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September 1, 2005

10 CFR 50.54(f)

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

Gentlemen:

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

SEQUOYAH NUCLEAR PLANT (SQN) UNITS 1 AND 2 - NUCLEAR REGULATORY COMMISSION (NRC) GENERIC LETTER (GL) 2004-02, POTENTIAL IMPACT OF DEBRIS BLOCKAGE ON EMERGENCY RECIRCULATION DURING DESIGN BASIS ACCIDENTS AT PRESSURIZED-WATER REACTORS (PWR) - SECOND RESPONSE (TAC NOS. MC4717, MC4718)

The purpose of this letter is to provide TVA's response requested by NRC GL 2004-02. This response is provided in accordance with 10 CFR 50.54(f). TVA provided SQN's 90-day response by letter dated March 7, 2005. In addition, TVA provided response to NRC request for additional (RAI) on July 21, 2005.

GL 2004-02 requested that PWR licensees perform a mechanistic evaluation of the potential for the adverse effects of post-accident debris blockage and operation with debris-laden fluids to impede or prevent the recirculation functions of the emergency core cooling system (ECCS) and containment spray system (CSS) following all postulated accidents for which the recirculation of these systems is required.

Enclosure 1 provides TVA's response for GL 2004-02. Enclosure 2 provides TVA commitments made in this letter. If you have any questions concerning this matter, please contact Jim Smith at (423) 843-6672.

A116

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 1st day of September 2005.

Sincerely,

Randy Douet

Enclosures
cc (Enclosures):

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ENCLOSURE 1

SEQUOYAH NUCLEAR PLANT (SQN)
UNITS 1 AND 2

NRC GENERIC LETTER (GL) 2004-02
POTENTIAL IMPACT OF DEBRIS BLOCKAGE ON EMERGENCY RECIRCULATION DURING DESIGN BASIS ACCIDENTS AT PRESSURIZED-WATER REACTORS (PWR)

The following provides TVA's response to Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation during Design Basis Accidents," in support of resolution for Generic Safety Issue (GSI)-191, "Assessment of Debris Accumulation on PWR Sump Performance," for SQN Units 1 and 2.

NRC Request 2(a)

"Confirmation that the ECCS and CSS recirculation functions under debris loading conditions are or will be in compliance with the regulatory requirements listed in the Applicable Regulatory Requirements section of this generic letter. This submittal should address the configuration of the plant that will exist once all modifications required for regulatory compliance have been made and this licensing basis has been updated to reflect the results of the analysis described above."

TVA Response

Actions have been identified and are planned to ensure that the emergency core cooling system (ECCS) and containment spray system (CSS) recirculation functions under debris-loading conditions will meet the requested actions in NRC Generic Letter (GL) 2004-02 when all modifications are completed.

The containment walkdowns, debris generation calculations, debris transport calculations, downstream effects evaluations for blockage and long-term wear, and allocation of an allowance for chemical effects have been completed. The procurement specification for new sump strainers has been issued, and the vendor selection process is underway.

The configuration of the plant that will exist once all modifications are complete is addressed in responses 2(b) through 2(f) below.

NRC Request 2(b)

"A general description of and implementation schedule for all corrective actions, including any plant modifications, that you identified while responding to this generic letter. Efforts to implement the identified actions should be initiated no later than the first refueling outage starting after April 1, 2006. All actions should be completed by December 31, 2007. Provide justification for not implementing the identified actions during the first refueling outage starting after April 1, 2006. If all corrective actions will not be completed by December 31, 2007, describe how the regulatory requirements discussed in the Applicable Regulatory Requirements section will be met until the corrective actions are completed."

TVA Response

Based on the results of the debris generation and transport analyses discussed in this response, TVA identified the need for modifications to the existing sump to meet the GL. Installation of new sump strainers is planned for the Unit 1 refueling outage in the fall of 2007 and the Unit 2 refueling outage in the fall of 2006. If additional corrective actions are identified in the process of designing and installing new strainers, those actions will be described in a supplement to this submittal.

TVA plans to complete all actions prior to December 31, 2007.

