



~~SET~~  
Loran-C Transmitter AN/FPN-39

#### FUNCTIONAL DESCRIPTION:

Loran-C Transmitter AN/FPN-39 generates, shapes, and radiates the pulse or group of pulses, timed by Timer Synchronizer AN/FPN-38, which are used by the Loran-C receiver. The transmitter takes a phase-coded 100-kc reference signal and transmitter triggers from the timer and generates pulses, consisting of 100-kc sine waves, of approximately 200 microseconds in duration corresponding in time with each transmitter trigger. Loran-C Transmitter AN/FPN-39 operates in conjunction with Timer Synchronizer AN/FPN-38 at a permanently installed land-based station which is located at an accurately known geographical location.

#### EQUIPMENT REQUIRED BUT NOT SUPPLIED:

The Timer Synchronizer Set AN/FPN-38 is required to provide the Transmitter AN/FPN-39 with necessary 100-kc reference and multipulse trigger.

#### ELECTRICAL AND MECHANICAL CHARACTERISTICS:

Loran-C Transmitter AN/FPN-39 comprises eight basic units: High Voltage Power Supply and Control Unit (Power Supply PP-2125/FPN-39), R-F Driver Amplifier (R-F Modulator Amplifier AM-2028/FPN-39), R-F Amplifier (R-F Amplifier AM-2029/FPN-39), Air

Cleaner Assembly (Cooler, Air, Electronic Equipment, HD-345/FPN-39), Distribution Box J-998/FPN-39, Dummy Load DA-198/FPN-39, Antenna Coupler CU-702, FPN-39, and Antenna. The complete Transmitter at the station includes two High Voltage Power Supply and Control units, two R-F Driver Amplifiers, two R-F Amplifiers, two Air Cleaner Assemblies, and one of each of the other units.

The High Voltage Power Supply and Control Unit, which contains the filament voltage regulator, plate voltage regulator, unitized plate transformer, and filter capacitor assembly, provides all high plate voltages and voltage controls for the transmitter. The unit is housed in a metal cabinet which is 108 inches high, 112 inches wide, and 45 inches deep. Access to internal units is provided by doors on the front, rear, and sides of the cabinet.

The R-F Driver Amplifier contains the pulse generator, pulse driver, and r-f driver amplifier circuits which generate, shape, and amplify the 100-kc pulses to sufficient power for driving the R-F Amplifier. The driver amplifier bias power supply, low-plate power supply, and relay chassis are also located in this unit. The front panel contains the meter panel, the monitor oscilloscope, and the control panel which contains the switches and indicator lights, which control application of power to the various circuits of the transmitter.

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The R-F Amplifier contains the power amplifier circuits which amplify the pulsed 100-kc signal from the driver amplifier and feed it to the Distribution Box. The front of the unit contains a meter panel across the top and an indicator panel, located beneath the access doors, containing the indicators which indicate to the operator any malfunction in transmitter operation. The R-F Amplifier cabinet contains, as well as the power amplifier, two high pressure air ducts used for carrying cooling air to the transmitting tubes in the R-F Amplifier and R-F Driver Amplifier.

The Air Cleaner Assembly contains the final amplifier tank coil and the blower assembly. The Air Filter Assembly containing the replaceable Filter elements is located at the rear of the blower.

The Dummy Load, which consists of a resistor bank and a blower, permits testing of the transmitter without radiating a signal from the antenna. The unit, which is wall-mounted above the Distribution Box, receives its input from that unit.

The Distribution Box performs the function of interchanging transmitters with the Dummy Load and Antenna. When the manually operated switch is thrown, the operative transmitter is connected to the Antenna Coupler and the standby transmitter to the Dummy Load.

The Antenna Coupler, installed at the base of the antenna, contains a large tuning coil controlled by a tuning knob on the front of the unit. An antenna current ammeter is located behind a window on the side of the cabinet.

The transmitter characteristics are as follows:

Transmitter frequency	100 kc
Antenna Impedance	2.27 ohms
Output pulse characteristics	
Rise time	Approx. 70 microseconds
Pulse width	200-300 microseconds
Bandwidth and sideband distribution	99% of energy radiated in the 90 to 110kc band
Peak power output	25KW rms equivalent at 30 microsecond sampling point approx. 100 KW at peak
Power requirements	190 amperes at 0.9 minimum
Ambient temperature range	0° to 55° C

**MANUFACTURER'S OR CONTRACTOR'S DATA:**

Loran-C Transmitter AN/FPN-39 is manufactured by Sperry Gyroscope Company Division of Sperry Rand Corporation, Great Neck, New York, under U.S. Coast Guard Contract: Tcg-40661.

**TUBE COMPLEMENT:**

Type	Quantity	Type	Quantity
OA2	1	6L6GB	6
OB2	1	6X4	2
1X2B	2	12AT7	5
3B28	4	12AU7	4
4B32	12	12AX7	6
4PR60A	2	12B4	6
5AQP7	1	250TH	2
6AQ5	1	5651	2
6AW8	2	5726	2
6BH6	3	5749	2
6BJ7	1	5814	9
6BQ7A	3	6146	2
6BW4	1	7012	16

**REFERENCE DATA AND LITERATURE:**

- Technical Manual for Loran-C Transmitter AN/FPN-39: No. CG-273-58
- Technical Manual for Loran-C Timer Synchronizer AN/FPN-38: No. CG-273-59

