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DEC 06 2004

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station OP1-17
Washington, DC 20555

SUSQUEHANNA STEAM ELECTRIC STATION RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION FROM NRC ON PROPOSED RELIEF REQUEST NOS. RR-01, RR-02, RR-04, AND RR-05 TO THE THIRD TEN-YEAR IN-SERVICE TESTING PROGRAM FOR PUMPS AND VALVES FOR SUSQUEHANNA SES UNITS 1 AND 2
PLA-5837

Docket Nos. 50-387 and 50-388

Reference: Letter from R. V. Guzman (NRC) to B. L. Shriver (PPL) titled, "Request for Additional Information (RAI) – Susquehanna Steam Electric Station, Units 1 and 2 (SSES 1 and 2) – Proposed Third Ten-Year Interval In-service Testing Program Plans (TAC Nos. MC3382, MC3383, MC3384, MC3385, MC3386, MC3387, MC3388, MC3389, MC4421, and MC4422)," dated November 4, 2004.

This letter is in response to the above-referenced letter. Enclosure 1 to this letter contains PPL Susquehanna, LLC's response to the Request for Additional Information. Enclosure 2 contains revised Unit 1 Relief Request Nos. RR-01 and RR-05. Enclosure 3 contains revised Unit 2 Relief Request Nos. RR-01 and RR-05. Relief Request Nos. RR-01 and RR-05 supercede those transmitted to the NRC in PPL's letters (PLA-5805 and PLA-5806) dated September 10, 2004. The revised Relief Requests have been updated to reflect the appropriate information provided in Enclosure 1.

Also, note that PPL letter PLA-5806 incorrectly identified the issue date of PLA-5746 as May 5, 2004. The correct issue date of PLA-5746 is May 28, 2004.

A047

There are no new commitments made in this letter. If you have any questions, please contact Mr. C. T. Coddington at (610) 774-4019.

Sincerely,

B. T. McKinney

Enclosure 1: Response to NRC Request for Additional Information dated November 4, 2004
Enclosure 2: Revised Relief Request Nos. RR-01 and RR-05 for SSES Unit 1
Enclosure 3: Revised Relief Request Nos. RR-01 and RR-05 for SSES Unit 2

copy: NRC Region I
Mr. A. J. Blamey, NRC Sr. Resident Inspector
Mr. R. V. Guzman, NRC Project Manager
Mr. R. Janati, DEP/BRP

Enclosure 1 to PLA-5837

Response to NRC Request for Additional Information dated November 4, 2004

RR-01 and RR-05

NRC Question No. 1:

Provide the sizes of all the check valves for which relief is requested to perform on-line in-service testing (IST).

Response

The sizes of all check valves for which relief is requested are shown on Table 1 "Unit 1 and Common" and Table 2 "Unit 2."

TABLE 1
UNIT 1 AND COMMON

P&ID	Valve Number	System	Size (in.)	Cat.	Safety Class
M-111 Sheet 1	011033	Emergency Service Water	8	C	3
M-111 Sheet 1	011034	Emergency Service Water	8	C	3
M-111 Sheet 1	011035	Emergency Service Water	8	C	3
M-111 Sheet 1	011036	Emergency Service Water	8	C	3
M-111 Sheet 1	011037	Emergency Service Water	8	C	3
M-111 Sheet 1	011038	Emergency Service Water	8	C	3
M-111 Sheet 1	011039	Emergency Service Water	8	C	3
M-111 Sheet 1	011040	Emergency Service Water	8	C	3
M-111 Sheet 4	011513	Emergency Service Water	10	C	3
M-111 Sheet 4	011514	Emergency Service Water	10	C	3
M-111 Sheet 1	011193A	Emergency Service Water	1	C	2
M-111 Sheet 1	011193B	Emergency Service Water	1	C	2
M-112 Sheet 1	012807A	RHR Service Water	1	C	2
M-112 Sheet 1	012807B	RHR Service Water	1	C	2
M-149 Sheet 1	149016	Reactor Core Isolation Cooling	2	C	2

