April 27, 2004

10 CFR 50.12

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

Gentlemen:

In the Matter of	)	Docket Nos. 50-327
Tennessee Valley Authority	)	50-328

SEQUOYAH NUCLEAR PLANT (SQN) - SUPPLEMENTAL INFORMATION FOR EXEMPTION FROM 10 CFR 50.68, "CRITICALITY ACCIDENT REQUIREMENTS," IN ACCORDANCE WITH 10 CFR 50.12, "SPECIFIC EXEMPTIONS," FOR HANDLING OF SPENT FUEL (TAC NOS. MC1871 AND MC1872)

Reference: TVA letter to NRC dated February 20, 2004, "Sequoyah Nuclear Plant (SQN) - Request for Exemption from 10 CFR 50.68, 'Criticality Accident Requirements,' In Accordance with 10 CFR 50.12, 'Specific Exemptions,' for Handling of Spent Fuel"

A telephone conference was held on April 9, 2004, between NRC and TVA personnel to discuss TVA's exemption request. During the discussion, TVA informed NRC that SQN had reevaluated potential soluble boron dilution sources described in the above reference. As a result of this evaluation, SQN's most limiting dilution source, raw cooling water system pipe rupture, is no longer considered a credible event. Details of the SQN credible potential dilution sources are described in Enclosure 1. TVA also had Holtec International perform calculations for both 4.1 and 5.0 weight-percent U-235 fuel enrichments to determine the critical soluble boron concentration. This information is also presented in Enclosure 1. In addition, NRC has requested some additional information regarding administrative controls and mixing of nonborated water with the spent fuel pool. This information is also included within the supplemental information.

TVA has considered the commitments previously submitted and provides in Enclosure 2 its revised commitments which supercede, in full, the commitments included in the above reference.

Please direct questions concerning this issue to me at (423) 843-7170 or J. D. Smith at (423) 843-6672.

Sincerely,

Original signed by

Pedro Salas
Licensing and Industry Affairs Manager

Enclosures
cc (Enclosures):
Mr. Michael L. Marshall, Jr., Senior Project Manager
U.S. Nuclear Regulatory Commission
Mail Stop O-8G9A
One White Flint North
11555 Rockville Pike
Rockville, Maryland 20852-2739

ENCLOSURE 1

TENNESSEE VALLEY AUTHORITY (TVA)
SEQUOYAH NUCLEAR PLANT (SQN)
UNITS 1 AND 2

SEQUOYAH NUCLEAR PLANT (SQN) – SUPPLEMENTAL INFORMATION FOR EXEMPTION FROM 10 CFR 50.68, "CRITICALITY ACCIDENT REQUIREMENTS," IN ACCORDANCE WITH 10 CFR 50.12, "SPECIFIC EXEMPTIONS," FOR HANDLING OF SPENT FUEL (TAC NOS. MC1871 AND MC1872)

BACKGROUND INFORMATION ASSOCIATED WITH A SIMILAR EXEMPTION REQUEST

The NRC issued Diablo Canyon an exemption from the requirements of 10 CFR §50.68(b) and as part of the NRC safety evaluation report it stated:

"The staff has established a set of acceptance criteria that, if met, satisfy the underlying intent of 10 CFR 50.68(b)(1). In lieu of complying with 10 CFR 50.68(b)(1), the staff determined that an inadvertent criticality accident is unlikely to occur if the licensee meets the following five criteria:

1. *The cask criticality analyses are based on the following conservative assumptions:*

    a. *All fuel assemblies in the cask are unirradiated and at the highest permissible enrichment,*

    b. *Only 75 percent of the Boron-10 in the Boral panel inserts is credited,*

    c. *No credit is taken for fuel-related burnable absorbers, and*

    d. *The cask is assumed to be flooded with moderator at the temperature and density corresponding to optimum moderation.*

2. *The licensee's ISFSI TSs require the soluble boron concentration to be equal to or greater than the level assumed in the criticality analysis and surveillance requirements necessitate the periodic verification of the concentration both prior to and during loading and unloading operations.*

3. *Radiation monitors, as required by GDC 63, "Monitoring Fuel and Waste Storage," are provided in fuel storage and handling*

areas to detect excessive radiation levels and to initiate appropriate safety actions.