**EQUIPMENT SUPPLIED:**

Quantity per Station	Nomenclature		*Dimensions in Inches		
	Name and Designation	Short Form Name	Height	Width	Depth
2	Transmitter AN/FPN-39	Transmitter	—	—	—
2	Power Supply Assembly PP-2125/FPN-39	High Voltage Power Supply and Control Unit	108	112	45
2	R-F Modulator Amplifier AM-2028/FPN-39	R-F Driver Amplifier	72	64	40

**DESCRIPTION OF COAST GUARD ELECTRONIC EQUIPMENT**

## EQUIPMENT SUPPLIED (cont):

Quantity per Station	Nomenclature		*Dimensions in Inches		
	Name and Designation	Short Form Name	Height	Width	Depth
2	R-F Amplifier AM-2029/FPN-39	R-F Amplifier	72	84	40
2	Cooler, Air, Electronic Equipment HD-345/FPN-39	Air Cleaner Assembly	72	72	40
1	Dummy Load DA-198/FPN-39	Dummy Load	24	42	22-1/2
1	Distribution Box J-998/FPN-39	Distribution Box	48-1/8	22	18-1/4
1	Coupler, Antenna CU-702/FPN-39	Antenna	41	51	41
1	Antenna	Antenna*	625 ft.		

\*Antenna dimensions in feet.

## SHIPPING DATA:

Box Number	Contents	Volume (Cu. Ft.)	Length x Width x Height (Inches)	Weight Packed (Pounds)
1	Power Supply Cage (Rear)	27.3	92-1/2 x 51-1/4 x 99-5/8	3080
2	Power Supply Cage (Rear stand-by)	27.3	92-1/2 x 51-1/4 x 99-5/8	3080
3	Power Supply Cage (Front)	13.1	45 x 51-1/4 x 99-5/8	1500
4	Power Supply Cage (Front stand-by)	13.1	45 x 51-1/4 x 99-5/8	1500
5	Filament Voltage Regulator	10.2	28 x 17 x 37	375
6	Filament Voltage Regulator (Stand-by)	10.2	28 x 17 x 37	375
7	Filter Capacitors—Power Supply (16)	6.8	83 x 39 x 34	2060
8	Filter Capacitors—Power Supply (16) (Stand-by)	6.8	83 x 39 x 34	2060
9	Plate Voltage Regulator	32.9	34 x 31 x 54	1050
10	Plate Voltage Regulator (Stand-by)	32.9	34 x 31 x 54	1050
11	Plate Transformer	61.5	46 x 42 x 55	2700
12	Plate Transformer (Stand-by)	61.5	46 x 42 x 55	2700
13	R-F Driver Amplifier	199.1	74 x 50 x 93	1872
14	R-F Driver Amplifier (Stand-by)	199.1	74 x 50 x 93	1872
15	R-F Amplifier	260.7	95 x 51 x 93	2150
16	R-F Amplifier (Stand-by)	260.7	95 x 51 x 93	2150
17	Air Cleaner Assembly	69.1	46 x 49 x 53	290
18	Air Cleaner Assembly (Stand-by)	69.1	46 x 49 x 53	290
19	Electron Tubes, Type 250 TH (2)	3.7	24 x 22 x 12	12
20	Electron Tubes, Type 7012 (12)	3.9	27 x 21 x 12	86
21	Tank Circuit and Blower Assembly, Including Blower	130	81 x 48 x 80	1383
22	Tank Circuit and Blower Assembly, Including Blower (Stand-by)	130	81 x 48 x 80	1383

## DESCRIPTION OF COAST GUARD ELECTRONIC EQUIPMENT

## SHIPPING DATA (cont)

Box Number	Contents	Volume (Cu. Ft.)	Length x Width x Height (Inches)	Weight Packed (Pounds)
23	Filament Transformers (3)	13.6	42 x 28 x 20	566
24	Filament Transformers (2)	9.7	30 x 28 x 20	390
25	Input Duct	7	23 x 23 x 23	28
26	Input Duct	10	27 x 26 x 18	31
27	Intercabinet Air Duct	3.3	21 x 15 x 18	17
28	Filament Transformers (3) (Stand-by)	13.6	42 x 28 x 20	566
29	Filament Transformers (2) (Stand-by)	9.7	30 x 28 x 20	390
30	Filter Capacitors (4) (Stand-by)	23.5	49 x 24 x 26	590
31	Electron Tube, Type 250 TH (2) (Stand-by)	3.7	24 x 22 x 12	12
32	Electron Tubes, Type 7012 (12) (Stand-by)	3.9	27 x 21 x 12	86
33	Electron Tubes, Type 7012 (4)	1.4	14 x 14 x 12	30
34	Electron Tubes, Type 7012 (4) (Stand-by)	1.4	14 x 14 x 12	30
35	Filter Capacitors	23.5	49 x 24 x 26	590
43	Oscilloscope	5.1	26 x 16 x 21	59
44	Oscilloscope (Stand-by)	5.1	26 x 16 x 21	59
45	Antenna Coupler	119.6	58 x 54 x 66	786
46	Dummy Load	36.1	50 x 39 x 32	350
47	Distribution Box	23.3	54 x 31 x 24	315
48	Air Duct (Intercabinet)	3.3	21 x 15 x 18	14
49	Air Duct (Output)	26.7	50 x 22 x 42	71
50	Installation Wire and Material	10.4	33 x 32 x 17	205
51	Installation Wire and Material (Stand-by)	10.4	33 x 32 x 17	205
52	Air Duct (Output, Elbow)	16.2	42 x 29 x 23	42
53	Air Duct (Output, Elbow)	10.5	33 x 29 x 19	36
54	Wiring Duct	4.7	36 x 21 x 15	38

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