TABLE 1 UNIT 1 AND COMMON					
P&ID	**Valve Number**	**System**	**Size (in.)**	**Cat.**	**Safety Class**
M-149 Sheet 1	149F011	Reactor Core Isolation Cooling	6	C	2
M-149 Sheet 1	149F021	Reactor Core Isolation Cooling	2	C	2
M-149 Sheet 1	149F028	Reactor Core Isolation Cooling	2	A/C	2
M-149 Sheet 1	149F030	Reactor Core Isolation Cooling	6	C	2
M-149 Sheet 1	149F040	Reactor Core Isolation Cooling	10	A/C	2
M-149 Sheet 1	149F063	Reactor Core Isolation Cooling	3	C	2
M-149 Sheet 1	149F064	Reactor Core Isolation Cooling	3	C	2
M-150 Sheet 1	150F047	Reactor Core Isolation Cooling	2	C	2
M-151 Sheet 1	151F046A	Residual Heat Removal	4	C	2
M-151 Sheet 3	151F046B	Residual Heat Removal	4	C	2
M-151 Sheet 1	151F046C	Residual Heat Removal	4	C	2
M-151 Sheet 3	151F046D	Residual Heat Removal	4	C	2
M-152 Sheet 1	152005	Core Spray	3	C	2
M-152 Sheet 1	152F029A	Core Spray	2	C	2
M-152 Sheet 1	152F029B	Core Spray	2	C	2
M-152 Sheet 1	152F030A	Core Spray	2	C	2
M-152 Sheet 1	152F030B	Core Spray	2	C	2
M-152 Sheet 1	152F036A	Core Spray	3	C	2
M-152 Sheet 1	152F036B	Core Spray	3	C	2

TABLE 1 UNIT 1 AND COMMON					
P&ID	**Valve Number**	**System**	**Size (in.)**	**Cat.**	**Safety Class**
M-152 Sheet 1	152F036C	Core Spray	3	C	2
M-152 Sheet 1	152F036D	Core Spray	3	C	2
M-153 Sheet 1	153071A	Fuel Pool Cooling & Cleanup	8	C	3
M-153 Sheet 1	153071B	Fuel Pool Cooling & Cleanup	8	C	3
M-155 Sheet 1	155013	High Pressure Coolant Injection	2	C	2
M-155 Sheet 1	155F019	High Pressure Coolant Injection	16	C	2
M-155 Sheet 1	155F045	High Pressure Coolant Injection	16	C	2
M-155 Sheet 1	155F046	High Pressure Coolant Injection	4	C	2
M-155 Sheet 1	155F049	High Pressure Coolant injection	20	A/C	2
M-155 Sheet 1	155F076	High Pressure Coolant Injection	3	C	2
M-155 Sheet 1	155F077	High Pressure Coolant Injection	3	C	2
M-156 Sheet 1	156F048	High Pressure Coolant Injection	2	C	2
M-156 Sheet 1	156F052	High Pressure Coolant Injection	2	C	2
M-156 Sheet 1	156F057	High Pressure Coolant Injection	2	C	2

