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2. R. S. Bell
3. R. C. Grant
4. R. B. Richards
5. T. Prudich
6. F. A. R. Steinken
7. E. A. Foskett
8. L. M. Meeker
9. P. E. Collins
10. M. J. Szulinski
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**RECOMMENDATIONS - RECOVERY OF PRODUCT
FROM 234-5 BUILDING MISCELLANEOUS LIQUID WASTES**

Several types of aqueous waste streams have been accumulated and stored since the start-up of the 234-5 Building since a routine processing of these materials was of secondary importance with respect to the attainment of the desired production goals of these facilities. The volumes of these wastes, although small per run processed through the Purification and Fabrication Building has become a problem because of the considerable shelf and vault space occupied by storage vessels. A survey, based upon available information, of the volume, solution composition, and product content of the wastes together with procedures to be followed in recovery of the product has been made by T. Prudich, L. M. Meeker, M. J. Szulinski and V. R. Cooper.

The materials to be processed and the procedure to be followed are defined in the following arbitrary categorical groupings.

Category I

Material - caustic from the wet chemistry transfer system traps.

Composition - primarily NaOH - 30 to 50 per cent, minor constituents - iodine, oxalate

Volume - 15 tanks - 25 liters/ea.

Product - total about 865 grams. Non uniformly distributed between the individual tanks and between the liquid and solid phases

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Process Procedure - transfer from present storage vessels to RC cans. Dissolve solid phase with hot water and dilute nitric rinse where required.

Transfer to 224 B Building.

Accumulate a maximum of 300 grams of product in E-4 tank for processing as a master recycle run.

Acidify, dilute to normal process volume and oxidize with permanganate in E-4 tank.

Jet to D cell and wash through to E-1 tank. This operation is employed solely to effect a transfer from E-4 to E-1 through existing piping systems.

The Operating Log Forms for this procedure consist of special issue pages 7.11, 7.12, 8.1, 8.2 and marked pages 8.8 and 8.9 together with standard O. L. Form pages 8.10 to 8.19 inclusive, 9.1 to 9.11 inclusive and pages 10.1B and 10.1A.

Accountability - The caustic solutions cannot be analyzed prior to acidification in E-4 tank because of the impossibility of obtaining a representative sample. The assay of E-4 tank following acidification will be the basis for accountability.

Comment - Due to limitations in analyzing for trace and minor constituents the feasibility of the procedure was checked by laboratory demonstration of the proposed process scheme. The results indicated that a waste loss (total for all steps) should not exceed one per cent in the 224 Building.

Category II.

Material - E-1-E solution. Partially spent 70% nitric acid solution which had been employed for button pickling.

Composition - HNO_3 40 - 70 per cent.

Volume - Approximately 70 glass bottles each containing about 1.5 liters of solution.

Product - Total of about 100 grams non uniformly distributed between the individual containers.

Process Procedure - Transfer solution from bottles into RC can. Load each RC can with about 25 grams of product.

Transfer to 224 B Building.

Transfer to E-4 tank via normal recycle facilities.

Combine with a normal 224 Building run as regular recycle.

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Employ regular recycle log form.

Accountability - The individual RC cans will be analyzed prior to movement to 224 B Building. The quantity received at 224 B will also be calculated from assays of E-4 tank.

Category III.

Material - B-2-S solution. Partially spent sulfuric acid resulting from reduction bomb pickling.

Composition - Sulfuric acid - about 2.0 normal

Volume - 82 bottles - each average of 3.0 liters.

Product - 50 grams total

Process Procedure - Transfer solutions from bottles to RC cans and transfer promptly to 224 B Building.

Transfer to E-4 tank via normal recycle routing

Combine with normal 224 B Building run. Approximately 7 grams per recycle addition.

Follow regular recycle O. L. Form.

Accountability - The individual RC can only will be analyzed.

Category IV.

Material - COS coating stripping solution.

Composition - 50 - 60 per cent nitric acid.

Volume - 44 bottles - average 3.0 liters/ea.

Product - Total approximately 90 grams.

Process Procedure - Transfer to RC cans at 234 Building.

Transfer to E-4 tank.

Combine with normal 224 B Building run. Addition of product per recycle batch will be 25 grams or less.

Accountability - The individual RC cans will be analyzed as well as the composite in E-4 tank.

Category V.

Material - HCL solutions from bomb pickling prior to change in process reagent to H_2SO_4 .

Composition - 20 - 30 per cent HCL.

Volume - 8 bottles Average Volume 3.5 liters.

Product - 35 - 46 grams total.

Process Procedure - These solutions cannot be introduced into production plant equipment because of the chloride ion. They will be processed in special laboratory runs. The laboratory runs are to be deferred until rotational trainees are available for carrying out the manipulations, under the direction of a chemist which will separate the material from chloride ion and permit reentry into the process at 224 or 231 Buildings as permitted by solution composition.

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