4. *The quantity of other forms of special nuclear material, such as sources, detectors, etc., to be stored in the cask will not increase the effective multiplication factor above the limit calculated in the criticality analysis.*

5. *Sufficient time exists for plant personnel to identify and terminate a boron dilution event prior to achieving a critical boron concentration in the MPC. To demonstrate that it can safely identify and terminate a boron dilution event, the licensee must provide the following:*

    a. *A plant-specific criticality analysis to identify the critical boron concentration in the cask based on the highest reactivity loading pattern.*

    b. *A plant-specific boron dilution analysis to identify all potential dilution pathways, their flowrates, and the time necessary to reach a critical boron concentration.*

    c. *A description of all alarms and indications available to promptly alert operators of a boron dilution event.*

    d. *A description of plant controls that will be implemented to minimize the potential for a boron dilution event.*

    e. *A summary of operator training and procedures that will be used to ensure that operators can quickly identify and terminate a boron dilution event."*

Responses to each of the above criteria have previously been provided by TVA; however, the supplemental information provided below will facilitate NRC staff review.

Supplemental Response to Criterion 1:

TVA contracted with Holtec International to perform a criticality analysis for both 4.1 weight-percent (wt) and 5.0 wt-percent U-235 fuel enrichments using the same methodology as approved in the HI-STORM 100 Cask System Final Safety Analysis Report, which complies with the above-mentioned conservative assumptions to determine soluble boron concentration at k_{eff} = 1.0. The analysis established the critical boron concentration levels at which criticality inside the multiple purpose canister (MPC) is expected to occur for the available methodology. SQN design basis fuel, which is represented as 17x17B in the Holtec International HI-STORM 100 Final Safety Analysis Report, was used in the analysis. Each fuel enrichment was analyzed because the technical specification (TS) for the HI-STORM 100 Cask System requires a minimum boron concentration of 1900 parts-per-million (ppm) boron when spent fuel assemblies with enrichments less than or equal to 4.1 wt-percent U-235 are to be loaded into an MPC-32. Additionally, when loading fuel assemblies enriched to greater than 4.1 wt-percent U-235 and less than or equal to 5.0 wt-percent U-235 into an MPC-32, the minimum boron concentration is limited to 2600 ppm. The analysis determined the critical boron concentration level for 4.1 wt-percent U-235 enriched fuel to be 1180 ppm and for 5.0 wt-percent U-235 enrichment to be 1780 ppm.

TVA proposed commitments in Reference 1, limiting the fuel enrichments for spent fuel storage in the approved storage cask system to less than or equal to 4.1 wt-percent U-235 and to maintain SFP boron greater than 2625 ppm. Committing to 4.1 wt-percent fuel enrichment set the lower bounding critical boron limit for the dilution event ensuring subcritical conditions were maintained. Committing to greater than 2625 ppm soluble boron concentration in the spent fuel pool (SFP) provided margin above the minimum cask TS limit of 1900 ppm (i.e., the lower bounding limit in the dilution analysis) to detect and mitigate a dilution event. As a result of having performed a criticality analysis for the approved fuel enrichments, TVA no longer believes that these commitments are necessary and has concluded that full compliance with the approved cask TSs is sufficient.

Supplemental Response to Criterion 2:

The following was previously stated in our original exemption request and is restated here for continuity:

"The TS requirements for the HI-STORM 100 Cask System includes a minimum boron concentration of 1900 ppm boron when spent fuel assemblies with enrichments less than or equal to 4.1 wt-percent U-235 are loaded into an MPC-32. When fuel assemblies are enriched to greater than 4.1 wt-percent U-235 and less than or equal to 5.0 wt-percent U-235 and loaded into an MPC-32, the minimum boron concentration is limited to 2600 ppm. These TS requirements ensure that k_{eff} is maintained less than 0.95. Surveillance requirements in the TS require the boron concentration in the MPC water to be verified by two independent measurements within 4 hours prior to commencing any loading or unloading of fuel; and verified when one or more fuel assemblies are installed if water is to be added or re-circulated through the MPC; and verified every 48 hours thereafter while the MPC is in the SFP when one or more fuel assemblies are installed."

