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TO: Mr Rusche

FROM: Duke Power Co  
Charlotte, NC  
W O Parker Jr

DATE OF DOCUMENT  
11-18-76

DATE RECEIVED  
11-22-76

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DESCRIPTION

Ltr notarized 11-18-76.....re their 7-30-76 ltr.....trans the following:

PLANT NAME: Oconee 1-3

ENCLOSURE

Amdt to OL/Change to Tech Specs: Consisting of revisions with regard to release of radioactive wastes.....(40 cys encl rec'd)

**DO NOT REMOVE**

**ACKNOWLEDGED**

SAFETY		FOR ACTION/INFORMATION		ENVIRO	11-22-76	ehf
ASSIGNED AD:		ASSIGNED AD:				
BRANCH CHIEF:	Schwencer (5)	BRANCH CHIEF:				
PROJECT MANAGER:	Zech	PROJECT MANAGER:				
LIC. ASST.:	Sheppard	LIC. ASST.:				

INTERNAL DISTRIBUTION			
<input checked="" type="checkbox"/> REG FILE	SYSTEMS SAFETY	PLANT SYSTEMS	SITE SAFETY &
<input checked="" type="checkbox"/> NRC PDR	HEINEMAN	TEDESCO	ENVIRO ANALYSIS
<input checked="" type="checkbox"/> I & E (2)	SCHROEDER	BENAROYA	DENTON & MULLER
<input checked="" type="checkbox"/> OELD		LAINAS	
<input checked="" type="checkbox"/> GOSSICK & STAFF	ENGINEERING	IPPOLITO	ENVIRO TECH.
MIPC	MACCARRY	KIRKWOOD	ERNST
CASE	KNIGHT		BALLARD
HANAUER	SIHWEIL	OPERATING REACTORS	SPANGLER
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			SITE TECH.
PROJECT MANAGEMENT	REACTOR SAFETY	OPERATING TECH.	GAMMILL
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EXTERNAL DISTRIBUTION			CONTROL NUMBER
<input checked="" type="checkbox"/> LPDR: Walhalla, SC	NAT LAB:	BROOKHAVEN NAT. LAB.	11884
<input checked="" type="checkbox"/> TIC:	REG. VII	ULRIKSON (ORNL)	
<input checked="" type="checkbox"/> NSIC:	LA PDR		
<input checked="" type="checkbox"/> ASLB:	CONSULTANTS		
<input checked="" type="checkbox"/> ACRS 16 CYS HOLDING/EN	A2 CAT B 11-22-76		

# DUKE POWER COMPANY

POWER BUILDING

422 SOUTH CHURCH STREET, CHARLOTTE, N. C. 28242

WILLIAM O. PARKER, JR.  
VICE PRESIDENT  
STEAM PRODUCTION

November 18, 1976

TELEPHONE: AREA 704  
373-4083

## Regulatory Docket File

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

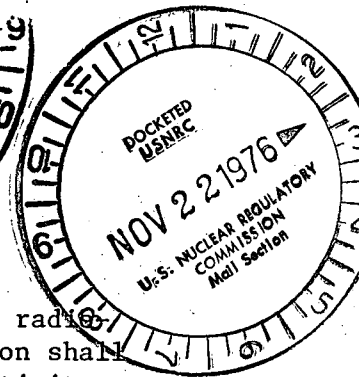
Re: Oconee Nuclear Station  
Docket Nos. 50-269, -270, -287

Dear Mr. Rusche:

The Oconee Nuclear Station Technical Specification 3.9.3 concerning radioactive liquid effluent releases states that releases from the station shall be controlled such that the instantaneous concentrations of radioactivity in liquid waste released from the Restricted Area do not exceed the values listed in 10CFR20, Appendix B, Table II, Column 2. Specification 3.9.7 further states that an effluent control monitor shall be set to alarm and automatically close the waste discharge valve such that the above requirements are met.

In our letter dated July 30, 1976, we informed you of the difficulty we were experiencing with high background readings which prevented the setting of the monitor as required by Specification 3.9.7. Prior to and since that time, considerable efforts have been expended in the solution of this problem. An off-line radiation monitor has been temporarily installed in order to more effectively decontaminate the monitor. Equipment and procedures have been provided which will allow flushing of the radiation monitors between releases to reduce the buildup of radioactivity on interior surfaces. Experimentation with various piping materials, coatings and surface finishes have also been conducted to obtain minimum background on the liquid effluent monitor. These actions have been successful in significantly reducing the average background seen by the detector and have resulted in the ability of the monitor to detect station releases.