TABLE 2 UNIT 2					
P&ID	**Valve Number**	**System**	**Size (in.)**	**Cat.**	**Safety Class**
M-2111 Sheet 1	211132	Emergency Service Water	4	C	3
M-2111 Sheet 1	211133	Emergency Service Water	4	C	3
M-2111 Sheet 2	211134	Emergency Service Water	4	C	3
M-2111 Sheet 2	211135	Emergency Service Water	4	C	3
M-2149 Sheet 1	249016	Reactor Core Isolation Cooling	2	C	2
M-2149 Sheet 1	249F011	Reactor Core Isolation Cooling	6	C	2
M-2149 Sheet 1	249F021	Reactor Core Isolation Cooling	2	C	2
M-2149 Sheet 1	249F028	Reactor Core Isolation Cooling	2	A/C	2
M-2149 Sheet 1	249F030	Reactor Core Isolation Cooling	6	C	2
M-2149 Sheet 1	249F040	Reactor Core Isolation Cooling	10	A/C	2
M-2149 Sheet 1	249F063	Reactor Core Isolation Cooling	3	C	2
M-2149 Sheet 1	249F064	Reactor Core Isolation Cooling	3	C	2
M-2150 Sheet 1	250F047	Reactor Core Isolation Cooling	2	C	2
M-2151 Sheet 1	251F046A	Residual Heat Removal	4	C	2
M-2151 Sheet 3	251F046B	Residual Heat Removal	4	C	2
M-2151 Sheet 1	251F046C	Residual Heat Removal	4	C	2
M-2151 Sheet 3	251F046D	Residual Heat Removal	4	C	2
M-2152 Sheet 1	252005	Core Spray	3	C	2
M-2152 Sheet 1	252F029A	Core Spray	2	C	2

TABLE 2 UNIT 2					
P&ID	**Valve Number**	**System**	**Size (in.)**	**Cat.**	**Safety Class**
M-2152 Sheet 1	252F029B	Core Spray	2	C	2
M-2152 Sheet 1	252F030A	Core Spray	2	C	2
M-2152 Sheet 1	252F030B	Core Spray	2	C	2
M-2152 Sheet 1	252F036A	Core Spray	3	C	2
M-2152 Sheet 1	252F036B	Core Spray	3	C	2
M-2152 Sheet 1	252F036C	Core Spray	3	C	2
M-2152 Sheet 1	252F036D	Core Spray	3	C	2
M-2153 Sheet 1	253071A	Fuel Pool Cooling & Cleanup	8	C	3
M-2153 Sheet 1	253071B	Fuel Pool Cooling & Cleanup	8	C	3
M-2155 Sheet 1	255013	High Pressure Coolant Injection	2	C	2
M-2155 Sheet 1	255F019	High Pressure Coolant Injection	16	C	2
M-2155 Sheet 1	255F045	High Pressure Coolant Injection	16	C	2
M-2155 Sheet 1	255F046	High Pressure Coolant Injection	4	C	2
M-2155 Sheet 1	255F049	High Pressure Coolant injection	20	A/C	2
M-2155 Sheet 1	255F076	High Pressure Coolant Injection	3	C	2
M-2155 Sheet 1	255F077	High Pressure Coolant Injection	3	C	2
M-2156 Sheet 1	256F048	High Pressure Coolant Injection	2	C	2
M-2156 Sheet 1	256F052	High Pressure Coolant Injection	2	C	2
M-2156 Sheet 1	256F057	High Pressure Coolant Injection	2	C	2

NRC Question No. 2:

Provide all the related piping and instrumentation drawings which contain the relief request's subject check valves (sizes greater than two inches) along with their isolation valves, which will be used for the isolation of the check valves when performing IST on-line.

Response

The SSES P&ID's listed above in Tables 1 and 2 are enclosed. The check valves have been highlighted in yellow and the isolation valves have been highlighted in green. Please note that closure verification for check valves in Relief Request RR-05 (149F028, 149F040, 155F049, 249F028, 249F040, and 255F049) is not disassembly and examination but 10 CFR 50 Appendix J local leakage rate testing. In accordance with SSES FSAR Table 6.2-22, a water seal is maintained in the piping submerged in the suppression pool and the valves are tested with water.

NRC Question No. 3:

RR-01 and RR-05 do not address the safety and risk significance of the on-line IST of the check valves. Please address (either in a qualitative or quantitative manner) the potential risk of disassembly and inspection of the check valves on-line compared to the risk during system outage/plant shutdown.