NRC Request 2(c)

"A description of the methodology that was used to perform the analysis of the susceptibility of the ECCS and CSS recirculation functions to the adverse effects of post-accident debris blockage and operation with debris-laden fluids. The submittal may reference a guidance document (e.g., Regulatory Guide 1.82, Rev. 3, industry guidance) or other methodology previously submitted to the NRC. (The submittal may also reference the response to Item 1 of the Requested Information described above. The documents to be submitted or referenced should include the results of any supporting containment walkdown surveillance performed to identify potential debris sources and other pertinent containment characteristics.)"

TVA Response

Walkdown Methodology

Containment walkdowns were made at both SQN units to support the analysis of debris blockage as identified in the GL. The walkdowns were performed by personnel from Enercon, Westinghouse Electric Corporation (WEC), Alion Science and Technology, and Transco in consultation with TVA personnel using the guidelines provided in Nuclear Energy Institute (NEI) 02-01, "Condition

Assessment Guidelines, Debris Sources inside Containment," Revision 1.

Debris Generation Methodology
The methodologies that were used to determine the types, quantities, and locations of debris generated during a loss of coolant accident (LOCA) event in which the plant enters the recirculation mode are those of NEI Guidance Report 04-07, "Pressurized Water Reactor Sump Performance Evaluation Methodology" as supplemented by the NRC in the "Safety Evaluation by The Office of Nuclear Reactor Regulation Related to NRC Generic Letter 2004-02, Nuclear Energy Institute Guidance Report (Proposed Document Number NEI 04-07), 'Pressurized Water Reactor Sump Performance Evaluation Methodology.'"

The zone of influence that was used for qualified coatings is 10 times the break diameter. The zone of influence for other materials is based on the destruction pressures established for the plant specific materials, which is an acceptable analytical refinement over the baseline evaluation approach that is presented in NEI 04-07 Section 4.2.2.1.1. Credit is not taken for shadowing effects arising from large components/equipment within a given zone of influence.

Debris from qualified coatings was determined using the approach described in NEI 04-07. Inside the zone of influence, the qualified coatings are assumed to fail to pigment-sized particles. All coatings were conservatively assumed to fail as a 10-micron particulate in the debris generation analysis for SQN. Outside the zone of influence, qualified coatings are assumed to remain intact.

Debris from unqualified coatings is determined using the approach described in NEI 04-07. All unqualified coatings in containment are assumed to fail.

Debris Transport Methodology
The methodology used in this analysis is based on the NEI 04-07 guidance report for refined analyses as supplemented by the NRC's safety evaluation report (SER), as well as the refined methodologies suggested by the SER in Appendices III, IV, and VI. The specific effect of each mode of transport was analyzed for each type of debris generated, and a logic tree was developed to determine the total transport to the sump screens.

Chemical Effects Methodology
A comparison of the NRC industry integrated chemical effects test program Test 5 and the Unit 1 & 2 plant specific parameters has been performed. The evaluation concluded that the critical parameters in the integrated chemical effects test program Test 5 bound the plant parameters. To account for chemical effects, margin will be added to the strainer area requirements. If

vendor data on the impact of chemical effects on head loss for specific strainer designs is available, it will be used to establish margin.

Downstream Effects Methodology

The methodologies of WCAP-16406-P, "Evaluation of Downstream Sump Debris Effects in Support of GSI-191," were used to evaluate the downstream effects of debris passed by the sump strainer.

Analyses Performed By Contractors

TVA contracted with WEC, Enercon, and Alion to perform the evaluations necessary to respond to the GL. These evaluations were integrated with the containment walkdowns that were performed by Enercon with a team of personnel that included WEC and Alion as well as independent industry consultants. Alion developed the containment computer-aided design model and the computation fluid dynamics model. Alion also performed the debris generation and head loss calculations. Downstream effects were evaluated by WEC as the original equipment manufacturer/supplier for most of the components. The fuel was evaluated by WEC.

NRC Request 2(d)

"The submittal should include, at a minimum, the following information:"

Item 2(d)i

"The minimum available NPSH margin for the ECCS and CSS pumps with an unblocked sump screen".

TVA Response

The minimum available net positive suction head (NPSH) margin for the ECCS and CSS pumps with an unblocked sump strainer is not available as the selection of a strainer vendor, and final design is in progress. The available NPSH margin will be provided in the supplemental response to this letter. The minimum NPSH margin for SQN is 14.3 ft. Given that the existing screen has an area of 51 ft^2, a new larger screen should maintain an equivalent or improve the margin. Containment overpressure is not considered in establishing the NPSH margins. An additional five feet of margin is available at the time the containment spray pumps are switched to sump recirculation. This occurs due to the increase in sump pool level due to the water injected from the refueling water storage tank by the spray pumps after the ECCS pumps have been realigned to the sump.

