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MOUND LABORATORY MONSANTO  
CENTRAL FILE NO. 66-4-511

April 22, 1966

ALMD66045111172

Mr. W. B. Creamer, Area Manager  
U. S. Atomic Energy Commission  
P. O. Box 66  
Miamisburg, Ohio

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MOUND LSDR PROJECT  
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Dear Mr. Creamer:

**Subject: Plutonium-238 Specifications for DID Requirements**

Reference 1: SRD Letter, Dated February 14, 1966, W. B. Creamer to D. L. Scott, "Plutonium-238 Specifications for DID Requirements"

Reference 2: SRD Letter, Dated October 27, 1965, D. L. Scott to W. B. Creamer, "Plutonium-238 Fuel Form Oxide Specifications"

Comments on the above referenced letters are as follows:

**Sample Weight** (Specification from Reference 2 above)  
The calculated weight of a sample of the oxide determined from calorimetric analysis, isotopic ratio, calculated oxygen content, and impurities, shall agree within 2.0 per cent of the measured sample weight.

**Comment** Total impurities expressed as oxide must agree within 2 weight per cent. The impurities must be tabulated and identified. For calculations of feed material for DID requirements only the 87.5 year half-life can be used.

**Lot** (Specification from Reference 2 above)  
A plutonium oxide lot shall come from a common nitrate solution and shall consist of that quantity of material from which a representative sample may be taken.

MOUND DECLASSIFICATION REVIEW	1. DETERMINATION (CIRCLE NUMBER(S))
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Mr. W. B. Creamer,  
Area Manager

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Comment Lot size was not specified. However, it is mandatory that Mound be supplied with an analysis of impurities and an isotopic analysis on all material which is to be used as feed for DID programs.

Neutron Count (Specification from Reference 2 above)  
The neutron background of the oxide must be less than  $4.4 \times 10^4$  neutron per second per gram of plutonium-238. (Although this is a maximum, we desire to keep the neutron background to a minimum. This action is necessary for the use of kilogram quantities in a single heat source. It is requested that SRP determine the minimum neutron flux that can be readily obtained in material as presently produced at SRP and advise Mound Laboratory accordingly. Mound Laboratory personnel will be happy to meet with SRP personnel at any time to discuss this attribute.)

Comment Mound will consider material which does not meet the neutron specification and will deviate if it is possible to use it for a specific application.

We should like to point out, however, that the SNAP-27 program requires that total neutron counts be as low as possible. If neutron counts exceed approximately  $2.0 \times 10^4$  n/s/gram, it may be necessary for Mound to reprocess the material. This will increase our costs, potentially delay the program and will also tie up some of our recovery capability, thus interfering with that program. We request, therefore, that every effort possible be given to removing impurities and supplying low neutron count material.

Very truly yours,

Original signed by D. L. Scott

David L. Scott  
Vice President,  
Plant Manager

JEB:DLS:rg

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Mr. W. B. Creamer,  
Area Manager

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