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CENTRAL INTELLIGENCE AGENCY
INFORMATION REPORT

REPORT

CB NO.

COUNTRY East Germany

DATE DISTR 10 January 1955

SUBJECT Germanium and
Development

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NEVALUATED INFORMATION

1. Transistors have been developed in East Germany by VEB Werk fuer Bauelemente der Nachrichtentechnik "Ossietzky" (formerly Dralowid), in Teltow, VEB Werk fuer Halbleitungen (former OSW) in Berlin-Oberschonenberg. Some transistor research has also been carried out in the Academy, Institute for Research on the Physics of Solids in Berlin-Buch.
2. The OSW enterprise obtained the order for research and development of transistors from the Soviets while the enterprise was still under SAG administration. The Soviets invested large sums, up to 100,000 DEM per year, in the development project. After the project was initiated by the Soviets, it was carried out by two parallel Work Groups, one working for the East German government and the other carrying out the same development for the Soviet government. Difficulties arose from the fact that the project was governed by strict secrecy measures and details of the project were not allowed to be divulged to anyone not directly involved in the work. These difficulties, however, were somehow overcome. Transistor development in the OSW enterprise at that time was supervised by Dr. Ringel (fnu). No progress was made under his supervision, but some progress was made after Dr. Ringel was removed from his position and after the OSW enterprise was returned to East German administration. In late 1953, the Soviets withdrew their representatives from the enterprise and cut off all monetary allocations from it. At Soviet insistence, transistor development was to be conducted exclusively at the Dralowid plant, where, in the meantime, Dr. Falter was carrying out the research and development of the first transistors. Progress in the development of the devices was slow research was continued under the supervision of Dr. Richter (fnu), who continued transistor development on its own and in the late summer of 1954 succeeded in completing laboratory samples of transistors. In September 1954, the East German government was requested to decide whether transistor production should be carried out at Dralowid or OSW or at both plants. In order to decide this question, a session of "Arbeitskreis Richtigthalbleiter" was called, with representatives of the State Planning Commission present.

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25X1

Page Denied

SECRET

-2-

25X1

Both enterprises demonstrated sample circuits in which transistors produced by them were used. As a result of this test, a preliminary decision was reached that the manufacture of transistors would in the future be carried out by the Dralowid plant only and that all monetary allocations for this purpose by the East German government would go there. This decision, however, is subject to revision by the government.

3. The Dralowid plant, which started transistor development much later than the OSW enterprise, succeeded in producing development samples during the first part of 1954. The plan in this enterprise was to develop transistors of stable qualities by the end of 1954, so that full-fledged production could begin in 1955. As of early November 1954 this goal had been reached. Production of transistors at Dralowid was to start soon, possibly even in 1954. Dralowid was able to start full-fledged production of transistors up to a maximum frequency of 10 mcs with an output amplification between 100 and 1,000 mcs.
4. In addition to the work on germanium transistors described above, Dr. Falter's department has also carried out development of silicon transistors, but this has not progressed beyond its initial stages. As of early November 1954, it had been abandoned entirely and work was exclusively concentrated on germanium transistors. The reasons for discontinuation of silicon transistor development were:
 - a. Dralowid had enough germanium and hoped to be able to obtain sufficient amounts in the future for production. As of early November 1954, the plant had about one kilogram of germanium of 99.99% purity, delivered by the firm Franko in Frankfurt/Main. This firm had also made germanium deliveries to Dralowid previously.
 - b. Because of the higher melting point of silicon as compared with that of germanium, the making of very pure silicon monocrystals presents more technological difficulties than the making of germanium monocrystals.
5. The transistors so far developed in East Germany are all point-contact transistors. As of early November 1954, Dr. Falter was also engaged in the development of junction-type transistors, but this work has so far been unsuccessful. Dr. Falter had only succeeded in completing the first step in this direction by developing layer rectifiers (Flaechengleichrichter) from n-germanium and indium. These rectifiers will go into full-scale production. They can be operated with inverse voltage up to 1,000 volts and they have strong photo-effects, i.e. the reversed current is increased through illumination with light beyond the limit of visibility up to two micron wave lengths. Dr. Falter furthermore tried to develop junction-type transistors by vaporizing elements of the third group upon both sides of n-germanium and elements of the fifth group, upon both sides of p-germanium crystals in the vacuum, and by having these elements diffused into the crystal at temperatures just below the melting point of germanium. The attempts, however, failed because Dr. Falter was not able to obtain well-defined inversion layers in this way. The attempts at Dralowid to develop junction-type germanium transistors were to be continued. Dr. Falter is assisted in this work by mathematician G. Raabe and physicist El Axenburg (p.u).

