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DATE OF INFORMATION  
April 1957

FROM  
COMNAVGR APO 403

INFORMATION REPORT  
 OFFICE OF NAVAL INTELLIGENCE

STATE DEPARTMENT CLASSIFICATION REVIEW  
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SERIAL NO.  
164-S-57

DATE OF REPORT  
29 April 1957

EVALUATION  
B-3

SUBJECT  
D Discussion of Soviet Isotope Separation Program with DRAGON  
USSR/ at AMSTERDAM Conference.

INFORMATION DEVELOPED IN CONVERSATION WITH DR. HEINZ BARWICH AT INTERNATIONAL SYMPOSIUM ON ISOTOPE SEPARATION, AMSTERDAM 23-27 APRIL 1957 IS REPORTED.

1. Dr. Heinz BARWICH, Director Institute for Nuclear Physics, Dresden, Germany (Soviet Zone) had dinner with Dr. Carl COHEN, Atomic Energy Division, General Electric Co., USA, Dr. George KOLSTAD, Research Division, US AEC and the preparing officer, on 27 April 1957 while attending the International Symposium on Isotope Separation, AMSTERDAM. BARWICH was in the USSR from 1945 to 1954 and is known to have played an important role in the design of the Soviet Gaseous Diffusion Plant. The following items were discussed during dinner conversation:

2. CASCADE AND STAGE THEORY.

BARWICH had approached COHEN at the conference and introduced himself as the man who had "your place" in the Soviet program. During the dinner BARWICH said that he had worked out most of the cascade theory which COHEN had published in his book but that it was now locked up in a safe in the USSR. BARWICH said that he assumed COHEN had also written a book on stage theory but that it was still "locked up". BARWICH stated that he found stage theory much more interesting. He said this included a study of real barriers, pressures, velocities, etc. When asked if he would like to publish this now he said that it was all locked up in the USSR and that it was not very interesting to work it all out again when he had done it before. He stated, however, that

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OPNAV FORM 3820-2 (C) (CNFG) (REV 11-66)

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he had done "a little" of this recently. When it was suggested that he might publish this in the Zeitschrift fuer Naturforschung, he laughed.

3. BARWICH stated that he had not participated in as detailed an application of the cascade theory as the stage theory and that his calculations of the latter were confined to such things as stability, losses and equilibrium times. He recalled that in one calculation he showed the Soviets that a certain cascade had an equilibrium time of 150 years. This was recalled with some relish as though it may have been an important achievement. From the context it was not clear whether BARWICH was referring to a gaseous diffusion cascade as a counter current diffusion cascade.

4. U.S. AEC PRICE LIST FOR U 235.

BARWICH stated that he believed the U.S. AEC price list for U 235 to be quite low. He said only people who don't know about these things would say the price was high. He seemed sure that the USSR could not produce it that cheaply. He also said he did not expect the USSR to export significant amounts of U 235.

5. SOVIET BARRIER FOR GASEOUS DIFFUSION.

FOIA(b)(3) - 42 USC 2162(a) - RD DOE

The definite impression was made that now something else was used, but it was not stated in so many words. It was necessary to change the subject to relieve the tension. Earlier BARWICH said he had agreed with Soviets to keep his knowledge secret.

6. COUNTERCURRENT DIFFUSION.

BARWICH stated that BENEDICT was not correct in stating in an article published in 1951, that countercurrent diffusion could not be used for separation of uranium isotopes. They found that this could be done using a fluorinated hydrocarbon as carrier but that it was not a very economical method in spite of the fact that it could use cheap thermal energy.

7. THERMAL DIFFUSION.

Because KAPITZA would not work in the USSR Atomic Weapons program he was replaced as director of his Institute by ALEXANDROV. ALEXANDROV conducted experiments on thermal diffusion of liquids but BARWICH did not hear that he was successful. BARWICH was of the opinion that gaseous UF6 could be successfully used in a thermal diffusion column if an inert gas as third component was used which was continuously recycled through the system. It was not clear whether this opinion was based on experiments or was merely an opinion.

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8. DDR POWER REACTOR.

*ability options*  
BARWICH said that the DDR will receive a small pressurized water power reactor moderated with light water and using 1.5 percent enriched uranium as fuel. He stated this may be in operation in 1960 or 1961. He did not seem to be taking a leading role in this project.

9. DDR RESEARCH REACTOR.

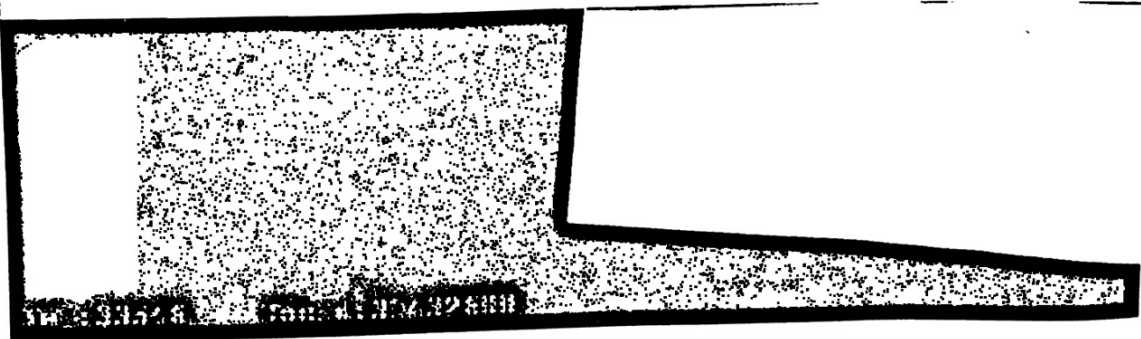
BARWICH said that his most important problem was the supervision of the installation of a Soviet research reactor in his laboratory. This was described as a 2000 kilowatt reactor of the swimming pool type fueled with 10 percent material.

10. TRIPS MENTIONED.

BARWICH plans a trip to Moscow in May for the official ceremony of opening the new Soviet BEV accelerator. He said he seldom visited West Germany but often went to West Berlin on his trips to Berlin.

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Source Information:

Participation of preparing officer in subject conversations.

Preparing Officer's Comment:

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The calculation of a 150 year equilibrium time may have applied to an early flat plate gaseous diffusion plant which was designed by the Soviets to produce 90 percent material.

The remarks on the use of countercurrent diffusion for uranium hexafluoride were prepared by BARWICH during his paper which he presented to the conference.

Prepared by:

*Oswald F. Schuette*

Oswald F. Schuette  
Scientific & Technical Unit

Forwarded by:

*A.R. Gierwonky*  
A.R. GIERWONKY  
CDR USN

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National Security Archive,  
Suite 701, Gelman Library, The George Washington University,  
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