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HW-13254

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May 10 1949

SEGREGATION OF FLUORIDE SLUDGE
BUILDING 313

$40,000

Upon authorization of formal project proposal

12 months after authorization

18 months after authorization

CAUTION

[redacted]

B840

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REASON SHEET

1. Present Facilities and to What Extent They are Inadequate

The 300 Area fabrication process in which slugs are prepared for use in the piles produces some scrap uranium salts (C-6) consisting of uranium precipitated from nitric acid and also from hydrofluoric acid. The existing system involves a procedure in which the rejected slugs are first immersed in caustic to dissolve the outer cans, then in 20% hydrogen-fluoride to dissolve the bond, and then in nitric acid to "pickle" or dissolve a thin layer of the uranium surface. The sludge from each of these dissolving processes is then pumped to a common neutralizing tank, after which the uranium salts are recovered by filtration and shipped off-site for purification and reduction to the metal. The sludge from the caustic and nitric acid dissolving, which amounts to about 99% of the whole, is of such purity that the off-plant purification operation for it could be eliminated and the metallic phase regenerated directly. However, the sludge from the hydrogen-fluoride dissolving, amounting to about 1%, contaminates the whole with fluorine, making the costly purification step necessary for the entire batch.

2. Description of Proposed Work

It is proposed that separate facilities be provided for the recovery of C-6 (fluoride sludge) from the hydrofluoric acid solution used in the slug recovery operation. This will consist of disconnecting the hydrofluoric acid tank drain piping from the rest of the drain system to the existing neutralizing tank and the installation of one additional smaller neutralizing tank, pumps, filters, incidental piping and facilities for the hydrofluoric acid only. Additional building space will be required to house this additional equipment.

3. Advantages to be Gained and Justification for Proposed Work

The cost of purifying the C-6 sludge prior to the regeneration of the uranium metal is estimated at approximately $3.50 per pound. At the current

rate of production, if 99% of the C-6 sludge could be eliminated from the purification operation, a saving of approximately $46,000 per year would result.

4. Why Existing Facilities Cannot be Utilized

There are no existing facilities to accomplish the proposed operation changes.

5. Time Required to Accomplish Work After Authorization

It is estimated that the proposed installations will be ready for use 12 months after authorization and all work physically completed in 18 months.

6. Funds

A budgetary allotment of $40,000 is requested for the proposed work, $32,000 to be required in fiscal year 1950 and $8,000 in fiscal year 1951. A formal project proposal is to be submitted at a later date.

7. Remarks

This preliminary project was prepared by the Project Engineering Division at the request of the "P" Division.