12-2-55

Those Listed Below

Lyall Johnson, Chief, Licensing Branch, Division of Civilian Application

MEETING WITH WESTINGHOUSE ELECTRIC CORPORATION IN CONNECTION WITH PROCUREMENT OF SPECIAL NUCLEAR MATERIAL FOR USE IN FABRICATION OF FUEL ELEMENTS FOR THE BELGIAN THERMAL REACTOR

SYMBOL: CAL:LJ

On December 2, 1955, Dr. Robert H. Shane, who is in charge of Westinghouse's activities in connection with the Belgian Thermal Reactor, telephoned and requested a meeting next Friday, December 9th, to explore various administrative and technical problems involved in the fabrication of fuel elements for the reactor.

Westinghouse proposes to engage Mallinckrodt Chemical Works to produce approximately 5000 pounds of uranium oxide enriched to approximately 10% in U-235. Further work in connection with the fuel element fabrication will be done at various Westinghouse locations.

Attached is a verbatim transcript of Dr. Shane's remarks regarding some of the technical aspects and problems involved in the production of the desired uranium oxide. In essence, their principal problem is to determine out of five possible methods the method which is most feasible, most economical and most susceptible to the enrichment level which AEC can furnish, and most desirable from the standpoint of meeting the Westinghouse schedule.

Westinghouse particularly wishes to explore with us the availability of specified enriched material at uniform levels of isotopic concentration. The uniformity of the material will be an important factor in their selection of a method of production of the enriched uranium oxide.

Although this was not mentioned by Dr. Shane, it also appears that it would be timely to discuss the allocation of the enriched material to the Belgians for this purpose under the existing bilateral agreement and to line up the procedures for initially making the material available to Mallinckrodt and then to Westinghouse for the fabrication work.

Dr. Shane will bring a draft application for license with the view of obtaining guidance, if necessary, in completing the application to meet AEC licensing requirements.

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Dr. Shane expects the following people to participate in this meeting:

Dr. Robert H. Shane, Westinghouse
W. P. Kelly, Jr., Westinghouse
Dale Versaw, Westinghouse
Fred Belmore, Mallinckrodt

This meeting has been tentatively schedul d for 9:30 a.m., Friday, December 9th, in my office, Room 1047, H Street Building. I shall appreciate your letting me know immediately by telephone (Ext. [redacted]) if you will be able to attend this meeting and if not, the name of the person or persons in your organization you have designated for attendance.

Addressees:
George F. Quinn, Division of Production
E. Gardner, Division of Inter. Affairs
U. M. Staebler, Div. Reactor Development
S. G. Manly, CA
R. B. Smyth, CA

[redacted]
L. Johnson/egh
12/2/55

VERBATIM TRANSCRIPT OF INFORMATION FURNISHED BY Dr. ROBERT H. SHANE, WESTINGHOUSE ELECTRIC CORPORATION

The 5 proposed methods for making the uranium oxide are based upon two conversions to uranium oxide - 2 different methods - one of which is based on going through a uranyl nitrate stage and the other one is not - it is based on going direct from UF_6 to uranium oxide without going through the uranyl nitrate stage, although it is possible to go through the uranyl nitrate stage starting with UF_6 material. The Mallinckrodt process would go through the UF_6 stage only for the possibility of reducing the fluorine content of the final product. However, the present process (their new process) will turn out uranium oxide with 500 ppm of fluorine maximum. We think that we can live with 500 ppm fluorine from a corrosion point of view.

Due to criticality requirements, it is impossible to duplicate exactly the present uranium oxide production technologically. The production of enriched uranium oxide will be a very small pilot plant operation - batches will be about 8 lbs. each.

There are at least five possible alternative methods for preparing enriched uranium oxide for ceramic use. The particular method which will be selected for production will depend upon:

a. The AEC material which is available

b. The economics of the process

c. The feasibility

d. Scheduling requirements

Delivery of 5000 lbs. of enriched uranium oxide is desired by Westinghouse by September 30, 1956. Initial shipments are desired during March 1956, subject to the Commission furnishing the necessary raw materials in good time. Delivery should be at an approximately uniform rate subject to the usual and unusual contingencies.

Here are five possible methods:

1. Uranium fluoride is removed from the cascade at approximately 10% enrichment to be adjusted by the manufacturer to the desired enrichment using normal uranium for adjustment.

2. Highly enriched uranium fluoride is adjusted with normal uranium fluoride to the desired enrichment and then processed to uranium oxide.

3. Uranium fluoride at the exact isotopic concentration required is withdrawn from the cascade and processed directly to the uranium oxide with no adjustment of the isotopic content. (I am highly doubtful that this can be done).

4. Uranium metal at the exact isotopic composition will be processed to the oxide.

5. Highly enriched metal will be converted to a uranyl nitrate solution and adjusted to the desired isotopic content with a uranyl nitrate solution made from normal uranium material.

These are five processes. There are other variations possible.