Response

SSES performs on-line maintenance on the Emergency Service Water (ESW), RHR Service Water (RHRSW), Reactor Core Isolation Cooling (RCIC), Residual Heat Removal (RHR), Core Spray (CS), Fuel Pool Cooling and Cleanup (FPCC), and High Pressure Coolant Injection (HPCI) systems. The RHR Service Water check valves 012807A and 012807B are one-inch biocide injection check valves that can be disassembled and inspected without impacting the safety function of the RHR Service Water System. Similarly, the Emergency Service Water check valves 011193A and 011193B are one-inch biocide injection check valves that can be disassembled and inspected without impacting the safety function of the Emergency Service Water System. System Outage Windows (SOWs) are used for work activities that require an ECCS system out of service for greater than 24 hours. These are preplanned to occur once for each ECCS system per 2 year cycle.

Tasks performed during system outage windows include activities such as pump and/or turbine inspections, relief valve testing, electrical breaker maintenance and testing, room cooler inspections, and valve diagnostic testing. The system outage window for the basic inspections conducted on a biennial basis lasts typically 72 to 96 hours (<50% LCO Time). Based on a review of maintenance history, disassembly, inspection, and reassembly of a check valve takes between 6 and 24 hours, depending upon size and location. This IST activity would be conducted simultaneously with other maintenance activities scoped into the system outage window. Based on maintenance history, scheduling experience, and work execution in past on-line system outage windows, the additional work of check valve disassembly, inspection, and reassembly will neither extend the system outage window nor increase the overall system unavailability. Therefore, performing IST activity on-line would not change the duration of the on-line system outage window or the core damage probability (CDP) associated with the existing on-line maintenance activities. For these reasons, the risk/CDP over the entire operating/shutdown spectrum would remain unchanged with approval of these relief requests.

NRC Question No. 4:

Provide sufficient information for the NRC staff to reach a safety or risk determination with regards to the leak testing experience and leak tightness reliability of the associated pressure isolation valves and the potential consequences of a loss of isolation capability during disassembly, inspection, and manual exercising of all the check valves (sizes greater than 2 inch).

Response

The valves used to provide the isolation boundary for the disassembly and inspection of the check valves have an excellent history of providing adequate isolation. The isolation points used would depend upon the extent of work being performed in the system outage window. For example, if other activities require draining, the isolation points chosen would encompass a larger section of piping. Activities, including check valve disassembly and inspection, would not proceed if adequate isolation could not be established and maintained.

Once adequate isolation is confirmed, it is maintained by passive isolation valves or valves made passive (e.g., de-energized motor-operated valves) that are controlled in accordance with SSES' Energy Control Process. A loss of isolation capability under these conditions is not considered credible due to the passive characteristics of the isolation valves.

Additionally, when breaching a pressure boundary, standard maintenance practice is to monitor the component being disassembled to ensure there is no unexpected leakage during disassembly. This practice verifies the integrity of the isolation boundary and allows for recovery of safe conditions should evidence of unexpected leakage become apparent.

NRC Question No. 5:

Based on the risk significance discussed in Question No. 4 above, discuss what preventive or compensatory measures are necessary to maintain safety and minimize risk while performing on-line IST.

Response

Risk associated with on-line maintenance activities is controlled through the SSES work management process. This process includes preventive measures for maintaining safety and minimizing risk while performing on-line maintenance activities such as:

a. Assessing work activities by multiple independent personnel to ensure work activities in one system do not affect the ability of redundant systems or trains to perform their safety function. SSES work management practices includes assigning a Work Week Manager, Evolution Coordinator, Operations Contact (OPCAT)/Unit Supervisor, and affected Work Group individuals to the System Outage Window. The Work Week Manager determines when a Risk Analysis of the schedule for a Probabilistic Risk Analysis (PRA) is required and initiates the review and ensures site-specific requirements for managing risk associated with on-line maintenance and non-repetitive work are met.

   The Nuclear Operations Supervisor for Operations Work Control provides the Operations focal point for work groups (e.g., Maintenance, Engineering, I&C, etc.), with the authority to establish Station priorities in accordance with regulatory requirements. The Shift Manager provides the overall operational focus by communicating Station priorities to Work Group supervision.

