



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

AUG 9 1985

DOCKET NO: 70-1113

LICENSEE: General Electric Company (GE)
Wilmington, SC

SUBJECT: AMENDMENT APPLICATION DATED JULY 10, 1985, RE:
URANIUM RECOVERY LAGOON SLUDGE (URLS) PROJECT
FOR NITRATE LAGOON WASTES PROCESSING

APPLICATION DATED JULY 30, 1985, RE:
FEBRUARY 25, 1985, REVISION OF RADIOLOGICAL
CONTINGENCY AND EMERGENCY PLAN (RC&EP)

BACKGROUND

- A. In September 1983, GE notified the NRC of its intent to construct the URLS facility for recovery of uranium from calcium fluoride sludges. On December 21, 1983, the NRC staff notified GE that sufficient information had been submitted to construct but not operate the URLS facility. In the July 1985 application, GE requested authorization to operate the URLS for treatment of nitrate lagoon wastes.
- B. In a separate, unrelated action on February 25, 1985, GE notified the NRC staff of changes to the RC&EP. By application dated July 30, 1985, the applicant proposed revision of Section I-8 to reference the changed pages in the RC&EP.

DISCUSSION

A. Processing Nitrate Lagoon Sludge

The URLS facility was originally intended for use to recover uranium from calcium fluoride which is stored in lagoons and elsewhere at GE. The facility has been built and some equipment has been installed. GE now proposes to conduct a series of tests for uranium recovery using nitrate lagoon sludge rather than calcium fluoride sludge. The tests are intended to determine filterability through different types of filter media. Once the tests are completed, the URLS will be used for processing all the sludge in the nitrate lagoons.

Sludge from the lagoons will be transferred on a batch basis. The uranium will be transferred to the leach solution. The leach solution will be transferred to existing Tank V-108 for uranium precipitation and recovery. The

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supernate from V-108 and the sludge from the batch tank in URLS will be returned to one of the nitrate lagoons. The uranium precipitate will be collected in 5-gallon containers for transfer to the UPMP facility. It is estimated that the test program will require 20 batches of 1,000 gallons, each.

The information on the batch process was obtained, in part, during a telephone discussion with Messrs. C. Durham and R. Toleck, GE, on July 22, 1985. After completion of the test program, GE will describe the process, including preparation of the residual solids for disposal at an offsite location.

Nuclear criticality safety in the URLS facility will be based on batch control. Sampling of waste streams into the lagoons indicates that the average enrichment in the lagoons does not exceed 3 w/o U-235. The batch limit will be based on 3 w/o enriched homogeneous UO_2 . The leach solution from each batch will be transferred to an accumulator tank in URLS where the batch limit will again be verified. Existing Tank V-108 is operated on concentration control for incoming materials. Before transfer to V-108, the leach solution will be adjusted to meet concentration limits for V-108. Both batch and concentration controls are acceptable methods for assuming nuclear criticality safety. See Chapter 4, Part I, of the license application.

The existing radiation program will be extended to the URLS facility which will be established as a controlled area for surface contamination. No unusual radiation safety issues are involved in processing low concentrations of low-enriched uranium solutions and sludges.

The test program should have no measurable environmental effects. The liquids and solids minus the unrecovered uranium will be returned to the lagoon system. Air effluents, if any, should be essentially the same as the lagoons and will be controlled by 40 CFR 90 limits for the site.

B. Revision of RC&EP

The revisions to the existing plan essentially are made to reflect personnel and organizational changes. GE notified the NRC of the changes to satisfy the requirements of the license.

CONCLUSION/RECOMMENDATION

The NRC staff concluded that operation of the URLS facility for the test program for recovery of uranium from nitrate lagoon sludge will not cause any undue risk to the health and safety of the public or to the environment. Amendment of the license to authorize the test program is recommended.

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Revision of the RC&EP is an administrative matter and should have no effect on the health and safety of the public. Amendment of the license is recommended.

The Region II Project Inspector has no objection to this action.

Original signed by
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