



Loran Transmitting Set AN/FPN-45

FUNCTIONAL DESCRIPTION

The Loran transmitting set is used with a timer-synchronizer set (AN/FPN-46) to form a Loran-C ground station which, in turn, is part of a Loran-C chain. A Loran-C chain consists of one master and two or three slaves operating on a single specific repetition rate; it supplies navigational information to ships and aircraft which are equipped with Loran-C receivers.

The Loran transmitting set generates high power, Loran-C pulses in response to signals received from its associated timer-synchronizer set. It contains two complete transmitter groups: one is selected as the operate group and the other is selected as the standby group. The output of the operate group is applied to an antenna and the output of the standby group may be applied to a dummy load. The selection is accomplished by means of the transmitter control group.

RELATION TO OTHER EQUIPMENT

Loran Transmitting Set AN/FPN-45 is very similar to Loran Transmitting Set AN/FPN-44; it differs only in that it has a higher output power.

Loran Transmitting Set AN/FPN-45 is similar to, and performs the same functions as, Loran Transmitting Set AN/FPN-42.

EQUIPMENT REQUIRED BUT NOT SUPPLIED

Transmitting Antenna - 1350 feet
Primary Power Source

ELECTRICAL AND MECHANICAL CHARACTERISTICS**TYPE OF EMISSION:**

Pulsed signals conforming to Loran-C patterns and repetition rates.

FREQUENCY:

100-kc carrier in the 90 to 110-kc band.

POWER OUTPUT:

1000 kw (peak), 50 kw (average) depending on the pulse repetition rate.

PEAK POWER REQUIREMENTS:

Single pulse at a group repetition rate of 50,000 USEC.

- (1) 208 VAC, 50-60 CPS, 3 phase, 188 KVA.
- (2) 440 VAC, 50-60 CPS, 3 phase, 221 KVA.

PULSE SHAPE:

Similar to cosine-squared type wave shape with a much longer decay time.

FREQUENCY ACCURACY:

Determined by the timer-synchronizer set.

AMBIENT TEMPERATURE LIMITATIONS:

Operation: 0° to +50°C (+32° to +122°F)

Storage: -62° to +75°C (-69° to +167°F)

INSTALLATION DATA:

Each unit of the loran transmitting set comes with an enclosure. The various units are connected with wireways and conduits.

POWER SUPPLY OUTPUTS:

- +20 kv at 15 amp
- +10 kv at 3 amp
- 5 kv at 0.2 amp
- 500 v at 0.5 amp
- 700 to 1600 vdc (adjustable), 700 ma
- 1200 to 2600 vdc (adjustable), 500 ma

MANUFACTURER'S OR CONTRACTOR'S DATA

ITT Federal Laboratories, 500 Washington Avenue, Nutley, New Jersey.

Loran Transmitting Set AN/FPN-45, drawing number J1087456. Contract number Tcg 41848-A. Purchase Description number EEE-1-62.

TUBE, DIODE, AND TRANSISTOR COMPLEMENT

Type	Quantity	Type	Quantity
F8C25A	4	1901-0034	3
F8045	28	2N1046	4
G203C	3	2N297A	10
G-31H-18H	3	2N301	3
G-84B	12	2N526	12
OA2WA	4	4-1000A	4
1N1199A	3	4JA10MX5(226)	24
1N1614	16	4JA10MX5(239)	16
1N2154	8	4JA411DB2AD1	4
1N278	4	4JA90A	4
1N2976B	2	5642	6
1N3016B	2	5651	5
1N3018B	2	5651WA	2
1N3022B	2	5687WA	10
1N3037B	2	5751	4
1N457	21	5814A	4
1N459	4	6AQ5	3
1N483B	2	6AU6	3
1N540	8	6AU6WB	6
1N538	20	6C4	3
1N547	44	6CL6	10
1N746A	4	6CW4	3
1N753A	8	6DJ8	9
1N756A	4	6L6WGB	4
1087689	32	6RS21SA10D10	2
12AT7WA	8	6RS22PB1ABH1	4
12AU7	14	6U8	9
12B4A	6	6336A	14
1901-0036	3	6922	4
1901-0030	9	857B	48

REFERENCE DATA AND LITERATURE

Technical Manual for Loran Transmitting Sets AN/FPN-44 and AN/FPN-45 Publication number G-273-103.

