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CENTRAL INTELLIGENCE AGENCY

INFORMATION REPORT

REPORT

CD NO.

COUNTRY East Germany

DATE DISTR. 19 October 1953

SUBJECT Development of a Single-Thread Projection Electrometer at Zeiss, Jena

NO. OF PAGES 1

PLACE ACQUIRED

NO. OF ENCLS. (LISTED BELOW)

DATE OF INFO.

SUPPLEMENT TO REPORT NO. 50X1-HUM

THIS IS UNEVALUATED INFORMATION

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1. In August 1953 the Construction and Experimental Department (Konstruktions- und Versuchsabteilung) (KoV) of VEB Carl Zeiss, Jena, completed the development of a single-thread projection electrometer (Einfaden-Projektions-Elektrometer). Work on the device was begun in the fall of 1952. One model of the instrument is finished. It is to be used for the measurement of very weak currents and/or small charges, in particular, for the measurement of the following: a) weak photocurrents with photocells; b) ionization currents in nuclear physics, gas discharge physics, geophysics, dosimetrics of X-rays and radium rays; c) pH-values with glass electrodes; and d) insulators and resistances with high damage.

2. The instrument has a very thin platinum thread, elastically affixed within an electrostatic field between two edge electrodes (Schneiden). If a charge is applied to the thread, it is moved from its zero position; the movement of the thread is read through a microscope. As an innovation, the instrument is provided with projection equipment which permits the shadow of the thread to be thrown onto a screen with a scale of 100 millimeters length.

3. The range of the instrument extends from 0.5 to 500 volts. The insulation resistance between the thread and the case is about ten power 16 ohms. The capacity of the thread is about five pF. The sensitivity of the device can be selected within wide limits. In general, 50 scale parts per volt are enough for sensitive measurements. Sensitivity, however, can be increased to several hundred scale parts per volt for zero methods (Nullmethoden).

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