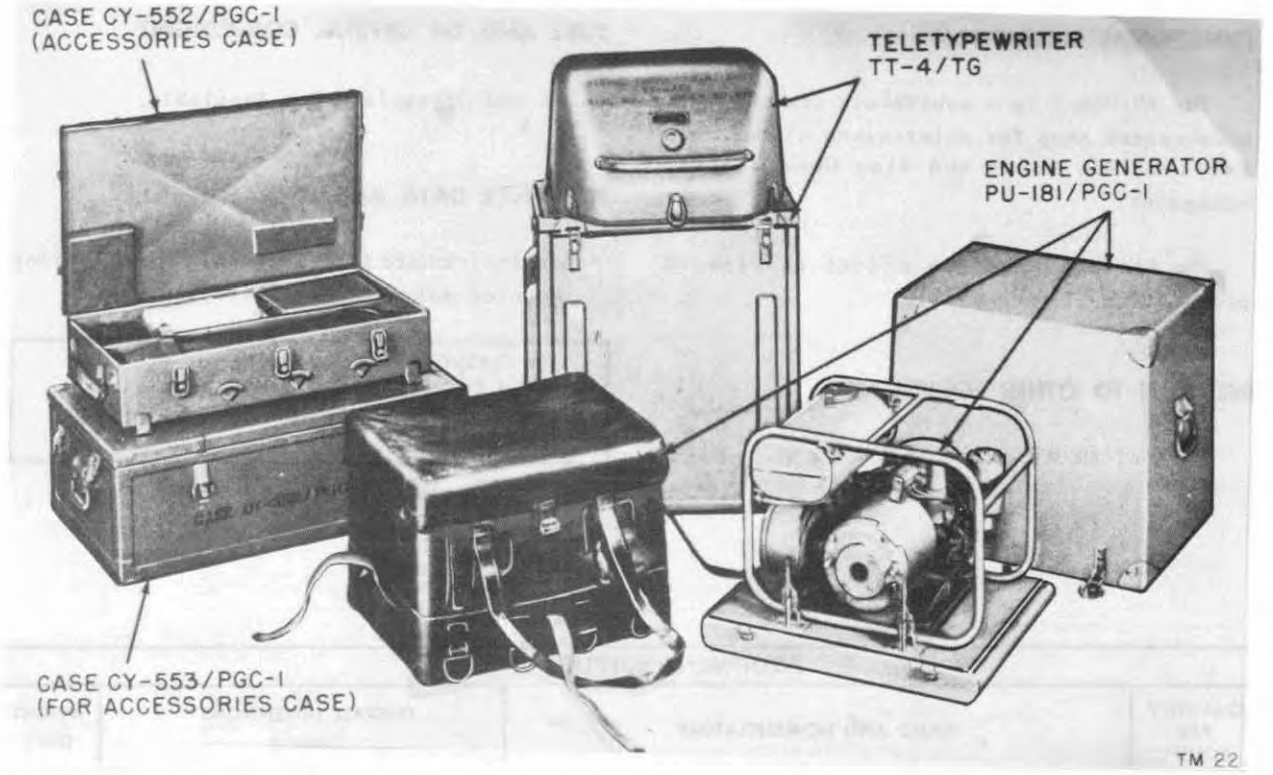
TYPE CLASSIFICATION	
DESIGN COGNIZANCE	BUSHIPS
PROCUREMENT COGNIZANCE	
STOCK NO.	

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Semi-Trailer MC-2	26-1/2 ft x 7 ft 8 in. x 10 ft 8 in.	
1	Intercom		
4	Work Tables		
1	Chair		
3	Steel Stools		
2	Steel Cabinets		
	Small Parts		
3	Storage Cabinets		
	Miscellaneous Tool equipment and Test Equipment		

Radio-Auxiliary

TELETYPEWRITER SET AN/PGC-1



Components of Teletypewriter Set AN/PGC-1

FUNCTIONAL DESCRIPTION

The AN/PGC-1 is a lightweight, portable, sending and receiving teletypewriter station primarily intended for field use. The set is designed for operation in a nominal 60 milliampere direct current network or 20 milliampere wire-line or radio carrier system. Has standard communication keyboard, 75 english characters per line. It is capable of receiving and sending messages in standard Baudot start-stop five-unit code.

No field changes in effect at time of preparation (3 September 1958).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TELETYPEWRITER TT-4/TG.
TYPE OF SIGNALS: Neutral.
SPEED (SEND AND RECEIVE): 368.1, 404, or 600 opm.
TYPE OF FEED: Friction.
SERVICE RANGE
368.1 OR 404 OPM: 25 mi.
600 OPM: 15 mi.
MOTOR AND GOVERNOR
TYPE OF MOTOR: Universal (AC or DC series type).
SPEED: 3600 rpm ±5% at all signal opm.
GOVERNOR: Reduces motor current when motor speed exceeds critical rate.
TUNING FORK: Stroboscopic, 180 vibrations per sec.
POWER REQUIREMENTS
MOTOR
VOLTAGE: 105 to 125 v (AC or DC).
FREQUENCY (IF AC): 50 to 60 cps single ph.
DEMAND: Approx 150 W.
LINE
DC LINE: 60 ma.
VOICE FREQUENCY LINE: 20 ma.
ENGINE GENERATOR PU-181/PGC-1
GENERATOR GN-51-C
OUTPUT VOLTAGE: Nominal 120 or 240 v.
FREQUENCY: 60 cps.
PHASE: Single.

Radio-Auxiliary

April 1959

AN/PGC-1 TELETYPEWRITER SET

MAX LOAD: 300 va.
REGULATION: 10%.

ENGINE GE-12-F
TYPE: Gasoline (mixed with lubricating oil).
IGNITION SYSTEM: Magneto type.
GOVERNOR: Electric-solenoid type.
FUEL CAPACITY: 1 gal.
FUEL CONSUMPTION: 7.5 hr/gal (under full load).
HORSEPOWER: 1.25 hp at 3000 rpm.

MANUFACTURER'S OR CONTRACTOR'S DATA

Kleinschmidt Lab. Inc., Chicago, Ill.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes or Crystal used.

REFERENCE DATA AND LITERATURE

Technical Manual TM11-2234 for Teletypewriter Set AN/PGC-1.

TYPE CLASSIFICATION

DESIGN COGNIZANCE TASSA

PROCUREMENT COGNIZANCE Sig. Spec. 71-3364

STOCK NO.

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Case CY-694/PGC-1, Teletypewriter TT-4/TG, Tools and Instruction books	5.98	17-5/8 X 23-1/8 X 25-3/8	90
2	Case CY-553/PGC-1, Case CY-552/PGC-1, Accessories and running spare parts	3.76	10-3/4 X 19-7/8 X 30-3/8	60
3	Case CY-739/PGC-1 and Engine Generator PU-181/PG-1	4.43	18-1/2 X 20-1/8 X 21	

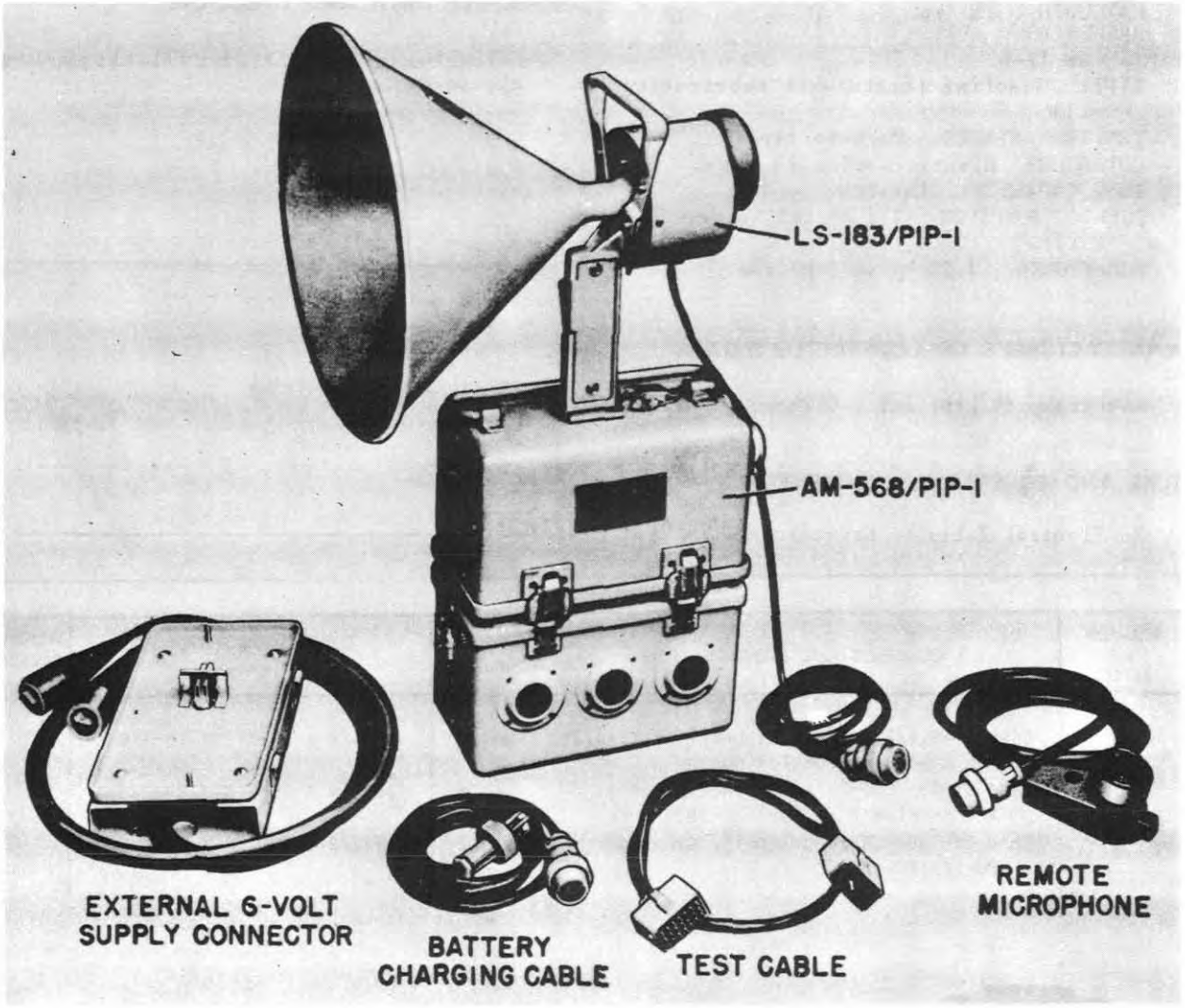
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Teletypewriter TT-4/TG	16-3/8 X 20-7/8 X 24-3/8	94.5
1	Engine Generator PU-181/PGC-1	12-3/4 X 14-3/4 X 17-1/2	95
1	Case CY-552/PGC-1	6 X 16 X 27	24
1	Case CY-553/PGC-1 Accessories and running-spare parts	9-1/2 X 19-1/2 X 30-1/2	30

October 1957

Radio-Auxiliary

PUBLIC ADDRESS SET AN/PIP-1



Public Address Set AN/PIP-1

FUNCTIONAL DESCRIPTION

The AN/PIP-1 is designed to amplify and transmit intelligible speech over extended distances through high ambient noise levels. It employs an electric megaphone which is similar in appearance and use to an ordinary megaphone but has the advantages of greater range and intelligibility. The electric megaphone is almost as easily handled as an ordinary megaphone and is to some extent more versatile. The output and hence the range of the electric megaphone may be increased by the use of a remote microphone which is supplied with the equipment.

No field changes in effect at time of preparation (26 March 1957).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER OUTPUT: 10 w.
FREQUENCY RESPONSE: 400 to 5500 cps.
OUTPUT IMPEDANCE: 16.5 ohms.
LOUDSPEAKER: Permanent magnet, horn type.
INPUT IMPEDANCE: 16,000 ohms.
MICROPHONE: Reluctance type.
POWER SOURCE REQUIRED: 6 v DC.

Radio-Auxiliary

October 1957

AN/PIP-1 PUBLIC ADDRESS SET

MANUFACTURER'S OR CONTRACTOR'S DATA

Radio Corp of America, Camden, N.J.
Contract NObs-50670

TUBE AND/OR CRYSTAL COMPLEMENT

(2) 3A5 (2) 2E30
Total Tubes: (4)

REFERENCE DATA AND LITERATURE

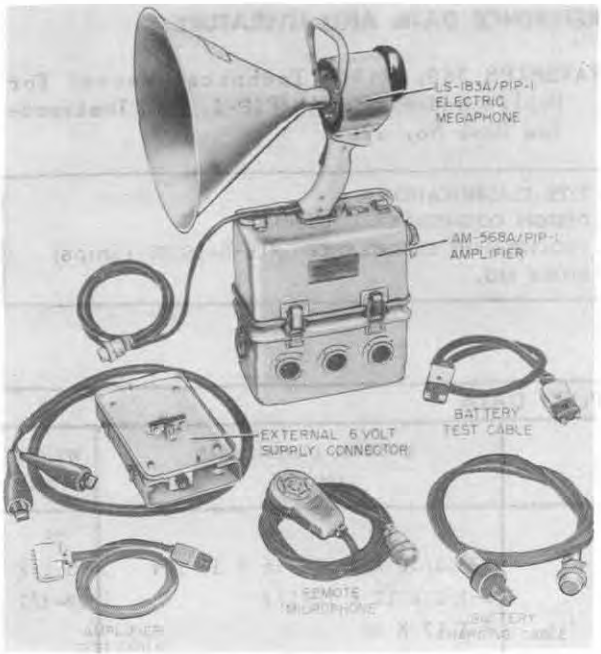
NAVSHIPS 365,1963: Technical Manual for Public Address Set AN/PIP-1, I.C. Instruction Book No. 106.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE MIL-R-15238 (ships)
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Public Address Set AN/PIP-1 c/o		28
	(1) Loudspeaker-Microphone LS-183/PIP-1	12-15/16 X 13-15/16 X 17-1/4	5-1/2
	(1) A-F Amplifier AM-568/PIP-1	6-1/2 X 12 X 10-1/2	22-1/2
	(1) Maintenance Parts Kit MK-74/PIP-1 c/o	9 X 12 X 18	
	(1) Remote Microphone	2 X 2-7/16 X 4-1/4	2.1
	(1) External 6 v Supply Connector		
	(1) Battery Charging Cable		
	(1) Test Cable		

PUBLIC ADDRESS SET AN/PIP-1A



Public Address Set AN/PIP-1A

FUNCTIONAL DESCRIPTION

The AN/PIP-1A is a compact, portable instrument which may be carried about and used in the same manner as an ordinary megaphone. The equipment is designed for intermittent operation while amplifying and transmitting intelligible speech over extended distances through high ambient noise levels.

A total operating cycle of two hours at 50 per cent on and 50 per cent off is available from the fully charged battery, but continuous operation for a period of more than ten minutes will tend to cause damage to the vibrator power supply due to overheating. Each operating period should be followed by an equal de-energized period.

No field changes in effect at time of preparation (4 June 1956).

RELATION TO OTHER EQUIPMENT

Directly interchangeable electrically and mechanically with AN/PIP-1.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

LOUDSPEAKER-MICROPHONE
TYPE: A pressure-operated magnetic controlled reluctance microphone element.
IMPEDANCE: 16000 ohms.
REMOTE MICROPHONE
TYPE: A pressure-operated magnetic controlled reluctance microphone element.
IMPEDANCE: 16000 ohms.
AUDIO AMPLIFIER
FREQUENCY RESPONSE: 400 to 5500 cps.
STAGES: 3 push-pull.
OUTPUT: 10 W.
LOUDSPEAKER
TYPE: A driver mechanism coupled to a horn.
POWER REQUIREMENTS: 6 v battery BB-207/U.

MANUFACTURER'S OR CONTRACTOR'S DATA

Audio Equipment Co. Inc., Great Neck, N.Y.
Contract NObsr-59427.

TUBE AND/OR CRYSTAL COMPLEMENT

(2) 3A5 (2) 2E30
Total Tubes: (4)

REFERENCE DATA AND LITERATURE

NAVSHIPS 365-2035: I.C. Technical Manual Book No. 107 for Public Address Set AN/PIP-1A.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	BUSHIPS
PROCUREMENT COGNIZANCE	
STOCK NO.	

EQUIPMENT SUPPLIED DATA

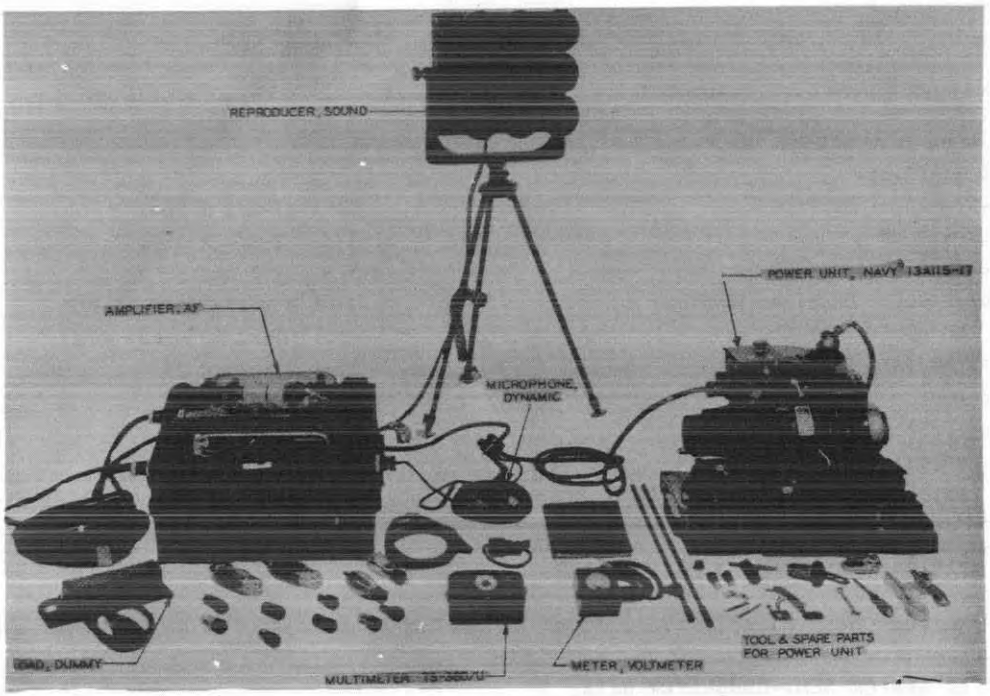
QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Public Address Set AN/PIP-1A including:		55
1	Loudspeaker-Microphone LS-183A/PIP-1	6 x 13-1/2 x 13-3/4	5.25
1	Audio-Frequency Amplifier AM-568A/PIP-1	6-1/2 x 10-1/2 x 12	20
1	Remote Microphone TH-4	1-11/16 X 2-5/8 X 4-5/16	2
1	Maintenance Parts Kit MK-132/PIP-1A	6 X 12 X 18	32

Cog Service: USMC FSN: Functional Class:

USA	USN	USAF

TYPE CLASS: Used by Used by

MANUFACTURER'S NAME/CODE NUMBER: Western Electric Company, (90044).



Public Address Set AN/PIQ-3

FUNCTIONAL DESCRIPTION:

The Public Address Set AN/PIQ-3 is a high level, high gain auditory system for distant projection of sound. It is intended primarily for directing beach activities during landing operations.

No field changes in effect at time of preparation (14 February 1962).

TECHNICAL CHARACTERISTICS:

TYPE OF INSTALLATION : Portable.
TYPE OF EQUIPMENT: Public Address System.
INPUT AND OUTPUT IMPEDANCE: 9 ohms.
FREQUENCY RESPONSE: Rises from 250 to 500 cycles, reasonably flat to 6000 cycles and decreasing beyond this point.
POWER OUTPUT: 250 W.

AN/PIQ-3 PUBLIC ADDRESS SET

OPERATING POWER RQMT: 115 v ac, 60 cps, single ph, 1.67 kva.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Public Address Set AN/PIQ-3 consists of:			675
1	A.F. Amplifier		16 x 17-1/2 x 25-1/2	
1	Dummy Load		3/8 x 2-3/4 x 12-1/2	
1	Multimeter TS-380/U		3 x 4 x 7-1/2	
1	Power Unit, Gasoline Navy Model #13A115-17		17-1/8 x 20-5/8 x 24-1/8	135
1	Reproducer, Sound		17-1/2 x 23 x 23	140
1	Tripod, Speaker (Collapsible)		7 x 7 x 41	
1	Yoke, Frame		3-1/2 x 18 x 26	
2	Technical Manual USMC Catalog of Material Vol. #1		1/4 x 9 x 11-1/2	

REFERENCE DATA AND LITERATURE:

Catalog of Marine Corps Material Vol. #1 of which Public Address Set AN/PIQ-3 is a part of.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (2) 6SL7GT (1) 6SN7GT (2) 6V6GTY (2) 805 (1) 6E5 (1) 0C3/VR105
(1) 0D3/VR150 (1) 5Y3GT (2) 836

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	17.9	675

PROCUREMENT DATA

PROCURING SERVICE: USN DESIGN COG: USMC
SPEC &/OR DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Western Electric Company Pt. no. 66468	Baltimore, Maryland	NObs-12920 NObs-14643	

6 September 1962 PUBLIC ADDRESS SET AN/PIQ-5
Cog Service: USN FSN: Functional Class:

USA	USN	USAF

TYPE CLASS: Used by Used by

MANUFACTURER'S NAME/CODE NUMBER: Audio Equipment Company, Inc., (91505).

(No Illustration Available)

FUNCTIONAL DESCRIPTION:

The Public Address Set AN/PIQ-5 is designed as a portable Electronic Power Megaphone, with a detachable microphone which may be used with extension cord as a field public address system.

No field changes in effect at time of preparation (20 July 1962).

TECHNICAL CHARACTERISTICS:

POWER OUTPUT: 15 watts with less than 10% distortion.
POWER SOURCE: 10 (15 v) BA-30 Internal Dry Batteries.
TYPE OF INSTALLATION: Portable.
EQUIPMENT PURPOSE: Field Public Address System.

RELATION TO OTHER EQUIPMENT:

The AN/PIQ-5 is the same as U. S. Marine Corps manufacturer's Hand Held Model S-183.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)

REFERENCE DATA AND LITERATURE:

NAVSHIPS 93400: Preliminary Data Sheet for Public Address Set AN/PIQ-5.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Data not available.

CRYSTALS: Data not available.

SEMI-CONDUCTORS: Data not available.

AN/PIQ-5 PUBLIC ADDRESS SET

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	1.9	15

PROCUREMENT DATA

PROCURING SERVICE: USMC, USN
DESIGN COG: USN, USMC
SPEC &/OR DWG: CSY-3-FY59-10

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Audio Equipment Co., Inc. Model no. S-183	Port Washington, N. Y.	NOm 71527	$140.00

August 1960

Radio-Auxiliary

TELETYPEWRITER CODE GROUP AN/SGA-3

FUNCTIONAL DESCRIPTION

The AN/SGA-3 is designed as an off-line teletypewriter code group for use with communications equipment (classified).

No field changes in effect at time of preparation (9 March 1960).

RELATION TO OTHER EQUIPMENT

The AN/SGA-3 is designed to be used with but not part of the TSEC/KL-47 or TSEC/KL-29.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

NUMBER OF CHANNELS: 1 channel.
OPERATING POWER RQMT: 115 v, 60 cps, single ph, 1100 watts.

MANUFACTURER'S OR CONTRACTOR'S DATA

Teletype Corporation, Chicago, Illinois.

TUBE AND/OR CRYSTAL COMPLEMENT

Electron Tube and/or Crystal data not available.

