December 14, 1987

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
Chattanooga, Tennessee 37402-2801

Dear Mr. White:

SUBJECT: EXEMPTION FROM 10 CFR PART 50, APPENDIX A, GENERAL DESIGN CRITERION (GDC) 56 FOR VACUUM RELIEF LINES (TAC 64623, 64624)

Re: Sequoyah Nuclear Plant, Units 1 and 2

By letter dated February 3, 1987, supplemented by letter dated April 8, 1987, Tennessee Valley Authority (TVA) requested exemptions from certain requirements of 10 CFR Part 50, Appendix A, GDC 55 and 56 for the Residual Heat Removal (RHR) Supply Line and Vacuum Relief Lines, respectively. This letter transmits the NRC staff evaluation of your exemption request for the Vacuum Relief Lines only. The evaluation of your request for exemption to GDC 55 for the RHR Supply Line will be the subject of a separate licensing action.

NRC staff has reviewed your request referenced above and has granted an exemption from the requirements of 10 CFR Part 50, Appendix A, GDC 56 specifically for containment isolation valve location in the Vacuum Relief Lines.

This exemption is effective upon the date of issuance. The exemption is being forwarded to the Office of the Federal Register for publication.

Sincerely,

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

Enclosure:
Exemption

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cc w/enclosure:
See next page

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| 12/2/87 | 12/3/87 |

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

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

| | | |
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| In the Matter of | ) | |
| | ) | |
| TENNESSEE VALLEY AUTHORITY | ) | Docket Nos. 50-327 and 50-328 |
| | ) | |
| Sequoyah Nuclear Plant, Units 1 and 2 | ) | |

EXEMPTION

I.

The Tennessee Valley Authority (the licensee) is the holder of Facility Operating Licenses No. DPR-77 and DPR-79 which authorize operation of the Sequoyah Nuclear Plant, Units 1 and 2, respectively. These licenses provide that, among other things, the facility is subject to all rules, regulations, and orders of the Commission now or hereafter in effect.

The Sequoyah facility consists of two pressurized water reactors located at the licensee's site in Hamilton County, Tennessee.

II.

General Design Criterion (GDC) 56 of Appendix A to 10 CFR Part 50 requires that each line that is connected directly to the containment atmosphere and penetrates primary reactor containment shall be provided with containment isolation valves. The combination of valves, automatic or locked closed, and the location of valves, one inside and one outside containment, are specified in GDC 56. These requirements must be met unless it can be demonstrated that the containment isolation provisions for a specific class of lines are acceptable on some other defined basis.

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As part of the original design of Sequoyah Nuclear Plant Units 1 and 2, TVA relied upon certain closed systems as the outside containment isolation barrier to meet the Commission's regulations, specifically GDC-55 and 56, on some "other defined basis." The NRC staff issued NUREG-0011, dated March 1979, which documents the acceptability of TVA's compliance with the GDC; however the staff did not specifically address the acceptability of an "other defined basis" for any containment isolation configurations.

Subsequent to the development of the TMI Action Plan, NRC staff policy has been established that closed systems outside containment are not generally acceptable as an isolation barrier for lines covered by GDC 55 and 56.

As a result of an NRC staff inspection conducted at Sequoyah in March 1986, apparent discrepancies in system compliance with the containment isolation requirements were identified. These findings led to a general reassessment of the containment isolation design and the "other defined basis" assumptions made for the Sequoyah Nuclear Plant, Units 1 and 2.

Subsequent to discussions with TVA, by letter dated January 2, 1987 TVA redesignated certain existing system line isolation valves as containment isolation valves. The Commission's requirements, however, could not be met in every isolated case. In most of the cases evaluated, the explicit requirements of GDC 55 or 56 could be satisfied by valve redesignation, thereby imposing them to the associated operability, surveillance, and testing requirements. For those cases where the staff requirements could not be met, TVA has requested an exemption from the GDC.

This exemption addresses the Sequoyah Nuclear Plant, Units 1 and 2, containment isolation valves in the vacuum relief lines with respect to the valve location requirements only.

The vacuum relief penetrations at the Sequoyah Nuclear Plant, Units 1 and 2, provide a containment isolation design consisting of a single automatic isolation valve located outside containment and a spring-loaded vacuum relief check valve in series.

