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DESCRIPTION:

Ltr. re our ltr. of 10-15-75 and their ltr. of 6-23-75....Trans the following.....

ENCLOSURES:

Furnishing additional items of info related to final design of the Oconee Nuclear Station Permanent Waste Management Facility ......

ACKNOWLEDGED

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sent to Denton w/encl.

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DUKE POWER COMPANY
POWER BUILDING
422 SOUTH CHURCH STREET, CHARLOTTE, N. C. 28242

WILLIAM O. PARKER, JR.
VICE PRESIDENT
STEAM PRODUCTION

TELEPHONE: AREA 704
373-4083

December 16, 1975

Mr. Benard C. Rusche
Director of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Mr. Robert A. Purple, Chief
Operating Reactors Branch #1

Re: Oconee Nuclear Station
Docket Nos. 50-269, -270, and -287

Dear Sir:

Our letter of June 23, 1975 provided a safety analysis report describing the final design of the Oconee Nuclear Station Permanent Waste Management Facility pursuant to an agreement made in our November 27, 1973 meeting. Your letter of October 15, 1975 requested additional items of information related to the design of this facility. Attached is our response to your request.

Very truly yours,

W. O. Parker, Jr. By HB

William O. Parker, Jr.

EDB:mmb

Attachment

RESPONSE TO MR. R. A. PURPLE'S LETTER
OCTOBER 15, 1975

(1) Item: Provide a complete set of as-built piping and instrument diagrams (P&ID's) for the liquid, gaseous and solid radwaste systems. The diagrams should indicate the original, and modified equipment, including instruments, interconnecting piping, and valves.

Response:

The requested flow diagrams are listed below and provided as an attachment. Those drawings marked with an asterisk show the additional equipment incorporated in the Permanent Waste Management Facility. All other drawings show original station equipment.

PO-106A-1, revision 15
PO-106A-3, revision 12
PO-106B, revision 23
PO-106C, revision 8
PO-106D, revision 12
PO-107B-1, revision 20
PO-107B-3, revision 10
PO-107C-1, revision 20
PO-107C-3, revision 10
PO-107D-1, revision 15
PO-107D-3 revision 11
PO-107E, revision 20
PO-107F-1, revision 9
PO-107F-3, revision 7
PO-107G, revision 16
*PO-107H, revision 3
*PO-107J, revision 3
*PO-107K, revision 3
*PO-107L, revision 4
*PO-107M, revision 4
PO-108A-1, revision 19
PO-108A-3, revision 10
PO-108B-1, revision 11
PO-108B-3, revision 10
*PO-108C, revision 4
PO-125C, revision 4

(2) Item: Provide the process flow diagram for liquid, gaseous, and solid radwaste systems indicating the radwaste process paths used during normal plant power operation with all three units on line. The diagrams should show (1) the origin and/or source of radwaste into each receiving tank, (2) the major equipment, instruments, interconnecting piping, and valves, and (3) the following operating data:

(A) Input radwaste flow rates (gallons/day) into each of the Low Activity Waste Tanks, High Activity Waste Tanks,

V

Miscellaneous Waste Holdup Tanks, and Reactor Coolant Bleed Holdup Tanks.

(B) The fraction of liquid radwaste expected to be discharged from the Condensate Monitor Tank and the Condensate Test Tank to the environment after processing.

(C) Detergent (laundry) radwaste input flow rate (gallons/day) into the liquid radwaste system and the fraction of waste discharged to the environment.