REFERENCE DATA AND LITERATURE

NAVSHIPS 93400: Preliminary Data Form for Teletypewriter Code Group AN/SGA-3.

TYPE CLASSIFICATION (NAVY)
DESIGN COGNIZANCE NAVY BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Teletypewriter Code Group AN/SGA-3 consisting of:		
1	Control Converter TSEC/HL-2	6-1/4 X 15 X 21-1/8	60
1	Perforator-Reperforator TT-253/UG	12 X 16-1/4 X 16-1/2	60
1	Security Device TSEC/KL-47	11-1/2 X 12 X 15	50
1	Tape Reader TSEC/HL-1B	10 X 10 X 11-1/2	60
1	Power Supply PP-1767/UG	7 X 8-1/2 X 19	35
1	Teletypewriter TT-234/SGA-3	6-1/4 X 15 X 21-1/8	60

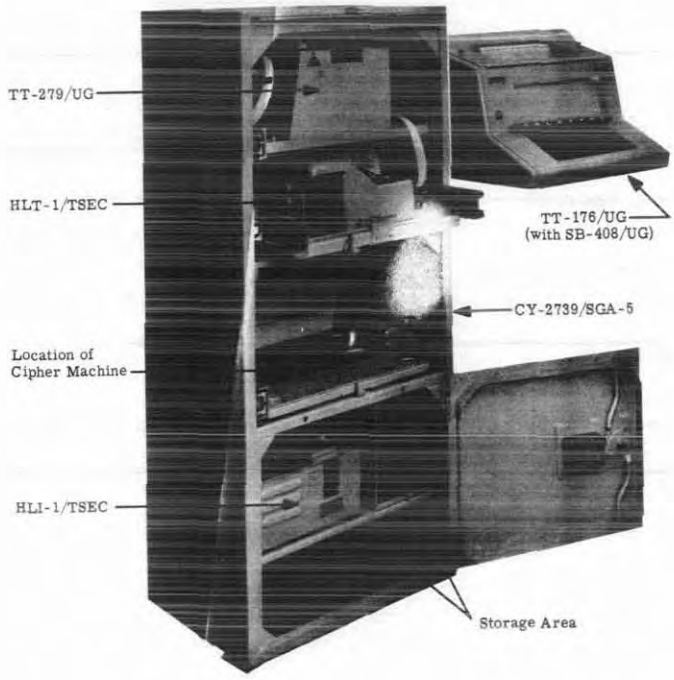
16 July 1962 TELETYPEWRITER CODE GROUP AN/SGA-5

Cog Service: TASSA FSN: Functional Class:

USA	USN	USAF

TYPE CLASS: Used by Used by

MANUFACTURER'S NAME/CODE NUMBER: Teleprinter Corp., (59433).



Teletypewriter Code Group AN/SGA-5

FUNCTIONAL DESCRIPTION:

The Teletypewriter Code Group AN/SGA-5 is designed as a compact, off-line cryptographic configuration, primarily for submarine use. It provides a capability for semi-automatic off-line decryption, which, at the option of the operator, may be by-passed for conventional decryption. Encryption is accomplished in the conventional manner.

No field changes in effect at time of preparation (11 December 1961).

TECHNICAL CHARACTERISTICS:

OPERATING POWER RQMT: 115 v ac, 60 cps, single ph.

RELATION TO OTHER EQUIPMENT:

The AN/SGA-5 is designed to be used with, but not part of TSEC/KL-47 Joint Military

AN/SGA-5 TELETYPEWRITER CODE GROUP

Security Equipment.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Typing Reperforator TT-279/UG; (1) Teletypewriter TT-176/UG; (1) Cipher Machine TSEC/KL-47; (1) Instruction Book for Teletypewriter TT-45/FG (TT-279/UG) NAVSHIPS 91241A; (1) Instruction Book for Teletypewriter TT-176/UG NAVSHIPS 92361; (1) Repair & Maintenance Instruction for TSEC/KL-47 (KAM-3A/TSEC); (1) Repair & Maintenance Instruction for AFSAZ 7301 (KAM-87A/TSEC); (3) Cable Type FSGA-3; (2) Plug, AC, Polarized.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Electrical Equipment Cabinet CY-2739/SGA-5		16-1/4 x 19 x 45	277-1/2
1	Tape Reader HLT-1/TSEC		5 x 9-1/2 x 9-1/2	13
1	Translator HLT-1/TSEC		8-1/2 x 9-1/2 x 9-1/2	17

REFERENCE DATA AND LITERATURE:

NAVSHIPS 93543: Technical Manual for Teletypewriter Code Group AN/SGA-5.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: TASSA DESIGN COG: TASSA
SPEC &/OR DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Teleprinter Corp. Div. of Teletype Corp. Model 104	Chicago, Illinois	TASK MA-59-17	

2 July 1962 | 5815-501-3318 | TELETYPEWRITER SET AN/SGC-2

Cog Service: USN **FSN:** 5815-696-8835 W/S **Functional Class:**

USA	USN	USAF

TYPE CLASS: Used by Used by

MANUFACTURER'S NAME/CODE NUMBER: Teletype Corporation, (59433).

(No Illustration Available)

FUNCTIONAL DESCRIPTION:

The Teletypewriter Set AN/SGC-2 is designed for fixed installation aboard ship. It is used for sending and receiving teletype signals. The set has a standard commercial keyboard with English characters, Murray Style with capacity of seventy-two (72) characters per line. A signal bell on figure "S", carriage return and line feed at end of line and on carriage return signal is incorporated.

No field changes in effect at time of preparation (31 January 1962).

TECHNICAL CHARACTERISTICS:

TYPE OF INSTALLATION: Fixed, shipboard.
TYPE OF KEYBOARD: Standard commercial keyboard.
TYPE OF CHARACTERS: English.
TYPE OF STYLE: Murray.
TYPE OF FEED: Friction feed.
NUMBERS OF CHARACTERS PER LINE: 72.
NUMBER OF OPERATIONS PER MINUTE: 368 opm.
UNIT CODE: 5.
OPERATING POWER RQMT: 115 v ac, 60 cps, single ph.

RELATION TO OTHER EQUIPMENT:

The AN/SGC-2 is similar to AN/FGC-9 except modified for shipboard use per Teletype Spec 5475.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Multimeter AN/PSM-4 (Series); (1) Distortion Test Set TS-658/UG or TS-383/GC; (1) Tool Equipment TE-50 (Series).

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Perforator-Transmitter TT-9/FG			
1	Transmitter-Distributor TT-57/G			
1	Table (XRT 114 Modified for Shipboard use)			

AN/SGC-2 TELETYPEWRITER SET

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Power Supply PP-315/GGA-1		8 x 11 x 25	
1	Typing Unit BP128/210 (Teletype)			
1	Cover PEXC204A (Teletype)			
1	Base BB51 (Teletype)			
1	Motor Unit MU4 (Teletype)			
1	Set of Gears (60 Speed) 80437 (Teletype)			
1	Tape Container 115700AA (Teletype)			
1	Copy Holder			
1	Line Relay RY30 (Teletype)			

REFERENCE DATA AND LITERATURE:

NAVSHIPS 91523-42: Maintenance Standards Book for Teletypewriter Set AN/SGC-2 and Teletypewriter Set AN/FGC-11.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBE: (2) 323B (1) 6F6GT

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: USN
SPEC &/OR DWG:

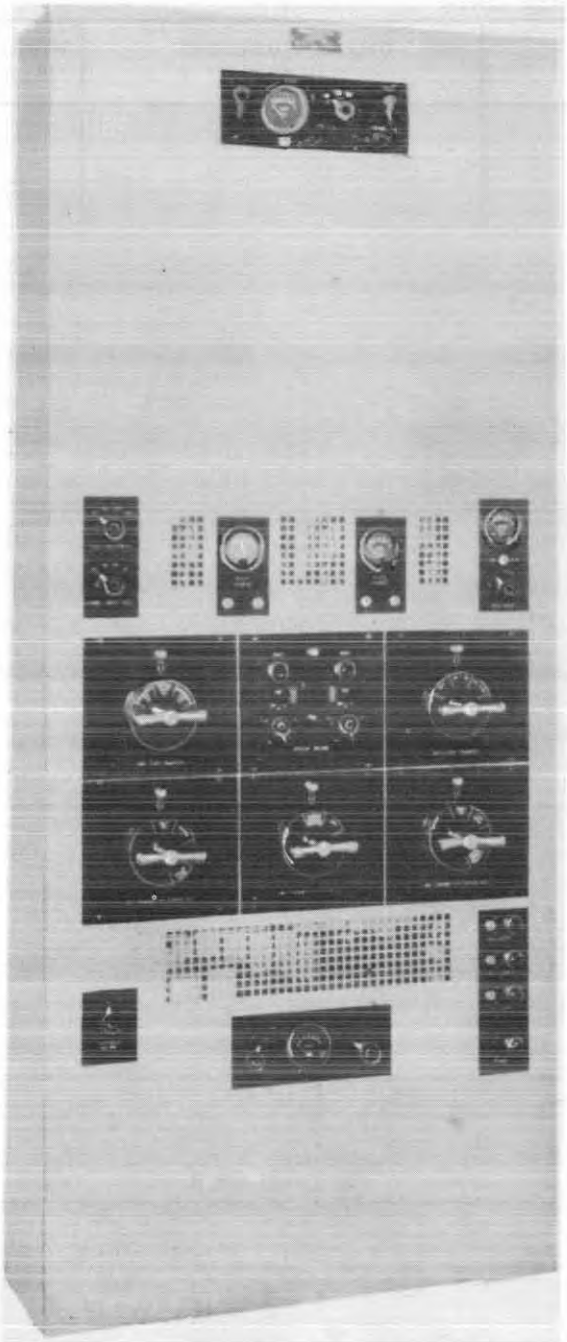
DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Teletype Corporation Model no. 19	Chicago, Illinois	NObsr-52090	

December 1956

Radio-Auxiliary

AMPLIFIER, OSCILLATOR AN/SIA-1



Amplifier-Oscillator AN/SIA-1

FUNCTIONAL DESCRIPTION

The AN/SIA-1 consists of a preliminary amplifier and two oscillators mounted in a cabinet. The front panel of the cabinet also provides various control and indicating devices. The equipment controls the generating of general alarm and chemical attack alarm signals and amplifies audio signals. It is a part of Navy Battle Announcing Equipment Type MCG.

No field changes in effect of time of preparation (29 June 1956).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: Transmitter Control Stations and Reproducers as required.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER REQUIRED: 115 v, 60 cps, single phase.

MANUFACTURER'S OR CONTRACTOR'S DATA

Western Electric Co. Inc., New York, N.Y.
Dwg No. ESXX-677147-G1.
Contract Nod-1098.

TUBE AND/OR CRYSTAL COMPLEMENT

(2) 6J7	(2) 6H6	(4) 6X5G
(2) 1612	(4) 6L6	(4) 6SJ7
(2) 6C5	(2) 574	

Total Tubes: (22)

REFERENCE DATA AND LITERATURE

NAVSHIPS 365-0286: Technical Manual for Announcing Systems-1MC, 2MC, 4MC, 11MC, 12MC, 13MC, 17MC for B58.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE BUSHIPS
STOCK NO.

AN/SIA-1 AMPLIFIER, OSCILLATOR

December 1956

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Cabinet D-150162		
1	Amplifier D-150159		
2	Oscillator D-150139		

Radio-Auxiliary

AMPLIFIER-OSCILLATOR GROUP AN/SIA-112

FUNCTIONAL DESCRIPTION

The Amplifier-Oscillator Group AN/SIA-112 is deck mounted, and designed to be used aboard ships to generate and amplify alarm signals and to amplify voice signals for one (1) of six (6) megacycles (MC) functions.

No field changes in effect at time of preparation (13 April 1961).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF INSTALLATION: Shipboard-deck mounted.
INDIVIDUAL OSCILLATOR DATA
FREQUENCY RANGE: 600 to 1750 cps.
FREQUENCY ADJUSTABLE IN STEPS: 1000 cps pulsed in groups of three.
ONE: 1000 cps tone.
TWO: 1000 cps and 1500 cps mixed (periodic closing of circuit, strikes bell).
THREE: 600 and 1500 cps jump frequency at 1-1/2 cps.
POWER OUTPUT: 170 mw.
OUTPUT IMPEDANCE: 600 ohms.
INDIVIDUAL AMPLIFIER DATA
POWER OUTPUT: 125 W.
VOLTAGE GAIN: 8050 v gain or 1164 v gain.
FREQUENCY RESPONSE: 200 to 8000 cps normal.
VARIATION IN OUTPUT: Porm 3 db variation.
INPUT CHANNEL DATA
NUMBER OF CHANNELS: 2 channels.
IMPEDANCE FOR EACH CHANNEL: 75 or 600 ohms.
OUTPUT IMPEDANCE: 40 ohms.
OPERATING POWER RQMT: 115 v ac, 60 cps, single ph.

MANUFACTURER'S OR CONTRACTOR'S DATA

Stromberg-Carlson Company, A Division of General Dynamics Corporation, Rochester, New York.
Contract NObsr-73564.

TUBE AND/OR CRYSTAL COMPLEMENT

Electron Tube, Crystal and/or Semi-Conductor Device data not available.

REFERENCE DATA AND LITERATURE

NAVSHIPS 93400: Preliminary Data Form for Amplifier-Oscillator Group AN/SIA-112.

TYPE CLASSIFICATION (NAVY)
DESIGN COGNIZANCE NAVY BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO. MIL-A-20222 & MIL-E-17362A
R.D.B. IDENT. NO. AMEND 2, AND SHIPS-A-2573

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
	Amplifier-Oscillator Group AN/SIA-112 consists of:	15 x 20 x 62	
2	Amplifier, Audio Frequency	10 x 14 x 18-1/8	
2	Oscillator, Audio Frequency	4-1/2 x 13 x 17-3/4	

Radio-Auxiliary

AMPLIFIER OSCILLATOR GROUP AN/SIA-113A

FUNCTIONAL DESCRIPTION

The AN/SIA-113A generates and amplifies alarm signals and amplifies voice signals for 1 to 7 megacycles ~~(MC)~~ function aboard ships. This equipment has an additional relay to operate from the alarm circuit only for the purpose of making and breaking an external circuit which is part of ship's entertainment system.

No field changes in effect at time of preparation (26 September 1960).

RELATION TO OTHER EQUIPMENT

The AN/SIA-113A is 1-way interchangeable with Amplifier-Oscillator Group AN/SIA-113.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF INSTALLATION: Shipboard deck mounted.
INPUT CHANNEL DATA
NUMBER OF CHANNELS: 2.
INPUT IMPEDANCE: 70 or 600 ohms each channel.
OUTPUT IMPEDANCE: 40 ohms.
POWER OUTPUT: 125 W.
AMPLIFICATION: 8050 v or 1164 v gain.
FREQUENCY RESPONSE: 200 to 8000 cps porm 3 db in output.
OPERATING POWER RQMT: 115 v ac, 60 cps, single ph.

MANUFACTURER'S OR CONTRACTOR'S DATA

Stromberg-Carlson, Rochester, N. Y.
Dwg No. B-7578.
Part No. 291334-000.
Contract NObsr-74393.
Contract NObsr-76263.

TUBE AND/OR CRYSTAL COMPLEMENT

(4) 3B28	(4) 5726-6AL5W
(8) 5750-6BEGW	(20) 5751
(16) 5814A	(4) 6AV6WA
(10) 6X4WA	(8) 6005-6AQ5W
(4) 811A	

Total Tubes: (78)

No Crystals Used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 93400: Preliminary Data Form for Amplifier-Oscillator Group AN/SIA-113A.

TYPE CLASSIFICATION	(NAVY)
DESIGN COGNIZANCE	NAVY BUSHIPS
PROCUREMENT COGNIZANCE	MIL-I-983, MIL-A-20222, SHIPS-A-2786
STOCK NO.	
R.D.B. IDENT. NO.	

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Amplifier-Oscillator Group AN/SIA-113A	15 x 20 x 62	
2	Consists of:		
2	Audio Frequency Amplifiers (Stromberg Carlson type)	8-1/2 x 10 x 14	
2	Audio Frequency Oscillators (Stromberg Carlson type)	4-1/2 x 13 x 17-3/4	

June 1961

Radio-Auxiliary

AMPLIFIER OSCILLATOR GROUP AN/SIA-114

FUNCTIONAL DESCRIPTION

The AN/SIA-114 controls and amplifies voice and alarm signals and transmits these signals to the loudspeakers aboard ships.

No field changes in effect at time of preparation (5 July 1960).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF RECEPTION: Audio.
NUMBER OF CHANNELS: 2 channels.
IMPEDANCE
INPUT: 150 ohms.
OUTPUT: 10 and 18 ohms.
POWER OUTPUT: 500 W.
FREQUENCY RESPONSE: 200 to 8000 cps porm 3 db in output.
OPERATING POWER RQMT: 115 v AC, 60 cps, single ph.

MANUFACTURER'S OR CONTRACTOR'S DATA

Stromberg-Carlson Company, Rochester, N.Y.

Pt No. 625014-043.
Contract NObs-76683.
Contract NObs-78043(FRAM).

TUBE AND/OR CRYSTAL COMPLEMENT

Electron Tube and/or Crystal data not available.

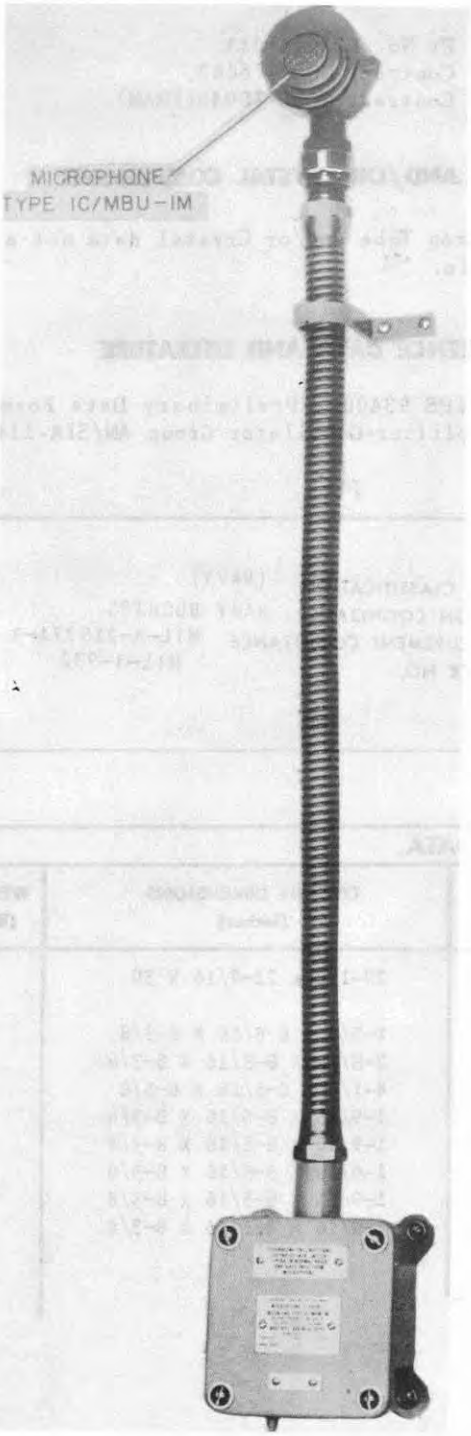
REFERENCE DATA AND LITERATURE

NAVSHIPS 93400: Preliminary Data Form for Amplifier-Oscillator Group AN/SIA-114.

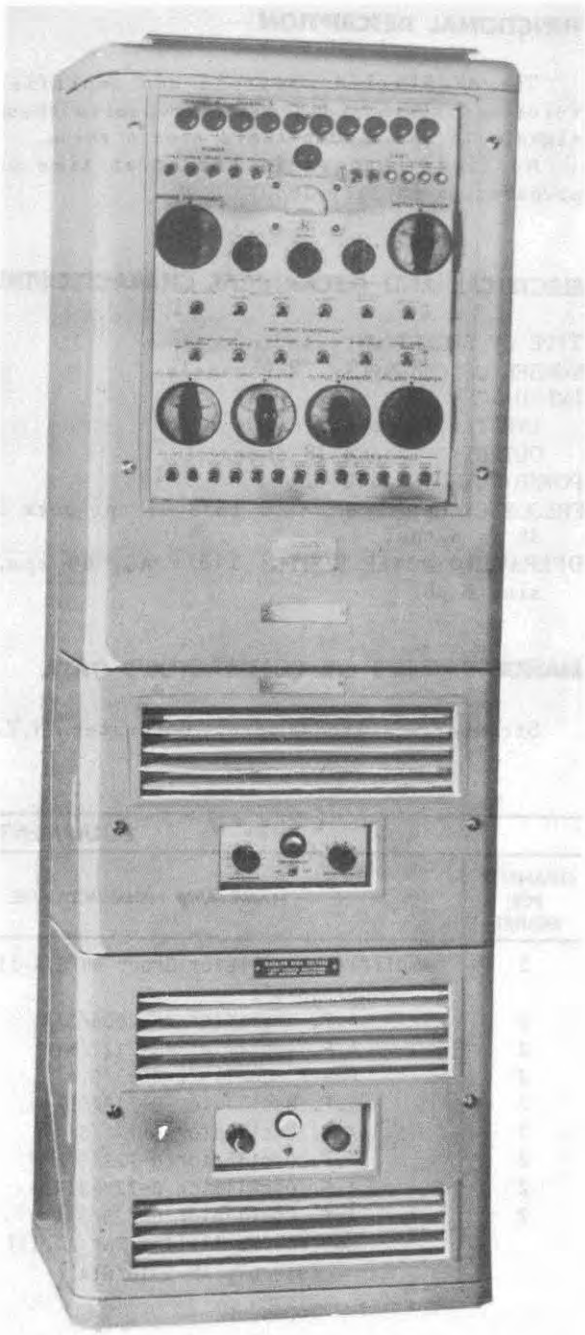
TYPE CLASSIFICATION	(NAVY)
DESIGN COGNIZANCE	NAVY BUSHIPS
PROCUREMENT COGNIZANCE	MIL-A-215771-1 and MIL-I-932
STOCK NO.	

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Amplifier Oscillator Group AN/SIA-114	20-1/2 x 22-7/16 X 30	
	Consists of:		
2	A.F. Amplifier AM-2506/SIA	1-5/8 X 8-5/16 X 8-3/8	
2	A.F. Amplifier AM-2127/SIA	2-5/16 X 8-5/16 X 8-3/8	
2	Power Supply PP-2563/SIA	4-1/6 X 8-5/16 X 8-5/8	
2	A.F. Oscillator O-718/SIA	1-9/16 X 8-5/16 X 8-3/8	
2	A.F. Oscillator O-721/SIA	1-9/16 X 8-5/16 X 8-3/8	
2	A.F. Oscillator O-722/SIA	1-9/16 X 8-5/16 X 8-3/8	
2	A.F. Oscillator O-724/SIA	1-9/16 X 8-5/16 X 8-3/8	
2	A.F. Oscillator O-725/SIA	1-9/16 x 8-5/16 X 8-3/8	
	Control Facilities for Amplifier Assembly AM-2316/SIA		



Microphone Flexible Mounting IC/MFM-1M



AF Amplifier IC/BGL-1M

AN/SIA-3 SHIPBOARD ANNOUNCING EQUIPMENT

Microphone Jack Box
IC/MJB-1M

Microphone Portable
IC/MPM-1M

Microphone Control Box IC/MBA-1M
Shipboard Announcing Equipment AN/SIA-3

FUNCTIONAL DESCRIPTION

The AN/SIA-3 is used to provide general announcing facilities for a One megacycle circuit and submarine control announcing facilities for a Seven megacycle circuit. It is used for disseminating orders and information from the various control stations strategically located throughout the submarine to all other parts of the vessel where the One megacycle or Seven megacycle loudspeakers are employed

No field changes in effect at time of preparation (25 June 1956).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

AUDIO FREQUENCY AMPLIFIER:
- POWER OUTPUT: 125 W at 5% distortion.
- INPUT IMPEDANCE: 75 and 150 ohms at 1000 cps.
- OUTPUT IMPEDANCE: 39 ohms at 1000 cps.
- AMPLIFIER GAIN: 119 db max.
- FREQUENCY RESPONSE: ±1 db at 300 to 8000 cps.