Item 2(d)ii

"The submerged area of the sump screen at this time and the percent of submergence of the sump screen (i.e., partial or full) at the time of the switchover to sump recirculation."

TVA Response

A preliminary estimate of the submerged area of the new sump strainer is 1400 ft^2 utilizing a passive design. The strainers will be fully submerged at the minimum containment water level. The submerged area will be provided in the supplemental response to this letter.

Item 2(d)iii

"The maximum head loss postulated from debris accumulation on the submerged sump screen, and a description of the primary constituents of the debris bed that result in this head loss. In addition to debris generated by jet forces from the pipe rupture, debris created by the resulting containment environment (thermal and chemical) and CSS washdown should be considered in the analyses. Examples of this type of debris are disbonded coatings in the form of chips and particulates and chemical precipitants caused by chemical reactions in the pool..."

TVA Response

TVA performed comprehensive evaluations of the ECCS and the containment spray system recirculation function due to debris generation and transport in a post-accident containment environment for SQN.

SQN is an ice condenser plant with a free standing steel containment (refer to SQN FSAR Figures 6.2.1-5 and 6.2.1-63). There are four distinct regions within the containment. The lower compartment contains the reactor coolant system and the LOCA boundary. The perimeter of the lower compartment is the containment floor, the right circular cylinder concrete crane wall, and the divider barrier at the top. The emergency sump is in the lower compartment. The dead ended compartments are outside the crane wall and extend to the containment shell. The divider barrier is the top of the dead ended compartments. The ice condenser is located outside the crane wall and provides a flow path for steam and non-condensable gases between the lower compartment and the upper compartment. The upper compartment is an open volume that serves as a reservoir for non-condensable gases during a high energy line break in the lower compartment. The containment spray system discharges into the upper compartment. The spray flow is returned to the lower compartment through two drains in the floor of the refueling canal. There are no high energy pipes in the upper compartment or the ice condenser. The containment sump is located near reactor coolant system (RCS) loop 4. The sump is a pit in the containment floor. The suction piping is located approximately 10 feet below the floor elevation. The penetrations in the crane wall have been sealed to an elevation of 13 feet above the containment floor.

During a loss of coolant accident, water fills the sump from the refueling water storage tank by injection from the ECCS system and containment spray system and from water due to ice melt. The lower compartment fills first. After the water level reaches just over 13 feet, water begins to flow into the dead ended regions. Once this water enters the dead ended region, it no longer actively communicates with the lower compartment sump. Thus, any debris generated in or carried into the dead ended regions will not contribute to sump screen blockage or downstream effects.

No exposed fibrous material is used in the SQN containment in areas that are subjected to high energy jets, containment spray or ice condenser melt water flow, or submergence in the active sump pool. Stainless steel reflective metallic insulation is used on the RCS and other insulated piping in the lower compartment. Non-metallic tape, tags and labels in the upper, lower, and ice condenser compartment are a post-LOCA debris source. Based on walkdown information, it was conservatively estimated that there are 870 ft^2 of this type of material. All unqualified coatings in the containment were assumed to fail along with qualified coatings within the zone of influence of high energy jets. These debris sources were determined from a review of design documents and a detailed walkdown of both SQN units. A case has been considered assuming all coatings failed. A quantitative latent debris walkdown was performed for Unit 2. A walkdown has not been performed for Unit 1; however, TVA considers the walkdown information for Unit 2 can be applied to Unit 1 based on the following: 1) the same personnel and procedures are used for housekeeping on both containments; and 2) a complete and comprehensive cleaning of the entire containment was performed following the recent completion of the steam generator replacement activities on SQN Unit 1. Based on the comprehensive cleaning of Unit 1, the SQN Unit 2 walkdown was chosen as the bounding case for establishing the latent debris inventory for input to the analysis and licensing basis for the new sump strainer design. Tags, tapes, and labels are assumed to fail regardless of break size and location.

