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By **R** NARA Date **1/19/12**

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April 28, 1960.

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No. 1-c Mr. Fullerton - AEC
5-30- Mrs. Leland - AEC

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Official - Informal

Series D - No 1 of 1 to GEA - Mr. Devine 6-13

Dear Mr. Ambassador:

A recent memorandum from the Atomic Energy Commission expressed the Commission's serious concern over the implications of the unclassified development in Germany of the gas centrifuge method for the large scale separation of Uranium-235 isotopes from natural uranium. Uranium-235 is a material used in both weapons and power reactors. As a general matter uranium enriched only slightly in U-235 is used in power reactors and is not suitable as is higher enrichment, for weapons purposes. The centrifuge process is capable of separating U-235 to both low and very high enrichments and the process and equipment are not significantly different if low or highly enriched uranium is to be produced. The Atomic Energy Commission does not use the gas centrifuge process for its own U-235 production purposes, but it has maintained for a number of years a modest experimental program, most of which has been carried out on a classified basis.

Within Germany gas centrifuge research and development has gone forward with groups working at the Universities of Bonn and Kiel, the Max Planck Institute at Aachen and at DEGUSSA and AEG. To the best of our knowledge all of the German work has been done on an unclassified basis and aimed primarily at developing the process for commercial exploitation.

As a result of recent development work the gas centrifuge process may within the next decade be attractive to a substantial group of nations for use in acquiring their own U-235 production capability. Among the attractive characteristics of the gas centrifuge process are the relatively small capital investment required to produce significant quantities of U-235, the small demand on existing electric power capabilities, and the mechanical simplicity of the centrifuge units per se. Should the gas centrifuge process be successfully developed on an unclassified basis it could be utilized in a number of countries

either

The Honorable
Walter G. Dowling,
American Ambassador,
Bonn.

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either openly or secretly and in either event complicate the problem of preventing the spread of a nuclear weapons capability.

I am enclosing a copy of a memorandum dated March 23 which we sent to the Commission containing our preliminary views on the problem raised by the Commission's memorandum. It touches upon the principal difficulties we see in seeking control of centrifuge research and development information. Our discussions with representatives of the Commission early this month did not develop any other approaches to the problem that seemed practicable to the Department.

As you may recall, the Secretary called Mr. von Brentano's attention to some of the implications of this problem during their meeting of March 15, and told him that we would be discussing the matter further with the German Government. Following a meeting we had a short time ago with Mr. Hillenbrand and Mr. Devine of GER, it was agreed that Mr. Farley would write to the Embassy to solicit its advice and suggest that talks be held at an appropriate level with representatives of the Foreign Office and the Ministry of Atomic Energy to see what steps might be practicable.

We believe that the problem should be examined thoroughly and promptly with the Germans in view of the implications of the process. Whether or not it appears that control of centrifuge technology either by classification or by some other means is practicable, we believe that we should seek German assent to control the export of reactors and centrifuges and related equipment through safeguards. Agreement by the German Government to the requirement of safeguards on export of reactors and centrifuge equipment through the International Atomic Energy Agency (except for equipment exported within the Euratom Community) would be consistent with the position the United States Government has urged upon uranium supplier nations and other atomic energy equipment suppliers.

Since several decisions on the future course of United States work on the centrifuge process depend upon the reaction of the German Government to the proposals for controlling information concerning developments on centrifuge technology and the export of reactors, we hope that these talks can be held at the earliest practicable date. While these are topics of primary concern, the talks might incidentally further some informal discussions which have occurred at a technical level on the matter of German - United States cooperation on centrifuge research, recognizing that such cooperation may present a number of problems, including the role of Euratom.

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I believe there is nothing in the enclosed memorandum that cannot be made known to the Germans except the statement referring to the security arrangements of the French Atomic Energy Commission and the conclusions that follow from it.

We shall look forward to receiving your comments and a report of the earliest date at which talks with the German Government on this subject can be initiated. We are prepared to send a small group of AEC and Department experts to discuss the problems in detail with German officials.

Sincerely yours,

CAS

Charles A. Sullivan
Acting Special Assistant to the Secretary

Enclosure:

Copy (#1 Series E)
of memorandum to
Mr. A.A. Wells, AEC,
from S/AE - Mr. Farley,
dated March 23, 1960.

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GER - Mr. Devine AEC - Mr. Menke
RA - Mr. Hartman
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This document consists of 3 pages
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March 23, 1960

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MEMORANDUM FOR

Mr. Algie A. Wells,
Director,
Division of International Affairs,
Atomic Energy Commission.

SUBJECT: Control of and Cooperation in Centrifuge Research
and Development.

The Department has given careful consideration to your memorandum to me of February 19 on the problem of ultra-centrifuge research and technology and the distribution of isotope separation equipment. I am writing now to give the Department's preliminary views, which we might discuss in detail at a meeting between officers of the Department and the Atomic Energy Commission.

The Department shares the concern of the Commission over the implications of unclassified development of ultra-centrifuge isotopic separation equipment in Germany and the Netherlands and the availability of such equipment on the commercial market. The Department believes, however, that possibilities of control of information pertaining to this equipment are very limited, although export controls by the German and Dutch Governments might be practicable.

The Department does not feel qualified to say whether information pertaining to ultra-centrifuge work in Germany and the Netherlands ought to be classified, but it believes that efforts to have such information classified would raise unusually difficult problems.

To begin with, the Germans would probably be unwilling to classify any information of this kind either unilaterally at our urging or through a bilateral agreement with the U.S. The classification of such information would raise suspicions that Germany was engaged in atomic weapons development and thus would raise serious foreign policy and public relations problems for the German Government. The problem

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would not be made easier from the foreign policy standpoint if classification were made under a bilateral agreement with the United States, since we have refused to collaborate with France in the field of isotope separation and Germany might encounter serious difficulties with Euratom if it attempted to conclude such an agreement.

Furthermore, Euratom probably would insist that all such information be made available to the Commission under the terms of the dissemination of information provisions of the treaty.

Another possibility would be to request that Euratom attempt to persuade the member states to classify all information connected with the ultra-centrifuge development on the basis of an understanding similar to the one we have with the United Kingdom covering gaseous diffusion. The Department, however, doubts whether Euratom would be prepared to meet such a request; it would probably press us to conclude an agreement covering cooperation in this field, in which it has expressed strong interest. Furthermore, France, which has attempted to gain our cooperation in the field of isotope separation, probably would also be reluctant to consent to such a request and might regard our interest in this problem as an important bargaining point for attaining its objectives.

Euratom in the past has expressed a readiness to become a party to classified information that has peaceful applications as well as military. An agreement with Euratom that covered cooperation in this field as well as others could provide an acceptable framework, from a foreign policy point of view, for applying classification. Assurances by Euratom that classification was not a cover for military activity might win greater acceptance than those coming either from Germany or the United States. Furthermore, Euratom, through its treaty responsibilities for gathering and disseminating information within the Community, is probably best equipped to keep abreast of all significant developments in this field. This approach, however, may raise serious questions regarding Euratom's security. We would have to assume that any information classified under an agreement between the United States and Euratom would be made available to the French Atomic Energy Commission. Therefore, since the United States Atomic Energy Commission has not been able to approve the French AEC for security, it is questionable whether it could approve Euratom from the security standpoint. The Department believes that a negative finding would be quite damaging to Euratom's status and that no

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