SHIPBOARD ANNOUNCING EQUIPMENT AN/SIA-3

ALARM SIGNAL GENERATOR
- COLLISION ALARM: 750 to 1750 cps siren, 3 sec full sweep.
- DINING ALARM: Simulated motor operated horn.
- GENERAL ALARM: Simulated bell, 90 strokes per minute.
- VOLTAGE OUTPUT: 10 v RMS.
- OUTPUT IMPEDANCE: 500 ohms.

POWER REQUIREMENTS
- STANDBY: 115 v, 60 cps, single ph, 2.0 amp, 230 W.
- READY: 115 v, 60 cps, single ph, 11.0 amp, 1250 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

Remler Co. Ltd., San Francisco, Calif.
Contract NObs-47705.

TUBE AND/OR CRYSTAL COMPLEMENT

(4) 6BD6	(8) 12AX7	(8) 6AQ5
(4) 811A	(14) 6X4	(4) 836
(4) 12AU7		

Total Tubes: (46)

REFERENCE DATA AND LITERATURE

NAVSHIPS 365-1864 (IC Instruction Book No. 30F2) Technical Manual for Shipboard Announcing Equipment, Circuits 1MC and 7MC AN/SIA-3.

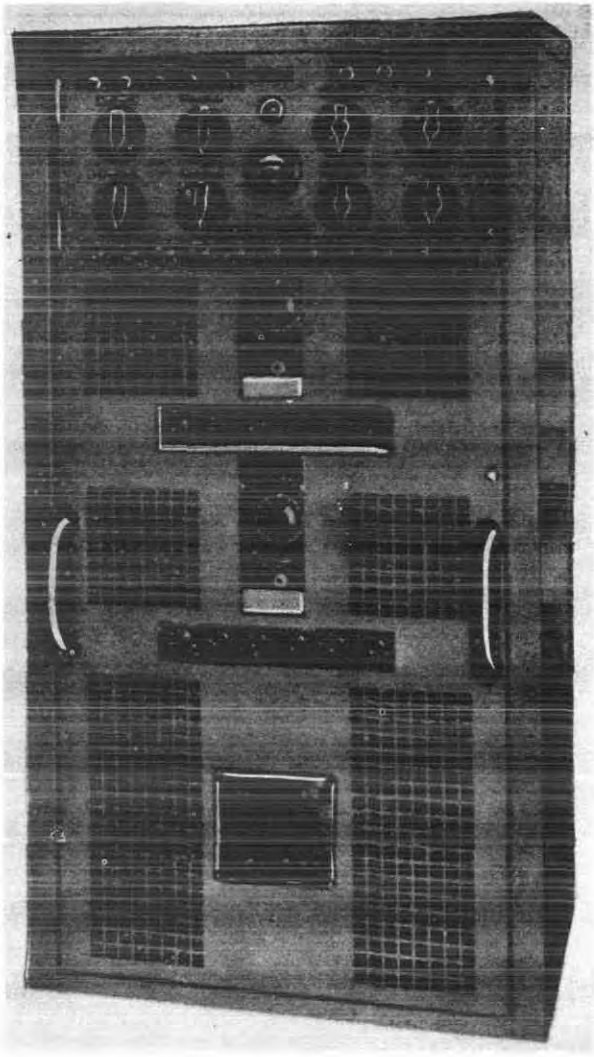
TYPE CLASSIFICATION
DESIGN COGNIZANCE
PROCUREMENT COGNIZANCE
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
As required per installation	Portable Microphone 1C/MPM	2-3/4 X 5-1/4 X 11	5.0
	Handset 1C/MPH	2-3/4 X 3-1/2 X 9-1/2	4.5
	Microphone with Flexible Mounting 1C/MFM	3-1/2 X 4-1/2 X 39	5.5
	Microphone Control Box 1C/MBA	4-1/2 X 5-5/8 X 5-5/8	5.0
	Microphone Jack Box 1C/MJB	4 X 4-1/2 X 4-1/2	4.5
	Pressure Proof Loudspeaker 1C/SHA	5 X 6 X 6	13.0
	Pressure Proof Talk Switch (1MC-7MC) Loudspeakers L-S	5 X 8 X 12	23.0
	Low Power Loudspeakers 1C/SAA	8-1/2 X 11 X 11	15.0
	Amplifier and Control Rack 1C/BGL	15 X 20 X 61-3/4	750.0
	Loudspeaker Fixed Volume Control 1C/SXV	3-1/4 X 4-7/16 X 4-7/16	4.5

AMPLIFIER CONTROL

AN/SIA-35



Amplifier Control AN/SIA-35

FUNCTIONAL DESCRIPTION

The AN/SIA-35 Battle Announcing Equipment constitutes a shipborne system designed to provide communication, by means of amplified voice reproduction, between microphones, located at various positions on the vessel, and groups of reproducers located throughout the ship. Provision is also made for the reproduction of electronically generated alarm signal, which are designed to simulate the Klaxon, siren and gong signals. The transmitter stations provided, permit the use of fixed, portable or throat microphones except in torpedo rooms where only throat microphones can be used. Pressure proof boxes are provided for protection against submersion.

No field changes in effect at time of preparation (1 June 1956).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied; Connecting cables as required.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER SOURCE: 115 v, 60 cycles.
POWER CONSUMPTION
- STANDBY: 232 W.
- OPERATING: 634 W.

POWER OUTPUT: 160 W.
HEAT DISSIPATION: 474 W.
SIGNAL GENERATOR
- POWER CONSUMPTION
  - STANDBY: 82 W.
  - OPERATING: 92 W.
- HEAT DISSIPATION: 92 W.
- POWER OUTPUT; 10 milliwatts.

VOLTAGE AMPLIFIER
- POWER INPUT
  - STANDBY: 80 W.
  - READY: 271 W.
- HEAT DISSIPATION
  - STANDBY: 80 W.
  - READY: 191 W.
- DISTORTION: 10% at full load.

MANUFACTURER'S OR CONTRACTOR'S DATA

Guided Radio Corp., New York, N.Y.
Contract NOs 88797.

TUBE AND/OR CRYSTAL COMPLEMENT

(4) 5W4-GT	(4) 6SN7-GT	(8) 6X5-GT
(12) 884	(8) 6SK7	(8) 6SJ7
(4) 6C5	(4) 6J5	(8) 6L6
(4) 5U4G		

Total Tubes: (64)

REFERENCE DATA AND LITERATURE

NAVSHIPS 365-0222 I.C.: Instruction Book NO-29D for Battle Announcing Equipment.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

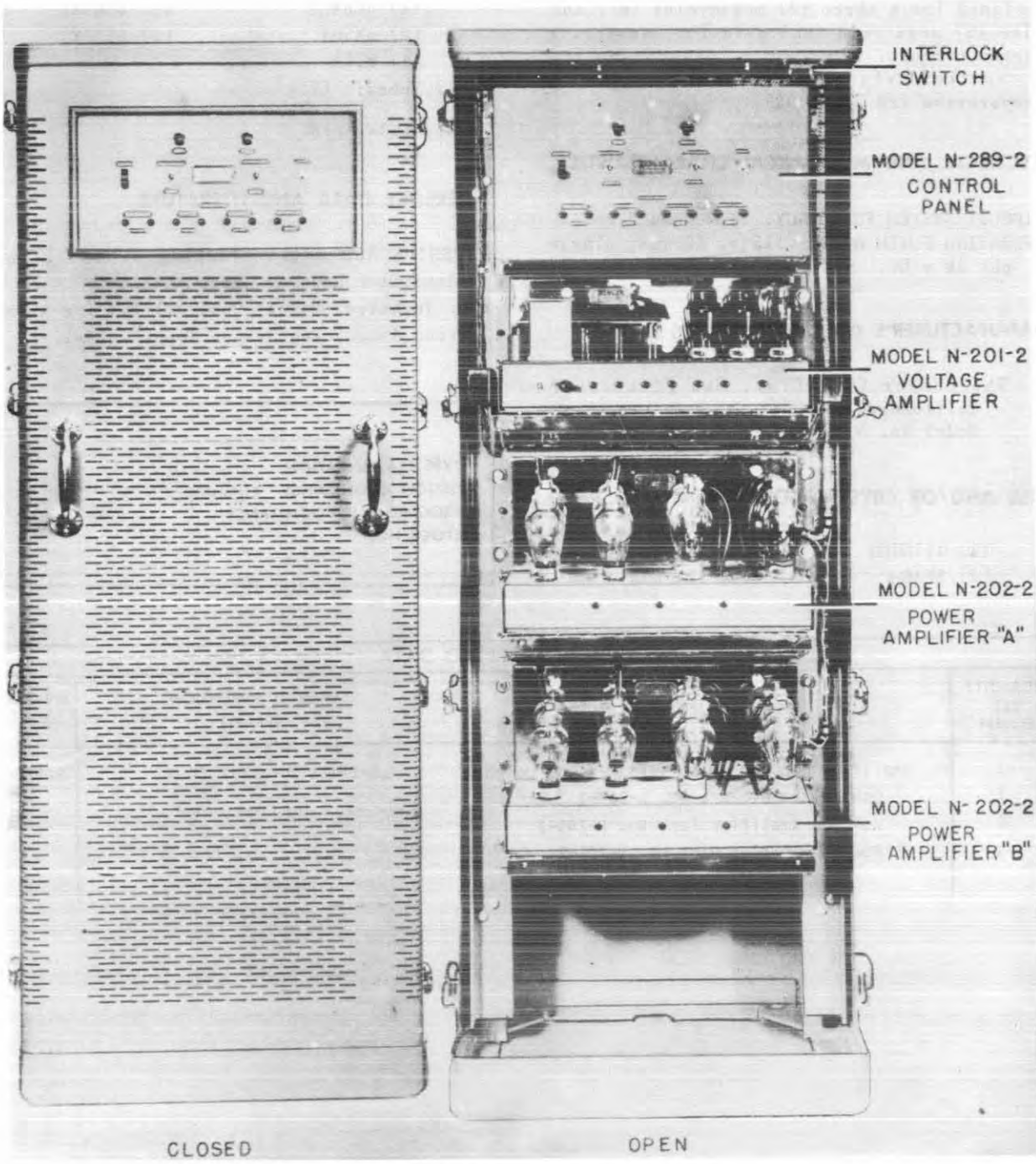
AN/SIA-35 AMPLIFIER CONTROL

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Control Panel		
2	Signal Generator		
2	Power Amplifier		

Radio-Auxiliary

AMPLIFIER CONTROL GROUP AN/SIA-4



Amplifier Control Group AN/SIA-4

FUNCTIONAL DESCRIPTION

The AN/SIA-4 is an Amplifier Control Group, designed to house the relays, switches, fuses and terminals associated with the power supply and control of the equipment. It is

AN/SIA-4 AMPLIFIER CONTROL GROUP

designed for a three (3) megacycles (mc) and five (5) megacycle (mc) aviation announcing system circuit.

No field changes in effect at time of preparation (23 June 1959).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

CIRCUIT SYSTEM FREQUENCY: 3 mc and 5 mc.
OPERATING POWER RQMT: 115 v, 60 cps, single ph; 28 v DC.

MANUFACTURER'S OR CONTRACTOR'S DATA

The Remler Co., Ltd., San Francisco, California.
Model No. N-207-2.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 117N7GT
(2) 5U4GB
(2) 3B28
(2) 6J5
(4) 6L6WGB
(2) 6X5GT
(4) 811A
(2) 6SK7WA
(2) 65J7Y

Total Tubes: (21)

No Crystals used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 365-0941: Technical Manual for Amplifier Control Group AN/SIA-4.
I.C. Technical Manual Book No. 514 for Aviation Announcing System Type N-300-1.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

EQUIPMENT SUPPLIED DATA

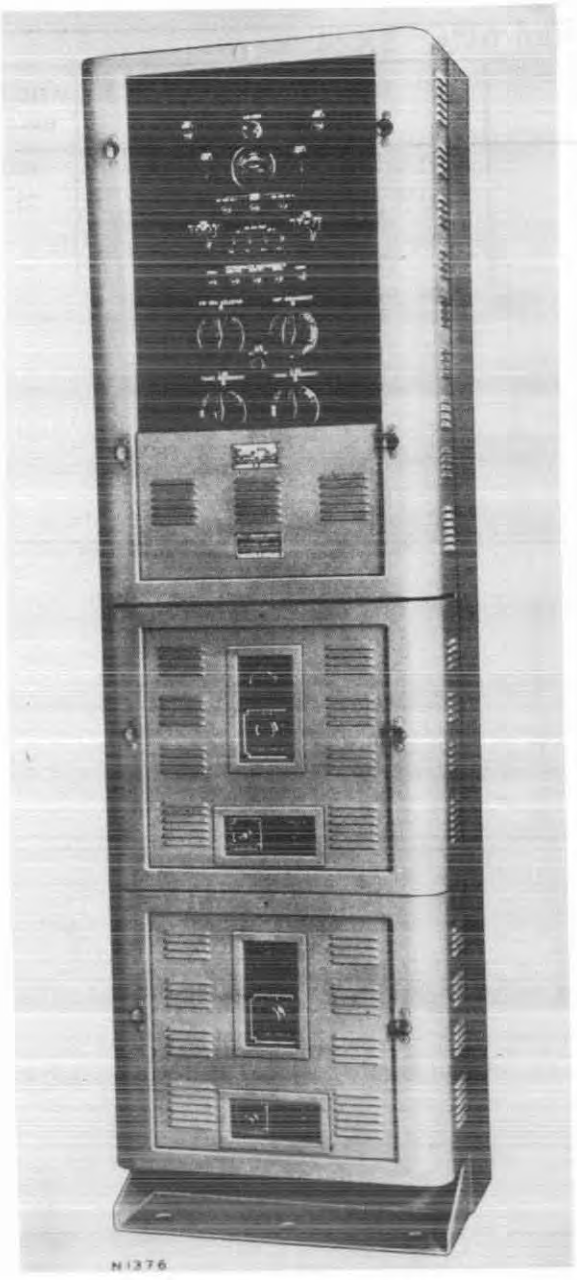
QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Amplifier Control Group AN/SIA-4 Including:	18-1/4 X 24-1/4 X 64	800
1	Control Panel Part No. N-289-2		
1	Voltage Amplifier Part No. N-201-2		
1	Power Amplifier Part No. N-202-2		

April 1959

Radio-Auxiliary

AMPLIFIER-CONTROL GROUP

AN/SIA-46



Amplifier Control Group AN/SIA-46 (RCA W-130845-501)

FUNCTIONAL DESCRIPTION

The AN/SIA-46 is designed to provide amplified voice and alarm signal communication to the various reproducers aboard a ship.

No field changes in effect at time of preparation (20 February 1959).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

AMPLIFIER, AUDIO FREQUENCY
- AMPLIFICATION: 125 W power output.
- FREQUENCY RESPONSE: 250 to 3000 cps normal operating range.
- INPUT CHANNEL
  - CHANNEL: 1.
  - IMPEDANCE: 250/500 ohms input; 15/50 ohms output.
- OPERATING POWER: 115 v, 60 cps, single ph.

MANUFACTURER'S OR CONTRACTOR'S DATA

Radio Corp of America, Camden, N.J.
Contract NObs-15147.

TUBE AND/OR CRYSTAL COMPLEMENT

(4) 2A3	(4) 6H6
(8) 6J7	(4) 6K7
(4) 6SL7GT	(4) 25Z5
(8) 809	(4) 866-A

Total Tubes: (40)

No Crystals used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 365-1629(IC27K5): Technical Manual for Battle Announcing Equipment.

TYPE CLASSIFICATION

DESIGN COGNIZANCE BUSHIPS

PROCUREMENT COGNIZANCE

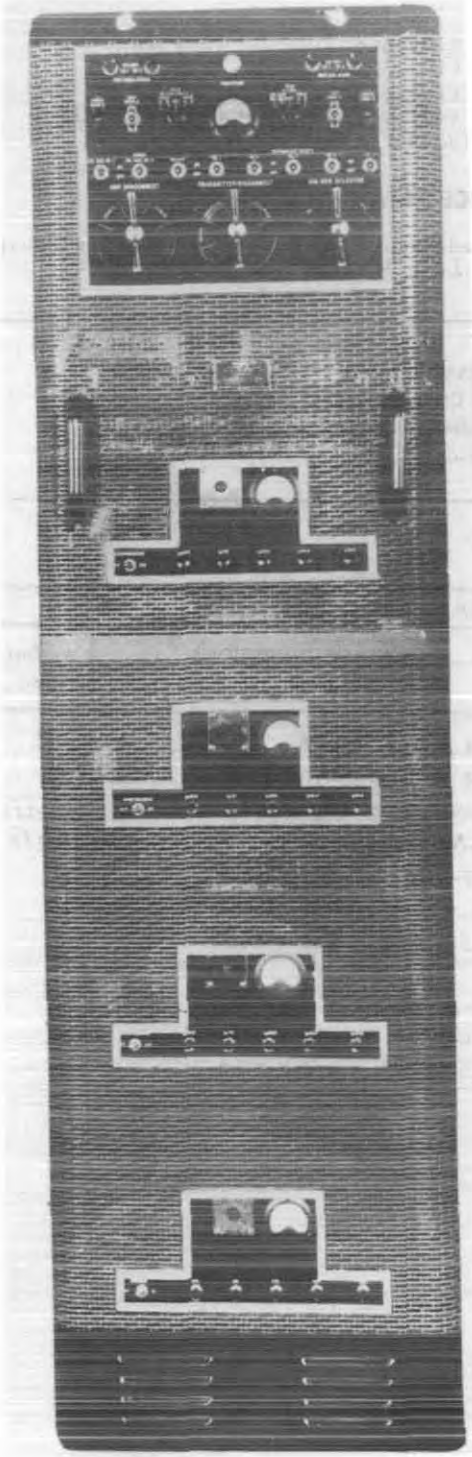
STOCK NO.

AN/SIA-46 AMPLIFIER-CONTROL GROUP

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Amplifier-Control Group AN/SIA-46 C/O:	16-1/2 X 21-1/4 X 72	600
2	Power Amplifier AM-1462/SRC	15-3/8 X 17-15/32 X 20	136
2	Signal Generator W-130375-507		
1	Control Panel W-130955-501		

AMPLIFIER-CONTROL GROUP



Radio-Auxiliary AN/SIA-61

FUNCTIONAL DESCRIPTION

The AN/SIA-61 is designed for the purpose of transmission, amplification and reproduction of speech and tone signals on shipboard.

The number of transmitter control stations, signal generators, amplifiers and reproducers employed on any particular system is determined by the requirements and extent of the installation.

No field changes in effect at time of preparation (8 June 1956).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

AMPLIFIER RACK (CIRCUIT IMC): Provides two channel amplifier rack with facilities four housing (4) voltage amplifiers, (2) signal generators, (1) control panel. Each of two amplifier channels comprises two voltage amplifiers connected in parallel.

AMPLIFIER RACK (Lifeboat Talk-Back Circuit): Comprises a cabinet in which is mounted (1) control panel (1) voltage amplifier with compressor.

PORTABLE TRANSMITTER: Comprises a magnetic microphone with a "talk" switch supported on user by neck band and including 20 ft. of microphone cable.

REPRODUCERS (High and Medium Power): High and low power reproducers are alike in all construction details with exception of volume control switch and resistor. Diaphram has 15 ohm voice coil.

REPRODUCERS (Low and Standard Power): Contained within two-section circular, brass mounting. They are of permanent-magnet-field dynamic type.

SIGNAL GENERATOR (Type B): Produce bell-tone signal for general alarm and various audio-frequencies for alarm or command signals. Signals also used for test purposes.

TALK-BACK SWITCH: Indicates when system is in use, and connects components for various operations.

TRANSMITTER CONTROL STATION (Class A): Comprises magnetic type microphone, volume indicating meter, switch and indicating lamps.

VOLTAGE AMPLIFIER WITH COMPRESSOR

VOLTAGE AMPLIFIER: Consists of three stages of amplification together with rectifier tubes that supply DC plate power for Voltage Amplifier and compressor.

COMPRESSOR: Consists of one stage amplification and two separate signal rectifier stages.

POWER REQUIREMENTS
STANDBY: 285 W, 93 pf, lagging with talk-back amp "off".
527 W, 93 pf, lagging with talk-back amp "on".
READY: 1137 W, 87.5 pf, lagging with talk-back amp "off".
1430 W, 87.5 pf, lagging with talk-back amp "on".

HEAT DISSIPATION (MAX)
STANDBY: 285 W with talk-back amp "off".
527 W with talk-back amp "on".
READY: 1057 W with talk-back amp "off".
1360 W with talk-back amp "on".

MANUFACTURER'S OR CONTRACTOR'S DATA

RCA Manufacturing Company, Inc., Camden, New Jersey
Contract NOs.-94132

TUBE COMPLEMENT

(10) 6C6	(10) 76
(10) 5Z3	(20) 6L6
(10) 6D6	(10) 84
(4) 25Z5	(4) 6SL7-GT

Total Tubes: (78)

REFERENCE DATA AND LITERATURE

Technical Manual for Battle Announcing Equipment I.C. Instruction Book No. 27H3.

TYPE CLASSIFICATION
DESIGN COGNIZANCE
PROCUREMENT COGNIZANCE
STOCK NO.

EQUIPMENT SUPPLIED DATA

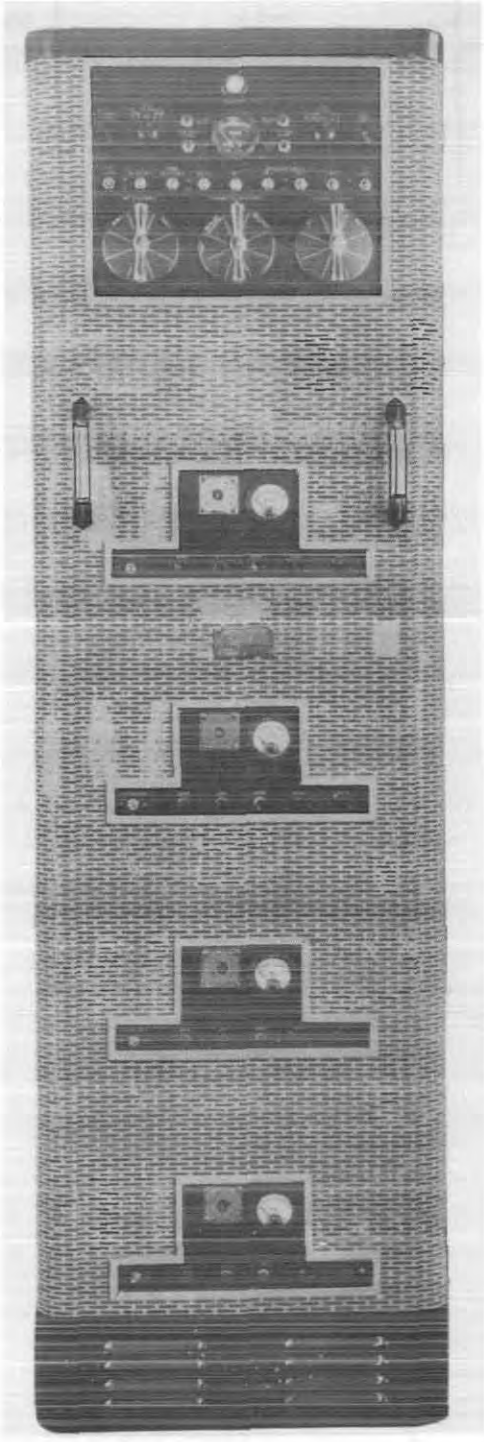
QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Amplifier Rack MI-2784	14 X 21-3/8 X 72	555
1	Amplifier Rack MI-2783	14 X 24 X 29-5/8	200
1	Circuit Tester MI-2657	5-1/2 X 12-3/4 X 13	13-1/2
10	Portable Transmitter MI-2162-A	4-3/8 X 5-1/2 X 12	5-1/2
2	Reproducer, Class "H" MI-2916-A	13-3/4 X 17-1/8 X 18	36
62	Reproducer, Class "L" and "S" MI-2917-J	5 X 10 X 10-3/4	19
16	Reproducer Class "M" MI-2915-A	13-3/4 X 17-1/8 X 18	36
1	Set Spare Parts and Tools W-130307		
8	Talk Back Switch MI-2859-B	5-1/2 X 7 X 7-1/2	6
2	Transmitter Control Station Class "A" MI-2192-5.	10-1/4 X 12-1/8 X 16-1/2	35
1	Transmitter Control Station Class "A" MI-2192-1.	10-1/4 X 12-1/8 X 16-1/2	35
2	Sets Tubes MI-2647		
2	Sets Tubes MI-2646		

December 1956

Radio-Auxiliary

AMPLIFIER

AN/SIA-62



Amplifier AN/SIA-62

FUNCTIONAL DESCRIPTION

The AN/SIA-62 comprises a rack containing a two channel amplifier, a control panel and two signal generators. Each of the two amplifier channels is composed of two voltage amplifiers connected in parallel. The equipment is designed for shipboard installation and is used to amplify and control voice communications to and from reproducers and transmitters located at various stations aboard ship. It is also used to generate general alarm and chemical alarm signals.