Response:

The flow diagrams provided in response to Item (1) show the process flow for the liquid, gaseous and solid radwaste systems. For data requested by (A), (B), and (C), the following information is provided:

(A) Input radwaste flow rates (in gallons/day) into:

(1)	Low Activity Waste Tank (Units 1 and 2)	=	520
	Low Activity Waste Tank (Unit 3)	=	200
(2)	High Activity Waste Tank (Units 1 and 2)	=	210
	High Activity Waste Tank (Unit 3)	=	280
(3)	Misc. Waste Holdup Tank A (Units 1 and 2)	=	1790
	Misc. Waste Holdup Tank B (Units 1 and 2)	=	1620
	Misc. Waste Holdup Tank A (Unit 3)	=	890
	Misc. Waste Holdup Tank B (Unit 3)	=	870
(4)	Reactor Coolant Bleed Holdup Tanks (Average for each unit)	=	2100

The above waste flow values represent average, steady-state conditions gathered in November 1975 and will vary considerably depending upon unit conditions. For example, the values of flow to the bleed holdup tanks may vary from no flow to several times the value given depending on the time of the cycle. Beginning of cycle and end of cycle flows would be smallest while near the end of cycle flows would be the greatest.

(B) Approximately three-fourths of the liquid radwaste processed by evaporation will enter the condensate monitor tanks and condensate test tanks as distillate. Of that volume, 95-100% is expected to be discharged to the environment and 0-5% is expected to be re-used in station systems.

(C) The average detergent (laundry) radwaste input flow rate into the liquid radwaste system would be approximately 1,000 gallons/day. It is expected that all of this water would be eventually discharged to the environment. Please note that this is an estimated quantity and that the laundry is not presently being utilized.

(3) Item: In your Waste Management Facility Safety Analysis Report, you have stated that the interim radwaste management system would be acceptable for permanent use with several design modifications. Itemize the design modifications required and provide the basis for each modification.

Response:

The design modifications required to qualify the present facility for permanent use are listed below:

A. Civil

1. Increase the thickness of the north, west, and south walls of the room housing the evaporator condensate monitor tanks to 24 inches to meet wind and tornado loading design criteria.

2. Extend the shield wall in the waste evaporator room to the shielding roof slab to meet seismic design criteria.

3. Provide positive horizontal shear connections between the shielding roof slab and the walls to meet seismic design criteria.

4. Add 12 inches of reinforced concrete to the shielding roof slab for missile protection.

5. Tie the north wall of the valve gallery to the interior shielding walls to meet seismic design criteria.

6. Tie the east wall of the pipe chase to the interior shielding walls to meet wind and tornado loading design criteria.

B. Electrical

The redundant 480 VAC circuit consisting of MCC RWJ and the 600 VAC/480 VAC auto transformer, with associated cables and cable trays, will be added. In addition, MCC RWH will be modified to receive power from redundant 480 VAC sources. The modified 480 VAC system is shown on Figure 3.3-1 of the Waste Management Facility Safety Analysis Report. These modifications will be made to bring the system into conformance with Duke Power Company standards.

C. Mechanical

1. A portion of the piping and valves on the hot skid of the liquid waste solidification system will require replacement to meet NRC Regulatory Guide 1.26 Quality Group D standards.

2. The following valves do not meet Duke Power Company specifications for Class G piping systems and will be replaced.

a. Interim evaporator condensate return valves,

b. Recirculating Cooling Water System butterfly valves RCW-299, -300, -301, -305, -306, -307.

3. The following valves do not meet NRC Regulatory Guide Quality Group D standards (Duke piping class E) and will be replaced.

a. Interim evaporator condensate demineralizer chemical additional valve.

b. Combination vacuum/relief valves.

c. Miscellaneous diaphragm valves FS/1/70A/24, 25, 26, 27, 28, 30.

4. The following valves serve as isolation valves upstream and downstream of the interim waste gas decay tanks and will be seismically qualified or replaced.

Valve Type	Valve Operating Number
Diaphragm	GWD-196
	GWD-197
	N-222
	GWD-227
	GWD-204
	GWD-191
	GWD-199
	GWD-200
	GWD-205
	GWD-228
	N-224
	GWD-194
	GWD-223
	GWD-211
	N-226
	GWD-229
	GWD-214
	GWD-220
Safety Relief	GWD-225
	GWD-226
	GWD-218
Check	GWD-192
	GWD-195
	GWD-219
Discharge Control	GWD-206
	GWD-207
	GWD-215

5. Piping between the interim waste gas decay tanks and the valves listed in 4 above must be seismically qualified or replaced.