A 3-dimensional (3D) computational fluid dynamics analysis of the SQN containment was performed to determine flow direction, velocity, and turbulence in the sump pool. The analyses were performed using the FLOW 3D computer code. Debris source terms were generated for breaks in the four coolant loops. Assumptions made with respect to unqualified coatings and other non-break generated debris in conjunction with the use of very large zones of influence provide that different break locations within a given RCS loop results in the same debris generation for a given size pipe. The crossover leg is the largest RCS pipe and has an internal diameter of 31 inches. Based on the debris produced and position relative to the sump, two break locations were modeled. One break was taken in the crossover leg on RCS loop 4. Loop 4 is closest to the sump. A break was also taken in loop 2. This is the loop opposite the sump. These double-ended breaks are limiting as they generate the greatest amount of debris. After the RCS piping, the next largest line is the 14-inch pressurizer surge line. This is also a double-ended rupture. Other lines connected to the RCS are single ended only. A spherical zone of influence with a radius of 28.6 times the diameter (D) was used for the reflective metal insulation and 10 times D for the qualified coatings. The definition of D is the diameter of the high energy source. The volume of the reflective metal insulation zone of influence is 1,690,000 ft^3. The entire volume of the lower compartment is approximately 248,000 ft^3. Thus, the reflective zone of influence does not have a physical meaning. The zone of influence volume for the paint is approximately 72,200 ft^3. The amount of debris generated by the large RCS breaks are much more challenging for screen blockage than any attached piping break. Attached piping breaks will not result in a different debris type than the RCS main loop breaks. As such, only the large breaks were numerically evaluated for debris generation and transport. Water levels in the sump at the time of switchover are based on minimum available for any RCS break in the range of 2 inches to 31 inches in diameter. The ECCS and CSS flow rates used in the computational fluid dynamics and transport analyses were based on two train maximum flow. The table below shows the quantities of debris produced by the most limiting break for each type of debris and the quantities transported to the vicinity of the sump.

Debris Types	Total Quantity	Quantity at Sump
Insulation		
Transco & Mirror SS RMI	177,605 ft^2	60,385 ft^2
Coatings		
Phenolic	131 lb	131 lb
IOZ	2,150 lb	2,150 lb
Alkyds	5 lb	5 lb
Silicone	162 lb	162 lb
Latent Debris		
Latent fiber	12.5 ft^3	12.5 ft^3
Dirt & Dust	170 lb	170 lb
Labels, Placards, etc.	870 ft^2	870 ft^2

The values shown in this table are based on conservative assumptions and calculations of pool turbulence, particularly the treatment of water from the ice condenser drains. Sensitivity studies are ongoing and include a more appropriate treatment of water addition from the ice condenser. These studies may reduce the quantities of material that will be transported to the sump. The latent debris source terms were taken from the guidance document. The actual values from the Unit 2 walkdown were approximately 50 lbs of particulate debris and less than ten small individual fibers. The value used in the analysis for fiber is many orders of magnitude higher than was actually found. There was not sufficient fiber found to form any type of fiber bed on the existing sump screens. The particulate value is a fraction of the paint values determined in the debris generation study. Upon final determination of the debris load, the most limiting case will be evaluated to ensure head loss across the sump strainer meets the requirements. TVA will include the maximum head loss in the supplemental response.

SQN uses sodium tetra borate as a buffering agent for the boric acid in the RCS and from the refueling water storage tank. The pH in the SQN sump post-accident ranges from 8.0 to 8.4. This is considerably below the values used in the integrated chemical effects testing for either sodium hydroxide or sodium tetra borate. In addition, SQN has only latent fiber and that is in a small quantity. Thus, the deposition of precipitants on fiberglass fibers as experienced in the integrated chemical effects tests will not have any effect on the head loss across the SQN screens. The strainer material for SQN is expected to be stainless steel. Stainless steel is also the predominant debris material in the sump pool post LOCA. If any precipitant were to plate out on stainless steel, it would do so on all stainless surfaces not just on the strainer. TVA has concluded that large margins for chemical effects are not warranted as would be the case if a fiber bed could form on the sump strainer surface. TVA will add a 10 percent margin to the strainer area to cover chemical affects unless further testing justifies a different figure.

***NRC Requested Information* 2(d)iv**

"The basis for concluding that the water inventory required to ensure adequate ECCS or CSS recirculation would not be held up or diverted by debris blockage at choke-points in containment recirculation sump return flowpaths".

