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

June 12, 1979

Docket No. 50-333

Mr. George T. Berry
General Manager and Chief
Engineer
Power Authority of the State
of New York
10 Columbus Circle
New York, New York 10019

Dear Mr. Berry:

By letter dated May 2, 1979 you submitted the Radiological Effluent Technical Specifications for the James A. FitzPatrick Nuclear Power Plant. In this submittal, you indicated that the offsite dose calculation manual (ODCM) and the process control program (PCP) for solidification are within the site Administrative Procedures and would be indexed and available for inspection.

While the site Administrative Procedures may have the type of information we have requested, these procedures usually contain a significant amount of unneeded information. Therefore, it is requested that the Power Authority provide a document specifically prepared for the Technical Specifications. Attachments A and B provide guidance for ODCM and PCP preparation, respectively.

Your response is requested by July 15, 1979. If we can be of assistance, please advise.

Sincerely,

Thomas A. Ippolito, Chief
Operating Reactors Branch #3
Division of Operating Reactors

Enclosures:
As stated

cc w/enclosures:
See page 2

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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.

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, powered 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, poylester, etc.) employed, the process parameters shall include but are not limited

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-ETSB 11- NUREG-0133 the licensee shall define the limitations of his present syste.. and provide a Process Control Prog am 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.

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.

GENERAL CONTENTS OF THE OFFSITE DOSE CALCULATION MANUAL (ODCM*)

Section 1 - Set Points

Provide the equations and methodology to be used at the station or unit for each alarm and trip set point on each effluent release point according to the Specifications 3.3.3.8 and 3.3.3.9. The instrumentation for each alarm and trip set point, including radiation monitoring and sampling systems and effluent control features, should be identified by reference to the FSAR (or Final Hazard Summary). This information should be consistent with the recommendations of Section I of Standard Review Plan 11.5, NUREG-75/087, (Revision 1). If the alarm and/or trip set point value is variable, provide the equation to determine the set point value to be used, based on actual release conditions, that will assure that the Specification is met at each release point; and provide the value to be used when releases are not in progress. If dilution or dispersion is used, state the on-site equipment and measurement method used during release, the site related parameters and the set points used to assure that the Specification is met at each release point. The fixed and variable set points should consider the radioactive effluent to have a radionuclide distribution represented by normal and anticipated operational occurrences.

Section 2 - Liquid Effluent Concentration

Provide the equations and methodology to be used at the station or unit

*The format for the ODCM is left up to the licensee and may be simplified by tables and grid printout. Each page should be numbered and indicate the facility approval and effective date.

for each liquid release point according to the Specification 3.11.1.1. For systems with continuous or batch releases, and for systems designed to monitor and control both continuous and batch releases, provide the assumptions and parameters to be used to compare the output of the monitor with the liquid concentration specified. State the limitations for combined discharges to the same release point. In addition, describe the method and assumptions for obtaining representative samples from each batch and the use of previous post-release analyses or composite sample analyses to meet the Specification.

Section 3 - Gaseous Effluent Dose Rate

Provide the equations and methodology to be used at the station or unit for each gaseous release point according to Specification 3.11.2.1. Consider the various pathways, release point elevations, site related parameters and radionuclide contribution to the dose impact limitation. Provide the equations and assumptions used, stipulating the pathway, receptor location and receptor age. Provide the dose factors to be used for the identified radionuclides released. Provide the annual average dispersion values (X/Q and D/Q), the site specific parameters and release point elevations.

Section 4 - Liquid Effluent Dose

Provide the equations and methodology to be used at the station or unit for each liquid release point according to the dose objectives given in Specification 3.11.1.2. 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 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 discriptive name for identification purposes.