EQUIPMENT SUPPLIED

LORAN TRANSMITTING SET AN/FPN-45								
QUANT. PER EQUIP.	NOMENCLATURE		UNIT NUMBER	*OVERALL DIMENSIONS			*VOLUME	*WEIGHT
	NAME	DESIGNATION		HEIGHT	WIDTH	DEPTH		
2	Transmitter-Group (includes)	OA-4479/FPN-45	1					
1	Elect. Equip. Cabinet	CY-3839/FPN-45	1A1	102.00	492.00	276.0	80.15	3575
3	Electron Tube Liquid Coolers**	HD-601/FPN	1A2A1- 1A2A3	89.00	173.25	20.00	178.50	3450
1	Power Supply Set (includes)	OA-4782/FPN-45	1A3					
1	Switching Unit	SA-1069/FPN	1A3A1	15.00	39.00	16.00	5.42	78
1	Control-Indicator	C-4753/FPN-45	1A3A2	45.00	30.00	6.90	5.38	58
1	Relay Assembly	RE-743/FPN-45	1A3A3 and 1A3A11	76.00	82.50	38.00	137.70	1450
1	Instrument Shunt	MX-4827/FPN	1A3A4	6.90	13.00	16.375	0.85	32.5
1	Power Supply	PP-3815/FPN	1A3A5 and 1A3A6	80.00	73.75	34.50	117.80	3500
1	Voltage Divider	CN-942/FPN	1A3A7	17.50	31.00	10.00	3.14	41
1	Voltage Regulator	CN-940/FPN	1A3A8	67.75	23.375	40.00	36.8	2000
1	Voltage Regulator	CN-941/FPN	1A3A9	18.00	22.00	19.00	4.36	270
1	Indicator-Panel	SB-1988/FPN-45	1A3A10	5.26	30.00	4.00	0.37	12
1	Instrument Shunt	MX-4828/FPN-45	1A3A12	6.90	13.00	16.375	0.85	32
1	Power Supply	PP-3816/FPN-45	1A3A13 and 1A3A14	80.00	73.75	34.50	117.80	4150
1	Voltage Divider	CN-945/FPN	1A3A15	16.75	16.00	10.00	1.66	25
1	Switching Unit	SA-1068/FPN	1A3A16	21.75	27.75	2.50	0.87	70
1	Voltage Regulator	CN-944/FPN-45	1A3A17	81.00	24.00	43.63	49.09	4400
1	Voltage Regulator	CN-943/FPN-45	1A3A18	18.00	22.00	19.00	4.36	270
1	Resistor Rack		1A3A19 and 1A3A20	3.0	22.0	44.2	1.67	31
1	Resistor Rack		1A3A21 and 1A3A22	3.0	22.0	32.0	1.22	25
1	Amplifier Oscil- lator Group	OA-4480/FPN-45	1A4	72.00	66.00	30.00	82.70	1825
1	Radio Frequency Amplifier (includes)	AM-3775/FPN-45						
1	Power Amplifier Tank		1A5	68.875	41.75	33.375	53.20	575
3	Power Amplifier Tube Racks**		1A6- 1A8	78.15	238.50	41.95	150.40	6674

*Unless otherwise stated, dimensions are in inches, volume in cubic feet, and weight in pounds.

**Weights and dimensions are for all units combined.

DESCRIPTION OF COAST GUARD ELECTRONIC EQUIPMENT

EQUIPMENT SUPPLIED

LORAN TRANSMITTING SET AN/FPN-45								
QUANT. PER EQUIP.	NOMENCLATURE		UNIT NUMBER	*OVERALL DIMENSIONS			*VOLUME	*WEIGHT
	NAME	DESIGNATION		HEIGHT	WIDTH	DEPTH		
1	Driver Tube Rack		1A9	78.00	43.0	42.00	452.48	2125
14	Resistor Rack		1A12- 1A25	9.00	9.00	72.00	3.38	392
1	Electrical Equip- ment Rack	MT-2927/FPN-45	1A10	82.60	21.50	15.00	15.42	140
1	Indicator Panel	SB-1895/FPN-45	1A11	17.50	30.00	11.50	3.50	36
1	Transmitter Con- trol Group (in- cludes)	OA-4481/FPN	2	72.00	21.50	26.25	23.50	487
1	Transmitter Con- trol	C-4556/FPN	2A1	20.41	9.95	22.06	2.48	52
1	Oscilloscope	OS-147/FPN	2A2	8.54	17.74	20.00	1.76	35
1	Pulse Generator	O-1086/FPN	2A3	20.41	9.95	22.06	2.48	40
1	Pulse Generator	O-1087/FPN	2A4	20.41	9.55	22.06	2.48	40
1	Power Supply	PP-3658/FPN	2A5	20.41	9.55	22.06	2.48	115
1	Power Supply	PP-3659/FPN	2A6	20.41	9.55	22.06	2.48	115
1	Electrical Equip- ment Cabinet	CY-3840/FPN	2A7	72.00	21.66	24.00	21.66	90
1	Antenna Coupler	CU-1567/FPN-45	3	93.68	57.44	77.44	240.00	482
1	Dummy Load	DA-328/FPN-45	4	42.56	57.00	63.50	89.2	430

