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OCT 27 1981

Docket Nos. 50-325/324

MEMORANDUM FOR: T. Novak, Assistant Director for
Operating Reactors, DL

FROM: W. E. Kreger, Assistant Director for
Radiation Protection, DSI

SUBJECT: ADDITIONAL INFORMATION NEEDED FOR ETSB REVIEW OF
BRUNSWICK, UNIT NOS. 1 AND 2, SPENT FUEL POOL
EXPANSION (TAC-43797)

We have reviewed the licensee's submittal on the proposed second expansion of the spent fuel pool at Brunswick, Unit Nos. 1 and 2, and find that we need additional information to complete our review.

We need information concerning the design and expected increase in volume of demineralizer waste for the spent fuel pool cleanup system, which was not addressed in the licensee's submittal. We also need the licensee's estimate of the volume of solid waste, if any, to be generated by scrapping of existing fuel storage racks incident to the re-racking of the storage pool to increase its capacity.

This information is needed by November 18, 1981 to enable us to complete our review on schedule. If there are any questions, contact Mr. J. Boegli (x27634) who is the cognizant reviewer for this facility.

Original signed by: RW Houston for

William E. Kreger, Assistant Director
for Radiation Protection
Division of Systems Integration

Enclosure:
Request for Additional Information

cc: R. Mattson
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DATE	10/26/81	10/26/81	10/27/81	10/27/81		

PROCESS CONTROL PROGRAM

A "Process Control Program" (PCP) for a solid radwaste system shall be a manual detailing the program of sampling analysis and formulation determination by which solidification of radioactive wastes from liquid systems is assured. The PCP shall provide assurance that the system is operated as designed and produces a final product that contains no free water and has completely solidified all waste. If properties of the final product have been determined by the manufacturer the PCP shall also assure that the solidified waste products exhibit those physical and chemical properties (leachability, strength, flammability, etc.) that are characteristic of the product as demonstrated by the manufacturer for producing an acceptable solidified waste product. The PCP shall identify interfaces with other plant systems (e.g., liquid and gaseous radwaste systems), identify equipment (interlocks, alarms, monitors, etc.) which are required to be functional before processing can commence, identify administrative controls or equipment features to assure that operating procedures will be followed, identify the sampling requirements prior to processing and identify the various processing steps and process parameters which provide boundary conditions within which the solid radwaste system shall be operated. Depending upon the type of waste (bead resins, powdered resins, filter sludge, evaporator concentrates, sodium sulfate solutions, boric acid solutions, etc.) to be solidified and the kind of solidification agent (urea formaldehyde, cement, cement with sodium silicate, asphalt, polyester, etc.) employed, the process parameters shall include but are not limited

the equations and assumptions to be used, the site specific parameters to be measured and used, the receptor location by direction and distance, and the method of estimating and updating cumulative doses due to liquid releases. The dose factors, pathway transfer factors, pathway usage factors, and dilution factors for the points of pathway origin, etc., should be given, as well as receptor age group, water and food consumption rate and other factors assumed or measured. Provide the method of determining the dilution factor at the discharge during any liquid effluent release and any site specific parameters used in these determinations.

Section 5 - Gaseous Effluent Dose

Provide the equations and methodology to be used at the station or unit for each gaseous release point according to the dose objectives given in Specifications 3.11.2.2 and 3.11.2.3. The section should describe how the dose contributions are to be calculated for the various pathways and release points, the equations and assumptions to be used, the site specific parameters to be measured and used, the receptor location by direction and distance, and the method to be used for estimating and updating cumulative doses due to gaseous releases. The location, direction and distance to the nearest residence, cow, goat, meat animal, garden, etc., should be given, as well as receptor age group, crop yield, grazing time and other factors assumed or measured. Provide the method of determining dispersion values (X/Q and D/Q) for releases and any site specific parameters and release point elevations used in these determinations.

Section 6 - Projected Doses

For liquid and gaseous radwaste treatment systems, provide the method of projecting doses due to effluent releases for the normal and alternate pathways of treatment according to the specifications, describing the components and subsystems to be used.