In conjunction with a portable transmitter, two transmitter control stations and reproducers as required, it forms the Type MCG General Announcing System (Circuit 1 MC) of the Navy Battle Announcing Equipment.

No field changes in effect at time of preparation (28 June 1956).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (1) Portable Transmitter, (2) Transmitter Controls and Reproducers as required.

MANUFACTURER'S OR CONTRACTOR'S DATA

Radio Corporation of America, Camden, N. J.
Model No. MI-2722-A. Contract 78790.
Contract 81910.

TUBE AND/OR CRYSTAL COMPLEMENT

(4) 25Z5	(8) 6C6	(16) 6L6
(8) 5Z3	(8) 6D6	(12) 76
(8) 84		

Total Tubes: (64)

REFERENCE DATA AND LITERATURE

IC Technical Manual No. 27W; RCA Instructions IB-38673 U.S. Navy Battle Announcing Equipment-Type MCG Circuit 1 MC and Type MCA Circuit 17 MC.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE BUSHIPS
STOCK NO.

AN/SIA-62 AMPLIFIER

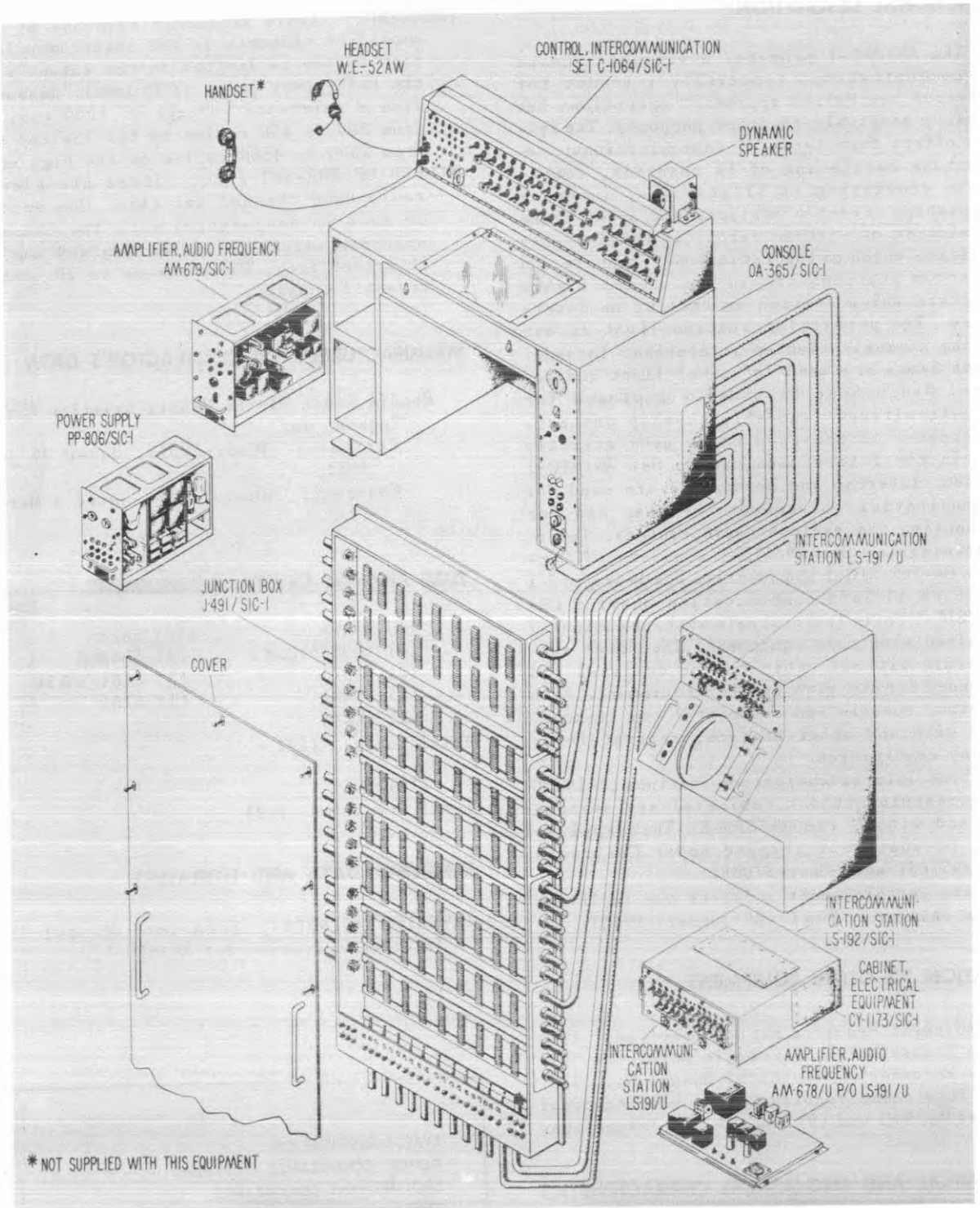
December 1956

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Amplifier Rack-1MC		
1	Voltage Amplifier-MI-2877A		
2	Signal Generator-MI-2871		
1	Control Panel		

INTERCOMMUNICATION SET

AN/SIC-1



Intercommunication Set AN/SIC-1

Radio-Auxiliary

AN/SIC-1 INTERCOMMUNICATION SET

April 1958

FUNCTIONAL DESCRIPTION

The AN/SIC-1 provides a versatile means of communications especially intended for "carrier controlled approach" operations but readily adaptable to other purposes. The system offers four types of communications; radiophone consisting of 11 channels, interphone consisting of 11 stations, intercom consisting of eleven stations and sound phone consisting of sixteen circuits. Panel lights indicate which of the radiophone channels and intercom stations are in use. Panel lights indicate which station is calling on interphone. The particular station light is out during communication on interphone. Incandescent lamps are used for panel light indicators. Radiophone is usually employed for ship-to-aircraft and ship-to-ship contact. Interphone is designed to be used strictly within the Intercommunication Set AN/SIC-1 system. Intercom and soundphone are used for communicating throughout the ship and for connecting the various nerve centers. Intercommunication Set AN/SIC-1 consists of Console OA-365/SIC-1 and Junction Box J-491/SIC-1 to which 10 Intercommunication Station LS-192/SIC-1 Units (subcontrols without cabinets) supplied with this equipment. The three subcontrols without cabinets are designed and intended for use with another equipment. Each station, console and subcontrol can communicate with any other station, separately or in any combination.

Three Intercommunication Stations LS-191/U (subcontrols without cabinets) are shipped mounted within the AN/SPN-8. This applies only to equipment shipped under Contracts NObsr-52057 and NObsr-57088.

Data on this sheet reflects the following field changes: FC#1 (28 January 1958).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (11) Radio Transmitters, (11) Radio Receivers, (1) Delay Recorder (1) Technical Manual No. 131H, (10) Intercommunicating Units, (1) Technical Manual No. 94D and (9) Handset Cord Assemblies.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER SOURCE REQUIRED: 1622 va, 60 cps, single ph and 365 va, 400 cps, single ph.

FREQUENCY: Audio frequency response of all amplifier channels in the intercommunication system is limited to the extent that the half-power point (3 db down), measured from a reference voltage at 1000 cps, is from 200 to 450 cycles on the low end and from 2500 to 4500 cycles on the high end.

NUMBER OF PRE-SET FREQ: There are eleven radiophone channel switches. One switch is used in conjunction with the channel selector switch for selecting any one of 10 preset freq. There are up to 20 usable preset frequency.

MANUFACTURER'S OR CONTRACTOR'S DATA

Bendix Radio Div of Bendix Aviation Corp, Towson, Md.
- Contract: NObsr-52057, dated 22 Aug 1951.
- Contract: NObsr-57088, dated 3 March 1952.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) OA2WA	(10) 5814A
(3) 6005/6AQ5W	(2) 5R4WGB
(2) 6AS7G	(3) 5654/6AK5W
(5) 6C4WA	(1) 5751
(2) 6X4WA	

Total Tubes: (29)

(18) 1N69

Total Crystals: (18)

REFERENCE DATA AND LITERATURE

NAVSHIPS 92165(A), Technical Manual for Intercommunication Set AN/SIC-1,

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

April 1958

INTERCOMMUNICATION SET

Radio-Auxiliary
AN/SIC-1

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
*1	Console OA-365/SIC-1 (less PP-806/SIC-1 and AM-679/SIC-1)	28.05	28 X 36 X 48	385
*1	Junction Box J-491/SIC-1	13.8	14 X 39 X 70	166
*5	Intercommunication Station LS-192/SIC-1 (less AM-678/U) incl CY-1173/SIC-1	3.07	12 X 20 X 22	60
**1	Power Supply PP-806/SIC-1	2.42	10 X 16 X 27	65.5
**1	Amplifier, Audio Frequency AM-679/SIC-1	2.42	10 X 16 X 27	50
1	Amplifier, Audio Frequency AM-678/U (5 units packed in one carton)	3.80	12 X 16 X 34	100
***	Headset W.E. 52AW			.75
**1	Console OA-365/SIC-1 (incl PP-806/SIC-1 and AM-679/SIC-1)	34.8	30 X 40 X 50	650
**2	Junction Box J-491/SIC-1	18.4	16 X 41 X 73	315
**5	Intercommunication Station LS-192/SIC-1 (incl AM-678/U)	4.45	14 X 22 X 25	110

NOTES: *Applies to first system only, which were crated in cardboard containers.
**Applies to remainder of systems which are crated in wood containers. This includes the drawer units and subcontrol units for the first five systems.
***The six headsets required for each Intercommunication Set AN/SIC-1 are shipped in shipping box number 1 of Radar Set AN/SPN-8.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Console OA-365/SIC-1 c/o	26-1/4 X 34-1/4 X 45-3/8	357.5
	(1) Control, Intercommunication Set C-1064/SIC-1	26-1/4 X 34-1/4 X 45-3/8	292.0
	(1) Amplifier, Audio Frequency AM-679/SIC-1	6-7/8 X 13-1/4 X 21-1/2	25.0
	(1) Power Supply PP-806/SIC-1	6-7/8 X 13-1/4 X 21-5/32	40.5
1	Junction Box J-491/SIC-1	6-3/4 X 30-1/4 X 64-1/4	150.0
4	Intercommunication Station LS-192/SIC-1 c/o	9-1/4 X 17 X 18	54.5 ea
	(4) Cabinet, Electrical Equip CY-1173/SIC-1		29.5 ea
	(7) Intercommunication Station LS-191/U		14.5 ea
	(7) Amplifier, Audio Freq - p/o LS-191/U, AM-678/U		10.5 ea
1	Intercommunication Station LS-192A/SIC-1 c/o	12-1/4* X 17 X 23 13-1/2** X 17 X 23	
	(1) Cabinet, Electrical Equipment CY-1834/SIC-1		
	(1) Intercommunication Station LS-191A/U		14.5

Radio-Auxiliary

AN/SIC-1 INTERCOMMUNICATION SET

April 1958

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
	(1) Amplifier, Audio Frequency AM-678/U p/o LS-191A/U		10.5
9	Headset, Western Electric No. 52AW		.75 ea

NOTES: *Represents height of unit when mounted without the mounting plate.
**Represents height of unit when mounted on mounting plate.

26 April 1962 INTERCOMMUNICATION SYSTEM AN/SIC-2

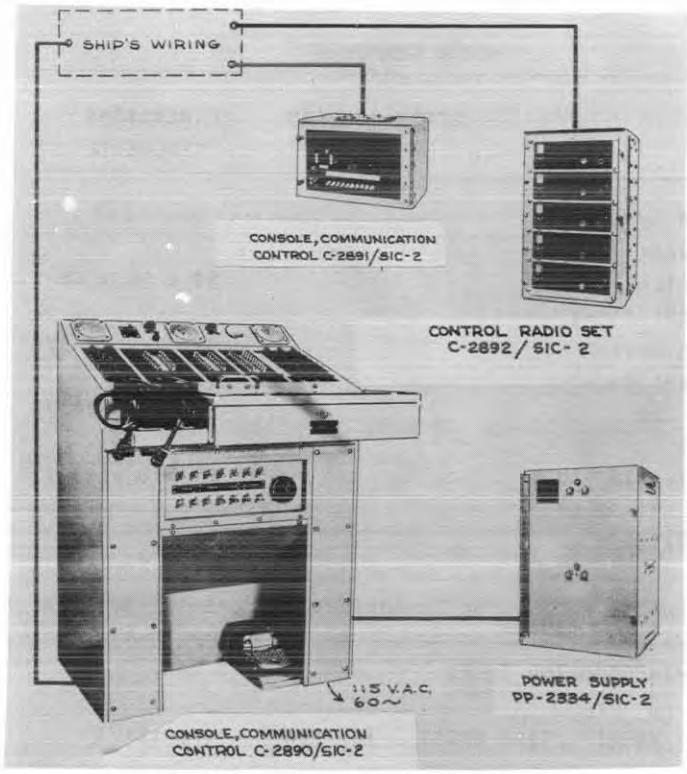
Cog Service: USN FSN: Functional Class:

USA USN USAF

Used by

TYPE CLASS:

MANUFACTURER'S NAME/CODE NUMBER: Coates Electric Mfg Co., (13305).



Intercommunication System AN/SIC-2

FUNCTIONAL DESCRIPTION:

Intercommunication System AN/SIC-2 provides a flexible communication system at key tactical stations. Radiophone, interphone, intercom and sound-powered-telephone circuits are coordinated at one control station at the Communication Control Console C-2890/SIC-2. Radiophone and interphone circuits may also be controlled at the Communication Control Console C-2891/SIC-2. Radiophone circuits may be controlled at the Radio Set Control C-2892/SIC-2 or at the Communication Control Console C-2890/SIC-2 and Communication Control Console C-2891/SIC-2.

No field changes in effect at time of preparation (1 June 1961).

TECHNICAL CHARACTERISTICS:

COMMUNICATION FUNCTIONAL DATA: 16 interphone lines, 16 radio lines, 20 intercommunication lines, 14 sound-powered telephone lines, 4 radio monitoring lines, 1 radio recording line.

AN/SIC-2 INTERCOMMUNICATION SYSTEM

POWER SUPPLY
POWER REQUIREMENTS: 120 W, 115 v, 60 cyc, single ph.
OUTPUT: 12 v dc, 6 amps max.
RIPPLE: 0.01 v max.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Intercommunication System AN/SIC-2 includes:			
2	Console, Communication Control C-2890/SIC-2		30 x 30 x 46-1/2	385
10	Console, Communication Control C-2891/SIC-2		8-1/4 x 10-3/16 x 15-1/8	31
3	Control, Radio Set C-2892/SIC-2		8-5/8 x 12-5/8 x 20-5/16	62
1	Power Supply PP-2334/SIC-2		13-7/8 x 15-7/8 x 23	127

REFERENCE DATA AND LITERATURE:

NAVSHIPS 365-2619: *Technical Manual for Communication Console Equipment AN/SIC-2.*

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (16) 6SJ7 (12) 6V6GT (10) 6X5GT (2) 12AT7 (2) 12AY7

CRYSTALS: None used.

SEMI-CONDUCTORS: (12) 1N69

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
17		

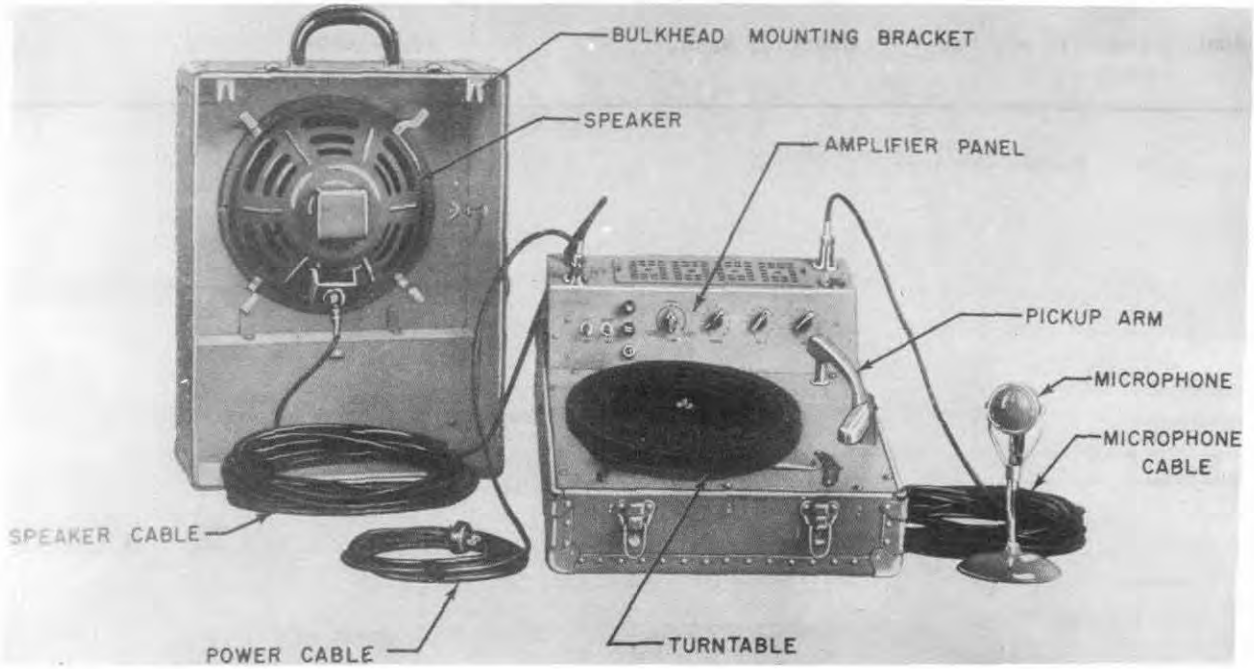
PROCUREMENT DATA

PROCURING SERVICE: USN
DESIGN COG: USN, BuShips
SPEC &/OR DWG: SHIPS-C-2960

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Coates Electric Mfg Co.	Seattle, Wash.	NObs-74694, 28 June 1958	

REPRODUCER, SOUND

AN/SIH-4



Reproducer, Sound AN/SIH-4

FUNCTIONAL DESCRIPTION

The AN/SIH-4 is a portable, self contained transcription reproducer and public address system. The equipment is used to reproduce all standard recording discs up to and including sixteen inches in diameter that have been originally recorded at speeds of 33-1/3 or 78 revolutions per minute. The reproducing speeds are adjustable to accommodate variations in line frequency or voltage or both. It will also reproduce the long playing or microgroove type of records if the proper needle is substituted in the reproducer head.

No field changes in effect at time of preparation (25 May 1956).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER SOURCE: 108 to 122 v AC, 55 to 65 cps, single ph.
POWER CONSUMPTION: 100 W.
INPUT FACILITIES: Microphone 1, Microphone 2, low level, and phonograph (variable reluctance pick-up).
INPUT IMPEDANCES
  MICROPHONE 1: 150 ohms.
  MICROPHONE 2: 150 ohms.
  LOW LEVEL: 35,000 ohms.
  PHONOGRAPH PICK-UP: 150,000 ohms.
INPUT VOLTAGE LIMITS
  MICROPHONE 1: 800 to 45,000 uv RMS.
  MICROPHONE 2: 800 to 45,000 uv RMS.
  LOW LEVEL: 2.5 to 4 v RMS.
  PHONOGRAPH: 30 to 360 mv RMS.
OUTPUT FACILITIES: Speaker and low level.
OUTPUT IMPEDANCES
  SPEAKER: 8 ohms.
  LOW LEVEL: 35,000 ohms.
POWER OUTPUTS
  SPEAKER: 10 W.
  LOW LEVEL: 4 v RMS.
REPRODUCING SPEEDS: 78 rpm and 33-1/3 rpm.
TYPE OF RECORDINGS: This equipment will reproduce all lateral cut records and transcriptions, cut either outside-in or inside-out and with the proper needle will reproduce microgroove recordings.

MANUFACTURER'S OR CONTRACTOR'S DATA

Mark Simpson Manufacturing Co. Inc., Long Island City, N.Y.
Contract NObsr 50563 dated March 1951.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 5Y3GT (2) 12AX7 (2) 6SL7GT
(2) 6V6GT
Total Tubes: (7)

AN/SIH-4 REPRODUCER, SOUND

REFERENCE DATA AND LITERATURE

NAVSHIPS 365-1947: I.C. Technical Manual No. 141 for Sound Reproducer Type IC/RPM-4MS.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE SHIPS-R-29
STOCK NO.

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Reproducer, Sound	5.15	15 X 21 X 29	86

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Carrying Case consisting of: Loudspeaker Amplifier and Turntable Assy Microphone Speaker Cable Power Cable Microphone Cable	12-1/4 X 17-1/2 X 23-1/2	51

March 1957

PUBLIC ADDRESS SET

AN/SIH-6

FUNCTIONAL DESCRIPTION

The AN/SIH-6 is an electrical amplification system designed to serve audiences by amplifying record player data to serve large groups.

No field changes in effect at time of preparation (17 September 1956).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER OUTPUT: 55 W.
POWER REQUIREMENTS: 115 v, 60 cps, single ph.

MANUFACTURER'S OR CONTRACTOR'S DATA

Bowen and Co; Inc, Bethesda 14, Maryland. Contract NObs-67052, dated 20 June 1955.

Approximate Cost: $81.25 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

REFERENCE DATA AND LITERATURE

Nomenclature Card for Public Address Set AN/SIH-6.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE MIL-P-16790
STOCK NO. (SHIPS)

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Amplifier, Audio Frequency		
1	Loudspeaker, Permanent Magnet		
1	Record Player		

Cog Service:	FSN:	Functional Class:
USA	USN	USAF

TYPE CLASS:

MANUFACTURER'S NAME/CODE NUMBER: Radiaphone Company Incorporated.