*Unless otherwise stated, dimensions are in inches, volume in cubic feet, and weight in pounds.

SHIPPING DATA

LORAN TRANSMITTING SET AN/FPN-45							
BOX NO.	NOMENCLATURE		*OVERALL DIMENSIONS			*VOLUME	*WEIGHT
	NAME	DESIGNATION	HEIGHT	WIDTH	DEPTH		
K1	Antenna Coupler, Dummy Load	CU-1567/FPN-45 DA-328/FPN-45	97	74	68	209	1800
K3	Installation Equip- ment		29	47	110	86	560
K4	Transmitter Control Group	OA-4481/FPN	88	34	31	51	850
K5	Cables		34	42	43	35	1420
K6	Ducts		24	22	63	28	380
NOTE							
Transmitter Group No. 1 is shipped in series L boxes, and Transmitter Group No. 2 in series M boxes. (Refer to Volume IV for detailed list of materials contained in each box.)							
L1, M1	Louver and Fan Housing		53	53	57	93	700
L2, M2	Electron Tube Liquid Cooler	HD-601/FPN	35	67	97	130	1475
L3, M3	Electron Tube Liquid Cooler	HD-601/FPN	35	67	97	130	1475
L4, M4	Electron Tube Liquid Cooler	HD-601/FPN	35	67	97	130	1475
L5, M5	Ceramic Coils		38	25	47	26	290
L6, M6	Ceramic Coils		38	25	47	26	290
L7, M7	Capacitors		40	25	37	20	640
L8, M8	Capacitors		40	25	37	20	640
L9, M9	Water Jackets		20	33	43	21	366
L10, M10	PA Tube Rack (P/O R. F. Amplifier)	AM-3775/FPN-45	97	55	94	290	1100
L11, M11	Ceramic Coils		38	25	47	26	290
L12, M12	Ceramic Coils		38	25	47	26	290
L13, M13	Capacitors		40	25	37	20	640
L14, M14	Capacitors		40	25	37	20	640
L15, M15	Water Jackets		16	33	43	13.2	282
L16, M16	PA Tube Rack (P/O R. F. Amplifier)	AM-3775/FPN-45	97	55	94	290	1100
L17, M17	Ceramic Coils		38	25	47	26	290
L18, M18	Ceramic Coils		38	25	47	26	290
L19, M19	Capacitors		40	25	37	20	640
L20, M20	Capacitors		40	25	37	20	640
L21, M21	Water Jackets		16	33	43	13.2	282
*Unless otherwise noted, dimensions are in inches, volume in cubic feet, and weight in pounds; equipment crated and ready for shipment.							

DESCRIPTION OF COAST GUARD ELECTRONIC EQUIPMENT

SHIPPING DATA (CONT)

