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January 11, 1988

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Amndt. 57

to DPR-79

Docket Nos. 50-327, 328

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Mr. S. A. White  
Manager of Nuclear Power  
Tennessee Valley Authority  
6N 38A Lookout Place  
1101 Market Street

Dear Mr. White:

SUBJECT: TECHNICAL SPECIFICATION CHANGE ON GASEOUS EFFLUENT DOSE RATE  
(TAC 00126, 00127) (TS 87-11)

Re: Sequoyah Nuclear Plant, Units 1 and 2

The Commission has issued the enclosed Amendment No. 65 to Facility Operating License No. DPR-77 and Amendment No. 57 to Facility Operating License No. DPR-79 for the Sequoyah Nuclear Plant, Units 1 and 2, respectively. These amendments are in response to your application dated May 22, 1987.

These amendments revise Section 3/4 11.2 to require sampling using containment noble gas activity monitors rather than the Shield Building stack monitor.

A copy of the Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's Bi-Weekly Federal Register Notice.

Sincerely,

Original Signed by  
Gary G. Zech, Assistant Director  
for Projects  
TVA Projects Division  
Office of Special Projects

Enclosures:

1. Amendment No. 65 to License No. DPR-77
2. Amendment No. 57 to License No. DPR-79
3. Safety Evaluation

cc w/enclosures:  
See next page

OSP:TVA/LA  
CJamerson:as  
1/11/88

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EMcKenna  
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OGC  
Washed  
1/15/88

TVA  
GZech  
1/11/88



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

January 11, 1988

Docket Nos. 50-327/328

Mr. S. A. White  
Manager of Nuclear Power  
Tennessee Valley Authority  
6N 38A Lookout Place  
1101 Market Street  
Chattanooga, Tennessee 37402-2801

Dear Mr. White:

SUBJECT: TECHNICAL SPECIFICATION CHANGE ON GASEOUS EFFLUENT DOSE RATE  
(TAC 00126, 00127) (TS 87-11)

Re: Sequoyah Nuclear Plant, Units 1 and 2

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These amendments revise Section 3/4 11.2 to require sampling using containment noble gas activity monitors rather than the Shield Building stack monitor.

A copy of the Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's Bi-Weekly Federal Register Notice.

Sincerely,

A handwritten signature in dark ink, appearing to read "Gary G. Zech", is written over a horizontal line.

Gary G. Zech, Assistant Director  
for Projects  
TVA Projects Division  
Office of Special Projects

Enclosures:

1. Amendment No. 65 to  
License No. DPR-77
2. Amendment No. 57 to  
License No. DPR-79
3. Safety Evaluation

cc w/enclosures:  
See next page

Mr. S. A. White  
Tennessee Valley Authority

Sequoyah Nuclear Plant

cc:  
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Knoxville, Tennessee 37902

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Chattanooga, Tennessee 37402-2801

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Tennessee Valley Authority  
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Soddy Daisy, Tennessee 37379

Mr. M. R. Harding  
Tennessee Valley Authority  
Sequoyah Nuclear Plant  
P.O. Box 2000  
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Mr. D. L. Williams  
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Knoxville, Tennessee 37902

County Judge  
Hamilton County Courthouse  
Chattanooga, Tennessee 37402

Regional Administrator, Region II  
U.S. Nuclear Regulatory Commission  
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Atlanta, Georgia 30323

Resident Inspector/Sequoyah NP  
c/o U.S. Nuclear Regulatory Commission  
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Soddy Daisy, Tennessee 37379

Mr. Richard King  
c/o U.S. GAO  
1111 North Shore Drive  
Suite 225, Box 194  
Knoxville, Tennessee 37919

Tennessee Department of  
Public Health  
ATTN: Director, Bureau of  
Environmental Health Services  
Cordell Hull Building  
Nashville, Tennessee 37219

Mr. Michael H. Mobley, Director  
Division of Radiological Health  
T.E.R.R.A. Building  
150 9th Avenue North  
Nashville, Tennessee 37203

Dr. Henry Myers, Science Advisor  
Committee on Interior  
and Insular Affairs  
U.S. House of Representatives  
Washington, D.C. 20515



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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-327

SEQUOYAH NUCLEAR PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 65  
License No. DPR-77

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Tennessee Valley Authority (the licensee) dated May 22, 1987, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

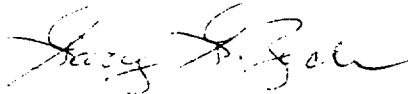
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-77 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 65, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Gary G. Zech, Assistant Director  
for Projects  
TVA Projects Division  
Office of Special Projects

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: January 11, 1988

ATTACHMENT TO LICENSE AMENDMENT NO. 65

FACILITY OPERATING LICENSE NO. DPR-77

DOCKET NO. 50-327

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change. Overleaf pages\* are provided to maintain document completeness.