6. The interim waste gas decay tanks will be seismically qualified.

(4) Item: Provide complete system descriptions, process flow diagrams and P&ID's for the Liquid Waste Solidification System.

Response:

Flow diagrams for the Liquid Waste Solidification System are included in the response to item 1. A written description of the system is included in Appendix A of the Waste Management Facility Safety Analysis Report.

(5) Item: Justify that the system components and structures housing the modified liquid, gaseous and solid radioactive waste treatment systems satisfy the design guidance defined in the attached Branch Technical Position ETSB No. 11-1 "Design Guidance for Radioactive Waste Management Systems Installed in Light-Water-Cooled Nuclear Power Reactor Plants".

Response:

The system components and structures housing the modified liquid, gaseous and solid radioactive waste treatment systems will satisfy the design guidance defined in Branch Technical Position ETSB No. 11-1 with the exception that piping systems were tested in accordance with ANSI B31.1 code requirements only. The minimum test pressure of 75 psig and minimum test time of 30 minutes called for in section IVC of ETSB No. 11-1 were not implemented.

(6) Item: Provide test data obtained and process parameters established for the Liquid Waste Solidification System to assure that there is no free liquid (uncombined water bound in the solid matrix) within the solid waste containers prior to shipment offsite.

Response:

Specific test data have not been accumulated relative to free liquid within the solid waste containers. Visual inspections, however, have been made of containers prior to shipment and free liquid on the surface of the solid has not been observed to be a problem. Careful management of chemicals and the solidification process serves to assure proper solidification.

(7) Item: Provide a complete description of radiation monitors for the waste management facility building ventilation exhaust system. Regulatory Guide 1.21 recommends continuous monitoring of fission and activation gases, iodine, and particulates along principle gaseous waste effluent pathways.

Response:

The radiation monitor in the radwaste facility ventilation exhaust system monitors total gaseous activity primarily for the detection of activity leakage within the facility. This system is not a principle liquid or gaseous waste effluent pathway since liquid and gaseous waste is returned to the Auxiliary Building and utilizes existing release points. Therefore, the radwaste ventilation exhaust does not monitor iodine separately nor does it monitor particulates as mentioned in Regulatory Guide 1.21. A sample line from the final building ventilation exhaust duct brings the air sample to a Victoreen Model 840-3 off-line effluent monitor system. This system is made up of a Victoreen Model 841-35 sampler and a Model 843-20 beta scintillation detector. The readout for the unit is located near the waste disposal control panel in the radwaste facility, and it initiates a high radiation alarm signal to a local annunciator on the control panel. This annunciator panel initiates an annunciator alarm in the Unit 3 Control Room.

The sensitivity of this system is 8×10^{-7} μCi/cc for ^{133}Xe (0.34 MeV Beta), and 3×10^{-7} μCi/cc for ^{85}Kr (0.670 MeV Beta). A particulate filter is used in this gas detector to prevent contamination of the detector. The unit also alarms on loss of sample flow as it is a continuous sample monitor.

(8) Item: Provide any proposed Oconee Technical Specifications considered necessary to reflect the final system design.

Response:

In Section 7 of the safety analysis report submitted, the rupture of the facility's gaseous decay tanks is discussed. The consequences of this postulated accident is no worse than that evaluated in FSAR Section 12. Therefore, the maximum activities to be contained in one of these tanks will be limited to 17,200/E curies, as specified in Oconee Technical Specification 3.10.5.b. No new technical specifications are considered necessary to reflect the final design of the Permanent Waste Management Facility.