Section 7 - Operability of Equipment

Provide a flow diagram(s) defining the treatment paths and the components of the radioactive liquid, gaseous and solid waste management systems that are to be maintained and used, pursuant to 10 CFR 50.36a, to meet Technical Specifications 3.11.1.3, 3.11.2.4 and 3.11.3.1. Subcomponents of packaged equipment can be identified by a list. For operating reactors whose construction permit applications were filed prior to January 2, 1971, the flow diagram(s) shall be consistent with the information provided in conformance with Section V.B.1 of Appendix I to 10 CFR Part 50. For OL applications whose construction permits were filed after January 2, 1971, the flow diagram(s) shall be consistent with the information provided in Chapter 11 of the Final Safety Analysis Report (FSAR) or amendments thereto.

Section 8 - Sample Locations

Provide a map of the Radiological Environmental Monitoring Sample Locations indicating the numbered sampling locations given in Table 3.12-1. Further clarification on these numbered sampling locations can be provided

by a list, indicating the direction and distance from the center of the building complex of the unit or station, and may include a descriptive name for identification purposes.

SOLID WASTE MANAGEMENT SYSTEMS -

Standard Review Plan 11.4⁽¹⁾ and Branch Technical Position ETSB 11-3⁽²⁾ require that each applicant for an operating license provide a detail description of a Process Control Program (PCP) to assure that the solid waste system will perform its intended function and that the product produced by this system contains no free water* and is a monolithic solid.

Specification 3.11.3.1 of the model Radiological effluent Technical Specifications⁽³⁾ require that the solid radwaste system be maintained and used in accordance with the PCP. NUREG-0133⁽⁴⁾ requires that at the time an applicant/licensee submits proposed Radiological Effluent Technical Specifications that he submit the PCP for NRC review. NUREG-0133 further requires that the PCP be documented in the plant operating procedures.

To meet this commitment, the staff has prepared a general description of a PCP giving the essential points that should be covered by the applicant/licensee in making this submittal. Due to variations in system design and operation, the applicant/licensee should not interpret this outline to be all inclusive. The PCP is plant specific and must be established on a case-by-case basis since waste characteristics will vary from plant to plant.

*Free water is defined as uncombined water not bound by the solid matrix.

to, the type of waste, requirements for sampling prior to processing, pH, oil content, water content, temperature, ratio of solidification agent to influent waste and the ratio of solidification agent to chemical additive.

NOTE:

For operating reactors which have systems installed that are not capable of solidifying the categories of "wet" waste as defined in SRP 11.4, BTP-EISB 11-3 or NUREG-0133 the licensee shall define the limitations of his present system and provide a Process Control Program to cover the waste that can be processed by his existing system. The licensee shall identify those wastes which cannot be solidified and indicate the method of packaging currently being employed (dewatered resins, vermiculite, etc.). In addition, the licensee shall provide a schedule for upgrading his solid waste system to provide the capability to process all types of "wet" wastes as defined in these reference documents.

REQUEST FOR ADDITIONAL INFORMATION FROM ETSB

- Q. What volume of solid radioactive waste is expected to be generated as a result of re-racking of the Brunswick, Unit Nos. 1 and 2, spent fuel pool? Estimate the volume, as prepared for shipment (in drums, boxes or wrapped) to the disposal site. Estimate the curie content of this waste.
- Q. Our records indicate that the spent fuel storage pool cleanup system contains two 500 gpm, 300 ft head, 60 HP pumps upstream of two heat exchangers and two filter/demineralizers. At what inlet water temperature do the pumps cavitate? Please indicate if your design for the proposed modifications includes any change to the automatic backwash of the filter/demineralizers or automatic bypass to maintain a minimum total flow of 1000 gpm through the SFP system (Figure 8-1). Also, indicate if the proposed expansion is expected to have any impact on the anticipated annual volume of demineralizer resin waste from this source; if so, provide your estimate of the annual volume and curie content.

REFERENCES

- (1) Standard Review Plan 11.4, Revision 1, Solid Waste Management Systems, NUREG-75/087.
- (2) Branch Technical Position - ETSB 11-3, Revision 1, Design Guidance for Solid Radioactive Waste Management Systems Installed in Light-Water-Cooled Nuclear Power Reactor Plants, NUREG-75/087.
- (3) Draft Radiological Effluent Technical Specifications for PWRs and BWRs, NUREGs 0472 and 0473.
- (4) Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants, NUREG-0133.