TVA Response

Containment walkdowns were performed in accordance with the guidance of NEI 02-01. These walkdowns showed that there are three potential choke-points that could prevent adequate water inventory from reaching the containment sump. The potential choke-points are the two refueling canal drains and a drain in Accumulator Rooms 3 and 4. The drains in the accumulator rooms allow the small amount of spray flow that directly hits the air return fans to be returned inside the polar crane wall. Curbs are present in the upper compartment around the fan suction that prevents spray water on the refueling floor from spilling through the fans. Thus, the only debris from the spray system entering the accumulator rooms is very small debris that has traveled through the strainers. Neither the upper compartment nor the accumulator rooms are subjected to high energy jets. The only debris in these compartments is failed coatings. The size of the failed coatings or debris that passes through the spray pumps is small and will not block any of these drains. Reflective metal insulation debris, large or small, will not be present to block these drains. It is therefore concluded that there will be no water inventory holdup or diversion due to debris blockage at choke-points.

Additionally, an inspection for non-LOCA generated material that could potentially obstruct recirculating water is conducted as part of the containment cleanliness inspection program prior to restart from an outage. The controlling procedure specifically addresses the need to assure that the containment is free of all items that could be washed to the sump.

NRC Requested Information 2(d)v

"The basis for concluding that inadequate core or containment cooling would not result due to debris blockage at flow restrictions in the ECCS and CSS flowpaths downstream of the sump screen, (e.g., a HPSI throttle valve, pump bearings and seals, fuel assembly inlet debris screen, or containment spray nozzles). The discussion should consider the adequacy of the sump screen's mesh spacing and state the basis for concluding that adverse gaps or breaches are not present on the screen surface."

TVA Response

The new sump strainers at SQN will have perforations of 1/8 inch or less. It is planned to use round holes. An evaluation of downstream effects was performed based on the debris mix present with a 1/8 inch open dimension. The debris mix included particulate (reflective metal insulation, dirt, etc.), coating debris, and fiber in quantities consistent with the amounts present at the sump strainer during steady state ECCS recirculation. The evaluation also considered the expected system alignments after a LOCA. Particulate debris up to 10 percent larger than the opening area was assumed to be capable of passing through the strainer openings.

WEC has evaluated the downstream impact of sump debris on the performance of the ECCS and CSS following a LOCA at SQN Units 1 and 2. The effects of debris ingested through the containment sump screen during the recirculation mode of the ECCS and CSS include erosive wear, abrasion, and potential blockage of flow paths. The smallest clearance found for the SQN heat exchangers, orifices, and spray nozzles in the recirculation flow path is 0.375 inches for the containment and RHR spray nozzles; therefore, no blockage of the ECCS flow paths will occur.

The instrumentation tubing is also evaluated for potential blockage of the sensing lines. The transverse velocity past this tubing is determined to be sufficient to prevent debris settlement into these lines so no blockage will occur. The reactor vessel level instrumentation system is also evaluated. The SQN reactor vessel level instrumentation system design has been evaluated and is not affected by the debris. The SQN heat exchangers, orifices, and spray nozzles were evaluated for the effects of erosive wear for a constant debris concentration over the mission time of 30 days. The erosive wear on these components is determined to be insufficient to affect the system performance.

For pumps, the effect of debris ingestion through the sump screen on three aspects of operability, including hydraulic performance, mechanical shaft seal assembly performance, and mechanical performance (vibration) of the pump, were evaluated. The hydraulic and mechanical performances of the pump were determined not to be affected by the recirculating sump debris.

Detailed evaluation of the 24 SQN Units 1 and 2 ECCS throttle valves shows that all throttle valves in their evaluated positions will pass all sump debris for a strainer hole size of 1/8 inch. Other ECCS valves have much larger openings and will not be subject to plugging. All valves requiring detailed evaluation for sedimentation were found to have a minimum flow velocity greater than 0.42 ft/sec, such that no sedimentation is expected to occur at either SQN unit. ECCS valves that are closed prior to exposure to debris-laden fluid did not require an explicit flow calculation. A detailed erosion evaluation was performed for each of the 24 ECCS throttle valves, crediting the time dependence of debris concentration decay due to settling. The results of these erosion evaluations showed acceptable 30-day erosion in all cases.

The fuel assemblies were evaluated, particularly the bottom nozzle filters, and they will not become plugged with debris based on screen size. Due to the limited amount of fiber present in the containment, there is no likelihood of plugging of openings in the ECCS flow path due to the formation of a fiber bed or clog for either hot or cold leg breaks in any recirculation mode. Other reactor vessel internals were evaluated and there are no potential blockages due to debris downstream of the sump strainers.

