DEPARTMENT OF STATE

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Memorandum of Conversation

DATE: October 27, 1954

SUBJECT: German Atomic Energy Program

PARTICIPANTS: British Embassy - Sir John Cockcroft, Mr. F. J. Leishman
French Embassy - Mr. Jacques Martin
German Diplomatic Mission - Dr. W. Heisenberg, Dr. Helmut Sigrist, Dr. Eduard Hess
Atomic Energy Commission - Mr. John Hall, Dr. Paul Fine, Dr. Kenneth Davis
Department of State - Mr. Philip J. Farley, Mr. Gerard C. Smith, Mr. George Spiegel, S/AE; Mr. W. K. Miller, GEA

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The meeting was arranged to permit Sir John Cockcroft to question Dr. Heisenberg concerning German plans in the atomic energy field in order that some limitation on German production of nuclear fuel might be arranged.

Dr. Heisenberg said, in reply to Sir John's question, that Germany would not develop an atomic weapons program. Germany, however, would want to build a reactor in the near future (within two years), produce heavy water, refine uranium, and later, perhaps, build a chemical separation plant for enriching uranium. Planning to date has kept in mind the proposed EDC restrictions, i.e., limitation of production of nuclear fuel to 500 grams per year and a reactor with no greater output than 1.5 Megawatts. Without the EDC restrictions, however, it will now be possible to build a larger reactor. In no event would this reactor have a heat output exceeding 10 Megawatts, since Germany lacks the experience to build a larger reactor at this time. Heisenberg indicated that Germany would keep its partners informed of its plans.

Mr. Leishman noted that under the EDC, Germany would have been able to produce no more than 500 grams of nuclear fuel a year, and this was related to a reactor having an output of no more than 1.5 Megawatts. He then inquired about the relationship of production of nuclear fuel to a 10 Megawatts reactor. Professor Heisenberg indicated that there was a direct ratio, and that about 6 pounds of plutonium would thus be produced.

Sir John inquired concerning German plans for isotope separation. Dr. Heisenberg indicated that there have been experiments with centrifugal separation, which is useful in producing small quantities of enriched uranium; a gaseous

9

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diffusion plant would be necessary to produce any large quantity of enriched material. He said the construction of such a plant would be out of the question at the present time. Dr. Heisenberg then inquired whether Germany might acquire natural uranium, enriched uranium (below 2.1 percent), and heavy water, and in what amount. Sir John said that arrangements for the procurement of such materials could probably be made under the aegis of the proposed International Atomic Energy Agency. Sir John, after noting that he had neither consulted with his Government nor had instructions on this subject, suggested, that it would be useful for Heisenberg to make inquiries of the US and UK concerning procurement of these materials and that it was within the realm of possibility that Germany might get them if the desired amounts were not too large. In any event, inquiries should be addressed to the US and UK before Germany would undertake the production of an isotope separation plant.

Dr. Davis inquired whether the German reactor would be designed for any specific use. Dr. Heisenberg said that the proposed air-coolsd graphite moderated natural uranium reactor would be for research, radiation experiments, production of isotopes, etc. He said there is no immediate interest in going into production of power, until experience has been gained.

Mr. Smith inquired about limitations on German industry. Dr. Heisenberg was not sure what restrictions would be placed on German industry under the proposed German atomic energy law. He said he would be surprised if any German company could build a reactor within two years or build it independently of the Government, since industry is associated with the Government in this field. Perhaps after two years or so, German industry would be interested in producing power reactors. On the other hand, German industry will be interested in producing heavy water, pure uranium metal, zirconium, etc. It was agreed that any letter that would be forthcoming from the Chancellor concerning a self-imposed limitation on production in Germany of nuclear fuel would be meaningless if a German company, such as Siemens, should be in a position to construct a 100 Megawatts reactor at the same time the Government had undertaken not to construct one greater than 10 Megawatts.

Sir John indicated that his Government would probably be satisfied if the Chancellor would indicate by letter that Germany would not plan to construct a reactor with an output greater than 10 Megawatts within the next two or three years and would consult with the other countries before building an isotope separation plant.

Professor Heisenberg suggested at one point in the conversation that there might be another exchange of letters after two years.

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