



Tennessee Valley Authority, Post Office Box 2000, Soddy-Daisy, Tennessee 37379-2000

10 CFR 70.14(a)  
10 CFR 70.24(a)  
10 CFR 70.24(d)

February 20, 1997

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555

Gentlemen:

In the Matter of )  
Tennessee Valley Authority )

Docket Nos. 50-327  
50-328

**SEQUOYAH NUCLEAR PLANT (SQN) - UNITS 1 and 2 - REQUEST FOR EXEMPTION FROM  
10 CFR 70.24 CRITICALITY MONITORING REQUIREMENTS**

In accordance with the provisions of 10 CFR 70.14(a), TVA is submitting a request for an exemption from the requirements of 10 CFR 70.24(a), "Criticality Accident Requirements" for SQN Units 1 and 2. This request involves no changes to radiation monitoring instrumentation or emergency procedures presently utilized at SQN.

Specific exemptions from Section 70.24 were previously granted in the construction phase special nuclear material (SNM) licenses for each unit (SNM-1716 and SNM-1863).

The basis for the exemption request is detailed in the attached enclosure and meets the good cause requirements outlined in 10 CFR 70.24(d). TVA believes the exemption request is appropriate for the same reasons as the exemption granted in the original SNM licenses. Further, we feel the proposed exemption is authorized by law and will not endanger life or property or the common defense and security, and is otherwise in the public interest.

If you have any questions about this exemption request, please telephone me at (423) 843-7170.

Sincerely,

R. H. Shell  
Manager of Licensing and Industry Affairs

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U.S. Nuclear Regulatory Commission

Page 2

February 20, 1997

Enclosure

cc (Enclosure):

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ENCLOSURE  
REQUEST FOR EXEMPTION FROM 10 CFR 70.24(a)  
CRITICALITY ACCIDENT REQUIREMENTS

I. EXEMPTION REQUESTED AND REGULATORY BACKGROUND

Pursuant to 10 CFR 70.14(a) and 70.24(d), TVA requests an exemption from the requirements of 10 CFR 70.24(a) "Criticality Accident Requirements" for SQN Units 1 and 2. Specifically, an exemption is requested for accident criticality monitoring for the handling, use, and storage of special nuclear material (SNM) in the form of nuclear fuel, calibration sources and neutron monitoring instrumentation [such as source range monitors (SRMs), intermediate range monitors (IRMs), and incore fission detectors].

10 CFR 70.24(d) anticipates that licensees may request relief from the requirements of Section 70.24, in whole or in part, if good cause is shown. 10 CFR 70.24(c) states that holders of Part 50 operating licenses are exempt from 10 CFR 70.24(b) provisions. Therefore, only an exemption to Section 70.24(a) is being requested.

Exemptions from 10 CFR 70.24 were previously granted in the construction phase SNM licenses for each unit (SNM-1716, and SNM-1863).

TVA believes an exemption is appropriate for the same reasons as for the exemption granted in the original SNM licenses. An accident criticality monitoring system was not and is not necessary at SQN Units 1 and 2.

II. JUSTIFICATION FOR THE EXEMPTION

SNM in Calibration Sources and Neutron Monitoring Instrumentation

The major form of SNM used at SQN is nuclear fuel. However, other small quantities of SNM are in the form of fissile material in calibration sources and neutron monitoring instrumentation. The quantity of SNM U-235 in each flux detector (SRM / IRM) and incore detector, is small and is 7 grams and 4 milligrams respectively. SQN also has several calibration sources containing very small amounts of plutonium-239 totaling approximately 0.02 milligrams.

The quantity of SNM specified to be enough for a critical mass in Section 1.1 of Regulatory Guide 10.3, "Guide for the Preparation of Applications for Special Nuclear Material Licenses of Less than Critical Mass Quantities", is 350 grams of U-235, 200 grams of U-233, and 200 grams of Pu-239.

The quantities of SNM in the nuclear instrumentation described above is far below the amounts for which criticality monitoring would be of concern.

## SNM IN UNIRRADIATED NUCLEAR FUEL

The principal form of SNM subject to 10 CFR 70.24(a) is unirradiated (new) nuclear fuel. New fuel bundles are received and transported in NRC approved packaging (commonly referred to as shipping containers). Package design for the shipping containers ensures that a geometrical criticality safe configuration is maintained during transport, handling, and storage.

New fuel may be placed in the new fuel storage vault or in the spent fuel pool. SQN has installed new fuel storage racks for storage of new fuel. The design basis and description of the new fuel storage racks and the spent fuel pool storage racks are provided in Chapter 9 of the Final Safety Analysis Report (FSAR) and section 5.6.1.2 of the SQN Technical Specifications (TS).

New fuel shipments are received in the approved shipping containers. The containers are opened and the bundles are inspected and placed directly in the new fuel vault or in the spent fuel pool. Handling of new fuel and irradiated fuel is carefully controlled by site fuel handling procedures. Strict limits are prescribed for the maximum number of fuel bundles permitted to be removed from approved storage locations at any given time. Given these circumstances, a criticality safe configuration is maintained and there is no need to maintain criticality monitoring system pursuant to 10 CFR 70.24.

This exemption request involves no changes to radiation monitoring instrumentation, plant equipment, or emergency procedures presently utilized at SQN, and does not involve changes to safety analyses found in Chapter 15 of the FSAR. Also, this exemption request does not involve changes to current TS requirements related to fuel handling, or involve changes to operations related to the spent fuel pool or criticality monitoring of fuel in the reactor core.

Based on the above, the design of the shipping containers and fuel racks in combination with the procedural controls associated with fuel handling ensure that conditions that may lead to accidental criticality are precluded. Accordingly, the requested exemption will not endanger life or property or be inimical to the common defense and security. Thus, we believe the exemption is authorized by law, and there is good cause for granting an exemption for accident criticality monitoring requirements for SQN Units 1 and 2. Granting of an exemption is also consistent with the same exemption granted from 10 CFR 70.24 in the original construction phase SNM licenses.

### III. Conclusion

TVA has concluded, based on the preceding justification, that operation of SQN in accordance with the proposed exemption to 10 CFR 70.24(a) is authorized by law, will not present an undue risk to the public health and safety, is consistent with the common defense and security, and is otherwise in the public interest.