(No Illustration Available)

FUNCTIONAL DESCRIPTION:

The Recording Set, Telemetric Data AN/SKH-1(XZ-1) is designed to produce a graphic record of frequency-modulated telemetered data together with time and event markers, as recovered from Telemetric Data Receiving Set AN/UKR-10. This unit will function either from a recorded tape or will transcribe directly from a receiving set. Operation may be changed from one type of input to the other by a simple switch adjustment on the control panel.

No field changes in effect at time of preparation (1 August 1961).

TECHNICAL CHARACTERISTICS:

TYPE OF INSTALLATION: Shipboard installation.
TYPE OF MOUNTING: Deck-mounted.
TYPE OF RECORDING MEDIUM: Sensitized paper.
RECORDING SPEED: 0.0865 to 138.5 inches per second.
INPUT SIGNAL DATA: 1.7 kc to 40 kc multiplexed signal containing intelligence signals of 2100 cycles max; 0 to 600 cycle signal.
OPERATING POWER RQMT: 115 v ac, 60 cps, single ph.

RELATION TO OTHER EQUIPMENT:

The AN/SKH-1(XZ-1) is designed to be used with, but not part of Telemetric Data Receiving Set AN/UKR-10.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Recording Set, Telemetric Data AN/SKH-1(XZ-1) consists of:			
1	Cabinet Ass'y includes:		22 x 28 x 69	400
	Filter		5-1/4 x 22-3/4 x 26-1/8	16
	Cover, Exhaust, Rear		1-3/4 x 6 x 25-15/16	2
	Regulator, Voltage (10 units)		2-1/8 x 7 x 7-1/2	2
	Support, Top		5 x 18 x 28	62
	Cover, Oscillator		7 x 16 x 19-1/8	13
1	Power Supply Section "A"		6-1/2 x 6-5/8 x 14-5/8	15

AN/SKH-1(XZ-1) RECORDING SET, TELEMETRIC DATA

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Power Supply Section "B"		7-1/2 x 7-5/8 x 15-1/8	82
1	Power Supply Section "C"		6 x 7 x 11-7/8	40
1	Amplifier Filter		4-1/8 x 6-13/16 x 13-13/16	6
1	Oscillograph, Recording		11-1/2 x 16-1/2 x 22-3/4	140
10	Discriminator, Subcarrier		3-13/16 x 6-1/4 x 14-9/16	6.81
1	Playback Equipment Magnetic Tape		7-1/8 x 13 x 25-1/2	41
1	Test & Control Panel Ass'y		6-13/16 x 11-11/16 x 12-1/2	11
2	Vacuum Tube Volt Meter		6-13/16 x 7-13/16 x 14-9/16	10-3/4
2	Filter, Driver		3-13/16 x 6-1/4 x 17-3/16	5
1	Chassis, Electronic Ass'y includes:		18-1/16 x 20-1/8 x 28-1/8	40
	P.S. "Ampex" (2 units)		3-1/2 x 7-1/2 x 14	15.87
	Dir. Repro. Ampl. (2 units)		3-1/4 x 8 x 8	3.12
	Network Frequency		1-5/8 x 8 x 8	2.12
	P.S. Front (Electronic)		6-3/4 x 7 x 16-3/4	23.5
	P.S. Rear (Electronic)		7 x 7-7/8 x 16-3/4	45
	Control Chassis (Electronic)		7-1/8 x 17 x 19-3/8	25
1	Test Fixture (2 units) includes:			
	Fixture, Test Pt. No. 1883131		3-7/8 x 7-1/4 x 24-1/2	3.5
	Fixture, Test Pt. No. 1883132		3-7/8 x 7-9/16 x 24-1/2	3.5
1	Test Oscillator &		8-3/8 x 9-1/8 x 17-1/4	30
	Cable		1-1/8 dia x 240 lg	3

REFERENCE DATA AND LITERATURE:

OP2570: Technical Manual for Recording Set, Telemeteric Data AN/SKH-1(XZ-1).

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (3) 5R4GY (2) 5U4GB (1) 5Z4 (1) 6AL7GT (2) 6AQ5 (7) 6AU6 (10) 6AU6WA
(1) 6BE6 (1) 6CL6 (1) 6V3A (4) 12AU7 (1) 12AT7 (1) 12AX7 (5) 0B2
(10) 5651 (2) 5687 (2) 5751 (3) 5814A (20) 5840 (40) 6005/6AQ5 (3) 6080
(70) 6111 (1) 6202 (2) 6336 (4) 6550 (1) 6626/0A2WA

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: DESIGN COG: USN, BuShips

SPEC &/OR DWG: MIL-T-17296B

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Radiaphone Company Inc. BuOrd dwg no. LD 521380	Monrovia, California	NOrd-18353, 6 June 1958	
Radiaphone Company Inc. BuOrd dwg no. LD 521380	Monrovia, California	NOrd-18655, 16 December 1958	

August 1957

Radio-Auxiliary

RECORDER-REPRODUCER SET, SOUND AN/SNH-1

FUNCTIONAL DESCRIPTION

The AN/SNH-1 is an electromagnetic type recorder and reproducer of sound signals. It is designed for a frequency response of 50 to 8000 cycles per second at a speed of 7.5 inches per second and a frequency response of 50 to 5000 cycles per second at a speed 3.75 inches per second. The equipment utilizes a magnetic tape recording medium which consists of a magnetically coated paper and plastic base. The tape is 1/4 inch wide with a maximum length of 1250 feet. The recording and reproducing heads are replaceable. Turnover of the tape is required for the use of dual track operation. Recording time is dependent upon the recording speed and the use of dual or single track operation. Remote electrical "stop-start", automatic shut-off, high speed shuttle and synchronous motor drive are features of the equipment.

No field changes in effect at time of preparation (22 March 1957).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE: electromagnet.
FREQUENCY RESPONSE
  SLOW SPEED: 50 to 5000 cps.
  HIGH SPEED: 50 to 8000 cps.
RECORDING MEDIUM: magnetic tape.
TAPE SIZE: 1/4 in. w by 1250 ft lg. max.
NUMBER OF TRACKS: 1 or 2 (turnover required for dual track.
RECORDING SPEED
  HIGH: 7.5 in/sec.
  SLOW: 3.75 in/sec.
CONTINUOUS RECORDING TIME
  DUAL TRACK
    HIGH SPEED: 60 minutes.
    SLOW SPEED: 120 minutes.
  SINGLE TRACK
    HIGH SPEED: 30 minutes.
    SLOW SPEED: 70 minutes.
AMPLIFIER OUTPUT: 5 w.
POWER SOURCE REQUIRED: 108 to 122 v, 55 to 65 cps, single ph.

MANUFACTURER'S OR CONTRACTOR'S DATA

Mark Simpson Mfg Co, Long Island City, N.Y.
Contract NObs-50472.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

REFERENCE DATA AND LITERATURE

Nomenclature Card for Recorder-Reproducer Set, Sound AN/SNH-1 dated 11 May 1955.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	BUSHIPS
PROCUREMENT COGNIZANCE	MIL-R-918(SHIPS)
STOCK NO.	

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Recorder-Reproducer Set, Sound AN/SNH-1		

April 1959

Radio-Auxiliary

SOUND RECORDER REPRODUCER EQUIPMENT AN/SNH-2

Recorder-Reproducer AN/SNH-2

FUNCTIONAL DESCRIPTION

Sound Recorder Reproducer Equipment AN/SNH-2 is a portable unit, designed to record and reproduce audio signals magnetically.

Data on this sheet reflects the following field changes: FC 3.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER REQUIREMENTS: 105 to 120 v, 60 cy, 1 ph.

FREQUENCY RESPONSE: 100 to 7,000 cy; +2 db or -6 db.
POWER OUTPUT: 1 W, across 3.2 ohms.
RECORDING MEDIUM: Silicon wire (0.0046 dia).
RECORDING TIME: 3 hrs.
WIRE SPEED: 2 ft/sec +1% -2%.

MANUFACTURER'S OR CONTRACTOR'S DATA

The Brush Development Co., Cleveland, Ohio.
Model BK-303.
Contract NObs-46104.
Contract NObs-46814.

TUBE AND/OR CRYSTAL COMPLEMENT

(2) 6AU6
(2) 6SN7
(1) 6E5
(3) 6J6
(1) 5Y3GT/G

Total Tubes: (9)

No Crystals Used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 365-1803 (I.C. 130B): Technical Manual for Sound Recorder Reproducer AN/SNH-2.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Sound Recorder Reproducer Equipment AN/SNH-2		11 X 15-3/4 X 23-1/4	56

AN/SNH-2 SOUND RECORDER REPRODUCER EQUIPMENT

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Sound Recorder Reproducer Equipment AN/SNH-2	8-1/4 X 12 X 20-1/2	48
	Including:		
1	Headset Ass'y		
1	Microphone		
1	Supply Reel of Wire		

August 1957

RECORDER-REPRODUCER SET, SOUND

Radio-Auxiliary
AN/SNH-3

FUNCTIONAL DESCRIPTION

The AN/SNH-3 is a portable, electromagnetic type recorder and reproducer of sound signals. It is designed for a frequency response of 100 to 7000 cycles per second at +2 decibels to -6 decibels using a 1000 cycle per second reference level. The recording medium is wire of a magnetic material plated on a copper silicon base. Three hours of continuous recording time is possible at a speed of 2 ft per second.

No field changes in effect at time of preparation (22 March 1957).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE: electromagnetic.
FREQUENCY RANGE: 100 to 7000 cps.
FREQUENCY RESPONSE: +2 db to -6 db, 1000 cps reference.
RECORDING MEDIUM: wire.
WIRE DIAMETER: 0.00475 in. (7400 ft. lg.)
RECORDING TIME: 3 hrs continuous.
SPEED: 2 ft/sec.
AMPLIFIER OUTPUT: 57.5 w.
POWER SOURCE REQUIRED: 105 to120 v, 60 cps, single ph.

MANUFACTURER'S OR CONTRACTOR'S DATA

Brush Development Co., Cleveland, Ohio.
Contract NObs-47359.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

REFERENCE DATA AND LITERATURE

Nomenclature Card for Recorder-Reproducer Set, Sound AN/SNH-3.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	BUSHIPS
PROCUREMENT COGNIZANCE	
STOCK NO.	

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Recorder-Reproducer Set, Sound AN/SNH-3		

Radio-Auxiliary

RECORDER-REPRODUCER SET, SOUND AN/SNH-4

FUNCTIONAL DESCRIPTION

The AN/SNH-4 is a portable, electromagnetic recorder and reproducer of sound signals. The AN/SNH-4 is designed for a frequency response of 70 to 9000 cycles per second. The AN/SNH-4 utilizes a recording medium of 0.00475 in diameter silicon copper wire. The recording and erasing heads are replaceable. The maximum recording time is eight (8) hours at 3/4 feet per second minimum.

No field changes in effect at time of preparation (25 June 1958).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE: Electromagnetic.
FREQUENCY RESPONSE: 70 to 9000 cps.
RECORDING MEDIUM: Silicon Copper Wire.
WIRE SIZE: 0.00475 in. dia.
RECORDING TIME: 8 hours max.
SPEED: 3 ft per sec max for 2 hrs, 3/4 ft per sec min for 8 hrs.
AMPLIFIER OUTPUT: 57.5 W (approx).
OPERATING POWER RQMT: 105 to 120 v AC, 60 cps, single ph.

MANUFACTURER'S OR CONTRACTOR'S DATA

Brush Development Co., Cleveland, Ohio.
Contract NObs-46435.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 5Y3WGTB	(2) 6AU6WA
(3) 6J6	(2) 6SN7WGTA

Total Tubes: (8)
No Crystals Used.

REFERENCE DATA AND LITERATURE

Nomenclature Card AN/SNH-4 for Recorder-Reproducer Set, Sound.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

October 1957

Radio-Auxiliary

RECORDER-REPRODUCER SET, SOUND AN/SNH-5

FUNCTIONAL DESCRIPTION

The AN/SNH-5 is a portable, electromagnetic type sound recorder and reproducer utilizing a 35 millimeter cellulose acetate film as the recording medium. It is designed to provide a normal frequency response of 250 to 4500 cycles per second at a speed of 40 feet per minute and a maximum continuous recording time of 3 hours. The instrument permits replacement of the recording and reproducing stylus. 120 sound tracks are produced on the film thereby providing an effective length of 7200 feet of recorded sound. Features of the equipment are, 2 hours of recording time at 60 feet per minute, a supply of 100 rolls of film and a public address system, monitor indicator.

No field changes in effect at time of preparation (21 March 1957).

RELATION TO OTHER EQUIPMENT

Identical to the AN/SNH-6 except for the supply of 100 rolls of film instead of 25 supplied with the AN/SNH-6.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE: Electromagnetic.
FREQUENCY RESPONSE: 250 to 4500 cps.
RECORDING MEDIUM: Cellulose acetate film.
FILM SIZE: 35 mm, 7200 ft. lg. (120 tracks).
RECORDING TIME: 3 hr max continuous.
SPEED: 40 ft per min and 60 ft per min.
AMPLIFIER OUTPUT: 3 w.
POWER SOURCE REQUIRED: 115 v, 60 cps, single ph.
SPECIAL FEATURES: 2 hrs recording at 60 ft per min., 100 rolls of film, public address system, monitor indicator.

MANUFACTURER'S OR CONTRACTOR'S DATA

Frederick Hart and Co, Poughkeepsie, N.Y. Contract NObs-45454.

TUBE AND/OR CRYSTAL COMPLEMENT

Tubes and Crystals: Not Available.

REFERENCE DATA AND LITERATURE

Nomenclature Cards for Recorder-Reproducer Set, Sound AN/SNH-5.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Sound Recorder-Reproducer Set AN/SNH-5		

Radio-Auxiliary

RECORDER-REPRODUCER SET, SOUND AN/SNH-6

FUNCTIONAL DESCRIPTION

The AN/SNH-6 is of the electromagnetic type utilizing a cellulose acetate film, 35 mm by 7200 ft long (120 tracks). It is designed to provide a normal frequency response of 250 to 4500 cycles per second at a speed of 40 feet per minute for maximum continuous recording time of 3 hours. Special features of the equipment permit 2 hours recording at a speed of 60 feet per minute, is furnished with 25 rolls of film under contract NObs 46215 and has a public address system, monitor indicator.

No field changes in effect at time of preparation (21 March 1957).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE: Electromagnetic.
FREQUENCY RESPONSE: 250 to 4500 cps.
RECORDING MEDIUM: Cellulose acetate film.
FILM SIZE: 35 mm, 7200 ft lg (120 tracks).
RECORDING TIME: 3 hr max continuous.
SPEED: 40 ft per min.
AMPLIFIER OUTPUT: 3 w.
POWER SOURCE REQUIRED: 115 v, 60 cps, single ph.

MANUFACTURER'S OR CONTRACTOR'S DATA

Frederick Hart and Co., Poughkeepsie, N.Y.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

REFERENCE DATA AND LITERATURE

Nomenclature Card for Recorder-Reproducer Set Sound AN/SNH-6 dated 11 May 1955.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Sound Recorder – Reproducer Set AN/SNH-6		

August 1957

Radio-Auxiliary

RECORDER-REPRODUCER SET, SOUND AN/SNH-7

FUNCTIONAL DESCRIPTION

The AN/SNH-7 is of the electromagnetic type, utilizing a steel wire recording medium. It is designed to provide a frequency response of 300 to 3700 cycle per sec, a maximum of 60 minutes recording time and a recording and reproducing speed of 4 feet per second. The equipment is portable.

No field changes in effect at time of preparation (21 March 1957).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE: Electromagnetic.
FREQUENCY RESPONSE: 300 to 3700 cps.
RECORDING MEDIUM: Steel wire.
RECORDING TIME: 60 min max continuous.
SPEED: 4 ft per sec (both recording and reproducing).
POWER SOURCE REQUIRED: 115 v, 60 cps, single ph.

MANUFACTURER'S OR CONTRACTOR'S DATA

Brush Development Co. Cleveland, Ohio.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

REFERENCE DATA AND LITERATURE

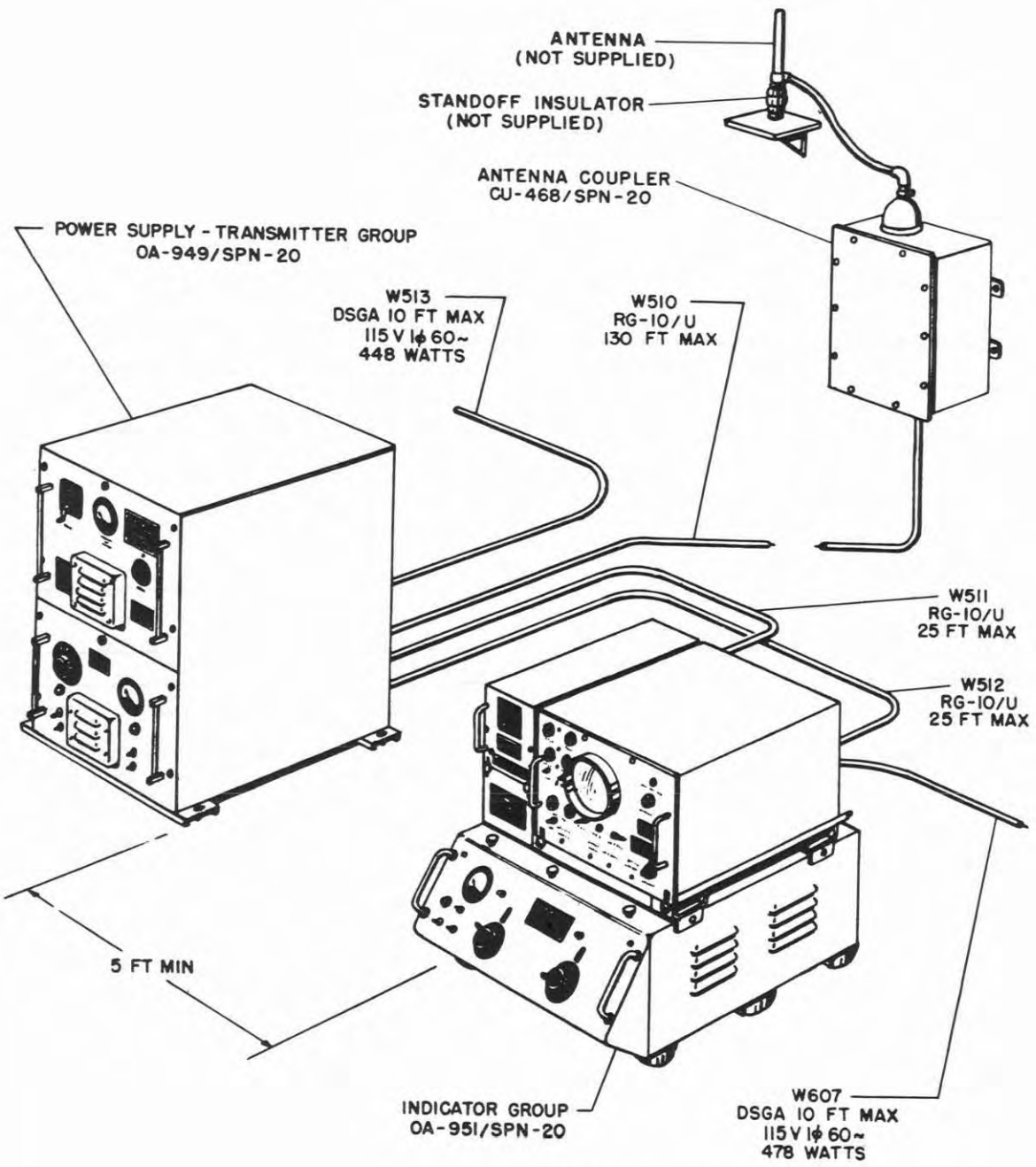
Nomenclature Card for Recorder-Reproducer Set Sound dated 11 May 1955.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	BUSHIPS
PROCUREMENT COGNIZANCE	
STOCK NO.	

EQUIPMENT SUPPLIED DATA

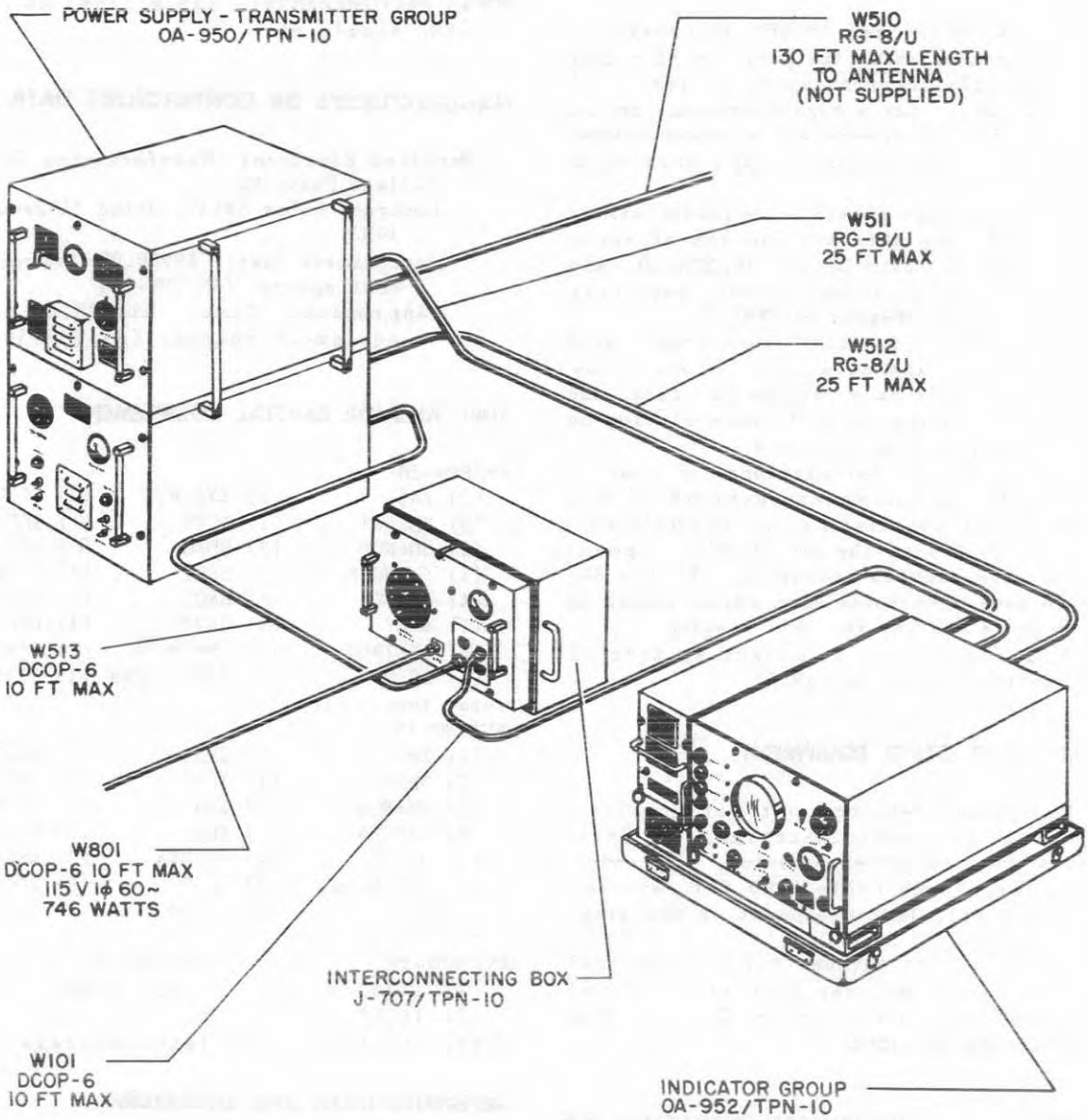
QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Recorder - Reproducer Set, Sound AN/SNH-7		

RADIO BEACON AN/SPN-20,AN/TPN-10



Radio Beacon AN/SPN-20

AN/SPN-20,AN/TPN-10 RADIO BEACON



Radio Beacon AN/TPN-10

RADIO BEACON AN/SPN-20,AN/TPN-10

FUNCTIONAL DESCRIPTION

The AN/SPN-20 and AN/TPN-10 provide a means of establishing the position of a ship with reliable accuracy up to distances of 200 to 300 miles for a highly accurate method of conducting hydrographic surveys beyond the range of other electronic surveying instruments.

