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FROM: P. F. Gast

July 6, 1948

CONVERSATIONS REGARDING RW

While attending the meeting of the American Physical Society in Pasadena on June 25, the writer was present at a brief informal discussion of RW attended by Drs. R. F. Bacher, E. O. Lawrence and J. A. Wheeler. Some technical aspects of the production of radioactive tantalum were discussed at greater length with Dr. Wheeler only. Details of these conversations follow.

Dr. Bacher emphasized the importance of the RW program and expressed the desire of the AEC to have at an early date a statement from us indicating approximately, production rates, cost in fissionable material, and any other important factors affecting the program. This was desired quickly in order to forestall any false impressions which might be created by less authoritative estimates.

Dr. Lawrence indicated that only approximate values were needed now but that these were needed quickly.

Dr. Wheeler emphasized the importance of determining what change in the temperature coefficients of the pile would result from the use of large amounts of U235.

In reply, the writer stated that experimental lots of tantalum could be exposed immediately in the Hanford piles. This material would be handled according to the standard Special Request Procedure. We will be prepared to act on this request as soon as it is received.

The writer agreed to prepare, within a short time, our estimates of approximate production rates, costs, etc. We will investigate the possibility of determining the effect of U235 on the reactivity coefficients at the start-up of DR pile.

In the conversation with Dr. Wheeler, which occurred prior to that with the entire group, the effect of U235 on the coefficients and thus on the safety of pile operation was discussed. The worst situation would of course occur in the event of the loss of water from the pile. We have no information on the temperature coefficients of the dry pile. All other graphite piles have had negative overall coefficients; none of these were water cooled. It would therefore be desirable to determine the coefficients of a dry pile both when loaded with normal metal and when containing some pure U235. It occurred to the writer that it might be possible to do this when the DR pile has been loaded slightly beyond dry critical.

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Rough estimates indicated that 10 kg of U²³⁵ would produce a measurable effect in a pile of dry critical size. These conclusions were reported to Dr. Bachor. He agreed to look into the availability of this material but made no further commitments.

Quite apart from the RW program, it is the writer's opinion that a determination of the coefficients of the dry lattice, with normal metal, should be included in the program for the loading of DR pile because of their importance to the question of pile safety control.

Paul F. Gast

P. F. Gast
Pile Technology Div.

PFG:mh

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