DUKE POWER COMPANY
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422 SOUTH CHURCH STREET, CHARLOTTE, N. C. 28242

WILLIAM O. PARKER, JR.
VICE PRESIDENT
STEAM PRODUCTION

TELEPHONE: AREA 704
373-4083

December 11, 1975

Mr. Norman C. Moseley, Director
U. S. Nuclear Regulatory Commission
Suite 818
230 Peachtree Street, Northwest
Atlanta, Georgia 30303

Re: Oconee Nuclear Station
Docket Nos. 50-269, -270, -287

Dear Mr. Moseley:

Pursuant to the requirements of Oconee Nuclear Station Technical Specification 6.6.2.6.d, this report is submitted describing a condition in which a measured level of radioactivity exceeded the control level by greater than ten times.

On December 5, 1975, it was determined that the tritium concentration in a composite water sample collected over the quarter, July 1 to September 30, 1975, exceeded the tritium concentration at the control location by greater than ten times. The sample was collected at location 000.7, i.e., at the bridge on Highway 183 near the effluent discharge point. The tritium value at location 000.7 was 7.30 ± 0.44 E + 04 pCi/l. The control value of 5.5 ± 0.7 E + 02 pCi/l, was determined at location 000.3, i.e., the bridge across the connecting canal north of the site on Highway 183.

A supplementary report will be submitted by December 23, 1975 which will provide an evaluation of this anamolous condition.

Very truly yours,

William O. Parker, Jr.

MST:mmb

DUKE POWER COMPANY
STEAM PRODUCTION DEPT.
GENERAL OFFICES
422 SOUTH CHURCH STREET
CHARLOTTE, N. C. 28242

P. O. BOX 2178

TELEPHONE: AREA 704
373-4011

November 28, 1975

Mr. Norman C. Moseley, Director
U. S. Nuclear Regulatory Commission
Suite 818
230 Peachtree Street, Northwest
Atlanta, Georgia 30303

Re: Oconee Nuclear Station
Docket Nos. 50-269, -270, -287

Dear Mr. Moseley:

Prior to November 19, 1975, the Oconee Unit 3 spent fuel pool, in preparation for the installation of new spent fuel racks, was drained to the upper settling basin pending controlled release to the Keowee River via the lower pond. Oconee Nuclear Station Appendix B Technical Specification 1.2A requires that station releases be limited such that the boron concentration in the Keowee River remain below 0.2 ppm. On November 19, 1975, after calculations were made to assure conformance to this technical specification, discharge from the upper settling basin to the Keowee River was initiated. However, on November 21, 1975, a recalculation was made, and it was subsequently determined that the boron concentration limit of 0.2 ppm in the river had been exceeded. The discharge of the upper settling basin was then secured to prevent further boron release.

The high boron concentration in the Keowee River resulted from an initial miscalculation of the release rate from the lower pond. A discharge of 50 gpm based on a boron concentration of 377 ppm had been calculated for the upper settling basin which, when combined with other sources to the lower pond (approximately 3500 gpm) would be reduced to 5.38 ppm. A release rate of 50 gpm from the lower pond to the Keowee River had been assumed, which with 5.38 ppm boron, would have resulted in a concentration well below the 0.2 ppm limit in the Keowee River. However, the release rate from the lower pond was actually 3500 gpm instead of 50 gpm resulting in an excessive boron concentration of 1.03 ppm in the Keowee River. This error was discovered and corrected after 48 hours. During this 48 hours, the Keowee Hydro Plant had been operated for 13.8 hours during which time the additional discharge to the river had diluted the boron concentration from 1.03 ppm to 0.004 ppm, well below the 0.2 ppm limit. Therefore, for the 48 hours that this problem existed, the technical specification limit of 0.2 ppm was exceeded for approximately 34 hours, but well within limits for the remaining 14 hours. The average boron concentration in the Keowee River over the entire period was calculated to be 0.015 ppm.

When discharge rates are to be calculated for non-routine releases of this type, at least two independent release rates will be determined. Agreement among these independently calculated release rates will be required prior to initiating the discharge. In addition, approval of recommended release rates by the Superintendent Technical Services will be required for non-routine releases. It is felt that implementation of these administrative procedures should prevent recurrence of this incident.

Very truly yours,

William O. Parker

William O. Parker, Jr.

EDB:mmb