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-2-

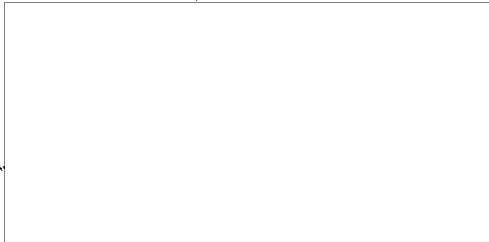
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-3-



25X1

6. Transistor research carried out in the Academy Institute for Medicine and Biology in Berlin-Buch up to early November 1954 had not progressed beyond the stage of preparing pure germanium monocrystals suitable for use as transistors. The Electronics Department of this institute was engaged in early November 1954 in measuring the purity and other qualities of the monocrystals. The institute had small quantities of chemically pure germanium which were provided by the Bralowitz plant.



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THIS IS UNEVALUATED INFORMATION 25X1

1. Transistors have been developed in East Germany by VEB Werk fuer Bauelemente der Nachrichtentechnik "Carl von Ossietzky" (formerly Dralowid), in Teltow, and VEB Werk fuer Fernmeldewesen (former OSW) in Berlin-Oberschoeneweide. Some transistor research has also been carried out in the Academy Institute for Research on the Physics of Solids in Berlin-Buch. 25X1
2. The OSW enterprise obtained the order for research and development of transistors from the Soviets while the enterprise was still under SAG administration. The Soviets invested large sums, up to 100,000 DME per year, in this development project. After the project was initiated by the Soviets it was carried out in two parallel Work Groups, one working for the Soviets and the other one carrying out the same development for the East German government. Difficulties arose from the fact that the Soviet project was guarded by strict secrecy measures and [redacted] of it were not allowed to be [redacted]. [redacted] not engaged in the work. These difficulties, however, were somehow circumvented. Transistor development in the OSW enterprise at that time was supervised by Dr. Bingel (fnu). No progress was made under his supervision. [redacted] after Dr. Bingel was relieved from his functions and after the OSW enterprise was returned to German administration. In late 1953, the Soviets withdrew their order from the enterprise and cut off all monetary allocations for it. Soviet insistence, transistor development was to be concentrated exclusively in the Dralowid plant, [redacted] in the meantime, Dr. Max Richter, head of the research and development of the firm, had made considerable progress in the development of the devices. The OSW research team under the supervision of Dr. Richter (fnu), however, continued transistor development on its own and in the late summer of 1954 succeeded in completing [redacted] samples of transistors. In September 1954, the East German government was requested to decide whether transistor production should be carried out at Dralowid or OSW or at both plants. In order to decide this, a session of "Arbeitskreis Richthalbleiter" was called, with representatives of the State Planning Commission present. 25X1

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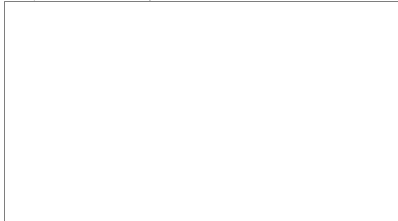
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-3-



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6. Transistor research carried out in the Academy Institute for Medicine and Biology in Berlin-Buch up to early November 1954 had not progressed beyond the stage of preparing pure germanium monocrystals suitable for use as transistors. The Electronics Department of this institute was engaged in early November 1954 in measuring the purity and other qualities of the monocrystals. The institute had small quantities of chemically pure germanium which were provided by the Bralowid plant.



25X1

-3-

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