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UNITED NUCLEAR
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365 WINCHESTER AVENUE
NEW HAVEN, CONN. 06508
777-5361

October 31, 1964

Mr. Lyall Johnson Acting Director
Division of Materials Licensing
U. S. Atomic Energy Commission
Washington, D. C. 20545

Attention Mr. Donald A. Nussbaumer, Chief
Source and Special Nuclear Materials Branch

Gentlemen:

As we discussed in our telephone conversation on October 30, 1964, because of technical difficulties encountered in the pre-experimental cleanout of equipment, specifically the precipitation of the material now in the 1-D-9 tanks (refer to Section II B page 3 items 2 and 3 of the Experimental Program for the Resolution of Impurity Problem submitted October 12, 1964), we request AEC review and approval of the proposed variation (attached).

This addendum to the experimental program has been internally reviewed and approved as indicated, but authorization to proceed has been withheld pending AEC concurrence.

Your concurrence is also requested to substitute the following for the last paragraph of Section II F page 16 of the Experimental Program.

"These two categories of transfer operations will never be performed simultaneously. The spent work solutions Item 2 will be stored after analysis in either 1 gallon jars or 11 liter bottles (for >1 gm U/liter) or in 55 gallon drums filled with Raschig rings (<350 gms U/drum). Spent solutions analyzed and identified as containing <1 gm U/liter may be stored in 55 gallon drums."

We would appreciate your early review and approval. Should any questions arise, please contact me so that we may promptly provide additional information.

Very truly yours,

D. F. Cronin

D. F. Cronin
Director of Licensing

J. S. ATOMIC ENERGY COM. REG. MAIL SECTION

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Attachment

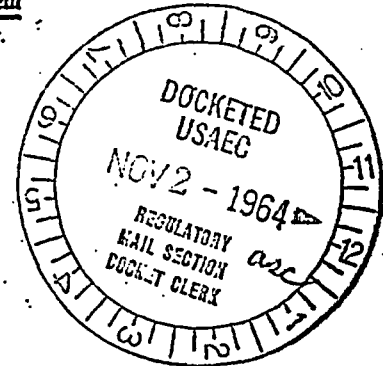
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UNITED NUCLEAR CORPORATION
FUELS RECOVERY PLANTExperimental Program for the Resolution of Impurity ProblemOriginal Submitted, October 12, 1964Addendum AOctober 30, 1964Reference: Section II B Pre-experimental Equipment
Clean Out, Page 3General:

Attempts to precipitate the uranyl nitrate in the 1-D-9 tanks have proven to be extremely time consuming. Causes for the poor precipitation and filtration characteristics are believed to be the presence of aluminum ion, soluble organics, and low UO_2^{++} content of the solution. Attempts to solve the problem without creating greater problems have not been successful. In view of this unexpected development, a change in the program is mandatory. Outlined below is the revised procedure for the processing of the impure uranyl solution from the 1-D-9 tanks.

1. Conditions of Equipment

- a. Fresh solvent - TBP solution will be prepared in 1-D-5 as outlined in item one (1) of original submittal. (II C).
- b. Evaporator is empty.
- c. 1-D-10-C tank is empty.
- d. 1-D-16 tank is connected and valved to evaporator. (1-D-16 is 5' ϕ storage tank running parallel to 1-D-10 tanks - see drawing A-904/4 of General Information and Procedures Manual).
- c. Raffinate slop tank is empty.

2. Feed the solution from the 1-D-9 series tanks into the extraction system.

3. Operate the extraction system as outlined in steps 9 c. through 9 g. of original submittal. Solution feed rates, pulse generator operation, level controllers and solution concentrations will be adjusted as necessary in order to provide efficient operation of the system. Sampling and analysis of raffinate, Na_2CO_3 , OK liquor and solvent - TBP will be made on periodic basis to assure process control. The input material from the 1-D-9 is estimated to be ~14 gm/l. Output from the system is expected to be in the range of 25-30 gm/l.

PRODUCTION <i>Blackburn</i> DATE: 10/30/64	ENGINEERING <i>W. Szyostak</i> DATE: 10/30/64	NUCLEAR SAFETY <i>Marvin Kober</i> DATE: 10/30/64	HEALTH PHYSICS <i>E. Barton</i> DATE: 10/30/64
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4. The raffinate from the extraction will be stored in the 1-D-21 slop tanks. This solution may be dumped into the lagoon only after suitable treatment, sampling, and counting as directed by the UNC Director of Licensing. A record of this treatment and counting will be maintained.
5. The OK liquor from the extraction system will be pumped into the 1-D-10-C tank. When 1-D-10-C tank is part full, commence to feed into the evaporator and concentrate the OK liquor as outlined in step 9 h. of original submittal. The concentrated OK liquor (expected 90-100 gm U/liter) will be pumped to tank 1-D-16. In the event that 1-D-10-C becomes full, feed to pulse columns may be stopped to allow evaporator to deplete some of the OK liquor.
6. Store the concentrated OK liquor in tank 1-D-16. This material, which has now been concentrated and depleted of Aluminum and organics will be precipitated as ADU at some future date. It is not to be processed further until AEC approval has been obtained.
7. With the 1-D-9 feed tanks empty, adjustment of the solution in tanks 1-D-10-A and B may be made, and the Experimental Program, as outlined in Section II C may be resumed.