   The OPCAT/Unit Supervisor approves blocking and post maintenance/ modification testing, (including functional, operability and performance testing); reviews planned and emergent work for impact to plant operation; releases equipment or systems for maintenance or testing while ensuring adequate levels of system availability and operability for safe operation and maintaining status control; ensures the status of each system is properly determined, maintained and controlled; ensures that any degraded or non-conforming equipment conditions that affect equipment operability are addressed for operability; and ensures systems are properly returned to operable status only after required Operability Testing has been completed.

Engineering provides effective and timely technical support to resolve restraints associated with work planning and implementation processes, including development of procedures necessary for the conduct of the work, provides engineering support as requested and is responsible for PRA for System Outage Windows (SOWs).

b. Equipment Out of Service (EOOS) is a software tool designed to evaluate plant configuration risk when the unit is in Mode 1, 2, or 3. Equipment Out of Service (EOOS) is a software tool that allows on-line work activity schedules to be analyzed for the impact on Nuclear Safety. The program receives input from the P3 scheduling tool as well as manually entered parameters. EOOS processes the activities through a Susquehanna-specific model and calculates the overall effects on nuclear safety. EOOS uses a probabilistic model and calculates Core Damage Frequency.

c. Application of EOOS is based on the Probabilistic Risk Assessment (PRA) in accordance with the Susquehanna Individual Plant Evaluation.

Plant configuration information input to EOOS includes:

- Equipment out-of-service; including duration
- Activities that can lead to plant transients (high risk evolutions)
- Safety significant alignments
- Plant operating mode

EOOS performs quantitative evaluations of this information. EOOS calculates the Core Damage Frequency (CDF) and Large Early Release Frequency (LERF) for any plant configuration. EOOS also calculates the components/systems whose importance is increased due to the specific plant configuration. The SSES EOOS model is not built to monitor components for generation risk or Technical Specification compliance.

The primary purpose of EOOS is to guard systems and equipment vital to safe shutdown of the nuclear units. To insure safe shutdown can be achieved and maintained, the EOOS model considers the most challenging as well as the most likely transients. EOOS determines increase in CDF and LERF.

d. The Protected Equipment Program at SSES is intended to be a tool that ensures equipment and systems required to minimize the risk of core damage are identified and communicated to station personnel. The program also controls access and work within posted protected equipment boundaries by requiring station personnel to obtain authorization from the responsible Unit Supervisor prior to entering the area or working in the vicinity of the equipment. This is implemented when the calculated risk status is either ORANGE or RED. This instruction is also implemented when the calculated risk status is YELLOW for greater than 12 hours.

e. Additionally, applicable portions of this program may be implemented as directed by Station Management to apply/control Protected Equipment postings where deemed appropriate for other reasons (e.g., to reduce the risk to Station Generation when equipment is out of service and a forced shutdown could occur if redundant equipment fails).

f. Using human performance tools including pre-job briefings, self-checking, and peer-checking to reduce or eliminate human errors.

NRC Question No. 6:

Under the section entitled, "Basis for Relief," of your letter dated May 28, 2004, you state that the maintenance rule, 10 CFR 50.65(a)(4) of Title 10 of the *Code of Federal Regulations* (10 CFR), requires licensees to assess and manage the increase of risk that may result from proposed maintenance activities. However, in order for the NRC staff to evaluate whether the proposed IST alternative is acceptable, you must demonstrate that the alternative provides an acceptable level of quality and safety pursuant to 10 CFR 50.55a(a)(3)(i). Performing a risk assessment of the proposed on-line testing at the time of IST does not address why on-line testing provides an acceptable level of quality and safety at this time. Meeting the maintenance rule is a separate regulatory requirement.

a. Demonstrate that the alternative provides an acceptable level of quality and safety pursuant to 10 CFR 50.55a(a)(3)(i).

b. Discuss how risk insights, as well as other factors, will be used to establish when IST should be performed either on-line or during refueling outages.