In view of the criticality analysis described in response to Criterion 1, there is no longer any need to commit to restricting fuel enrichments to less than 4.1 wt-percent U-235 or to maintain SFP boron greater than 2625 ppm. However, TVA will fully comply with the approved cask TS limits and requirements.

Supplemental Response to Criterion 3:

TVA addressed general design criteria (GDC) 63, "Monitoring Fuel and Waste Storage," requirements in its original exemption request as part of the special circumstances discussion. In that discussion, SQN provided the following information:

"...radiation monitors are discussed in Section 11.4 and 12.1 of the SQN Final Safety Analysis Report. Radiation monitors RE-90-102 and RE-90-103 continuously monitor the air space above the SFP and provide recordable readouts and high radiation level alarms in the control room. Area radiation monitors 1-RE-90-1 and 2-RE-90-1 monitor exposure rates in the SFP area and provide recordable readouts and high radiation level alarms in the control room, plus local audible and visual indicators. The combination of these monitors ensures detection of excessive radiation levels to initiate appropriate safety actions."

Supplemental Response to Criterion 4:

The following was previously stated in our original exemption request and is restated here for continuity:

"SQN's spent fuel and non-fuel hardware (i.e., non-fissile material) is bounded by the spent fuel and non-fuel hardware analyzed and represented in COC No. 1014, Appendix B, "Approved Content and Design Features." Start-up neutron sources in fuel assemblies have been evaluated as part of the criticality analysis and are permitted in the HI-STORM 100 Cask System."

Supplemental Response to Criterion 5:

A criticality analysis for both 4.1 and 5.0 wt-percent U-235 enriched fuels has been performed and the results are presented in response to Criterion 1. TVA previously provided information regarding the SQN potential dilution sources in its original exemption request. Subsequent to that request, a seismic evaluation of SQN's most limiting potential dilution source has been performed. SQN had identified the most limiting dilution source as the raw cooling water (RCW) system which could have a flow rate potential of 6800 gallons-per-minute (GPM). The seismic evaluation concludes that the piping will maintain pressure boundary retention during the SQN Safe Shutdown Earthquake, which is the equivalent to TVA Class G and Seismic

Category I(La). TVA made a number of changes in the dilution analysis to address NRC staff comments on critical cracks in moderate energy piping. In addition, to address NRC staff comments, a discussion of instantaneous mixing is provided below. These changes are represented below with the necessary administrative controls.

Potential Dilution Sources:

SQN has reviewed plant drawings to identify potential dilution sources and performed a plant walk-down to verify the drawing review. Design criteria for the potential dilution systems in the refueling pool area have been reviewed. Results of this review have identified the raw service water (RSW) to be seismically qualified and the previous dilution flow rate value to be conservative. In addition, SQN has reviewed its calculation for moderate energy line breaks and performed calculations for these piping systems in the refueling pool area to determine critical crack dilution potentials. Numerous smaller piping systems may experience critical cracks; however, the most limiting critical crack flow rates are represented by the raw service water (RSW) system and the raw cooling water (RCW) system that was recently seismically qualified. The following plant systems represent the credible bounding dilution sources and their flow rates:

Sources:	**Flow Rate**
Demineralized Water System,	
- Small dilution event (e.g., pump seal leak, possible evaporation)	5 GPM
- Open isolation valve to SFP cooling system	250 GPM
Fire Protection System	
- Unattended hose station	150 GPM
Component Cooling Water System	
- Heat exchanger tube break	< 250 GPM
RSW System	
- Critical Crack	186 GPM
RCW System	
- Critical Crack	314 GPM

Dilution Event:

The dilution analysis used the above established flow rates and includes the following assumptions:

1. Boron concentrations start at the minimum ISFSI TS values of 1900 and 2600 ppm for 4.1 and 5.0 wt-percent enriched fuel, respectively.