However, efforts to correlate the liquid effluent monitor readings with a laboratory sample have been unsuccessful. The primary reason for this is considered to be the changing spectrum of radionuclides from release to release. Although it may be possible to calibrate the monitor to a specific predominate isotope, if one exists, it is believed impossible to calibrate a single monitor to the wide spectrum of radionuclides present in liquid waste effluents at the low levels of activity necessary to assure compliance with 10CFR20, Appendix B, Table II, Column 2 on an instantaneous basis as required by Technical Specification 3.9.7. The monitor is capable of detecting and alarming on gross changes in activity and can provide indication of an unexpected condition.



11884

Mr. Benard C. Rusche

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It is considered that our present Technical Specifications concerning liquid waste effluents are impractical to meet literally on a continuous basis. The provisions of 10CFR20, §20.106 permit the release of liquid radioactivity to an unrestricted area in concentrations which do not exceed 10CFR20, Appendix B, Table II, Column 2 amounts. These concentrations are permitted to be averaged over periods not exceeding one year. The provisions of 10CFR50, Appendix A, General Design Criterion 60, require that the design of the nuclear power unit shall include the means to control suitably the release of radioactive materials in liquid effluents ..... produced during normal reactor operation. The design and operation of the Oconee Nuclear Station provides for the control of liquid radioactive effluents primarily by releasing only in a batch manner from tanks which have been isolated and sampled to assure the acceptability of the release. This method of sampling prior to release assures that the limits of 10CFR20 are met. The liquid effluent monitor is provided as a backup to detect gross changes which might occur from an unexpected release. The regulations do not require a monitor capable of alarming and automatically closing a waste discharge valve as required by the Technical Specifications.

For the above reasons, pursuant to 10CFR50, §50.90, revisions to the Oconee Nuclear Station Technical Specification 3.9, "Release of Radioactive Waste," are requested as indicated on the attached replacement page. These changes revise the maximum concentration of radioactivity in liquid waste to 35 times the concentrations specified in 10CFR20, Appendix B, Table II, Column 2 when averaged over the period of a batch release. This value is acceptable in that it assures compliance with 10CFR20.105 for permissible levels of radiation in the unrestricted area. The requirements for calibration of the liquid effluent monitor have been revised to require annual calibration by means of a known solid source; monthly checks with a known solid source; and daily instrument checks. The provisions for comparison with liquid effluent releases have been deleted.

The liquid effluent monitor is required to be operable during liquid effluent releases. However, in order to assure that the provisions of 10CFR20 are met, redundant valve lineup checks of the effluent pathway and redundant sample analyses will be performed prior to each liquid effluent release. Additionally, effluent releases will be permitted only from isolated tanks.

Your prompt attention to this matter is requested.

Very truly yours,

s/William O. Parker, Jr.  
William O. Parker, Jr.

MST:ge  
Attachment

cc: Mr. Norman C. Moseley

Mr. Benard C. Rusche

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WILLIAM O. PARKER, JR., being duly sworn, states that he is Vice President of Duke Power Company; that he is authorized on the part of said Company to sign and file with the Nuclear Regulatory Commission this request for amendment of the Oconee Nuclear Station Technical Specifications, Appendix A to Facility Operating Licenses DPR-38, -47 and DPR-55; and that all statements and matters set forth therein are true and correct to the best of his knowledge.

s/William O. Parker, Jr.

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William O. Parker, Jr., Vice President

ATTEST:

s/John C. Goodman, Jr.

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John C. Goodman, Jr.  
Assistant Secretary  
(Seal)

Subscribed and sworn to before me this 18th day of November, 1976.

s/Edna B. Farmer

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Notary Public  
(Notarial Seal)

My Commission Expires:

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October 24, 1977

### 3.9 RELEASE OF LIQUID RADIOACTIVE WASTE

#### Applicability

Applies to the controlled release of all liquid waste discharged from the station which may contain radioactive materials.

#### Objective

To establish conditions for the release of liquid waste containing radioactive materials and to assure that all such releases are within the concentration limits specified in 10 CFR Part 20. In addition, to assure that the releases of radioactive material in liquid wastes (above background) to unrestricted areas meet the low as practicable concept, the following liquid release objectives shall apply:

- a. The annual total quantity of radioactive materials in liquid waste, excluding tritium and dissolved gases, shall be less than 5 curies per unit;
- b. The annual average concentration of radioactive materials in liquid waste, upon release from the Restricted Area, excluding tritium and dissolved noble gases, shall not exceed  $2 \times 10^{-8}$   $\mu\text{Ci/ml}$ ;
- c. The annual average concentration of tritium in liquid waste, **upon release from the Restricted Area**, shall not exceed  $5 \times 10^{-6}$   $\mu\text{Ci/ml}$ ;
- d. The annual average concentration of dissolved gases in liquid waste, upon release from the Restricted Area, shall not exceed  $2 \times 10^{-6}$   $\mu\text{Ci/ml}$ ;

#### Specifications

3.9.1 If the experienced release of radioactive materials in liquid wastes, when averaged over a calendar quarter, is such that these quantities if continued at the same release rate for a year would exceed twice the annual objectives the licensee will:

- a. Make an investigation to identify the causes for such release rates;
- b. Define and initiate a program of action to reduce such release rates to the design levels, and;
- c. Describe these actions in a report to NRC/DOR within 30 days after incurring the reporting obligation.