LORAN TRANSMITTING SET AN/FPN-45							
BOX NO.	NOMENCLATURE		*OVERALL DIMENSIONS			*VOLUME	*WEIGHT
	NAME	DESIGNATION	HEIGHT	WIDTH	DEPTH		
L22, M22	PA Tube Rack (P/O R. F. Amplifier)	AM-3775/FPN-45	97	55	94	290	1100
L23, M23	Resistor Rack (P/O R. F. Amplifier)	AM-3775/FPN-45	40	47	53	56	565
L24, M24	PA Tank (P/O R. F. Amplifier)	AM-3775/FPN-45	80	46	52	116	800
L25, M25	Ceramic Coils		38	25	47	26	290
L26, M26	Water Jackets and Capacitors		40	25	38	22	515
L27, M27	Driver Tube Rack (P/O R. F. Amplifier)	AM-3775/FPN-45	96	52	58	170	1750
L28, M28	Air Exhaust Housing		44	52	58	77	350
L29, M29	Meter Light As- semblies, Cable Ducts, Grounding Rod		23	33	73	32	290
L30, M30	Power Supply Parts		37	36	51	39	330
L31, M31	Enclosure, Par- tition		23	43	107	61	750
L32, M32	Relay Rack	RE-743/FPN-45	24	27	93	35	350
L33, M33	Voltage Regulator	CN-940/FPN-45	95	34	52	98	5200
L34, M34	Power Supply	PP-3815/FPN	96	53	82	250	5600
L35, M35	Voltage Regulator	CN-941/FPN-45	26	27	29	12.2	426
L36, M36	Voltage Regulator	CN-944/FPN-45	26	27	29	12.2	426
L37, M37	Relay Assembly		92	48	93	238	2300
L38, M38	Voltage Regulator	CN-943/FPN-45	79	32	49	68	2400
L39, M39	Grounding Switch		36	32	40	29	213
L40, M40	Grounding Switch		41	35	56	45	328
L41, M41	Power Supply Parts		30	41	45	32	273
L42, M42	DC Power Supply		96	53	82	250	5600
L43, M43	Tubes 857B		36	38	46	36	192
L44, M44	Tubes 857B		36	38	46	36	192
L45, M45	Tubes 857B		36	38	46	36	192
L46, M46	Tubes 857B		36	38	46	36	192
L47, M47	Miscellaneous Parts		26	26	47	15	220

*Unless otherwise noted, dimensions are in inches, volume in cubic feet, and weight in pounds; equipment crated and ready for shipment.

SHIPPING DATA (CONT)

LORAN TRANSMITTING SET AN/FPN-45							
BOX NO.	NOMENCLATURE		*OVERALL DIMENSIONS			*VOLUME	*WEIGHT
	NAME	DESIGNATION	HEIGHT	WIDTH	DEPTH		
L48, M48	Hoses, Fittings Tubing, Con- nectors		23	43	102	58	775
L49, M49	Amplifier-Os- cillator Group	OA-4480/FPN-45	87	39	76	149	2000
L50, M50	Amplifier-Os- cillator Group Tubes		42	29	67	47	275
L51, M51	Tubes 8045		55	27	34	29.3	129
L52, M52	Tubes 8045		55	27	34	29.3	129
L53, M53	Tubes 8045		55	27	34	29.3	129
L54, M54	Tubes 8045		55	27	34	29.3	129
L55, M55	Tubes 8045		55	27	34	29.3	129
L56, M56	Tubes 8045		55	27	34	29.3	129
L57, M57	Tubes 8045		55	27	34	29.3	129
L58, M58	Tubes 8045		55	27	34	29.3	129
L59, M59	Tubes 8045		55	27	34	29.3	129
L60, M60	Tubes 8045		55	27	34	29.3	129
L61, M61	Tubes 8045		55	27	34	29.3	129
L62, M62	Tubes 8045		55	27	34	29.3	129
L63, M63	Tubes 8045		55	27	34	29.3	129
L64, M64	Tubes 8045		55	27	34	29.3	129
L65, M65	Capacitors		15	24	28	5.4	122
L66, M66	Interconnecting Cables		20	36	53	22	470
L67, M67	Power Supply Cables		21	45	45	25	845
L68, M68	Light Fixtures		22	32	53	21.6	180
L70, M70	Floor Assembly		16	50	76	35	370
L71, M71	Floor Assembly		12	24	76	12.6	290
L72, M72	Floor Assembly		16	50	94	44	430
L73, M73	Enclosure Assembly		16	50	94	44	810
L74, M74	Enclosure Assembly		25	51	96	71	770
L75, M75	Enclosure Assembly		25	51	96	71	770
L76, M76	Enclosure Assembly		19	28	75	23	400
L77, M77	Enclosure Assembly		12	30	75	24.6	430

*Unless otherwise noted, dimensions are in inches, volume in cubic feet, and weight in pounds; equipment crated and ready for shipment.

DESCRIPTION OF COAST GUARD ELECTRONIC EQUIPMENT

SHIPPING DATA (CONT)

LORAN TRANSMITTING SET AN/FPN-45							
BOX NO.	NOMENCLATURE		*OVERALL DIMENSIONS			*VOLUME	*WEIGHT
	NAME	DESIGNATION	HEIGHT	WIDTH	DEPTH		
L78, M78	Enclosure Assembly		8	28	77	10	290
L79, M79	Enclosure Assembly		8	28	77	10	325

*Unless otherwise noted, dimensions are in inches, volume in cubic feet, and weight in pounds; equipment crated and ready for shipment.