Adverse gaps or breaches in the sump strainer are prohibited by TVA criteria. This requires that there be no spaces or gaps in the final installation that would allow passage of any particles larger than the perforation size.

Plant Technical Specifications require that the sump screen be inspected at least once every 18 months. The inspection procedure requires verification that there are no unacceptable holes or gaps in the screen or between the screen and adjacent structures and components.

NRC Requested Information 2(d)vi

"Verification that close-tolerance subcomponents in pumps, valves and other ECCS and CSS components are not susceptible to plugging or excessive wear due to extended post-accident operation with debris-laden fluids".

TVA Response

Pump bearings and seals were evaluated and were determined that they would not become plugged. The bearings, seals, and impellers were evaluated for wear and it was determined that for a 30-day service, any wear would be within acceptable limits. The evaluation was consistent with the WEC Standard methodology in WCAP-16406-P.

***NRC Requested Information* 2(d)vii**

"Verification that the strength of the trash racks is adequate to protect the debris screens from missiles and other large debris. The submittal should also provide verification that the trash racks and sump screens are capable of withstanding the loads imposed by expanding jets, missiles, the accumulation of debris, and pressure differentials caused by post-LOCA blockage under predicted flow conditions."

TVA Response

The sump strainer design requirements ensure that it will be capable of withstanding the force of the analyzed post-LOCA debris loading, in conjunction with applicable design basis conditions, without collapse or structural damage. The design requirements also ensure that it will be capable of withstanding the hydrodynamic loads and inertial effects of water without loss of structural integrity. The new sump strainer and supports will be designed to be Seismic Category I. The assumption of a seismic event after a LOCA is not part of the SQN design basis.

***NRC Requested Information* 2(d)viii**

"If an active approach (e.g., backflushing, powered screens) is selected in lieu of or in addition to a passive approach to mitigate the effects of the debris blockage, describe the approach and associated analyses."

TVA Response

The specifications for new passive sump strainers have been issued and the vendor selection process is underway. TVA does not plan to install an active strainer design.

NRC Request 2(e)

"A general description of and planned schedule for any changes to the plant licensing bases resulting from any analysis or plant modifications made to ensure compliance with the regulatory requirements listed in the Applicable Regulatory Requirements section of this generic letter. Any licensing actions or

exemption requests needed to support changes to the plant licensing basis should be included".

TVA Response

The SQN licensing basis for the new sump strainers will be updated in accordance with TVA's design change control process to reflect the supporting analyses on a unit basis with their installation. The new strainers will be installed during the first refueling outage currently scheduled to start after April 1, 2006. This will occur prior to Unit 1 startup from the Cycle 15 refueling outage scheduled to start in the fall 2007 and prior to Unit 2 startup from the Cycle 14 refueling outage scheduled to start in the fall 2006. It is TVA's judgment based on the existing mechanistic sump transport analysis and the supporting assumptions that are part of the licensing base analysis that a license amendment request will be required.

NRC Request 2(f)

"A description of the existing or planned programmatic controls that will ensure that potential sources of debris introduced into containment (e.g., insulations, signs, coatings, and foreign materials) will be assessed for potential adverse effects on the ECCS and CSS recirculation functions. Addressees may reference their responses to GL 98-04, "Potential for Degradation of the Emergency Core Cooling System and the Containment Spray System after Loss-of-Coolant Accident Because of Construction and Protective Coating Deficiencies and Foreign Material in Containment," to the extent that their responses address these specific foreign material control issues."

TVA Response

TVA ensures that potential quantities of post-accident debris are maintained within the bounds of the analyses and design bases that support ECCS and CSS recirculation functions.