The electronic position indicator system consists of one ship station installation consisting of Radio Beacon AN/SPN-20, and two shore station installations, each consisting of Radio Beacon AN/TPN-10.

The AN/SPN-20 function is to interrogate the AN/TPN-10 installations, display the returned signals on a cathode-ray tube, and indicate the range to each shore station on direct reading range counters.

The AN/TPN-10 installations function is to respond to the interrogations of the AN/SPN-20, with provisions made to synchronize the AN/TPN-10 with the shipboard equipment so that the signals transmitted by the AN/TPN-10 have a definite time relationship to the signals sent by the ship station.

No field changes in effect at time of preparation (15 October 1956).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: AN/SPN-20 (1) Radio Receiver, (1) Radio Transmitter, (1) Antenna System, (1) Lead-In Insulator, Power Cable (200 ft), Antenna Wire (300 ft), Test Equipment as Required. AN/TPN-10 (1) Radio Receiver, (1) Radio Transmitter, (1) Antenna System, (2) Bowl Insulator, (4) Antenna Insulator, Ground Wire (5500 ft), Antenna Wire (200 ft), Test Equipment as Required.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 1750 to 1950 kc.
POWER OUTPUT: 18 kw peak.
EMISSION: Pulse modulated.
PULSE DATA
  REPETITION RATE: 41-2/3 pps.
  LENGTH: Approx 60 usec.
RECEIVER DATA
  TYPE: Superheterodyne.
  FREQUENCY RANGE: 1.7 to 2.0 mc.
  INTERMEDIATE FREQUENCY: 1050 kc.
PRESENTATION: 5 in. CR tube.
POWER REQUIREMENTS: 115 v ±10%, 60 cps ±5%, single ph.

MANUFACTURER'S OR CONTRACTOR'S DATA

Maryland Electronic Manufacturing Corp, College Park, Md.
Contract NObsr 64637, dated 31 January 1955.
Approximate Cost: $8200.00 with equipment spares. (AN/SPN-20)
Approximate Cost: $11780.00 with equipment spares. (AN/TPN-10).

TUBE AND/OR CRYSTAL COMPLEMENT

AN/SPN-20

(2) 2A3	(2) 2X2/879	(2) OC3W
(2) 3B24WA	(1) 3E29	(1) 5CP1
(1) 5RaWGB	(2) 5U4G	(1) 884
(1) 5Y3WGTB	(5) 5692	(14) 5814A
(4) 6AC7Wa	(6) 6AG5	(5) 6H6
(1) 6SA7	(4) 6SJ7	(4) 6SK7WA
(5) 6SL7WGT	(15) 6SN7WGTA	(2) 304TH
(1) 2050W	(2) 5750/6BE6W	(1) 6336

Total Tubes: (84)

AN/TNP-10

(2) 2A3	(2) 2X2A	(1) OC3W
(2) 3B24	(1) 3E29	(1) 5CP1
(1) 5R4WGB	(1) 5T4	(1) 5Y3WGTB
(4) 6AC7WA	(5) 6H6	(1) 6SA7
(5) 6SJ7	(4) 6SK7WA	(5) 6SL7WGT
(16) 6SN7WGTA	(3) 5692	(2) 304TH
(1) 884	(1) 2050W	

Total Tubes: (59)

AN/SPN-20	AN/TPN-10
(1) 1N34A	(1) 100KC
(1) 100KC	
Total Crystals: (2)	Total Crystals: (1)

REFERENCE DATA AND LITERATURE

NAVSHIPS 92555(A): Technical Manual for Radio Beacon AN/SPN-20 and Radio Beacon AN/TPN-10.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE SHIPS-E-1840
STOCK NO.

AN/SPN-20,AN/TPN-10 RADIO BEACON

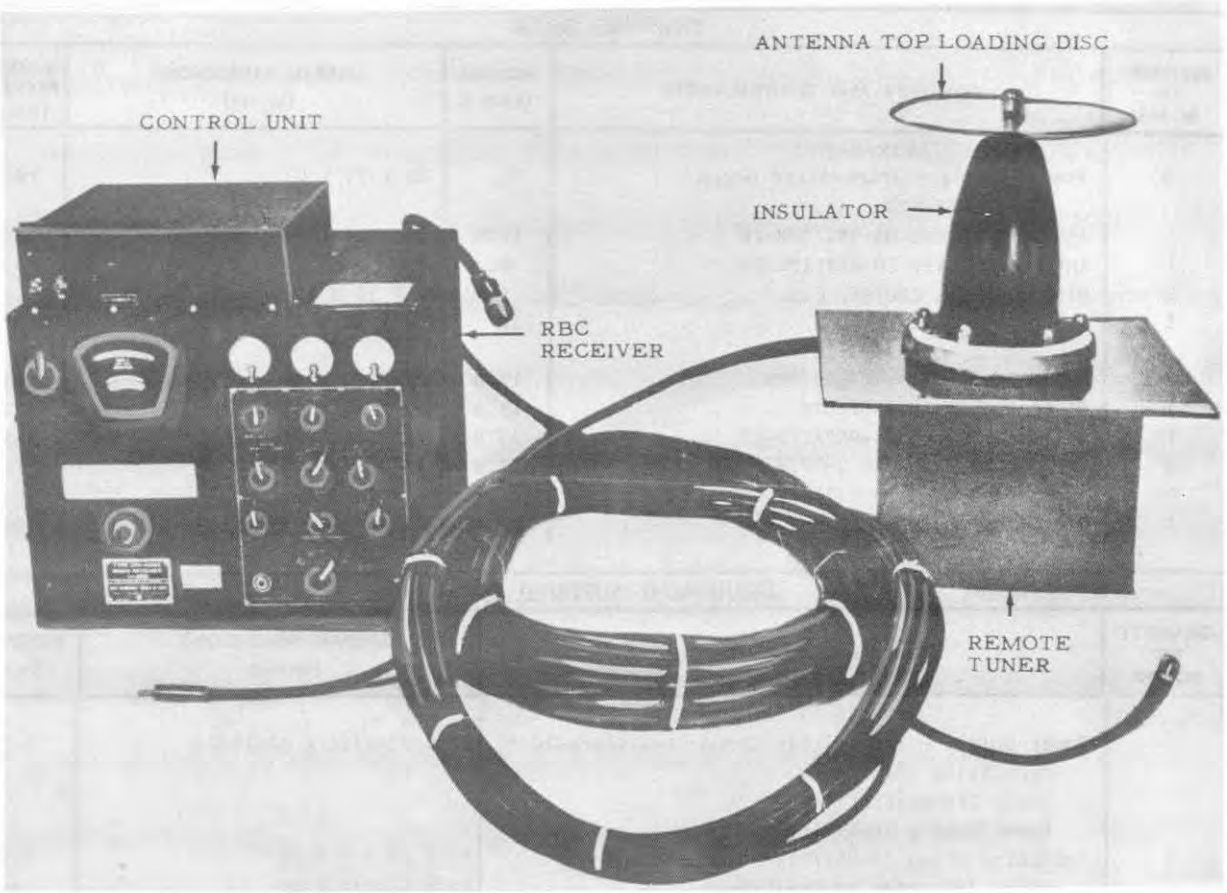
SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
	AN/SPN-20			
1	Power Supply – Transmitter Group OA-949/SPN-20	23	28 X 33 X 43	395
1	Indicator Group OA-951/SPN-20	14.8	24 X 28 X 38	340
1	Antenna Coupler CU-468/SPN-20	4.7	15 X 20 X 27	53
1	Miscellaneous Cables, Etc.	9.7	8 X 11 X 13	16
1	Set of Spare Parts	218	14 X 14 X 25	87
	AN/TPN-10			
1	Radio Transmitter T-579/UPN	13.8	22 X 30 X 36	207
1	Power Supply PP-1351/UPN	13.8	22 X 30 X 36	227
1	Indicator Group OA-952/TPN-10	13.8	22 X 31 X 35	263
1	Interconnecting Box J-707/TPN-10	4.8	16 X 18 X 29	78
1	Misc. Cables, Line Filter, etc.	1.9	8 X 18 X 23	44
1	Set of Spare Parts	2.8	14 X 14 X 25	98

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
	AN/SPN-20		
1	Power Supply – Transmitter Group OA-949/SPN-20 consisting of: Radio Transmitter T-579/UPN Power Supply PP-1351/UPN	21 X 27-7/16 X 32-15/16	265
1	Indicator Group OA-951/SPN-20 consisting of:	23 X 26-1/2 X 30	233
	Range Indicator IP-338/SPN-20	12 X 15-1/2 X 23	87
	Indicator Control C-1725/SPN-20	12-1/2 X 23 X 30	122
	Variable Attenuator CN-347/UPN	5 X 5 X 9-1/2	3
	Radio Receiver R-716/SPN-20	5 X 7-1/2 X 21-1/2	21
1	Antenna Coupler CU-468/SPN-20	8-13/16 X 14-1/2 X 20-1/4	14
1	Line Filter		
2	Technical Manual NAVSHIPS 92555(A)		
1	Set of Spare Parts		
1	Set of Cables and Connectors		
	AN/TPN-10		
1	Power Supply-Transmitter Group OA-950/TPN-10 consisting of: Radio Transmitter T-579/UPN Power Supply PP-1351	23-1/4 X 27-5/8 X 32-1/2	282
1	Indicator Group OA-952/TPN-10 consisting of:	17 X 25-1/2 X 27-1/2	186
	Range Indicator IP-339/TPN-10	12-1/2 X 15-1/2 X 22	105
	Indicator Cover CW-389/TPN-10	17 X 25-1/2 X 27-1/2	40
	Variable Attenuator CN-347/UPN	5 X 5 X 9-1/2	3
	Radio Receiver R-717/TPN-10	5 X 9 X 21-1/2	28
1	Interconnecting Box J-707/TPN-10	9-5/8 X 12-3/16 X 21-5/8	36
1	Line Filter		
2	Technical Manual NAVSHIPS 92555(A)		
1	Set of Spare Parts		
1	Set of Cables and Connectors		

MINIATURE RECEIVING ANTENNA AN/SRA-10(XG-1)



Miniature Receiving Antenna AN/SRA-10(XG-1)

FUNCTIONAL DESCRIPTION

The AN/SRA-10(XG-1) is a small, top loaded monopole antenna supported by a standard 12 inch deck insulator. The antenna is connected to a Remote Tuner Unit located directly under the insulator. Signals from the Tuner Unit are fed by radio-frequency transmission line to a modified RBC receiver. A Control Unit on top of the receiver enables the operator to change bands and to tune the antenna from the operating position.

The equipment is used aboard ship and is designed to increase the efficiency of shipboard communication systems by eliminating the problem of interaction between large, and closely spaced antennas.

No field changes in effect at time of preparation (30 April 1957).

RELATION TO OTHER EQUIPMENT

Used w/a modified RBC receiver.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 4 to 27 mc.
NUMBER OF BANDS: 4.
ANTENNA SENSITIVITY: At 4 mc, 28 db below the sensitivity of a quarter-wave monopole over a ground plane and 6 db below at 27 mc.
POWER SOURCE REQUIRED: 117 v, 60 cps.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 6J6 (1) 6AQ5 (1) 6J4

Total Tubes: (3)

Radio-Auxiliary

AN/SRA-10(XG-1) MINIATURE RECEIVING ANTENNA

REFERENCE DATA AND LITERATURE

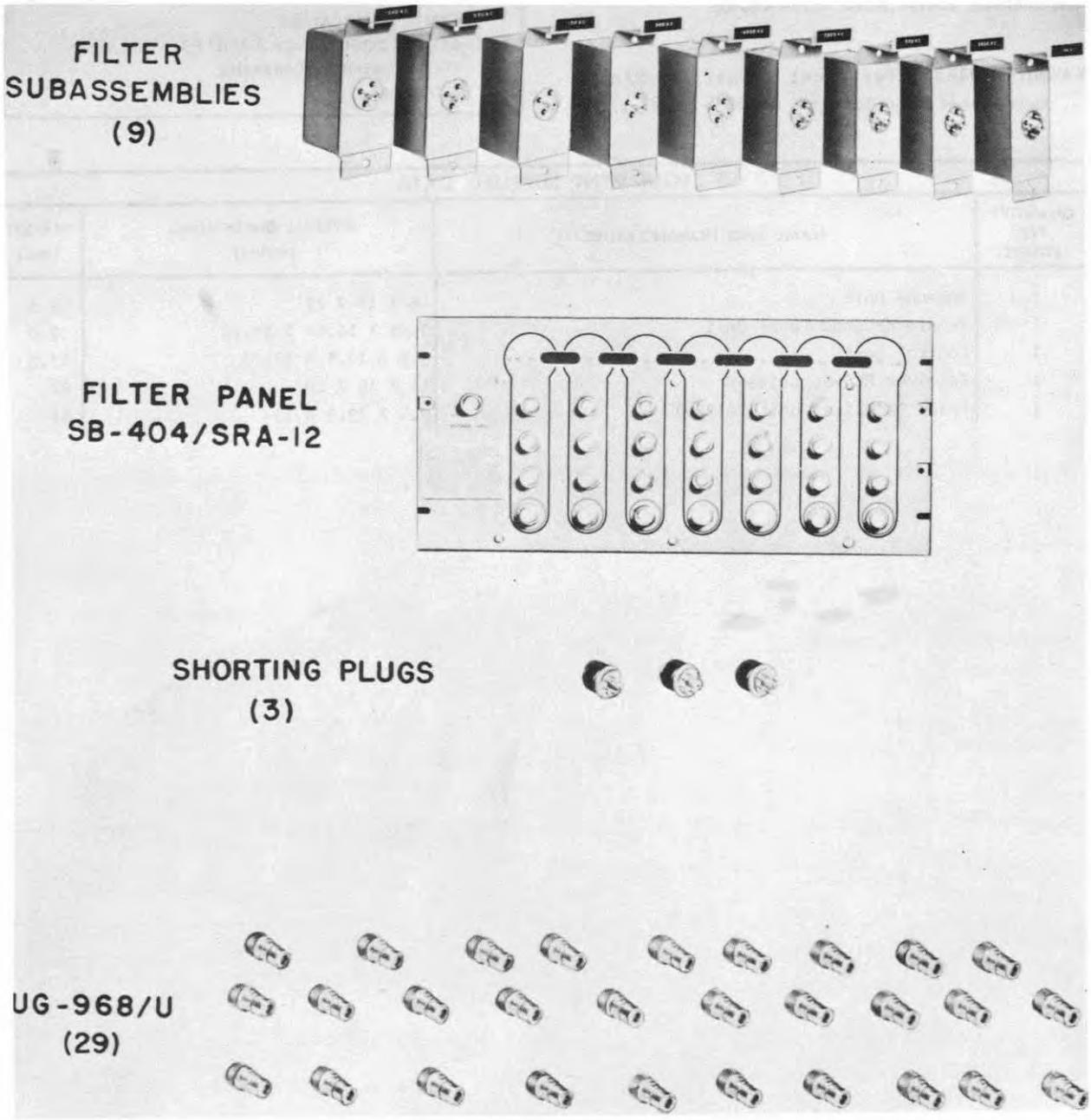
NAVSHIPS 91555, Technical Manual for Miniature Receiving Antenna AN/SRA-10(XG-1).

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Antenna Unit	18 X 18 X 22	54.5
1	Remote Antenna Tuner Unit	9.25 X 11.50 X 12.25	7.0
1	Control Unit	3.5 X 11.5 X 12.25	17.5
1	Receiver RBC-5, 46148-D	15 X 18 X 20	82
1	Power Rectifier Unit-20130-B	9.5 X 13.5 X 15	48

ELECTRICAL FILTER ASSEMBLY AN/SRA-12



Electrical Filter Assembly AN/SRA-12

FUNCTIONAL DESCRIPTION

Electrical Filter Assembly AN/SRA-12 provides, by means of filter subassemblies which plug into Filter Panel SB-404/SRA-12, a maximum of seven r-f bands in the frequency spectrum between 14 kc and 32 mc. Connections from the main chassis to an antenna and to receivers are made by coaxial patch cords in a manner similar to that employed with con-

AN/SRA-12 ELECTRICAL FILTER ASSEMBLY

ventional antenna patch panels now in use in the fleet. Any or all of the seven bands may be used simultaneously with and independently of any of the other bands.

No field changes in effect at time of preparation (10 August 1959).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY SPECTRUM: 14 kc to 32 mc, 7 bands.
CROSS-OVER FREQUENCY: 50, 150, 300, 530, 1500, 2000, 3500, 7000, and 14000 kc.
IMPEDANCE: 180 ohms (each filter).

MANUFACTURER'S OR CONTRACTOR'S DATA

Brubaker Mfg. Co., Inc., Los Angeles, California.
Contract NObsr-64102, dated 31 January 1954.
Edwin I. Guthman Co., Inc., Chicago, Illinois.
Contract NObsr-64134, dated 26 March 1954.
Electronics of Clearfield, Clearfield, Pa.
Contract NObsr-64769.
Production Research Corp., Thornwood, New York.
Contract NObsr-71721.
Lieco Inc., Freeport, New York.
Contract NObsr-75181.
Contract NObsr-75558.
Contract NObsr-75690.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes or Crystals used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 92206: Technical Manual for Electrical Filter Assembly AN/SRA-12, and AN/SRA-12A.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	USN, BUSHIPS
PROCUREMENT COGNIZANCE	SPEC MIL-F-17698B (SHIPS)
STOCK NO.	
R.D.B. IDENT. NO.	

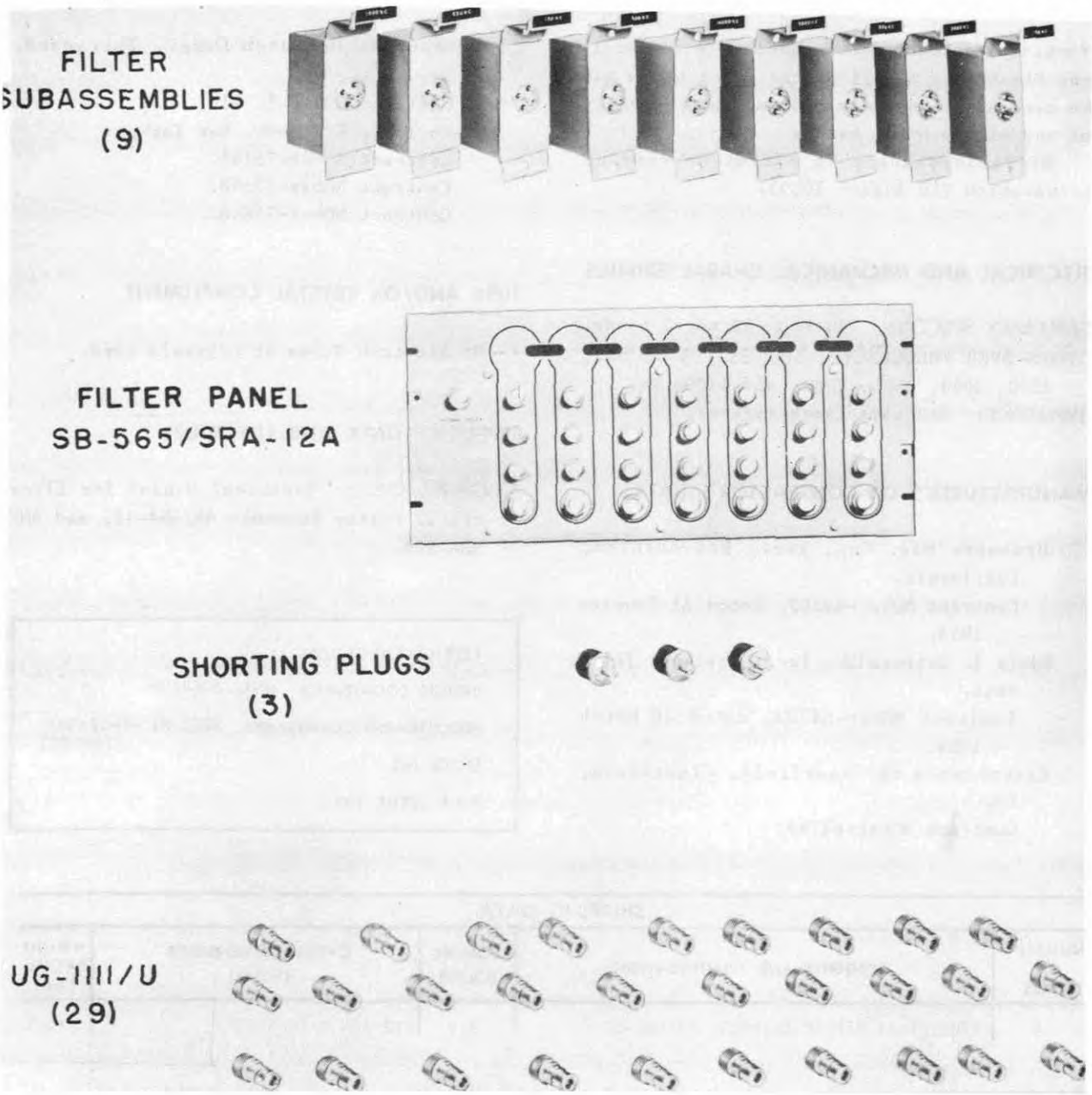
SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Electrical Filter Assembly AN/SRA-12	3.0	12-3/4 X 18 X 23	75.5

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Electrical Filter Assembly AN/SRA-12 includes:		
1	Panel, Filter SB-404/SRA-12	2-1/8 X 8-3/4 X 19	10.25
9	Filter Subassemblies	2-1/16 X 3-7/16 X 4	2
3	Shorting Plugs	1-1/4 dia X 1-25/32	0.1
29	Connector, Plug UG-968/U	1 dia X 1-51/64	0.44
2	Technical Manual NAVSHIPS 92206	1/4 X 8-1/2 X 11	0.2

ELECTRICAL FILTER ASSEMBLY AN/SRA-12A



Electrical Filter Assembly AN/SRA-12A

FUNCTIONAL DESCRIPTION

Electrical Filter Assembly AN/SRA-12A provides, by means of filter subassemblies which plug into Filter Panel SB-565/SRA-12A, a maximum of seven r-f bands in the frequency spectrum between 14 kc and 32 mc. Connections from the main chassis to an antenna and to receivers are made by coaxial patch cords in a manner similar to that employed with conventional antenna patch panels now in use in the Fleet. Any or all of the seven bands may

AN/SRA-12A ELECTRICAL FILTER ASSEMBLY

be used simultaneously with and independently of any of the other bands.

No field changes in effect at time of preparation (10 August 1959).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY SPECTRUM: 14 kc to 32 mc, 7 bands.
CROSS-OVER FREQUENCY: 50, 150, 300, 530, 1500, 2000, 3500, 7000, and 14000 kc.
IMPEDANCE: 180 ohms (each filter).

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes or Crystals used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 92206: Technical Manual for Electrical Filter Assembly AN/SRA-12 and AN/SRA-12A.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	USN, BUSHIPS
PROCUREMENT COGNIZANCE	SPEC MIL-F-17698B (SHIPS)
STOCK NO.	
R.D.B. IDENT. NO.	

