

Radio Set *AN/APN-4, the airborne receiver element of the Loran navigation system (long range navigation), is utilized in conjunction with Loran ground stations to determine the geographical position of an aircraft in flight. This system, comprising a set of three or more fixed transmitters operated in conjunction with appropriate special receiver equipment, provides, by the utilization of radar ranging principles, long range navigation information, used for the guidance of aircraft.

Comparable in accuracy to celestial navigation, Loran has the advantage that it can be used under unfavorable weather conditions. Maximum range of Loran operation is approximately 600 miles over water and 300 miles over land when working with direct radio waves (ground waves) from the associated ground stations, and approximately, 1,200 miles when sky waves (reflected waves) are used.

Synchronized ground stations operating in pairs generate radio frequency energy in the form of short wave trains having predetermined recurrence rates. The control station is designated the "Master" and the other, the "Slave." The difference in time of arrival of the two pulses at the airborne receiver is accurately measured by displaying the received pulses on timing markers on the screen of the cathode-ray tube of the airborne indicator. This information gives location of the airplane on a line of constant time difference which is plotted on a map of the region. To establish a navigational "fix," line of position must be obtained from another pair of stations, and the point of intersection of these lines is the position of the aircraft. Loran

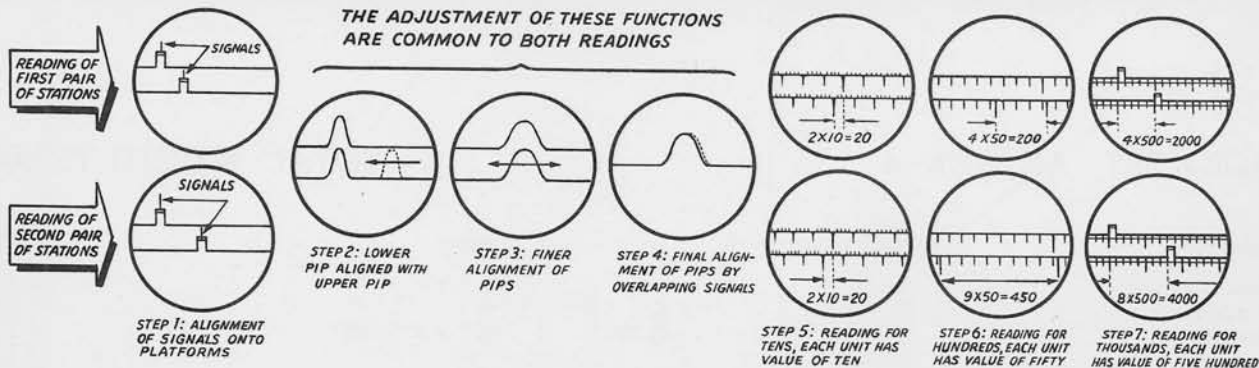
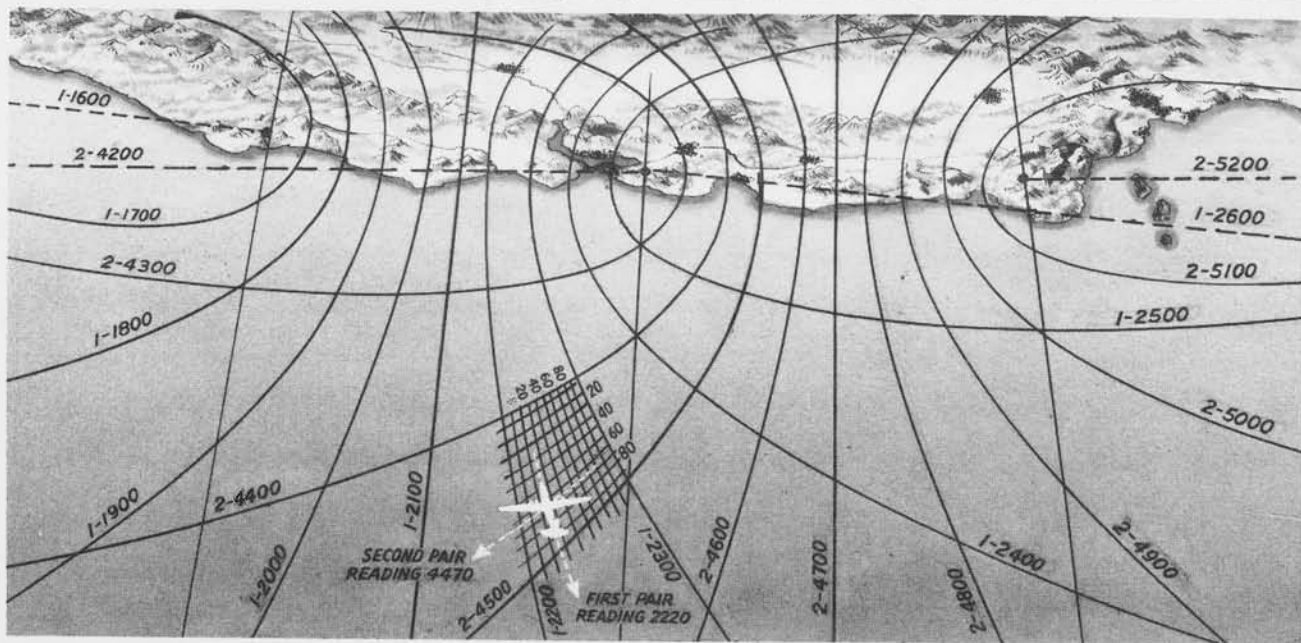
maps have been prepared for those areas now covered by the Loran net.