Following is a summary of the procedures and engineering specifications which constitute the present containment material control and inspection requirements at SQN that pertain to ensuring operability of the containment sump:

1. Surveillance Instruction 0-SI-SIN-063-009.0, R3, "Sump Pit Inspection" - A procedure that provides detailed steps for the inspection of the RHR/containment sump. A visual inspection of the RHR/containment sump is performed once every 18 months in order to verify the suction valve inlets are not restricted by debris and those sump components, such
2. Surveillance Instruction 0-SI-SXX-061-001.0, R1, "Ice Condenser Loose Debris Evaluation" - A procedure that describes the evaluation and approval process for loose debris in the ice condenser.
3. Technical Instruction, 0-TI-SXX-061-001.0, R5, "Ice Condenser Loose Debris Listing"
   Documents and maintains a record of the debris in the ice condenser that has been assessed by 0-SI-SXX-061-001.0.
4. Standard Programs and Processes (SPP)-10.7, R1, "Housekeeping/Temporary Equipment Control"
   A procedure that delineates controls for housekeeping, material condition, and temporary equipment at TVA nuclear sites. This encompasses housekeeping responsibilities for all workers to preserve the quality of the work environment and the material condition of the plant.
5. SPP-6.0, R2, "Maintenance and Modifications"
   This maintenance and modification process ensures that conduct of maintenance activities and the physical implementation of design changes support safe operation of the station.
6. SPP-9.3, R12, "Plant Modifications and Change Control"
   This procedure establishes a uniform process of administrative controls and regulatory/quality requirements for plant modifications and changes to engineering documents. It includes consideration of materials introduced into the containment that could contribute to sump strainer blockage.
7. SPP-9.5, R7, "Temporary Alterations" - This procedure provides the requirements for controlling temporary alterations to SSCs of TVA's 10 CFR 50 and 10 CFR 72 facilities in a manner which ensures operator awareness, conformance with design basis and operability requirements, and preservation of plan safety and reliability.
8. Surveillance Instruction 0-SI-OPS-000-011.0, R19, "Containment Access Control - Modes 1-4" - This surveillance instruction provides documentation of containment entry/exit and cleanliness (housekeeping) requirement when the plant is in Modes 1 through 4. Performance ensures no loose debris (rags, trash, clothing, failed protective coatings, tools, etc.) is present in containment, specifically debris that could impact RHR, CSS, and ECCS operability due to adverse impact on the containment sump.
9. Surveillance Instruction 0-SI-OPS-000-187.0, R27, "Containment Inspection" - This surveillance instruction provides the overall containment close-out prior to entry into Mode 4 during startup, including demonstrating good

housekeeping in containment by ensuring no loose debris are present which could be transported to the containment sump and cause restriction to RHR and CSS pump suction.

10. General Engineering Specification G-55, R14, "Technical and Programmatic Requirement for Protective Coating Program at TVA Nuclear Plant" - This engineering specification provides the technical and programmatic requirements for the protective coating programs at TVA nuclear plants.
11. Modification/Addition Instruction MAI-5.3, "Protective Coatings" - This procedure covers the technical and verification requirements to implement a protective coating program at SQN which meets TVA's commitments as defined in Engineering Specification G-55.
12. Technical Instruction 0-TI-DXX-000-010.0, "Protective Coatings Program for Coating Service Level I and II and Corrosive Environmental Applications" - This technical instruction establishes organizational responsibilities and department interfaces required for implementation of the protective coating program at SQN, including requirements associated with controlling and tracking the inventory of unqualified coatings installed inside primary containment that could adversely impact containment sump operability.

Collectively, these documents provide the technical and programmatic controls necessary to ensure that design change, maintenance, and modification activities are conducted in a manner that assures operability of the containment sump. As part of the TVA's design change control process, these documents receive review for impacts for installation of the new strainers.

ENCLOSURE 2

SEQUOYAH NUCLEAR PLANT (SQN)
UNITS 1 AND 2

NRC GENERIC LETTER (GL) 2004-02
POTENTIAL IMPACT OF DEBRIS BLOCKAGE ON EMERGENCY RECIRCULATION DURING DESIGN BASIS ACCIDENTS AT PRESSURIZED-WATER REACTORS (PWR)

TVA Commitments

1. TVA identified the need for modifications to the existing sump to meet the GL 2004-02. Installation of new sump strainers is planned for the Unit 1 refueling outage in the fall of 2007 and the Unit 2 refueling outage in the fall of 2006.

2. TVA will provide a supplemental response to this submittal to include:
   - Additional actions, if needed, identified in the process of designing and installing new strainers,
   - Submerged area of the sump strainer,
   - Available NPSH margin with an unblocked sump strainer, and
   - Maximum head loss.

3. TVA will add a 10 percent margin to the sump strainer area for both units to account for chemical effects unless further testing justifies a different figure.