REMOVE

3/4 11-13

3/4 11-14

INSERT

3/4 11-13

3/4 11-14\*

TABLE 4.11-2 (Continued)

TABLE NOTATION

- b. Sampling and analysis shall also be performed following shutdown, startup, or a thermal power change exceeding 15% of rated thermal power within 1 hour unless (1) analysis shows that the dose equivalent I-131 concentration in the primary coolant has not increased more than a factor of 3 and (2) the containment noble gas activity monitor (RE-90-106 or RE-90-112) shows that the radioactivity has not increased by more than a factor of 3.
- c. Tritium grab samples shall be taken at least once per 24 hours when the refueling canal is flooded.
- d. Samples shall be changed at least once per 7 days and analyses shall be completed within 48 hours after changing (or after removal from sampler). Sampling shall also be performed at least once per 24 hours for at least 2 days following each shutdown from  $\geq 15\%$  RATED THERMAL POWER, startup of  $\geq 15\%$  RATED THERMAL POWER or THERMAL POWER change exceeding 15% of RATED THERMAL POWER in one hour and analyses shall be completed within 48 hours of changing. When samples collected for 24 hours are analyzed, the corresponding LLD's may be increased by a factor of 10.
- e. Tritium grab samples shall be taken at least once per 7 days from the ventilation exhaust from the spent fuel pool area, whenever spent fuel is in the spent fuel pool.
- f. The ratio of the sample flow rate to the sampled stream flow rate shall be known for the time period covered by each dose or dose rate calculation made in accordance with Specifications 3.11.2.1, 3.11.2.2 and 3.11.2.3.
- g. The principal gamma emitters for which the LLD specification applies exclusively are the following radionuclides: Kr-87, Kr-88, Xe-133, Xe-133m, Xe-135, and Xe-138 for noble gases and Mn-54, Fe-59, I-131, Co-58, Co-60, Zn-65, Mo-99, Cs-134, Cs-137, Ce-141 and Ce-144 for particulate principal gamma emitters. This list does not mean that only these nuclides are to be detected and reported. Other gamma peaks which are measureable and identifiable, together with the above nuclides, shall also be analyzed and reported in the Semi-annual Radioactive Effluent Release Report pursuant to Specification 6.9.1.12.
- h. During releases via this exhaust system.
- i. Purging - Applicable in MODES 1, 2, 3 and 4, the upper and lower compartments of the containment shall be sampled prior to PURGING. Prior to breaking containment integrity in MODE 5 or 6, the upper and lower compartments of the containment shall be sampled. The incore instrument room purge sample shall be obtained at the shield building exhaust between 20 and 25 minutes following initiation of the incore instrument room purge.

TABLE 4.11-2 (Continued)

TABLE NOTATION

- j. Venting - Applicable in MODES 1, 2, 3, and 4; the containment will be vented to the containment annulus and then to the auxiliary building via containment annulus fans. The lower containment compartment shall be sampled daily when venting is to occur to account for the radioactivity being discharged from the venting process.





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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-328

SEQUOYAH NUCLEAR PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 57  
License No. DPR-79

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Tennessee Valley Authority (the licensee) dated May 22, 1987, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-79 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 57, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Gary G. Zech, Assistant Director  
for Projects  
TVA Projects Division  
Office of Special Projects

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: January 11, 1988

ATTACHMENT TO LICENSE AMENDMENT NO. 57

FACILITY OPERATING LICENSE NO. DPR-79

DOCKET NO. 50-328

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change. Overleaf pages\* are provided to maintain document completeness.

REMOVE

3/4 11-11

3/4 11-12

INSERT

3/4 11-11

3/4 11-12\*

TABLE 4.11-2 (Continued)

TABLE NOTATION

- a. The LLD is defined, for the purposes of these specifications, as the smallest concentration of radioactive material in a sample that will yield a net count above system background that will be detected with 95% probability with only a 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system (which may include radiochemical separation):

$$LLD = \frac{4.66 s_b}{E \cdot V \cdot 2.22 \times 10^6 \cdot Y \cdot \exp(-\lambda \cdot \Delta t)}$$

Where:

LLD is the "a priori" lower limit of detection as defined above in microcurie per unit mass or volume,

$s_b$  is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate (as counts per minute),

E is the counting efficiency as counts per disintegration,

V is the sample size in units of mass or volume,

$2.22 \times 10^6$  is the number of disintegrations per minute per microcurie,

Y is the fractional radiochemical yield (when applicable),

$\lambda$  is the radioactive decay constant for the particular radionuclide, and

$\Delta t$  for plant effluents is the elapsed time between midpoint of sample collection and time of counting (midpoint).

It should be noted that the LLD is defined as an a priori (before the fact) limit representing the capability of a measurement system and not as an a posteriori (after the fact) limit for a particular measurement.

- b. Sampling and analysis shall also be performed following shutdown, startup, or a thermal power change exceeding 15% of rated thermal power within 1 hour unless (1) analysis shows that the dose equivalent I-131 concentration in the primary coolant has not increased more than a factor of 3 and (2) the containment noble gas activity monitor (RE-90-106 or RE-90-112) shows that the radioactivity has not increased by more than a factor of 3.