2. The initial volume of the pool is 398,128 gallons, which includes both the spent fuel and cask pit pools volume minus the SFP storage racks volume, HI-TRAC, MPC-32, and all available fuel assembly volumes. Separation of the two pool volumes is controlled by Section 3.8.4.1.1, "Spent Fuel Pool Gates," of the SQN FSAR, which states, "The cask loading area gate is abandoned in the open storage position."

3. The starting level of the pool is set 7.5 inches above the low alarm set-point at elevation 725'-11.5". This is the nominal operating level accounting for margin to prevent a low-level alarm prior to placing the transfer cask in the cask pit pool (CPP) and the change in pool elevation when the transfer cask is in the pool.

4. For sources that are spilled on the floor, the 2-inch curb surrounding the pool that water must overcome before entering the pool is not credited as a mitigating factor, to delay an event.

5. Spill paths that would detract from water entering the pool (i.e., floor drains) are not credited as a mitigating factor.

6. Dilution times are based on a feed and bleed operation with instantaneous complete mixing. TVA finds instantaneous mixing to be appropriate for these events. Further discussion concerning instantaneous mixing is found below.

7. The SFP high-level alarm with set-point at elevation 726'-9" is considered the first alarm for operator's response.

The following tables present the results of the dilution analysis for the credible events. As can be seen, the dilution events are always bounded in minimum time response by 5.0 wt-percent fuel enrichment scenarios. Therefore, subsequent discussions will focus on the 5.0 wt-percent fuel enrichment scenarios only.

4.1 wt-percent U-235 Dilution Event Times From 1900 PPM

SOURCE	**FLOW RATE (GPM)**	**TIME**	
		SFP HIGH ALARM	REACH 1180 PPM
Demineralized Water System			

SOURCE	FLOW RATE (GPM)	TIME	
Small event	5	414.3 min	632.1 hrs
Open valve	250	8.3 min	12.64 hrs
Component Cooling Water System			
Heat exchanger tube break	< 250	Bound by Demin Water	Bound by Demin Water
Fire Protection System			
Unattended hose	150	13.8 min	21.07 hrs
Raw Service Water System			
Critical Crack	186	11.1 min	16.99 hrs
Raw Cooling Water System			
Critical Crack	314	6.6 min	10.07 hrs

5.0 wt-percent U-235 Dilution Event Times From 2600 PPM

SOURCE	FLOW RATE (GPM)	TIME	
		SFP HIGH ALARM	REACH 1780 PPM
Demineralized Water System			
Small event	5	414 min	502.8 hrs
Open valve	250	8.3 min	10.06 hrs
Component Cooling Water System			
Heat exchanger tube break	< 250	Bound by Demin Water	Bound by Demin Water
Fire Protection System			
Unattended hose	150	13.8 min	16.76 hrs
Raw Service Water System			
Critical Crack	186	11.1 min	13.52 hrs
Raw cooling Water System			
Critical Crack	314	6.6 min	8.01 hrs

Instantaneous Mixing of Nonborated Water:

As stated in its original exemption request, TVA used the conservative assumption of instantaneous mixing. Because the potential flow rate of 3400 GPM resulted in a rapid dilution, it may not have been an appropriate assumption without addition details. As stated above, this potential dilution source has been qualified for boundary retention resulting in significantly less limiting dilution flow rates. TVA finds the assumption of instantaneous mixing to be conservative and appropriate for the identified dilution events for the following reasons:

Spent fuel pool water circulation is established via thermal motive forces from the stored spent fuel assembles in the spent fuel racks and within the storage basket of the transfer cask.

The most limiting dilution event source (i.e., RCW System) would result in water flowing over the refueling floor prior to entering the SFP. As mentioned in the assumption, the SFP has a 2-inch curb around the perimeter, which was not credited for delaying dilution events. However, the 2-inch curb would result in a more even distribution of water flow around and into the SFP.

