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NAME/DATE *B. [Signature] 10/17/02*
ORG. **FNRL NSAT**
P. Sullivan 11-20-2002
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F. P. Baranowski, Director
Division of Production
USABC-HQ

J. E. Travis, Manager
Richland Operations Office

THIS DOCUMENT CONSISTS OF 2 PAGES

NPR TRITIUM PRODUCTION (YOUR MEMO 11/8/62, PRR:ONS)

OR:ELP

MANAGED

84208

During the recent midyear budget review here it was pointed out by Mr. E. L. Diebeman that the N Reactor Department has given additional thought to the possibility of tritium production in the NPR, both as a secondary product and as the only product. In partial justification for this concept it was pointed out that at some time in the future the N reactor might be the only Hanford reactor in operation, and that in this event there could be restrictions placed on its product(s), such as 6% Pu-240 or tritium only.

It is estimated that the NPR can produce 6% Pu-240 plutonium at an exposure of 1200 MWD/T with an E-N concept employing 1.1% U-235 fuel. This mode of operation would generate about 800 kg plutonium and 3.3 kg tritium per year, or about 100 kg equivalent plutonium more than the amount obtainable from irradiating uranium only in N reactor at the same exposure. The unit cost of equivalent plutonium is predicted to be less than that of plutonium-only operation.

Developmental problems are anticipated in the areas of metallurgy (swelling of target elements and tritium containment), physics, and separation of products. GE is now proposing an initial program costing \$100,000 to \$125,000 this fiscal year for the following objectives:

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- (a) Performing a preliminary experimental investigation of current technical aspects (primarily metallurgical) of tritium production in the NPR,
- (b) Performing calculations to define a number of conditions of operation which are expected to be acceptable, and
- (c) Define the balance of the NPR tritium R&D program.

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F. P. Baranowski

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The total weapons development program is presently estimated at about 1.5 to 3 million dollars over 3 or 4 years.

Your approval of the FY-1963 portion of this program is recommended. The initial \$125,000 this fiscal year would be for the primary purpose of better defining the magnitude of the technical problems and determining the overall cost of the program. This money would be spent within the current R&D budget, and additional work would not be undertaken until after the results of this fiscal year's work are presented to you.

cc: I. D. Hartman - BUDGET

Enclosure:
HAN-84258 (HW-76242)
Cys. 5-A & 6-A

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