3.9.2 The release rate of radioactive liquid effluents, excluding tritium and dissolved noble gases, shall not exceed 10 curies during any calendar quarter without specific approval of the Commission. Similarly, the quarterly average concentration of tritium released from the Restricted Area shall not exceed  $1 \times 10^{-5}$   $\mu\text{Ci/ml}$ .

- 3.9.3 The rate of release of radioactive materials in liquid waste from the station shall be controlled such that the concentrations of radioactivity in liquid waste upon release from the Restricted Area, does not exceed 35 times the values listed in 10CFR20, Appendix B, Table II, Column 2 when averaged over the actual release period.
- 3.9.4 The equipment installed in the liquid radioactive waste system shall be maintained and operated to process liquids prior to their discharge in order to limit the activity, excluding tritium and dissolved noble gases, released during any calendar quarter to 1.25 curies or less per unit.
- 3.9.5 As far as practicable, the releases of liquid waste shall be coordinated with the operation of the Keowee hydro unit.
- 3.9.6 Liquid waste discharged from the liquid waste disposal system shall be continuously monitored during release. The monitor shall be calibrated annually by means of a known solid source and checked at least monthly by means of a known solid radioactive source. In addition to the monthly functional check, the monitor shall have an instrument check daily. The solid sources and geometry shall be referenced to the original monitor calibration.
- 3.9.7 Liquid effluent releases shall be from an isolated tank. Redundant valve lineup checks of the effluent pathway and redundant sample analyses shall be performed prior to each liquid effluent release. The liquid effluent monitor shall be operable to alarm and automatically terminate the release if gross changes of activity occur. If the monitor is inoperable for a period exceeding 72 hours, the effluent release from this line will be terminated.
- 3.9.8 In addition to the continuous monitoring requirements, liquid radioactive waste sampling and activity analysis shall be performed in accordance with Table 4.1.3. Records shall be maintained and reports of the sampling and analysis shall be submitted in accordance with Section 6.6 of these Technical Specifications.

#### Bases

It is expected that the releases of radioactive materials and liquid wastes will be kept within the design objective levels and will not exceed the concentration limits specified in 10CFR20. These levels provide the reasonable assurance that the resulting annual exposure to the whole body or any individual body organ will not exceed 5 millirem per year. At the same time, the licensee is permitted the flexibility of operation compatible with

considerations of health and safety to assure that the public is provided a dependable source of power under unusual operating conditions which may temporarily result in releases higher than design objective levels but still within the exposure limits specified in 10CFR20. It is expected that when using this operational flexibility under unusual operating conditions, the licensee shall exert every effort to keep the levels of radioactive materials and liquid wastes as low as practicable and that annual releases will not exceed a small fraction of the annual average concentration limits specified in 10CFR20.

The anticipated annual releases from the three Oconee units have been developed taking into account a combination of variables including fuel failures, primary system leakage, primary-to-secondary leakage, and the performance of the various waste treatment systems. The actual magnitude of these parameters are as follows:

- a. Maximum expected reactor coolant corrosion product concentrations.
- b. Reactor coolant fission product concentration corresponding to 0.25 percent fuel cladding defects.
- c. Steam generator primary-to-secondary leakage rate of 20 gpd.
- d. 255,160 gallons per year processed by the waste disposal system in a 30-day hold-up.
- e. 1,060,800 gallons per year processed by the reactor coolant bleed treatment system.
- f. A decontamination factor of  $10^4$  for all radionuclides except tritium for the coolant bleed and waste evaporators and a decontamination factor of 10 for the demineralizers except for tritium which had an assumed decontamination factor of 1 for evaporation-demineralization.
- g. No removal by demineralization for Cs, Mo, and Y. A decontamination factor of  $10^3$  was used for the evaporation of iodine.
- h. The decay time of the reactor coolant bleed system was 30 days.

The application of the above estimates results in the radionuclide discharge concentrations and rates shown in Table III-12 of the "Final Environmental Statement Related to Operation of Oconee Nuclear Station Units 1, 2, and 3". These concentrations are based on an annual average flow in the Keowee River of 1,100 cfs.

Operating procedures will identify all equipment installed in the liquid waste handling and treatment systems and will specify detailed procedures for operating and maintaining this equipment.

The lowest practicable liquid release objectives expressed in this specification are based on the guidelines contained in the proposed Appendix I of 10CFR50. Since these guidelines have not been adopted as yet, the release objectives of this specification will be reviewed at the time Appendix I becomes a regulation to assure that this specification is based upon the guidelines contained therein.