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Electrical Filter Assembly AN/SRA-12A	3.0	12-3/4 X 18 X 23	75.5

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Electrical Filter Assembly AN/SRA-12A including:		
1	Panel, Filter SB-565/SRA-12A	2-1/8 X 8-3/4 X 19	10.25
9	Filter Subassemblies	2-1/16 X 3-7/16 X 4	2
3	Shorting Plugs	1-1/4 dia X 1-25/32	0.1
29	Connector, Receptacle UG-1111/U	1-1/2 od X 1-3/32	
2	Technical Manual NAVSHIPS 92206	1/4 X 8-1/2 X 11	0.2

June 1961

Radio-Auxiliary

ELECTRICAL FILTER ASSEMBLY AN/SRA-12B

FUNCTIONAL DESCRIPTION

Electrical Filter Assembly AN/SRA-12B provides a means of connecting up to 28 communication receivers to a single antenna by means of filter subassemblies which plug into Panel, Filter SB-404A/SRA-12. This unit has a maximum of seven R-F bands in the frequency spectrum of 14 kc to 32 mc. Connections from the main chassis of the filter panel to an antenna and to receivers are made by means of coaxial patchcords.

No field changes in effect at time of preparation (18 July 1960).

RELATION TO OTHER EQUIPMENT

This equipment is interchangeable as a complete unit with Filter Ass'y, Electrical AN/SRA-12, -12A; receptacle plug-in holes on front differ.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY SPECTRUM: 14 kc to 32 mc, 7 bands.
CROSS-OVER FREQUENCY: 50, 150, 300, 530, 1500, 2000, 3500, 7000 and 14000 kc.
IMPEDANCE: 180 ohms (each filter).

MANUFACTURER'S OR CONTRACTOR'S DATA

Lieco Inc., Syosset, Long Island, N. Y.
Contract NObsr-75181.
$153.16 unit price.
Contract NObsr-75690.
$179.90 unit price.
Contract NObsr-75558.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes or Crystals used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 93400: Preliminary data sheet for FILTER ASSEMBLY, ELECTRICAL AN/SRA-12B.

TYPE CLASSIFICATION	(NAVY)
DESIGN COGNIZANCE	USN, BUSHIPS
PROCUREMENT COGNIZANCE	SPEC: MIL-F-17698B (SHIPS) and Amend 5
STOCK NO.	
R.D.B. IDENT. NO.	

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Electrical Filter Assembly AN/SRA-12B			

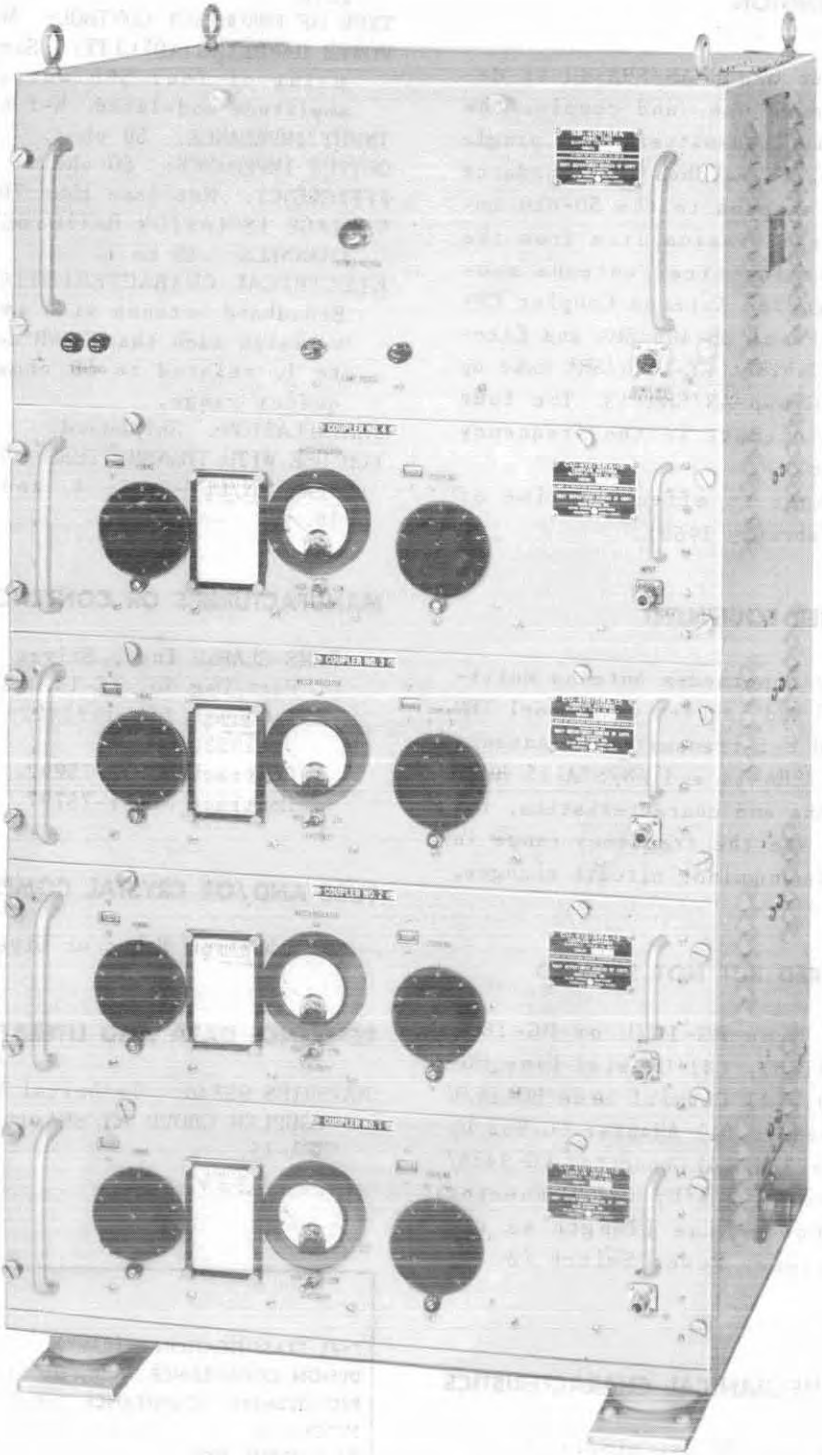
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Electrical Filter Assembly AN/SRA-12B including:	6-1/4 x 8-3/4 x 19	
1	Panel, Filter SB-404A/SRA-12	2-1/8 x 8-3/4 x 19	10.25
9	Filter Subassemblies		

Radio-Auxiliary

ANTENNA COUPLER GROUP

AN/SRA-13



Antenna Coupler Group AN/SRA-13

Radio-Auxiliary

August 1960

AN/SRA-13 ANTENNA COUPLER GROUP

FUNCTIONAL DESCRIPTION

Antenna Coupler Group AN/SRA-13 is designed for shipboard use, and couples the output of four radio transmitters to a single broadband antenna. It matches the impedance of the broadband antenna to the 50-ohm impedance of the transmission line from the transmitter. Four identical antenna couplers, each designated Antenna Coupler CU-419/SRA-13; Fuse Panel SB-406/SRA and Electrical Equipment Cabinet CY-1670/SRA make up Antenna Coupler Group AN/SRA-13. The four antenna couplers operate in the frequency range of 2 to 6 mc.

No field changes in effect at time of preparation (16 February 1960).

RELATION TO OTHER EQUIPMENT

This equipment supersedes Antenna Multicoupler CU-301/UR and is used with model TBM or other approved h-f transmitters. Antenna Coupler Group AN/SRA-14 and AN/SRA-15 have identical functions and characteristics, the only differences are the frequency range in which they operate and minor circuit changes.

EQUIPMENT REQUIRED BUT NOT SUPPLIED

(4) Coaxial Line RG-10/U or RG-18/U (length as required); (4) Coaxial Line RG-10/U (1 to 2 ft); (1) Coaxial Line RG-18/U (length as required); (4) Adapter UG-982/U; (4) Connector UG-23/U; (4) Connector UG-941A/U; (4) Connector UG-27A/U; (1) Connector UG-154/U; (1) Power Line (length as required); (1) Primary Power Switch (6 amp toggle).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER SUPPLY: 115 v, 60 cy, single ph.
FREQUENCY RANGE: 2 to 6 mc.
TUNING BAND: One band, continuously variable.
TYPE OF FREQUENCY CONTROL: Manual.
POWER HANDLING ABILITY: Simultaneous coupling of four 500 watts, 100 percent amplitude modulated, h-f transmitters.
INPUT IMPEDANCE: 50 ohms.
OUTPUT IMPEDANCE: 50 ohms.
EFFICIENCY: Not less than 70%.
VOLTAGE ISOLATION RATIO BETWEEN ADJACENT CHANNELS: 15 to 1.
ELECTRICAL CHARACTERISTICS OF ANTENNA: Broadband antenna with impedance characteristic such that VSWR does not exceed 3 to 1, related to 50 ohms, for the frequency range.
INSTALLATION: Shipboard.
FOR USE WITH TRANSMITTERS: Models TBM, TBK, TCK, AN/URT-2, 3, 4, and AN/SRT-14, 15, 16.

MANUFACTURER'S OR CONTRACTOR'S DATA

NEMS-CLARKE Inc., Silver Springs, Md.
Part/Dwg No. AC-13,050.
Contract NObsr-63422, dated 6 January 1953.
Contract NObsr-75292.
Contract NObsr-75797.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes or Crystals used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 92746: Technical Manual for ANTENNA COUPLER GROUP AN/SRA-13, AN/SRA-14, AN/SRA-15.

TYPE CLASSIFICATION (NAVY)
DESIGN COGNIZANCE USN, BUSHIPS
PROCUREMENT COGNIZANCE SPEC: SHIPS-C-3066
STOCK NO.
R.D.B. IDENT. NO.

August 1960

Radio-Auxiliary

ANTENNA COUPLER GROUP

AN/SRA-13

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Antenna Coupler Group AN/SRA-13	18.8	22 X 29 X 51	416

EQUIPMENT SUPPLIED DATA

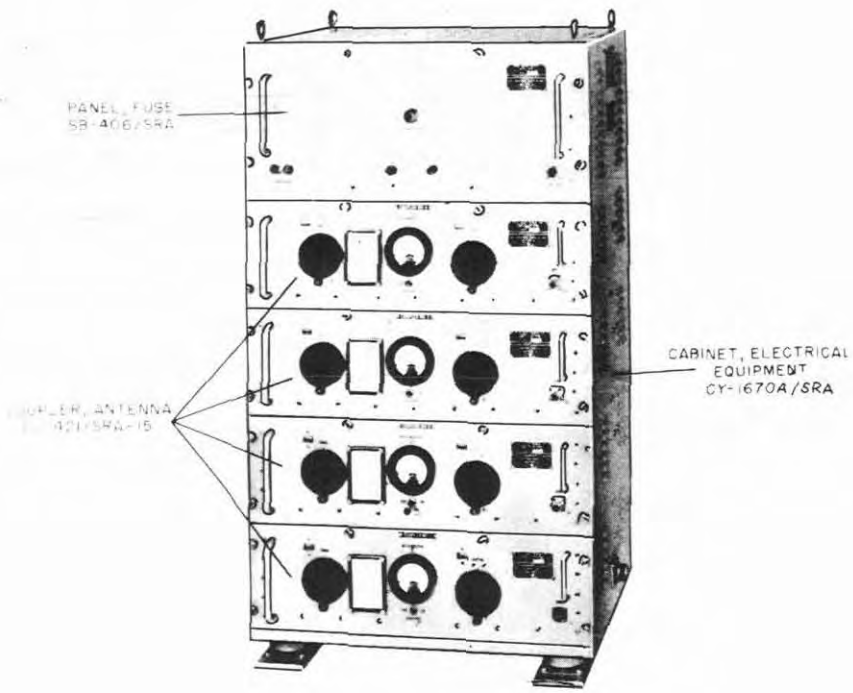
QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Antenna Coupler Group AN/SRA-13 includes:	20-1/2 X 26-1/4 X 46-3/4	176.5
4	Antenna Coupler CU-419/SRA-13	7-23/32 X 18-3/16 X 24-3/4	43
1	Fuse Panel SB-406/SRA	10-3/8 X 11-7/32 X 24-3/4	11.5
1	Electrical Equipment Cabinet CY-1670/SRA	20-1/2 X 26-1/4 X 46-3/4	122.5
2	Technical Manual NAVSHIPS 92746		

Cog Service: FSN: 5985-710-0098 Functional Class:

USA USN USAF

TYPE CLASS:

MANUFACTURER'S NAME/CODE NUMBER: Granite State Machine Company, Incorporated.



Antenna Coupler Group AN/SRA-13A

FUNCTIONAL DESCRIPTION:

The AN/SRA-13A is designed for shipboard use. The coupler group is capable of coupling four transmitters into a single broadband antenna. The coupler group must be operated independently with a broadband antenna designed to produce a voltage standing wave ratio no greater than 3 to 1 over its frequency at the output terminal of the coupler group. Each transmitter operating with a coupler group must be set to operate at channels spaced at least 10 per cent from any other frequency in the group. The principal function of this equipment is to provide an efficient means for operating, simultaneously, several transmitters, having output power up to 500 watts, into a single broadband antenna.

No field changes in effect at time of preparation (29 November 1960).

TECHNICAL CHARACTERISTICS:

TYPE OF FREQUENCY CONTROL: Manual.
TYPE OF INSTALLATION: Shipboard.

AN/SRA-13A ANTENNA COUPLER GROUP

TUNING BAND
NUMBER OF BANDS: One band, continuously variable, across the frequency range of each coupler group.
IMPEDANCE
INPUT IMPEDANCE: 50 ohms.
OUTPUT IMPEDANCE: 50 ohms.
VOLTAGE ISOLATION RATIO: Between adjacent channels for 10% frequency separation, 15 to 1 or greater.
METHOD OF COUPLING: Inductive capacitive.
OPERATING FREQUENCY RANGE: 2 to 6 mc.
OPERATING POWER RQMT: 115 v ac, 60 cps, single ph.

RELATION TO OTHER EQUIPMENT:

The AN/SRA-13A is used with but not part of Radio communication Equipment.
The AN/SRA-13A is similar to the AN/SRA-14A and the AN/SRA-15A except that they operate in different frequency ranges.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(4) Coaxial Line RG-10/U or RG-18/U (length as required); (4) Coaxial Line RG-10/U (1 to 2 ft lg); (1) Coaxial Line RG-18/U (length as required); (4) Adapter UG-982/U or equal; (4) Connector UG-23/U or equal; (4) Connector UG-941A/U or equal; (4) Connector UG-27A/U or equal; (1) Connector UG-154/U or UG-216/U; (1) Power Line (length as required); (1) Primary Power Switch (6 amp toggle switch).

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Coupler Group AN/SRA-13A		20-1/2 x 26-1/4 x 46-3/4	176-1/2
4	Coupler, Antenna CU-419/SRA-13		7-23/32 x 18-3/16 x 24-3/4	43 ea
1	Panel Fuse SB-406/SRA		10-3/8 x 11-7/32 x 24-3/4	11-1/2
1	Cabinet Electrical Cabinet CY-1670A/SRA		20-1/2 x 26-1/4 x 46-3/4	122-1/2
2	Technical Manual NAVSHIPS 92746		1/2 x 9 x 11-1/2	

REFERENCE DATA AND LITERATURE:

NAVSHIPS 92746: Technical Manual for Antenna Coupler Group AN/SRA-13, 13A, AN/SRA-14, 14A and AN/SRA-15, 15A.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	18.8	416

PROCUREMENT DATA

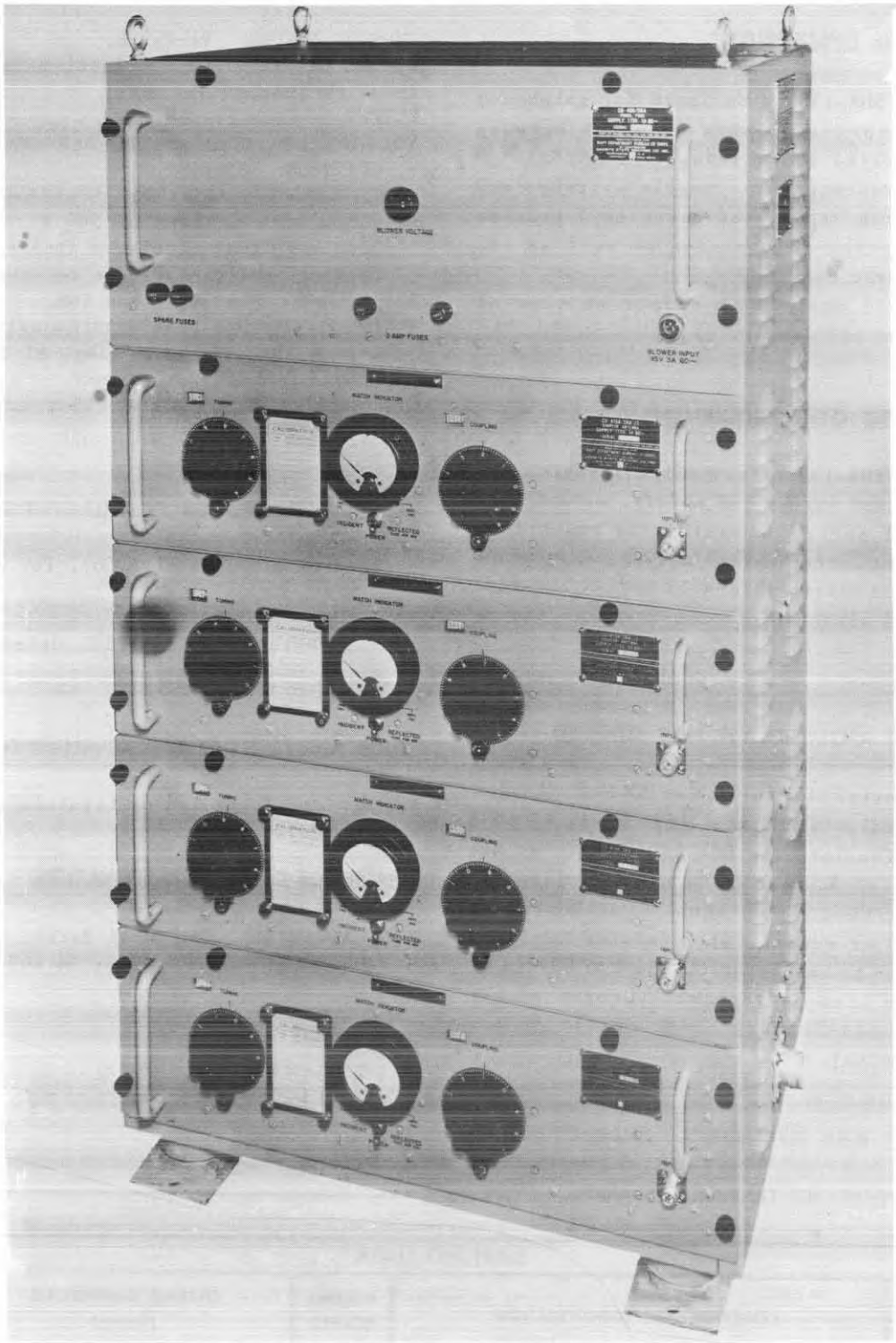
PROCURING SERVICE: DESIGN COG: USN, BuShips

SPEC &/OR DWG: SHIPS-C-2888

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Granite State Machine Company, Incorporated Dwg no. 3-0-2	Manchester, New Hampshire	NObsr-75524, 18 August 1958	

ANTENNA COUPLER GROUP

AN/SRA-13B



Antenna Coupler Group AN/SRA-13B

Radio-Auxiliary

June 1961

AN/SRA-13B ANTENNA COUPLER GROUP

FUNCTIONAL DESCRIPTION

The AN/SRA-13B is designed for shipboard use. It provides impedance match between transmitter(s) and antenna. The AN/SRA-13B has been redesigned so toggle switches and meters (with associated circuitry) provide incident power information as well as reflected power data.

No field changes in effect at time of preparation (12 January 1961).

RELATION TO OTHER EQUIPMENT

The AN/SRA-13B is virtually identical to AN/SRA-13 and AN/SRA-13A models, except that the actual parts comprising the redesigned area are not interchangeable with corresponding parts in models AN/SRA-13 and AN/SRA-13A. It is used with radio communications equipment.

EQUIPMENT REQUIRED BUT NOT SUPPLIED

(4) Coaxial Line RG-10/U or RG-18/U (Length as required), (4) Coaxial Line RG-10 (1 to 2 ft), (1) Coaxial Line RG-18/U (Length as required), (4) Adapter UG-982/U or equal, (4) Connector UG-23/U or equal, (4) Connector UG-941A/U or equal, (4) Connector UG-27A/U or equal, (1) Connector UG-154/U or UG-216/U, (1) Power Line as required (Length as required), (1) Primary Power Switch (6 amp toggle switch).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF FREQUENCY CONTROL: Manual.
TYPE OF TUNING: Variable.
METHOD OF COUPLING: Inductive-Capacitive.
INPUT IMPEDANCE: 50 ohms.
OUTPUT IMPEDANCE: 50 ohms.
VOLTAGE ISOLATION RATIO BETWEEN ADJACENT CHANNELS: 15 to 1.
POWER HANDLING ABILITY: Simultaneous coupling of a maximum of 500 W, r-f power, 100% amplitude modulated from each of four transmitters to a single antenna.
EFFICIENCY: Not less than 70%.
TUNING BAND: One band continuously variable across the frequency range of 2 to 6 mc.
FREQUENCY RANGE: 2 to 6 mc.
OPERATING POWER RQMT: 115 v ac, 60 cps, single ph, 500 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

Granite State Machine Co., Inc., Manchester, N.H.
Dwg no. 3-0-100.
Contract NObsr-81222, dated 16 March 1960.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes and/or Crystals used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 92746: Technical Manual for Antenna Coupler Group AN/SRA-13, 14 and 15.

TYPE CLASSIFICATION (NAVY)
DESIGN COGNIZANCE NAVY BUSHIPS
PROCUREMENT COGNIZANCE SHIPS-C-3413 AMEND 1
STOCK NO.
R.D.B. IDENT. NO.

