Wayne H. Jens
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October 11, 1984
EF2-71992

Director of Nuclear Reactor Regulation
Attention: Mr. B. J. Youngblood, Chief
Licensing Branch No. 1
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Youngblood:

Reference: Fermi 2
NRC Docket No. 50-341

Subject: Radwaste Processing

Based on the current schedule it appears that the preoperational testing of the permanent Fermi 2 radwaste system will not be complete at the time of initial fuel load. Hence, Edison intends to utilize portable radwaste processing system supplied by NUS Corporation. This system is described in NUS Topical Report PS-53-00378, "NUSPSC Topical Report on Radwaste Solidification System" which has been submitted to the NRC. In addition, conformance of the waste form to 10CFR61 requirements is discussed in NUS Topical Report TR-002 submitted to the NRC in May 1984 and revised in September 1984.

Two process control programs (PCP) are being submitted for your review (attachments A and B). One governs dewatering and the other covers solidification. These are the PCP's that will be used by the vendor to dewater or solidify all wet wastes until Edison's permanent system has been fully tested.

Attachment C consists of a revision to the FSAR which amplifies the existing discussion concerning the use of vendor supplied portable processing systems. It has been written in a manner which would describe several vendor supplied systems currently available. If Detroit Edison finds it necessary or expedient to utilize the services of a vendor other than NUS, the NRC will be notified and the necessary documentation and PCP's will be submitted or referenced prior to implementation.

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Attachments A and B contain information proprietary to NUS Corporation and it is requested that they be withheld from public disclosure as permitted by 10CFR2.790. An affidavit by NUS Corporation is attached.

Should you have any questions on this matter please contact Mr. O. K. Earle at (313) 586-4211.

Sincerely,

Wayne H. Jens

Attachments

cc: Mr. P. M. Byron
Mr. C. M. Nichols
Mr. M. D. Lynch
USNRC, Document Control Desk
Washington, D.C. 20555

Attachments A and B to this letter are identified below:

Attachment A: NUS Process Services Report No. SS-001, "Process Control Program for NUSPSC Radwaste Solidification Systems", Revision E.

Attachment B: NUS Process Services Report No. FI-002, "Standard Process Control Program for Dewatering Transfix Disposable Pressure Vessels", Revision C.

These reports are proprietary NUS Process Services Corporation reports as indicated in the following affidavit. Fifteen (15) copies of these reports and the cover letter were docketed coincident with the docketing of this letter.

Affidavit Submitted to the Nuclear Regulatory Commission Concerning Confidential Information and Trade Secrets Contained in Procedures Prepared by NUS Process Services Corporation

State of South Carolina
County of Richland

Steven B. McCoy states as follows on behalf of NUS Process Services Corporation:

1. I am the Director of Support Services for NUS Process Services Corporation.

2. I have prepared and am familiar with the following procedures, hereinafter referred to as "procedures", prepared by NUS Process Services Corporation:

   - SS-001, Rev. E, "Process Control Program for NUSPSC Radwaste Solidification Systems"

   - FI-002, Rev. C, "Standard Process Control Programfor Dewatering TRANSFIX™ Disposable Pressure Vessels"

3. NUS Process Services Corporation, hereinafter "NUSPSC" has granted permission for Detroit Edison Company to submit copies of the procedures to the Nuclear Regulatory Commission. The copies of the procedures contain proprietary information which should be withheld from public disclosure.

4. NUSPSC's Radwaste Solidification and TRANSFIX™ systems are major components of its waste processing business. These systems for processing radioactive liquid wastes are unique to NUSPSC. Design and fabrication details for these systems are held in strictest confidence by all employees.

All employees of NUSPSC complete an agreement with NUSPSC regarding protection and non-disclosure of trade secret information at the commencement of their employment. The information included in the procedures contains the type of information covered under the non-disclosure agreement. NUSPSC routinely stresses that such information is not to be discussed outside the company either during or after employment.

NUSPSC is in the process of making its initial entry into the radwaste processing service market. The Radwaste Solidification and TRANSFIX™ systems and associated chemical control information represent a substantial commitment of personnel and financial resources for research, development, design and procedural controls. This commitment has resulted in systems currently superior to that provided by competitors and this superiority is the basis on which system details are withheld from public disclosure.

The information included in the procedures is not available through public sources. Release through public channels of the procedures will substantially harm the competitive position of NUSPSC. NUSPSC has

expended over $750,000 in salaries and capital equipment during the last year and is engaged in a capital building project to make these systems available. Duplication of this effort by competitors would require both similar capital expenditures and the assembly of a team of experts similar to the design team employed by NUSPSC.

Steven B. McCoy

Steven B. McCoy
Director Support Services

Sworn and subscribed before me this 9th day of October, 1984.

Patricia Z. Jewell

Notary Public

My commission expires: November 17, 1993

j. Protect plant personnel from radiation exposure and incorporate the basic "as low as is reasonably achievable" (ALARA) objectives by the use of automated systems, shielding, and remotely operated instrumentation and controls.