Response

The level of quality associated with IST activities is independent of whether the activity is performed on-line or during an outage. The same personnel, procedures, and acceptance criteria are used in either case. The safe conduct of maintenance and IST activities is built into the work management process. The inspection activities are planned ensuring adequate isolation boundaries are established to protect both maintenance personnel involved in the activity and plant equipment.

SSES manages system outage windows on a recurring cycle. Risk insight is used to ensure that proposed work or inspection activities balance reliability with unavailability. The work selection process provides the means to ensure, through the oversight of knowledgeable personnel, that when system unavailability is to be incurred, the preventive maintenance, corrective maintenance, and other inspections required to maximize the system's reliability are included in the system outage window. In this manner, each window is scoped to maximize the reliability benefit from minimizing system unavailability such that it is maintained at a level that minimizes overall risk. SSES is confident that this rigorous work selection, scoping, and risk management system will identify all work that is more appropriately placed in outages, and schedules such work accordingly.

NRC Question No. 7:

Explain how Technical Specification requirements for the reactor core isolation cooling, high pressure coolant injection, residual heat removal, fuel pool cooling and cleanup, and core spray systems will be satisfied while performing on-line IST of check valve(s) in the system. Specifically, address the limiting condition for operation and describe your planned actions to ensure that on-line IST will be accomplished within the allowed outage time. Discuss the typical amount of time needed to complete the IST of this check valve based on previous testing experience. Similarly, describe any contingency plans that will be in effect to provide reasonable confidence that the Allowed Outage Time will not be exceeded if the check valve is found to be in a significantly degraded or unacceptable condition.

Response

Work on check valves and other periodic work activities in the HPCI system will cause HPCI to become inoperable in accordance with Technical Specifications. In accordance with TS 3.5.1, operation with HPCI inoperable is permitted for up to 14 days provided RCIC is OPERABLE and low pressure ECCS systems are OPERABLE. Work is prohibited on RCIC and low pressure ECCS systems during a HPCI system outage window. As described in the response to Question No. 3, disassembly, inspection, and reassembly of the check valves takes between 8 and 16 hours, which would typically be accomplished within a 96-hour system outage work window (<50% LCO Time).

Work on check valves and other periodic work activities in the RCIC system will cause RCIC to become inoperable in accordance with Technical Specifications. In accordance with TS 3.5.3, operation with RCIC inoperable is permitted for up to 14 days provided HPCI is OPERABLE. Work is prohibited on HPCI during a RCIC system outage window. As described in the response to Question No. 3, disassembly, inspection, and reassembly of the check valves takes between 8 and 16 hours, which would typically be accomplished within a 96 hour system outage work window (<50% LCO Time).

Work on check valves and other periodic work activities in the RHR system will cause RHR to become inoperable in accordance with Technical Specifications. In accordance with TS 3.5.1, operation with one subsystem of RHR inoperable is permitted for up to seven days. Work is prohibited on other low pressure ECCS systems during a RHR system outage window. As described in the response to Question No. 3, disassembly, inspection, and re-assembly of the check valves takes between 8 and 24 hours, which would typically be accomplished within a 72-hour system outage work window (<50% LCO Time).

The Fuel Pool Cooling and Cleanup (FPCC) System is postulated to be unavailable following a seismic event. However, the FPCC check valves included in this relief request are part of the RHR fuel pool cooling mode. They have a safety function to open to provide a return flow path from the RHR heat exchangers to the fuel pool. Work on check valves in the FPCC system will cause one subsystem of RHR fuel pool cooling to be inoperable. Technical Requirement for Operability (TRO) 3.7.10 requires one RHR Fuel Pool Cooling subsystem must be operable if the Unit 1 and Unit 2 Spent Fuel Storage Pools are not cross-connected through the Cask Storage Pit. Under TRO 3.7.10 Condition C (i.e., no RHR Fuel Pool Cooling subsystems OPERABLE), the REQUIRED ACTION is to restore one subsystem to OPERABLE status within seven days. Since SSES does not schedule work on both loops at the same time, there would be no LCO or TRO impact. As described in the response to Question No. 3, disassembly, inspection, and reassembly of the check valves takes between 8 and 12 hours (<50% LCO Time).

