CENTRAL INTELLIGENCE AGENCY

INFORMATION REPORT

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COUNTRY	East Germany	REPORT	25X1
SUBJECT	VEB Funkwerk Koepenick: Development of a Mobile Omnidirectional Wide-Band Receiving Antenna	DATE DISTR.	31 March 1955
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THE SOURCE EVALUATIONS IN THIS REPORT ARE DEFINITIVE.
THE APPRAISAL OF CONTENT IS TENTATIVE.
(FOR KEY SEE REVERSE)

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1. In late 1953, Department TEA (Technical Development of Antennae) of VEB Funkwerk Koepenick received an order for the development of a mobile omnidirectional wide-band receiving antenna with a reflection factor m less than 2 for the frequency range of 30 to 300 mcs and for the simultaneous reception of vertical and horizontal polarized waves. It was furthermore specified that this antenna should have an unsymmetrical 60-Ohm connection with the receiver. The development was carried on in 1954, but was not yet completed as of early January 1955. It was carried on

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under the supervision of the department head,

2. The following are the developmental steps performed

   a. Investigation of a vertical radiator consisting of an aluminum tube 0.75 meters long with a diameter of 5 centimeters and characteristic impedance (Wellenwiderstand) of Z=100 Ohms (see figure 1 of Annex 1).

      1) Investigation of m. A maximum value of about m=3 was measured. Through insertion of 2 RL links (resistance and inductivity), the maximum value of m was reduced to 1.5 over the entire range from 30 to 300 mcs. One link was inserted at a height of 0.5 meters, the other one at 0.75 meters. The RL links had Ohm values in the order of 100 Ohms. The lower link was connected in parallel, the upper one in series. A number of measurements were carried out for real R values from 50 to 200 Ohms and L values from 0.1 to 10 micro-Henrys. The following combinations were selected as the most favorable ones:

         1st link: 100 Ohms and 0.20 micro-Henrys.

         2nd link: 50 Ohms and 0.6 micro-Henrys.

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Note: Washington distribution indicated by "X"; Field distribution by "#".

2) Investigation of field density. Figure 2 of Annex 1 represents radiation diagrams of a regular antenna and an antenna with RL links. It was found that through use of the RL links the radiation characteristics (Rundstrahlcharakeristik) could be preserved. Therefore all essential requirements were fulfilled with the exception of the horizontal component.

b. Investigation of radiators placed obliquely. The dimensions of the radiator and the RL links were the same as cited above. The inclination angle of the radiator was 30° to 45°.

1) Impedance investigations were not carried out because it was expected that the values indicated above would not change essentially.

2) Field density: in addition to the vertical component, the horizontal one was obtained through the inlination of the radiator. It was found that the most favorable inclination angle for the occurrence of both components was 30°. However, it was also found that the radiation characteristics disappeared. The horizontal component was 70% of the vertical component.

c. The indications cited above show the status of the development [redacted] Before [redacted] it was planned to continue the development with four antennae connected together and inclined at angles of 30°. This model was only studied theoretically (see figure 3 of Annex 1).

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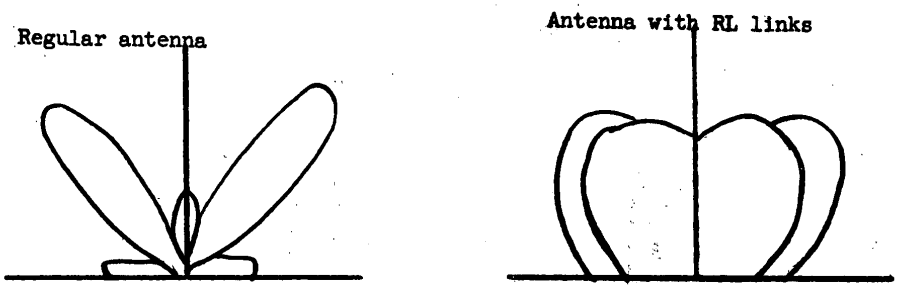
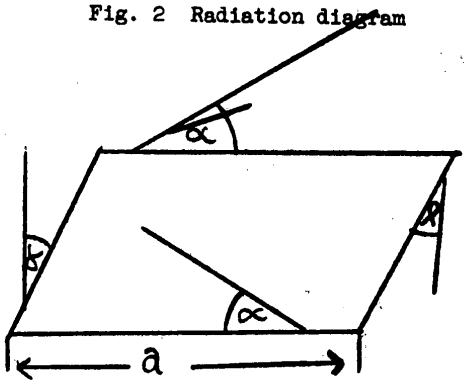


Fig. 2 Radiation diagram



a = 1 m.

Fig. 3 Four radiators (Stabstrahler)

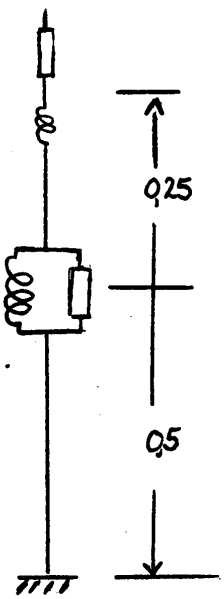


Fig. 1 Radiator with RL links