11.2.2 System Description

The liquid radwaste system is composed of two major subsystems--the floor drain collector (FDC) subsystem and the waste collector subsystem. The overall radwaste system's piping and instrumentation diagram is included as Figure 11.2-1 (Sheets 1 through 14), and Figure 11.2-2 (Sheets 1 through 5) depicts the process flow diagrams and the sump-pump diagrams.

Tables 11.2-1, 11.2-2, and 11.2-3 list the estimated inputs to the liquid radwaste system along with the corresponding process flow diagram stream numbers (Figure 11.2-2).

On an infrequent basis, the liquid radwaste system may produce water that may not be required for reuse in the station's water balance, in which case the system effluent will be discharged in a controlled manner to the circulating-water reservoir blowdown line. Processed liquid not meeting the criteria for either discharge or reuse is normally returned to the system for reprocessing. and Figure 11.2-2 Sheet 1).

The liquid and solid radwaste systems have a number of piping connections for use by portable waste-processing systems in the event of normal system unavailability (see Table 11.2-4). ~~No specific systems are included in the radwaste system description since these connections are for external use and only in the event of installed system malfunction. Temporary contract services will be brought to the site for waste processing and solidification. These services will meet applicable regulations when they are required.~~ Insert attached paragraph as continuation of sentence. (Blind note)

11.2.2.1 Floor Drain Collector Subsystem

The FDC subsystem will receive periodic and uncontrolled inputs from a variety of plant floor drain sources. The sources to this subsystem have been segregated from the waste collector subsystem because their water quality will probably be poor, will have high conductivity, and will normally contain higher contents of suspended and dissolved solids. The activity content will be generally lower than that of the waste collector subsystem. The estimated chemical characteristics of liquid radwaste input streams for this subsystem are listed in Table 11.2-5.

The chemical nature of the FDC subsystem inputs will also be highly variable. The effluent from the chemical waste tank will be particularly important to the overall stream process requirements because it is a source of high concentrations of dissolved solids. Periodic and variable quantities of oil and grease must

Blind note: Insert paragraph on page 11.2-2 as noted.

These connections are for external use, primarily in the event of system malfunction and/or if the permanent system is not completely available for initial plant fuel load. Temporary vendor-contract services are available onsite for waste processing and solidification. These services meet applicable regulations and are more fully described in sections 11.2.10 and 11.5.6.

11.2.10 Vendor Liquid Processing Systems

If the described permanent Fermi 2 liquid processing system is not operational at the time of initial fuel load, or is not available for some other reason, then a vendor-supplied portable system will be utilized. The system will be operated by the vendor and will be closely monitored by Detroit Edison personnel. The types and quantities of waste to be processed are the same as for the permanent radwaste systems (as described in Section 11.2.2). Fermi-2-specific operating procedures have been developed for operating this system as interfaced with the Fermi liquid radwaste system.

This vendor-supplied portable system will be installed in the areas immediately adjacent to the truck-bay of the Onsite Storage Facility (OSSF). These areas of the OSSF were specifically designed and constructed to contain and handle mobile process systems (see FSAR section 11.B.2.2.11). Concrete floors and walls in this region are coated, and all drains are routed back to the liquid radwaste system. The remote-operated overhead crane is available to move the process equipment. The design of these OSSF areas and the methods of operation have incorporated features to maintain personnel exposures ALARA. Permanent piping installed in the shielded OSSF pipe tunnel will transport the radioactive process fluid to the vendor's equipment.

The interface connections between the mobile system and the Fermi 2 system are shown in Fig. 11.2-2 (sheet 1), and described in Table 11.2-4. The portable radwaste system operates by passing the contaminated water through a series of pressure vessels, as necessary, containing filtration media or ion-exchange resins. When these vessels are removed from service, the media are dewatered in situ or solidified, and then shipped to an approved burial site for disposal. In both cases, the resulting end products comply with all federal and state disposal regulations. The processed water is, in turn, routed to the Waste Sample Tanks when established conductivity limits are met.

The system is designed to

a. Collect, process, and solidify radioactive wastes, which consist primarily of evaporator bottoms, filter backwash, tank sludge letdown, and spent resins

b. Provide for the transfer of decantate, resin sluice water, etc., to the LRS for processing and eventual reuse or controlled discharge

c. Package, handle, and temporarily store solidified and compressed radioactive wastes generated as a result of the normal operation of the plant, including those from anticipated operational occurrences

d. Provide a means to transfer the packaged wastes to vehicles that transport them to an offsite burial facility

e. Package the radioactive wastes in a manner that will allow shipment and burial in accordance with all applicable federal and state regulations

f. Provide a process for the solidification of wet wastes that leaves no freestanding water in the final product

g. Provide a means to transfer wet wastes to a mobile contractor-supplied system, if needed

h. Compact dry waste in a container that is suitable for offsite transportation and burial

i. Protect plant personnel from radiation exposure and incorporate the basic ALARA principles through the use of automated systems, shielding, and remotely operated instrumentation and controls

Standard Technical Specification 3.11.3.1 requires the establishment of a process control program (PCP). The purpose of this PCP is to provide reasonable assurance of the complete solidification of processed wastes and the absence of free water in the processed waste. Fermi 2 will be operated in accordance with its PCP, which is to be reviewed and approved by the NRC before implementation.

