Tennessee Valley Authority, Post Office Box 2000, Decatur, Alabama 35609-2000

November 22, 1996

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

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

Gentlemen:

In the Matter of	)	Docket Nos. 50-259
Tennessee Valley Authority	)	50-260
		50-296

BROWNS FERRY NUCLEAR PLANT (BFN) - UNITS 1, 2, and 3 - 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 BFN Units 1, 2, and 3. This request involves no changes to radiation monitoring instrumentation or emergency procedures presently utilized at BFN.

Specific exemptions from Section 70.24 were previously granted in the construction phase special nuclear material (SNM) licenses for each unit (SNM-1268, SNM-1434, SNM-1511). These exemptions were, however, not carried forth when the Part 50 operating licenses were issued.

TVA previously requested an exemption from the subject criticality monitoring requirements in a letter from R. L. Gridley, TVA, to NRC dated August 31, 1987. TVA was later notified (reference: letter from R. A. Hermann, NRC, to S. A. White, TVA, dated May 11, 1988) that an exemption

A001

request was not required. However, it is our understanding that NRC has subsequently determined that an exemption should have been pursued. Without prejudicing TVA's position regarding the need for a specific exemption to 10 CFR 70.24(a), we are resubmitting this exemption request.

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 (205) 729-2636.

Sincerely,

T. E. Abney
Manager of Licensing
and Industry Affairs

Enclosure
cc: See page 2

Enclosure
cc (Enclosure):
Mr. Mark S. Lesser, Branch Chief
U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

NRC Resident Inspector
Browns Ferry Nuclear Plant
10833 Shaw Road
Athens, Alabama 35611

Mr. Joseph F. Williams, Project Manager
U.S. Nuclear Regulatory Commission
One White Flint, North
11555 Rockville Pike
Rockville, Maryland 20852

ENCLOSURE

TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN)
UNITS 1, 2, and 3

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 BFN Units 1, 2, and 3. 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 sources, instrumentation (such as source range monitors (SRMS), intermediate range monitors (IRMs), local power range monitors (LPRMs), and fuel loading chambers (FLCs)), and for the handling, use, and storage of unirradiated fuel.

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-1268, SNM-1434, SNM-1511). Specific exemptions were, however, not carried forth when the Part 50 operating licenses were issued.

TVA previously requested an exemption from the subject criticality monitoring requirements in a letter from TVA to NRC, dated August 31, 1987. TVA was later notified (reference: letter from R. A. Hermann, NRC, to S. A. White, TVA, dated May 11, 1988) that an exemption request was not required. However, it is our understanding that NRC has subsequently determined that an exemption should have been pursued. Without prejudicing TVA's position regarding the need for a specific exemption to 10 CFR 70.24(a), we are resubmitting this exemption request.

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 BFN Units 1, 2, and 3.

II. JUSTIFICATION FOR THE EXEMPTION

SNM in Sources and Neutron Monitoring Instrumentation

The major form of SNM used at BFN is nuclear fuel. However, other small quantities of SNM are in the form of fissile material in sources and neutron monitoring instrumentation used for incore monitoring or for monitoring during core alterations. The total quantity of SNM (U-235) in incore detectors (SRMs, IRMs, and LPRMs) is very small and is currently less than 0.5 grams. There are also six FLCs in storage which each contain approximately 2 grams of U-235. FLCs are only needed for neutron monitoring during core reloads following lengthy refueling outages and thus are seldom needed. The six FLCS in storage are kept for this contingency and we have no need to possess more than this number. BFN also has several sources containing very small amounts (approximately 0.2 grams) of plutonium-239.

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. Clearly, the quantities of SNM in the nuclear instrumentation 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 shipments are stored on the refuel floor in the approved shipping containers until the bundles are inspected and placed in the spent fuel pool. Inspection involves removing individual fuel bundles from the shipping container, placement and examination in the new fuel storage stand, installation of fuel channels, and then storage in the spent fuel pool pending use in the reactor. Handling of new fuel and irradiated fuel is carefully controlled by site fuel handling procedures. Strict limits are established for maximum number of fuel bundles allowed out of approved storage locations at any given time.

BFN also has new fuel storage racks for storage of new fuel. The design basis and description of these racks is provided in Chapter 10.2 of the Final Safety Analysis Report (FSAR) and section 5.5.A of the BFN Technical Specifications (TS). This storage area is not currently

used since the shipping containers provide a convenient means for temporary storage prior to inspection and placement in the spent fuel pool. Also, direct placement in the fuel pool reduces the number of fuel moves that would be required if the new fuel storage racks were used. However, to preserve flexibility for future activities, the new fuel storage racks are included in the scope of the exemption request. Appropriate fuel handling procedures must be reviewed and revised to include the new fuel racks as a storage location prior to these racks being utilized.

This exemption request involves no changes to radiation monitoring instrumentation, plant equipment, or emergency procedures presently utilized at BFN, and does not involve changes to safety analyses found in Chapter 14 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 of 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 BFN Units 1, 2 and 3. 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 BFN Unit 1, 2, and 3 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.