Radio Set *AN/APN-4 fulfills the need for a radio navigational device to be used over areas far removed from radio range transmitters. It is not intended to replace the radio compass, but to extend the use of radio navigation beyond the range of low frequency transmitters. It is particularly useful on long ranges over water when overcast makes celestial navigation impossible.

Test Equipment used in the maintenance of this equipment includes TS-20/APN-4.

POWER INPUT	280 WATTS, 80 or 115 V.
FREQUENCY	1.7 TO 2.0 MC (4 BANDS)
TYPE OF SIGNAL	PULSE
RANGE	600 MILES (GROUND WAVES) 1200 MILES (SKY WAVES).

TUBE COMPLEMENT			
NO.	TYPE	NO.	TYPE
4	6SK7GT	1	5U4G
1	OC3/VR-105	2	2X2
16	6SN7GT	1	6SA7GT
4	6SL7GT	1	5CP1
2	6SJ7GT	8	6H6GT/G
3	6B4G		



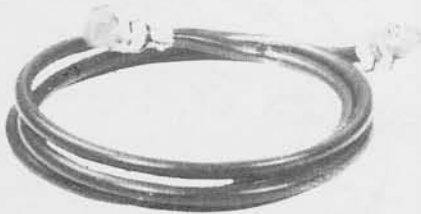
Radio Set *AN/APN-4 is the airborne receiver element of the Loran Navigation System with which a radar fix is obtained by taking a reading on each of two Loran chains in the order shown.



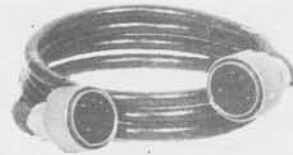
Indicator *ID-6B/APN-4.



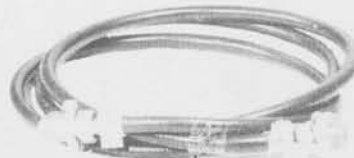
Radio Receiver *R-9A/APN-4



Cord CD-946



Cord CD-540



Cords CD-946



Power Cord



RADIO SET AN/APN-4

TOTAL WEIGHT 75 LBS.

Component	Nomenclature	Size	Weight
Radio Receiver	R-9/APN-4	20" x 9" x 8"	26 Lbs.
Mounting	FT-447-A		3 Lbs.
Indicator	ID-6/APN-4	20" x 9" x 12"	36 Lbs.
Mounting	FT-446		3 Lbs.

and includes plugs, cordage, couplings, cable clamps, wire and RF cable.

Section 4 - Graphic Survey

July 1945