11.5.2 System Inputs

Table 11.5-1 lists all major inputs to the SRS. This table shows that the greatest input to the SRS is from the condensate filter/demineralizer backwash, stream 21. This source dominates the design daily volume, representing 81 percent of a volume of about

For vendor-supplied solidification services, an NRC approved PCP will be utilized. This is more fully described in section 11.5.6.

11.5.6 Vendor Solidification System

If the permanent Fermi 2 solidification system is not operational at the time of initial fuel load, or is not available for some other reason, then a vendor-supplied portable solidification system will be utilized.

The portable solid waste management system will be supplied and operated by the vendor per the requirements and description in their topical report, which has been submitted to the NRC. The types and quantities of waste to be processed are the same as for the permanent Fermi solidification system and are described in section 11.5.2. The system operation will be closely monitored by Detroit Edison personnel. The vendor will utilize its own Process Control Program (PCP), which has also been submitted to the NRC for review and approval. Conformance to 10 CFR 61 criteria is discussed in the vendor-supplied documentation, which has been submitted to the NRC. Fermi 2 specific operating procedures have been developed for operating this system as interfaced with the Fermi solid radwaste system.

The portable system will be installed in the laydown areas immediately adjacent to the truck-bay area of the Onsite Storage Facility (OSSF), with the exception of a bulk cement trailer, which may be located outside of the truck-bay door. These areas of the OSSF were specifically designed and constructed to contain and handle mobile process systems (see FSAR section 11.B.2.2.11). Concrete floors and walls of this region are coated, and all drains are routed back to the liquid radwaste system. The remote-operated overhead crane is available to move equipment onto or from trucks located in the truck-bay. The basic design of these areas and the methods of system operation have incorporated features to maintain operator exposures ALARA. Permanent piping installed in the shielded OSSF pipe tunnel will transport the radioactive process fluid to the vendor's equipment.

The interface connections between the portable system and the Fermi 2 system are shown in Fig. 11.2.2 (sheet 1) and described in Table 11.2.4. In general, liquid from the Centrifuge Feed Tank is transported directly to the vendor equipment, and clarified liquid is returned to the Waste Clarifier Tank. The waste is pumped to a disposable solidification liner. Pretreatment of the waste with chemical additives is then conducted in accordance with values derived from the Process Control Program (PCP). Cement is then added and the waste is allowed to cure to complete the solidification process. The solidification liners are suitable for transportation and burial at an approved burial facility. Additionally, the solidification liners are compatible with numerous approved shipping casks if a liner requires shipment in a cask.

11B.2.2.10 Compaction

To decrease the volume of solid waste to be removed from the site, the onsite storage facility uses a high-efficiency, in-drum, ram head compactor system with a filtration and ventilation system.

The ventilation system controls any contaminated particles that may be released while the packaging equipment is being operated. The compacting press has an air exhaust system, consisting of a hood, a prefilter and absolute filter, and an exhaust fan.

This system is so arranged that when the ram descends to compress waste material, the air exhaust system descends until the hood is just above the drum and in position to filter the air from the drum as the material is compressed.

The compressible trash, which is made up of low-activity material, including glass, paper, rags, mop heads, booties, gloves, and towels, is normally transported from the radwaste building to the compactor room in plastic bags. The trash is then placed in the drums and compacted. When a drum is filled, the top is fastened on the drum, and a forklift truck transports the drum from the compactor room to drum staging or drum-storage areas.

11B.2.2.11 Temporary Solidification and Processing

Piping is routed from the main radwaste system to the onsite storage facility to allow temporary processing and/or solidification of wet waste in the truck-bay area.

All pipes run in a shielded pipe tunnel beneath the storage facility and conform to ANSI B31.1. An access hatch to the pipe tunnel beneath the storage facility is located in the truck bay. The radwaste pipelines terminate in the truck bay (see Figure 11B-2). A blind flange is at the termination of each line. Each pipeline is capable of being flushed and hydro-tested as necessary with recycled condensate. Water decanted from ~~slurried~~ processed waste ~~resin~~ in the truck bay will be returned through the pipelines to the liquid radwaste treatment system in the radwaste building.

If the primary solidification system in the radwaste building ~~is~~ ARE temporarily unavailable, the wet waste ~~slurries~~ would then be pumped through the pipelines to commercial, transportable, and NRC-approved ~~solidification~~ equipment brought in by trucks. The radwaste piping will be connected at the flange fittings to the transportable equipment with temporary lines, ~~These temporary lines are~~ provided by the vendor.

Details concerning the vendor-supplied mobile processing and solidification equipment are given in sections ~~11~~.2.10 and 11.5.6.