The SFP cooling system consist of two cooling trains (plus a backup pump capable of operation in either train), a purification loop and a surface skimmer loop. Both cooling system loops intake from two inlet suction lines, located 4-feet below the normal SFP water level at elevation 726'-2.5" at the south end of the SFP. There are two cooling loop outlets, one 10-inch line located 2'-8" below the normal water level at elevation 723'-7.5" in the northwest corner of the SFP, and one 4-inch line located 19'-10.75" below the normal water level at elevation 706'-3.75" in the northeast corner of the CPP. As stated in the above assumptions, the SFP and CPP area divider gate is removed, thus permitting uninterrupted bulk cooling water flow from the north to south direction. Additionally, with the one cooling loop outlet located in the northeast corner of the CCP, the top of the transfer cask lid is located approximately 4 below and 8 feet downstream of the bulk SFP flow direction. One cooling train is normally in service to maintain the temperature of the SFP with a design flow rate of 2300 GPM. At this flow rate, the SFP volume used in the dilution calculation can be estimated to cycle within 3 hours.

Small Dilution Event:

A slow, long-term dilution event where nonborated water enters the pool, and pool outflow is small enough to go essentially unnoticed, could occur if a seal in the piping, pumps, or possibly the pool liner, was to leak. Normal makeup operations (with demineralized water) would continue on a regular basis at a slightly higher frequency than that required without leakage. Pool level is maintained within normal operation range for the spent fuel activities. The maximum flow rate that could be leaving the SFP systems unnoticed is assumed to be 5 GPM. This is on the same order as possible evaporative losses.

With a leak rate of 5 GPM, the SFP makeup would be required every 32.3 hours between low- and high-level alarms. SFP boron concentration could become slowly depleted if an equivalent amount of unborated inleakage were to occur. It requires more than 20 days with a nonborated source to achieve a boron dilution of 1780 ppm ($k_{eff} \approx 1.0$) if loading 5.0 wt-percent U-235 enriched fuel. This condition would be detected by a sampling surveillance, which is conducted prior to initiating fuel loading or unloading operations and once every 48 hours thereafter.

Large Dilution Event:

1. The SFP water level with an empty MPC is initially at elevation 726’-7” with soluble boron concentration limits at 2600 ppm for 5.0 wt-percent U-235 enriched fuel. The conditions are considered normal.

2. A nonborated source of water begins to enter the SFP, including the CPP, raising the level and directly diluting the boron concentration as no water outlet exists as yet. This condition may or may not have a coincident indication or alarm condition, depending on the source and magnitude of flow rate into the SFP.

3. The SFP high-level alarm (elevation 726’-9”) is the first indication of abnormal conditions. This occurs after 2071 gallons of nonborated water have been introduced into the pool. At this point, the boron concentration would be reduced to 2586.5 ppm for 5.0 wt-percent U-235 enriched fuel.

4. SFP ventilation ducts (elevation 727’-1”) begin flooding as pool level increases. At this point, 6153 gallons of undiluted water have been introduced into the pool and boron concentration is reduced to 2560 ppm for 5.0 wt-percent U-235 enriched fuel.

5. At this point, "feed and bleed (with instantaneous mixing)" of the SFP volume is considered as the continuing inflow of nonborated water now has the simultaneous escape of an equal quantity of borated SFP water.

6. SFP ventilation ducts are completely flooded (elevation 728' 11-1/2") and water now begins to flood the sheet-metal ducts exterior to the SFP in the auxiliary building gas treatment system (ABGTS) room. At this point, 29,125 gallons of nonborated water have been introduced into the pool and the boron concentration has been reduced to 2416.5 ppm 5.0 wt-percent U-235 enriched fuel.

7. Sheet-metal ducts continue to accumulate water. The ducts will leak through the bolted joints and at some point collapse due to excessive loads and spill large quantities of SFP water onto the floor of the auxiliary building. The water level would have to rise about 28 inches for a length of about 40 feet of the duct before flowing into the ABGTS fan housing.