TABLE 4.11-2 (Continued)

TABLE NOTATION

- c. Tritium grab samples shall be taken at least once per 24 hours when the refueling canal is flooded.
- d. Samples shall be changed at least once per 7 days and analyses shall be completed within 48 hours after changing (or after removal from sampler). Sampling shall also be performed at least once per 24 hours for at least 2 days following each shutdown from >15% RATED THERMAL POWER, startup to >15% RATED THERMAL POWER or THERMAL POWER change exceeding 15% of RATED THERMAL POWER in one hour and analyses shall be completed within 48 hours of changing. When samples collected for 24 hours are analyzed, the corresponding LLD's may be increased by a factor of 10.
- e. Tritium grab samples shall be taken at least once per 7 days from the ventilation exhaust from the spent fuel pool area, whenever spent fuel is in the spent fuel pool.
- f. The ratio of the sample flow rate to the sampled stream flow rate shall be known for the time period covered by each dose or dose rate calculation made in accordance with Specifications 3.11.2.1, 3.11.2.2 and 3.11.2.3.
- g. The principal gamma emitters for which the LLD specification applies exclusively are the following radionuclides: Kr-87, Kr-88, Xe-133, Xe-133m, Xe-135, and Xe-138 for noble gases and Mn-54, Fe-59, I-131, Co-58, Co-60, Zn-65, Mo-99, Cs-134, Cs-137, Ce-141 and Ce-144 for particulate principal gamma emitters. This list does not mean that only these nuclides are to be detected and reported. Other gamma peaks which are measureable and identifiable, together with the above nuclides, shall also be analyzed and reported in the Semiannual Radioactive Effluent Release Report pursuant to Specification 6.9.1.12.
- h. During releases via this exhaust system.
- i. Purging - Applicable in MODES 1, 2, 3, and 4, the upper and lower compartments of the containment shall be sampled prior to PURGING. Prior to breaking containment integrity in MODE 5 or 6, the upper and lower compartments of the containment shall be sampled. The incore instrument room purge sample shall be obtained at the shield building exhaust between 20 and 25 minutes following initiation of the incore instrument room purge.
- j. Venting - Applicable in MODES 1, 2, 3, and 4, the containment shall be vented to the containment annulus and then to the auxiliary building via containment annulus fans. The lower containment compartment shall be sampled daily when venting is to occur to account for the radioactivity being discharged from the venting process.



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

SAFETY EVALUATION BY THE OFFICE OF SPECIAL PROJECTS

SUPPORTING AMENDMENT NO. 65 TO FACILITY OPERATING LICENSE NO. DPR-77

AND AMENDMENT NO. 57 TO FACILITY OPERATING LICENSE NO. DPR-79

TENNESSEE VALLEY AUTHORITY

SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-327 AND 50-328

1.0 INTRODUCTION

By letter dated May 22, 1987, Tennessee Valley Authority, the licensee for Sequoyah Units 1 and 2, proposed Technical Specifications changes to the Operating Licenses. The proposed amendments would modify Section 3/4 11.2, "Gaseous Effluents, Dose Rate," for both the Unit 1 and Unit 2 Technical Specifications. Footnote b of Table 4.11-2 of the surveillance requirement would be modified to require sampling to be performed using upper and lower containment noble gas activity monitors rather than the Shield Building and Auxiliary Building exhaust monitor as is currently called for.

2.0 EVALUATION

In meeting the limitation of the dose rate due to radioactive materials released in gaseous effluents to areas at or beyond the site boundary, Technical Specification Surveillance Requirements (SR) require radioactive gaseous waste through Auxiliary Building and Shield Building exhausts be monitored in accordance with Table 4.11-2. Note b of Table 4.11-2 specifically requires that sampling and analysis shall also be performed following shutdown, startup, or a thermal power change exceeding 15% of rated thermal power within 1 hour unless (1) analysis shows that the dose equivalent I-131 concentration in the primary coolant has not increased more than a factor of 3 and (2) the noble gas activity monitor shows that the effluent activity has not increased by more than a factor of 3.

The Technical Specification change proposes to monitor noble gas in the containment rather than the Auxiliary Building and Shield Building exhausts. The licensee stated that there are two monitors, RE-90-106 and RE-90-112, available in the containment, in the containment lower and containment upper compartment, respectively. Both instruments continuously sample the upper and lower containment compartments and they are interconnected by stainless steel tubing to ensure continuous containment monitoring, should one of the monitor assemblies malfunction. This method of monitoring is preferable since the source of the noble gas is in containment and any change in the level of containment atmosphere activity would be registered in the containment first,

thus providing more reliable and timely indication of the change. This constitutes an improvement over the current SR and, is therefore, acceptable to the staff.

### 3.0 ENVIRONMENTAL CONSIDERATION

These amendments involve a change to the surveillance requirements. The staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration and there has been no public comment on such finding. Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement nor environmental assessment need be prepared in connection with the issuance of these amendments.

### 4.0 CONCLUSION

We have concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations, and the issuance of the amendments will not be inimical to the common defense and security nor to the health and safety of the public.

Principal Contributor: Sang Bo Kim

Dated: January 11, 1988