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DATE 7/26/54 INIT GLm

MOUND LABORATORY-MONSANTO
Central File No. 54-7-68

July 26, 1954

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MOUND LSDR PROJECT
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Dr. John H. Roberson, Area Manager
U. S. Atomic Energy Commission
P. O. Box 66
Miamisburg, Ohio

Dear Dr. Roberson:

On Wednesday, July 21, 1954, Mr. J. E. Cole and Dr. L. Squires of DuPont visited and inspected Mound Laboratory. They indicated that this examination was directed toward suggesting work which could be done at Mound in support of the Savannah River operations. They stated that only one thing occurred to them immediately, but that they would give serious consideration to other items.

They suggested that Mound Laboratory examine the ion exchange technique which Spedding proposes to separate U-235 from U-238. However, their interest would lie in the application of this method to the separation of Pu-239 and Pu-240. They further suggested that Mound might examine any separation techniques which could be used for this job. It was felt that an industrial approach would have a better chance of providing an economical solution.

In August 1953, Mound Laboratory first offered an approach to this problem. At that time it was suggested that standard chemical separation techniques be examined to see whether isotopic separations were also effected. It was proposed that fractional crystallization be first examined. A rare earth series which had undergone thousands of fractionations was available at Michigan State. An examination of the samarium in the fore and end fractions of this series was to be made to detect the extent of isotopic separation.

Recently a scheme for carrying out fractional crystallization on a continuous basis has come to our attention. If fractional crystallization does effect an isotopic separation it should be more attractive than the Spedding ion exchange approach because the former is inherently a high concentration system whereas the latter is inherently a low concentration system.

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Restricted Data
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CLASSIFICATION REVIEW
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NAME J.W. FLANAGAN
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AUTHORITY ADD
NAME D.B. Ratay
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It is proposed that Mound Laboratory follow through on its suggestion of last fall to:

1. Determine the extent of isotopic separation in a fractional crystallization procedure.

2. If favorable, adapt the continuous fractional crystallization technique to the separation of Pu-239 and Pu-240.

3. Examine other chemical separation techniques including the Spedding ion exchange proposal.

4. Determine the feasibility of extending the work to larger capacity systems.

The first step of this study could be accomplished by one man in probably less than three months. If promising the study would involve four men for the first fiscal year.

Very truly yours,

J. Burbage

Joseph J. Burbage
Director

RAS: glm

Distribution:
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