8. If this scenario continues, at the point when the SFP boron concentration reaches 1780 ppm for 5.0 wt-percent U-235 enriched fuel, more than 150,000 gallons (about one million pounds) of SFP water would have been spilled into the ventilation system sheet-metal ductwork. This would activate the local high-level alarms in the building's drain collection system tanks which have a 23,000 gallon capacity.

This scenario is interrupted either by the depletion of the available dilution water source inventory, or by operator actions to arrest the flow of nonborated water into the SFP.

Administrative Controls:

High SFP alarm initiation times are supplied in the above tables, and in all cases annunciation would occur in less than 15 minutes except in the event of a small leak. In addition to the SFP level alarm, annunciation alarms exist in the control room for detection of a system pressure loss in the fire protection system and a low-level indication in the demineralized water tank. As such, operators will be able to identify and terminate any boron dilution source well within one hour of receiving an alarm.

Prior to initial dry cask operations, applicable operation procedures will be enhanced to explicitly address reaction of these alarms by identifying each potential dilution path and mitigation steps during dry cask operations (Commitment No. 1). For example, in the case of the RSW piping system dilution event, Operations' procedure require the determination of the dilution source upon receiving a high-level SFP alarm concurrent with cask loading and unloading activities. Operations would instruct the cask supervisor to suspend activities. A determination is made by visual or coincident annunciation from the RSW level/pressure/flow alarm. Once determined, the procedure instructs the operator to close isolation valve 0-25-595A of the "A" surge tank on the auxiliary building roof, close isolation valve 0-25-595B of the "B" surge tank on the auxiliary building roof, and close the auxiliary building isolation valve 0-25-535 from the turbine building (TB) located in the SE corner of the TB on elevation 685'. These actions would result in full suppression of the RSW dilution event by isolating the holding tanks' volume and isolating the supply source from the TB. As presented in our original exemption request, the steps to suppress the flow of water from the RCW system have not changed. The procedure requires identification of the dilution event upon receiving a SFP high-level alarm, instructing the cask supervisor to suspend activities, opening the breakers for the pumps which are adjacent to the control room, and then isolating one or both of the isolation valves in the auxiliary building. Similar operating instructions are provided for the lesser dilution event scenarios.

TVA intends to maintain its previous requirements for tag-out of systems. While the MPC is in the CPP, temporary administrative control will be implemented to minimize the potential for a boron dilution event. The normal make-up flow paths to the SFP will be isolated and tagged out. These flow paths include the primary water system and demineralized water system which is the second most limiting dilution source (Commitment No. 2). The fire protection system hose station is typically available for emergency fire situations only and maintained with a closed valve on the hose and a closed valve at the hose connection. However, it can be used during abnormal conditions to add volume to the SFP. Adding water to SFP using the fire protection system is controlled by procedure. This procedure will be revised to address the use of this system for SFP make-up (Commitment No. 1). The RSW system would result in water flowing over the refueling floor prior to entering the SFP and cannot be isolated and tagged out during normal plant operations. This system provides the cooling water to chiller package for chemistry lab equipment.

A separate piping section of the demineralized water system is necessary for cask decontamination and rinsing dry cask storage equipment. Rinsing and decontamination of the MPC and dry cask equipment is administratively controlled to ensure the minimum TS limit of either 1900 ppm or 2600 ppm boron for 4.1 and 5.0 wt-percent U-235 enriched fuel, respectively, is not exceeded. The actual administrative limit for SFP boron concentration during cask loading operations is increased from the ISFSI TS limit to provide margin for potential dilution from rinsing operations, which is estimated to take less than 3500 gallons.

