



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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DOCKET NO.: 70-820

APPLICANT: United Nuclear Corporation (UNC)

FACILITY: Wood River Junction, Rhode Island
Fuel Recovery Operation

SUBJECT: Safety Analysis Report - UNC's Amendment Application
for Uranium Recovery from Lagoon Solids, March 22,
1978 as Modified May 10, May 12 (two submittals)
and October 27, 1978, PC No. 78065A

REVIEWER: Robert L. Stevenson

Background

The UNC application concerns the addition of a new, two-story bay to the north of the main process building, to permit recovery of uranium from lagoon residues. The new recovery operation involves acid addition to the solids and solvent extraction of the uranium using the same TBP-kerosene type solvent used in the existing scrap recovery process. After stripping into an aqueous phase, the recovered uranium is transferred to the main process area as a low concentration solution. The extracted solids and solution will be returned to the lagoon system.

The nuclear criticality safety of the operation is based on the total uranium mass and limited concentration in the entire new operation, confirmed by chemical analyses. The process safety and fire safety are based on the same types of controls and precautions (e.g., limited total solvent inventory) used in the main scrap recovery process.

The application also includes a request for revised gaseous effluent controls based on a total gaseous effluent release limit of 25 micro-curies (alpha) per week in place of the individual stack release limits imposed by Condition 18 of the current license.

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The application includes information on site hydrology, the design of new lagoons, changes in liquid effluent releases and groundwater monitoring that has not yet been evaluated. That information will be reviewed in future letters or memoranda.

The proposed license amendment was discussed on November 16, 1978, with Mr. J. Roth, Region I I&E principal inspector for the Wood River Junction Plant and he saw no objection to issuance of the proposed amendment.

Safety

The nuclear criticality safety of the new recovery operation is based on a total room limit of 350 grams U-235 and isolation from the balance of the recovery operations. Adherence to the limit will be monitored by chemical analyses of the process solutions.

Radiological safety in the new operation is based on all radioactive material being wet and of low specific activity, with ventilation sweep of exposed surfaces, as in the mixing tank, or use of closed vessels. The entire area will be a part of the controlled access contamination control area.

As stated in Background, the bases for the fire and process safety of the new recovery operation are similar to those for the existing recovery process. The licensee has fourteen years of experience with the existing process and the record indicates that a satisfactory level of process and fire safety has been and will be maintained. The licensee has recognized that controls over the rate of acid addition in the dissolution step are needed to prevent excessive rates of carbon dioxide evolution with consequent overloading of the off-gas system.

Environmental Effects

As stated in the attached environmental review by Dr. E. Y. Shum, the new recovery operation and the revised gaseous release limit are not predicted to have a significant environmental impact.

Conclusion

The new gaseous effluent release limit and the controls on the new recovery operation are adequate to protect the health and safety of the operating personnel and the public, and to maintain the quality of the environment.

Issuance of the license amendment is recommended.

Robert L. Stevenson

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Attachment:
Environmental Review by
E. Y. Shum dtd Nov. 4, 1978,
Docket 70-820