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Antenna Coupler Group AN/SRA-13B	24.8	24 x 30 x 50	434

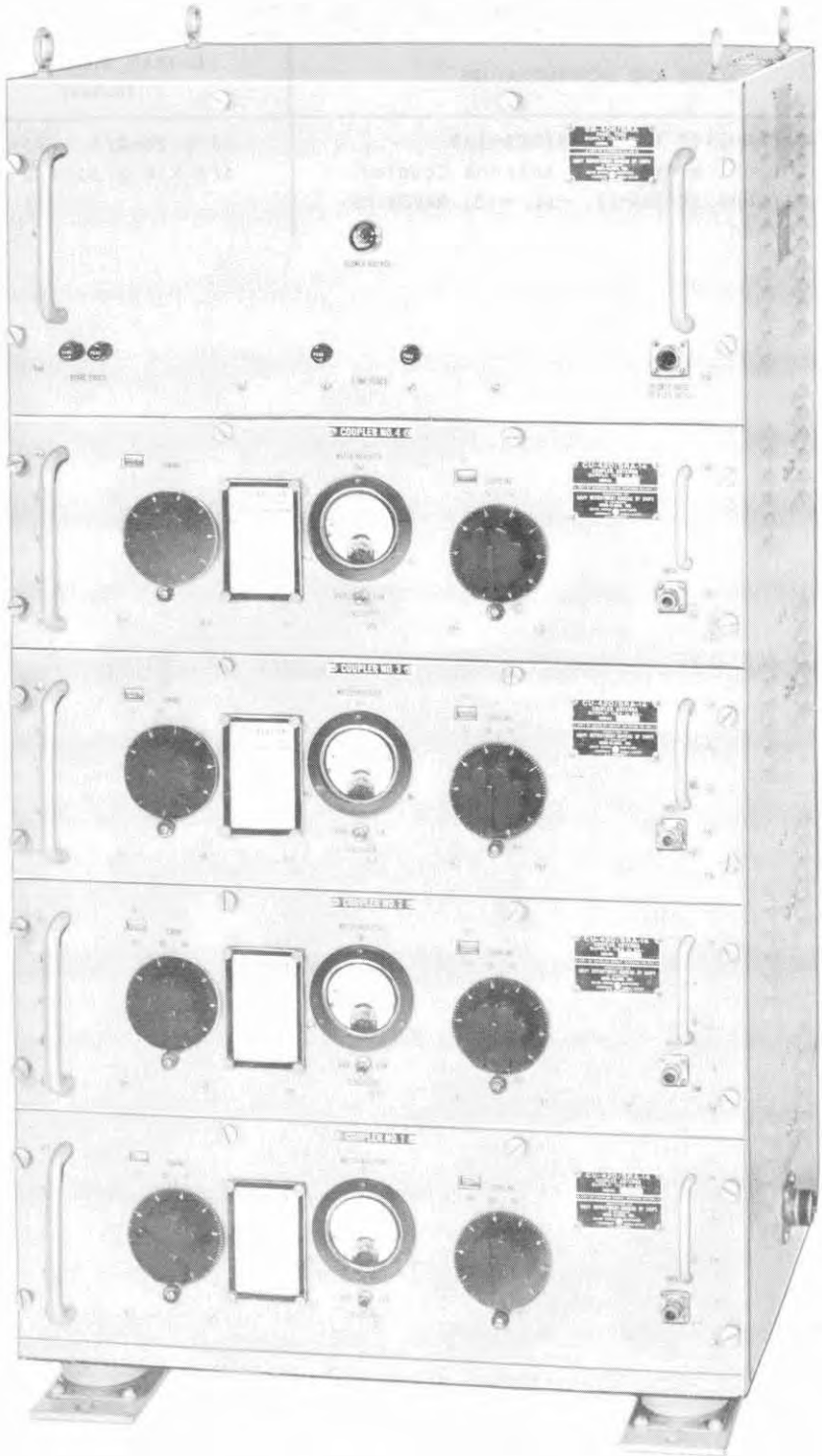
ANTENNA COUPLER GROUP

AN/SRA-13B

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Antenna Coupler Group AN/SRA-13B	20 x 26-1/4 x 46-1/2	309
1	Technical Manual for Antenna Coupler Groups AN/SRA-13, -14, -15, NAVSHIPS 92746	1/2 x 8 x 11-1/2	1/4

ANTENNA COUPLER GROUP AN/SRA-14



Antenna Coupler Group AN/SRA-14

Radio-Auxiliary

August 1960

AN/SRA-14 ANTENNA COUPLER GROUP

FUNCTIONAL DESCRIPTION

Antenna Coupler Group AN/SRA-14 is designed for shipboard use, and couples the output of four radio transmitters to a single broadband antenna. It matches the impedance of the broadband antenna to the 50-ohm impedance of the transmission line from the transmitter. Four identical antenna couplers, each designated Antenna Coupler CU-420/SRA-14; Fuse Panel SB-406/SRA and Electrical Equipment Cabinet CY-1670/SRA make up Antenna Coupler Group AN/SRA-14. The four antenna couplers operate in the frequency range of 4 to 12 mc.

No field changes in effect at time of preparation (16 February 1960).

RELATION TO OTHER EQUIPMENT

This equipment supersedes Antenna Multicoupler CU-302/UR and is used with model TBM or other approved h-f transmitters. Antenna Coupler Group AN/SRA-13 and AN/SRA-15 have identical functions and characteristics, the only differences are the frequency range in which they operate and minor circuit changes.

EQUIPMENT REQUIRED BUT NOT SUPPLIED

(4) Coaxial Line RG-10/U or RG-18/U (length as required); (4) Coaxial Line RG-10/U (1 to 2 ft); (1) Coaxial Line RG-18/U (length as required); (4) Adapter UG-982/U; (4) Connector UG-23/U; (4) Connector UG-941A/U; (4) Connector UG-27A/U; (1) Connector UG-154/U; (1) Power Line (length as required); (1) Primary Power Switch (6 amp toggle).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER SUPPLY: 115 v, 60 cy, single ph.
FREQUENCY RANGE: 4 to 12 mc.
TUNING BAND: One band, continuously variable.
TYPE OF FREQUENCY CONTROL: Manual.
POWER HANDLING ABILITY: Simultaneous coupling of four 500 watt, 100 percent amplitude modulated, h-f transmitters.
INPUT IMPEDANCE: 50 ohms.
OUTPUT IMPEDANCE: 50 ohms.
EFFICIENCY: Not less then 68%.
VOLTAGE ISOLATION RATIO BETWEEN ADJACENT CHANNELS: 15 to 1.
ELECTRICAL CHARACTERISTICS OF ANTENNA: Broadband antenna with impedance characteristic such that VSWR does not exceed 3 to 1, related to 50 ohms, for the frequency range.
INSTALLATION: Shipboard.
FOR USE WITH TRANSMITTERS: Models TBM, TBK, TCK, AN/URT-2, 3, 4 and AN/SRT-14, 15, 16.

MANUFACTURER'S OR CONTRACTOR'S DATA

NEMS-CLARKE Inc., Silver Spring, Md.
Part/Dwg No. AC-13,051.
Contract NObsr-63422, dated 6 January 1953.
Contract NObsr-75292.
Contract NObsr-75797.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes or Crystals used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 92746: Technical Manual for ANTENNA COUPLER GROUP AN/SRA-13, AN/SRA-14, AN/SRA-15.

TYPE CLASSIFICATION (NAVY)
DESIGN COGNIZANCE USN, BUSHIPS
PROCUREMENT COGNIZANCE SPEC: SHIPS-C-3066
STOCK NO.
R.D.B. IDENT. NO.

ANTENNA COUPLER GROUP

AN/SRA-14

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Antenna Coupler Group AN/SRA-14	18.8	22 X 29 X 51	390

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Antenna Coupler Group AN/SRA-14 Includes:	20-1/2 X 26-1/4 X 46-3/4	176.5
4	Antenna Coupler CU-420/SRA-14	7-23/32 X 18-3/16 X 24-3/4	36.5
1	Fuse Panel SB-406/SRA	10-3/8 X 11-7/32 X 24-3/4	11.5
1	Electrical Equipment Cabinet CY-1670/SRA	20-1/2 X 26-1/4 X 46-3/4	122.5
2	Technical Manual NAVSHIPS 92746		

6 July 1962 ANTENNA COUPLER GROUP AN/SRA-14A

Cog Service: FSN: 5985-710-0099 Functional Class:

USA USN USAF

TYPE CLASS:

MANUFACTURER'S NAME/CODE NUMBER: Granite State Machine Company.

(No Illustration Available)

FUNCTIONAL DESCRIPTION:

The AN/SRA-14A is designed for shipboard use. The coupler group is capable of coupling four transmitters into a single broadband antenna. The coupler group must be operated independently with a broadband antenna designed to produce a voltage standing wave ratio no greater than 3 to 1 over its frequency range at the output terminal of the coupler group. Each transmitter operating with a coupler group must be set to operate at channels spaced at least 10 per cent from any other frequency in the group. The principal function of this equipment is to provide an efficient means for operating, simultaneously, several transmitters, having output power up to 500 watts into a single broadband antenna.

No field changes in effect at time of preparation (29 November 1960).

TECHNICAL CHARACTERISTICS:

TYPE OF INSTALLATION: Shipboard.
METHOD OF COUPLING: Inductive-capacitive.
TYPE OF FREQUENCY CONTROL: Manual.
TUNING BAND
NUMBER OF BANDS: One band, continuously variable across the frequency range of each coupler group.
IMPEDANCE
INPUT IMPEDANCE: 50 ohms.
OUTPUT IMPEDANCE: 50 ohms.
VOLTAGE ISOLATION RATIO: Between adjacent channels for 10% frequency separation, 15 to 1 or greater.
OPERATING FREQUENCY RANGE: 4 to 12 mc.
OPERATING POWER RQMT: 115 vac, 60 cps, single ph.

RELATION TO OTHER EQUIPMENT:

The AN/SRA-14A is similar to the AN/SRA-13A and AN/SRA-15A except they operate in different frequency ranges.

The AN/SRA-14A is designed to be used with but not part of Radio Communications Equipment.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(4) Coaxial Line RG-10/U or RG-18/U (length as required); (4) Coaxial Line RG-10 (1 to 2 ft); (1) Coaxial Line RG-18/U (length as required); (4) Adapter UG-982/U or equal; (4) Connector UG-23/U or equal; (4) Connector UG-941A/U or equal; (4) Connector UG-27A/U or equal; (1) Connector UG-154/U or UG-216/U; (1) Power Line (length as required); (1) Primary Power Switch (6 amp toggle switch).

AN/SRA-14A ANTENNA COUPLER GROUP

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Antenna Coupler Group AN/SRA-14A		20-1/2 x 26-1/4 x 46-3/4	176-1/2
4	Coupler, Antenna CU-420/SRA-14		7-23/32 x 18-3/16 x 24-3/4	36-1/2 ea.
1	Panel, Fuse SB-406/SRA		10-3/8 x 11-7/32 x 24-3/4	11-1/2
1	Cabinet, Electrical Equipment CY-1670A/SRA		20-1/2 x 26-1/4 x 46-3/4	122-1/2
2	Technical Manual NAVSHIPS 92746		1/2 x 9 x 11-1/2	

REFERENCE DATA AND LITERATURE:

NAVSHIPS 92746: Technical Manual for Antenna Coupler Group AN/SRA-13, -13A, AN/SRA-14, -14A, and AN/SRA-15, -15A.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	18.8	390

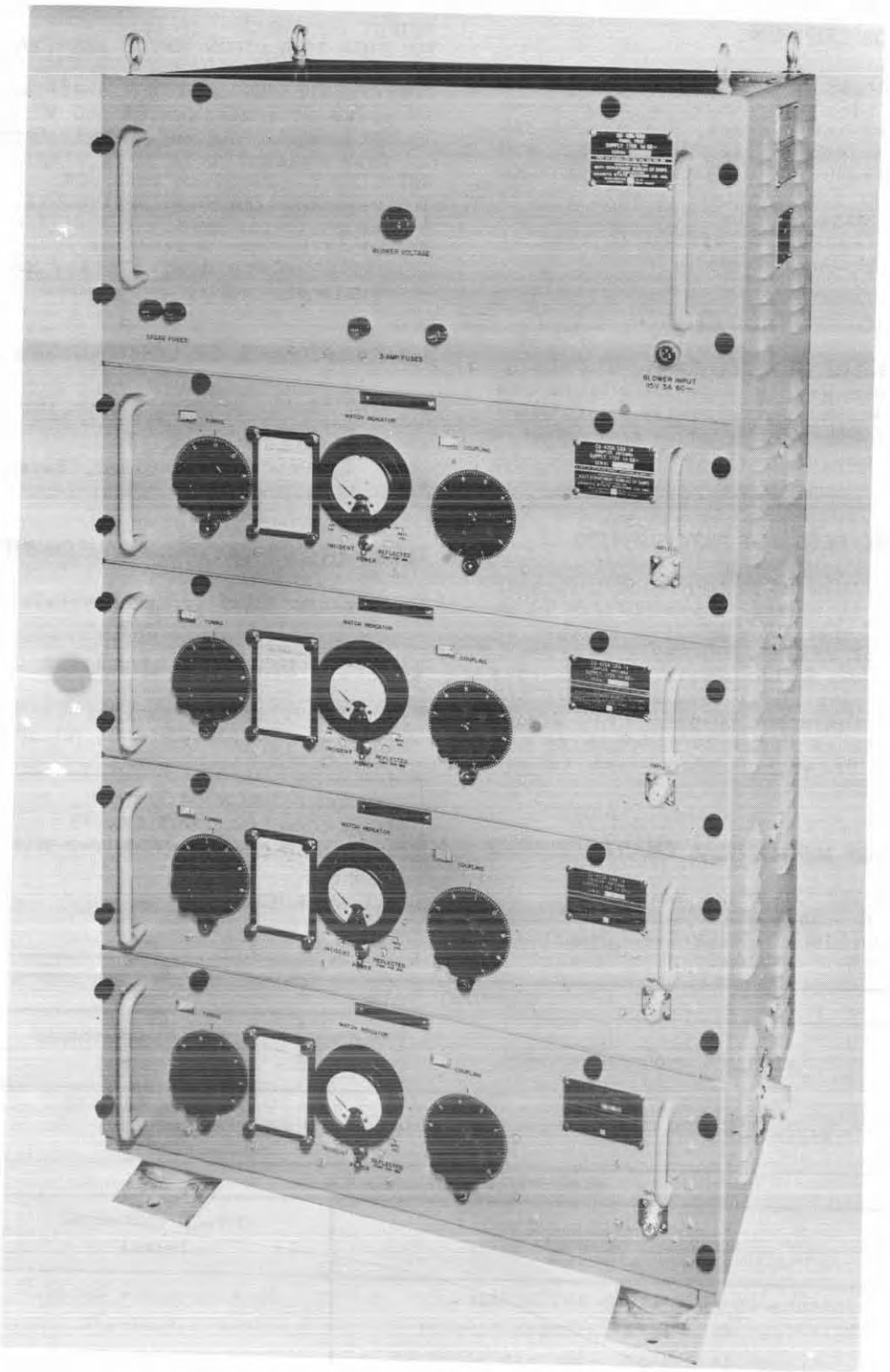
PROCUREMENT DATA

PROCURING SERVICE:
SPEC &/OR DWG: SHIPS-C-2888

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Granite State Machine Co. Dwg no. 4-0-2	Manchester, New Hampshire	NObsr-75524, 18 August 1958	

ANTENNA COUPLER GROUP



Antenna Coupler Group AN/SRA-14B

Radio-Auxiliary

AN/SRA-14B ANTENNA COUPLER GROUP

FUNCTIONAL DESCRIPTION

The AN/SRA-14B is designed for shipboard use. It provides impedance match between transmitter(s) and antenna. The AN/SRA-14B has been redesigned so toggle switches and meters (with associated circuitry) provide incident power information as well as reflected power data.

No field changes in effect at time of preparation (11 January 1961).

RELATION TO OTHER EQUIPMENT

The AN/SRA-14B is electrically and physically interchangeable with AN/SRA-14 and AN/SRA-14A. Actual parts in the redesigned area of the AN/SRA-14B are not interchangeable with corresponding part in AN/SRA-14 and AN/SRA-14A.

EQUIPMENT REQUIRED BUT NOT SUPPLIED

(4) Coaxial Line RG-10/U or RG-18/U (Length as required), (4) Coaxial Line RG-10/U (1 to 2 ft), (1) Coaxial Line RG-18/U (Length as required), (4) Adapter UG-982/U or equal, (4) Connector UG-23/U or equal, (4) Connector UG-941A/U or equal, (4) Connector UG-27A/U or equal, (1) Connector UG-154/U or UG-216/U, (1) Power Line as required (Length as required), (1) Primary Power Switch (6 amp toggle switch).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF FREQUENCY CONTROL: Manual.
TYPE OF TUNING: Variable.
METHOD OF COUPLING: Inductive-Capacitive.
INPUT IMPEDANCE: 50 ohms.
OUTPUT IMPEDANCE: 50 ohms.
VOLTAGE ISOLATION RATIO BETWEEN ADJACENT CHANNELS: 15 to 1.
POWER HANDLING ABILITY: Simultaneous coupling of a maximum of 500 W, r-f power, 100% amplitude modulated, from each of four transmitters to a single antenna.
EFFICIENCY: Not less than 68%.
TUNING BAND: One band continuously variable across the frequency range of 4 to 12 mc.
FREQUENCY RANGE: 4 to 12 mc.
OPERATING POWER RQMT: 115 v ac, 60 cps, single ph, 500 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

Granite State Machine Co., Inc., Manchester, N.H.
Dwg No. 4-0-100.
Contract NObsr-81222, dated 16 March 1960.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes and/or Crystals used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 92746: Technical Manual for the Antenna Coupler Groups AN/SRA-13, -14, -15.

TYPE CLASSIFICATION (NAVY)
DESIGN COGNIZANCE NAVY BUSHIPS
PROCUREMENT COGNIZANCE SHIPS-C-3413 AMEND 1
STOCK NO.
R.D.B. IDENT. NO.

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Antenna Coupler Group AN/SRA-14B	24.8	24 x 30 x 50	400

EQUIPMENT SUPPLIED DATA

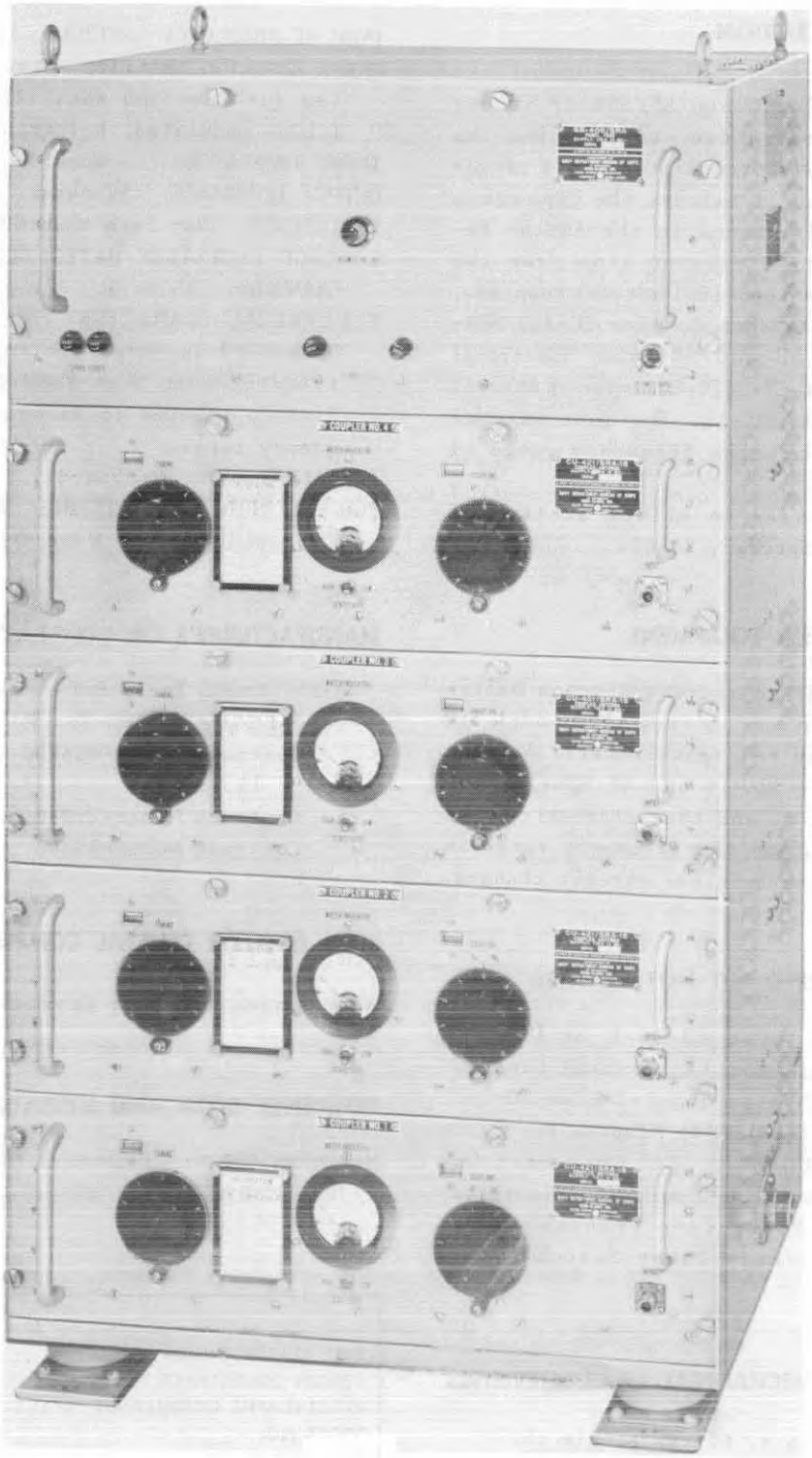
QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Antenna Coupler Group AN/SRA-14B	20 x 26-1/4 x 46-1/2	290
1	Technical Manual for Antenna Coupler Groups AN/SRA-13, -14, -15 NAVSHIPS 92746	1/2 x 8 x 11-1/2	1/4

August 1960

Radio-Auxiliary

ANTENNA COUPLER GROUP

AN/SRA-15



Antenna Coupler Group, AN/SRA-15

Radio-Auxiliary

August 1960

AN/SRA-15 ANTENNA COUPLER GROUP

FUNCTIONAL DESCRIPTION

Antenna Coupler Group AN/SRA-15 is designed for shipboard use, and couples the output of four radio transmitters to a single broadband antenna. It matches the impedance of the broadband antenna to the 50-ohm impedance of the transmission line from the transmitter. Four identical antenna couplers, each designated Antenna Coupler CU-421/SRA-15; Fuse Panel SB-406/SRA and Electrical Equipment Cabinet CY-1670/SRA make up Antenna Coupler Group AN/SRA-15. The four antenna couplers operate in the frequency range of 6 to 18 mc.

No field changes in effect at time of preparation (16 February 1960).

RELATION TO OTHER EQUIPMENT

This equipment supersedes Antenna Multicoupler CU-303/UR and is used with model TBM or other approved h-f transmitters. Antenna Coupler Group AN/SRA-13 and AN/SRA-14 have identical functions and characteristics, the only differences are the frequency range in which they operate and minor circuit changes.

EQUIPMENT REQUIRED BUT NOT SUPPLIED

(4) Coaxial Line RG-10/U or RG-18/U (length as required); (4) Coaxial Line RG-10/U (1 to 2 ft); (1) Coaxial Line RG-18/U (length as required); (4) Adapter UG-982/U; (4) Connector UG-23/U; (4) Connector UG-941A/U; (4) Connector UG-27A/U; (1) Connector UG-154/U; (1) Power Line (length as required); (1) Primary Power Switch (6 amp toggle).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER SUPPLY: 115 v, 60 cy, single ph.
FREQUENCY RANGE: 6 to 18 mc.
TUNING BAND: One band, continuously variable.
TYPE OF FREQUENCY CONTROL: Manual.
POWER HANDLING ABILITY: Simultaneous coupling for four 500 watt, 100 percent amplitude modulated, h-f transmitters.
INPUT IMPEDANCE: 50 ohms.
OUTPUT IMPEDANCE: 50 ohms.
EFFICIENCY: Not less than 60%.
VOLTAGE ISOLATION RATIO BETWEEN ADJACENT CHANNELS: 15 to 1.
ELECTRICAL CHARACTERISTICS OF ANTENNA: Broadband antenna with impedance characteristic such that VSWR does not exceed 3 to 1, related to 50 ohms, for the frequency range.
INSTALLATION: Shipboard.
FOR USE WITH TRANSMITTERS: Models TBM, TBK, TCK, AN/URT-2, 3, 4 and AN/SRT-14, 15, 16.

MANUFACTURER'S OR CONTRACTOR'S DATA

NEMS-CLARKE Inc., Silver Springs, Md.
Part/Dwg No. AC-13,052.
Contract NObsr-63422, dated 6 January 1953.
Contract NObsr-75292.
Contract NObsr-75797.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes or Crystals used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 92746: Technical Manual for ANTENNA COUPLER GROUP AN/SRA-13, AN/SRA-14, AN/SRA-15.

TYPE CLASSIFICATION (NAVY)
DESIGN COGNIZANCE USN, BUSHIPS
PROCUREMENT COGNIZANCE SPEC: SHIPS-C-3066
STOCK NO.
R.D.B. IDENT. NO.