As a result of eliminating the rapid dilution event from the RCW system by qualifying its piping, TVA does not find it necessary to maintain a dedicated person to watch the refueling floor area, specifically the RCW system for a dilution event. However, during the operation of loading or unloading a cask, the refueling floor is normally staffed with dry cask operation personnel. It is expected that dry cask personnel would notice any significant changes in the SFP level and water flowing over the refueling floor. There are times during dry cask activities that personnel may not occupy the refueling floor area, such as shift change, breaks, and for unforeseen delays due to equipment problems. During these times, either Operations' personnel will increase the frequency of their normal rounds or a trained monitor will be assigned to watch for dilution events in the SFP area (i.e., SFP level changes and water accumulation on the refueling floor) (Commitment No. 3).

Training:

Changes made to the operator's procedures to address SFP boron dilution events during dry cask operations will be included in operator training to ensure operators can effectively identify and terminate sources of unborated water into the SFP in a minimum amount of time prior to reaching a critical boron limit. The training will emphasize the importance of avoiding any inadvertent additions of unborated water to the SFP, responses to be taken for notification or alarms that may be indicative of a potential boron dilution event during cask loading and fuel movement in the SFP, and identification of the potential for a boron dilution event during decontamination rinsing activities and abnormal SFP make-up with the fire protection system (Commitment No. 1).

Those assigned to monitor the SFP area will be briefed on their responsibility to recognize change in the SFP level or running water on the floor and to immediately inform the main control room. This briefing material is part of the loading/unloading operation procedure.

Conclusion

The above information supplements TVA previous exemption request (Reference 1). TVA has qualified the RCW piping system, effectively eliminating the rapid dilution event of 3400 gpm. SQN has reviewed plant drawings and design criteria, performed plant walk downs, and evaluated the potential for critical cracks for the piping in the SFP area. The most limiting dilution events from critical cracks are presented by the RCW system and the RSW system. Administrative controls are present to preclude dilution events where possible, and to increase the ability to identify and mitigate dilution events, if necessary. To this end, TVA finds that ample time exists to identify and terminate any boron dilution event during MPC loading and unloading activities such that a critical soluble boron limit in not reached.

Reference

1. TVA letter to NRC dated February 20, 2004, "Sequoyah Nuclear Plant (SQN) – Request for Exemption from 10 CFR 50.68, 'Criticality Accident Requirements,' In Accordance with 10 CFR 50.12, 'Specific Exemptions,' for Handling of Spent Fuel"

2. Holtec International letter to TVA dated March 23, 2004, "Transmittal of Requested Criticality Analyses" (RIMS NO. B38 040406 803) and Letter from J. F. Burrow to D. L. Lundy, dated April 1, 2004, "Sequoyah Nuclear Plant (SQN) – Review of Holtec Supplemental Criticality Analysis for MPC-32" (RIMS NO. L36 040401 801)

ENCLOSURE 2

TENNESSEE VALLEY AUTHORITY (TVA)
SEQUOYAH NUCLEAR PLANT (SQN)
UNITS 1 AND 2

SEQUOYAH NUCLEAR PLANT (SQN) – SUPPLEMENTAL INFORMATION FOR EXEMPTION FROM 10 CFR 50.68, "CRITICALITY ACCIDENT REQUIREMENTS," IN ACCORDANCE WITH 10 CFR 50.12, "SPECIFIC EXEMPTIONS," FOR HANDLING OF SPENT FUEL (TAC NOS. MC1871 AND MC1872)

List of Regulatory Commitments

In view of the supplemental information contained in Enclosure 1, TVA withdraws the commitments contained in its original exemption request (Reference 1) and provides the following commitments which supercede, in full, those earlier commitments. The following commitments have been incorporated into our commitment management program:

1. Plant operating procedures will be enhanced and training provided to address the use of the fire protection system for SFP make-up and reaction to a notification or alarms ensuring that operators can identify and terminate any dilution sources during the dry cask storage loading and unloading operations.

2. The normal make-up flow path to the SFP from the demineralized water and primary water system will be tagged out during cask loading/unloading in the CPP.

3. During dry cask loading or unloading operations, either Operations personnel will increase the frequency of their normal rounds or a trained monitor will be assigned to watch for dilution events in the SFP area (i.e., SFP level changes and water accumulation on the refueling floor).