Both of these redundant isolation valves are located outside the primary containment. Thus, while the licensee has provided a design that complies with the requirements of GDC 56 in terms of the number of valves, there is deviation from the explicit GDC requirements with regard to valve location. Therefore, by submittal dated February 3, 1987, supplemented by letter dated April 8, 1987, the licensee has requested an exemption from the requirements of GDC 56 for the isolation provisions of the containment vacuum relief lines. Specifically, the exemption is from the requirements of GDC 56 regarding valve location.

With regard to the adequacy of redundant isolation, the staff concludes that with both the spring-loaded check valves and the automatic butterfly valves cited as containment isolation valves, the design is adequate for assuring redundancy in achieving containment isolation. The basis for this conclusion is the fact that the first outer isolation valve, the automatic butterfly valve, is bolted directly to the containment penetration sleeve thereby essentially extending the containment. The penetration sleeve between primary containment and the butterfly valve has been evaluated by the licensee to demonstrate that stresses in the penetration sleeve are well below allowable values in accordance with Branch Technical Position MEB 3-1. Therefore, a break in the penetration

sleeve between the first valve and the containment need not be considered. Therefore, this design essentially extends the containment to include the butterfly valves. Furthermore, it is the staff's judgement that no improvement to plant safety would be achieved by modification of the isolation design to fully comply with the GDC, and therefore is not warranted, nor necessary to achieve the underlying purpose of the rule. Therefore, the staff finds that an exemption from the requirements of GDC 56 in the case of the containment vacuum relief lines is justified.

III.

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12, the exemption is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense and security. The Commission further determines that special circumstances as provided in 10 CFR 50.12(a)(2)(ii) are present justifying the exemption; namely, that application of the regulation in the particular circumstances is not necessary to achieve the underlying purpose of the rule in that the licensee's design provides two, redundant means of isolation, and that implementing the required modifications to meet the location requirements would not significantly enhance plant safety.

The Commission hereby grants an exemption from the requirements of GDC 56 of Appendix A to 10 CFR Part 50 to the licensee for operation of Sequoyah Nuclear Plant, Units 1 and 2, in that the vacuum relief lines can be isolated using a spring-loaded check valve in series with a butterfly valve both of which will be located outside primary containment.

Pursuant to 10 CFR 51.32, the Commission has determined that the issuance of this exemption will have no significant impact on the environment (52 FR 46868, December 10, 1987.

For further details with respect to this action, see the request for exemption dated February 3, 1987, as supplemented April 8, 1987, which are available for public inspection at the Commission's Public Document Room, 1717 H Street, NW, Washington, D.C., and at the Chattanooga-Hamilton County Library, 1001 Broad Street, Chattanooga, Tennessee 37402.

This exemption is effective upon issuance.

Dated at Bethesda, Maryland, this 14th day of December 1987.

FOR THE NUCLEAR REGULATORY COMMISSION

Stewart D. Ebneter

Stewart D. Ebneter, Director
Office of Special Projects

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December 14, 1987

**DOCKET NO.**

**MEMORANDUM FOR:** Rules and Procedures Branch
Division of Rules and Records
Office of Administration

**FROM:** [illegible] Office of Special Projects

**SUBJECT:** TENNESSEE VALLEY AUTHORITY, SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2

One signed original of the *Federal Register* Notice identified below is enclosed for your transmittal to the Office of the Federal Register for publication. Additional conformed copies ( ) of the Notice are enclosed for your use.

- ☐ Notice of Receipt of Application for Construction Permit(s) and Operating License(s).
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- ☐ Notice of Consideration of Issuance of Amendment to Facility Operating License.
- ☐ Notice of Receipt of Application for Facility License(s); Notice of Availability of Applicant's Environmental Report; and Notice of Consideration of Issuance of Facility License(s) and Notice of Opportunity for Hearing.
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- ☐ Notice of Granting Exemption.
- ☐ Environmental Assessment.
- ☐ Notice of Preparation of Environmental Assessment.
- ☐ Other: _____

[illegible]
Office of Special Projects

Enclosure:
As stated

Contact: Carole Jamerson
Phone: 49-28749

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|---|---|---|---|---|---|---|---|
| OFFICE ► | OSP:TVA | | | | | | |
| SURNAME ► | PWilson | | | | | | |
| DATE ► | 12/14/87 | | | | | | |

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