



Log # TXX-89438
File # 10003
901.8
Ref 10CFR50.12(a)
10CFR70.14(a)
10CFR70.24(a)

William J. Cahill, Jr.
Executive Vice President

June 30, 1989

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

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES)
DOCKET NO. 50-445
APPLICATION FOR EXEMPTION FROM 10CFR70.24
CRITICALITY MONITORING REQUIREMENTS

Gentlemen:

Pursuant to 10CFR50.12, TU Electric requests an exemption, upon conversion of Construction Permit CPPR-126 to an operating facility license under 10CFR50, from the requirement of 10CFR70.24(a) to maintain a criticality alarm system.

10CFR70.24(a) requires the licensee to maintain, in each area in which special nuclear material is handled, used, or stored, a monitoring system which will energize clearly audible alarms if accidental criticality occurs. The Special Nuclear Materials License (SNM-1912) currently contains an exemption from 10CFR70.24(a). The impending 10CFR50 facility operating license will reinstate the requirements of 10CFR70. The CPSES fuel handling system, operating procedures and storage racks are designed such that sub-criticality will be maintained under normal and accident conditions while moving or storing new or spent fuel.

The CPSES Unit 1 and 2 spent fuel storage racks have a total capacity of 1116 assemblies with a center to center spacing of 16 inches. The Final Safety Analysis Report states that, with the assemblies placed at their most reactive positions in the storage racks, and with unborated water as a moderator in the spent fuel pool, this separation is sufficient to maintain a subcritical array with an effective multiplication factor of less than 0.95. This criticality analysis assumes the highest anticipated enrichment of 3.5 w/o U-235. The design of the spent fuel storage racks, handling equipment, and administrative controls are such that it is not possible to insert spent fuel in other than the prescribed locations.

8907050082 890630
PDR ADOCK 05000445
A PDC

Done
10

New fuel assemblies and control rods are stored in a concrete reinforced pit that provides for dry storage of 132 assemblies. The storage rack stores the new fuel assemblies with a center to center spacing of 21 inches with a minimum distance of 12 inches. The Final Safety Analysis Report, assuming the highest anticipated enrichment of 3.5 w/o U-235 and the pit flooded by unborated water, states the array would have an effective multiplication factor of less than 0.95 (0.98 for the normally dry conditions and possible moderation sources as could arise during firefighting operation). The design of the fuel storage rack, the fuel handling equipment, and the administrative controls is such that it is not possible to insert new fuel assemblies in other than prescribed locations.

In addition, new fuel assemblies in excess of the 132 will be stored in the spent fuel pool using an "expanded checkerboard" pattern when the spent fuel pool is dry. Because the spent fuel racks have a 16 inch center to center spacing, the checkerboard pattern will result in a 32 inch spacing between the new fuel assemblies. The effective multiplication factor of the new fuel in the spent fuel storage racks and in the expanded checkerboard pattern will be less than the new fuel in the new fuel storage racks under all credible conditions. Administrative controls and personnel training preclude storing new fuel in the spent fuel storage racks in other than a checkerboard pattern, when the spent fuel pool is dry. When the spent fuel pool is flooded, the conditions above for storage of fuel with the maximum enrichment and moderated by unborated water apply. The geometric spacing of the new and spent fuel in the storage racks, and the administrative controls then preclude accidental criticality events.

NRC Regulations provide for specific exemption in 10CFR50.12(a), 10CFR70.14(a), and 10CFR70.24(d) if:

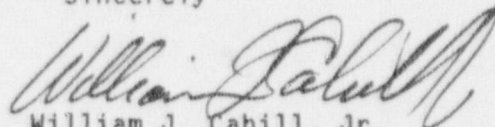
- o The activities to be conducted are authorized by law;
- o The exemption will not endanger life and property;
- o The exemption will not endanger the common defense and security of the United States and are otherwise in the public interest; and
- o There are special circumstances present that demonstrate good cause for the exemption.

TXX-89438
Page 3 of 3
June 30, 1989

Each of the above conditions are present here. In particular, special circumstances are present in that maintaining the criticality alarm monitors is not necessary to achieve the underlying purpose of the rule. The purpose of annunciating an accidental criticality is to protect personnel from accidental exposure to radiation in the event of inadvertent criticality. Since at CPSES the geometric spacing of the fuel will maintain sub-criticality under normal and accident conditions, inadvertent criticality is prevented and such accidental personnel exposures are also prevented. In addition, since a potential for criticality does not exist, a request for exemption is appropriate in accordance with Regulatory Guide 8.12 "Criticality Accident Alarm Systems".

In conclusion, the standards of 10CFR50.12(a), 10CFR70.14(a), and 10CFR70.24(d) are met and the request for exemption is appropriate. Pursuant to 10CFR170.21, no application fee is required for this exemption request. Please advise us if any additional information is necessary.

Sincerely



William J. Cahill, Jr.

JDR/jdr

c - Mr. R. D. Martin, Region IV
Resident Inspectors, CPSES (3)