Work on check valves and other periodic work activities in the Core Spray system will cause Core Spray to become inoperable in accordance with Technical Specifications. In accordance with TS 3.5.1, operation with one subsystem of Core Spray inoperable is permitted for up to seven days. Work is prohibited on other low-pressure ECCS systems during a Core Spray system outage window. As described in the response to Question No. 3, disassembly, inspection, and reassembly of the check valves takes between 6 and 16 hours, which would typically be accomplished within a 72-hour system outage work window (<50% LCO Time).

Work that requires entry into a TS LCO REQUIRED ACTION statement is planned and scheduled with the SSES Work Management Process previously described in Response to Question No. 5 above. The Work Management Process establishes the scope of work such that only 50% of the TS LCO time is required to perform the scheduled work. In addition, Evolution Coordinators provide continuous coverage for resolving problems. Spare parts that are necessary for re-work are identified and made available in case re-work becomes necessary. Based on historical performance, performance of check valve inspection, disassembly, and re-assembly would not affect the duration of the time spent in the LCO REQUIRED ACTION.

NRC Question No. 8:

(Only for RR-01) Under the second paragraph of Section 4, "Proposed Alternate Testing," of your letter dated May 28, 2004, you state, "Check Valve Groups CV09, CV10, CV13, CV14, and CV24 include identical Unit 1 and Unit 2 valves. For these check valve groups, one valve from each group will be tested each outage cycle combination. An outage cycle combination is defined as the start of Unit 1 operating cycle to the completion of Unit 2 operating cycle." Please explain the following:

a. How are you going to schedule check valve testing for both Unit 1 and Unit 2, when both units may have different refueling outage schedules?

Response

SSES will revise Relief Request RR01 to delete reference to an operating cycle combination. One check valve from the group will be disassembled and inspected every 24 months and all check valves in the group will be disassembled and inspected at least once every eight years. A copy of the revised Relief Request RR-01 for Unit 1 and Unit 2 is attached. This would also apply to check valve groups CV04 and CV07, in addition to the check valve groups identified in Question No. 8.

b. How will the IST records be maintained for various Unit 1 and Unit 2 check valves when both units have separate IST programs/records/management?

Response

SSES uses a Nuclear Information Management System (NIMS) that maintains the records for both Unit 1 and Unit 2 components. NIMS also contains a routine task scheduling module. Each check valve disassembly and inspection is assigned a routine task number. This routine task activity contains the frequency of performance. Administrative procedure NDAP-QA-0423 Station Pump and Valve Program is a common procedure for both Unit 1 and Unit 2. The schedule for check valve inspection is included as part of this document. The check valve schedule is established such that one check valve from the group will be disassembled and inspected every 24 months and all check valves in the group will be disassembled and inspected at least once every eight years.

c. The American Society of Mechanical Engineers *Boiler and Pressure Vessel Code* requires IST to be performed during refueling outages when quarterly testing is impractical. The refueling outage cycle is 24 months. Accordingly, one valve from each group should be tested every 24 months. Define the specific interval to be used with the proposed operating cycle combination of Units 1 and 2 in order to maintain the 24-month testing interval.

<u>Response</u>

The requirement stated in Question No. 8c. is correct - although the correct document for the SSES third ten-year interval is the American Society of Mechanical Engineers *Operation and Maintenance Code.* SSES will revise Relief Request RR-01 to delete reference to an operating cycle combination. As discussed in the response to Question Nos. 8a and 8b, one check valve from the group will be disassembled and inspected every 24 months and all check valves in the group will be disassembled and inspected at least once every 8 years. A copy of the revised relief request RR-01 for Unit 1 and Unit 2 is enclosed.

<u>NRC Question No. 9</u>:

(Only for RR-05) Under Section 3 of RR-05, "Basis of Relief," of your letter dated September 10, 2004, the third line of the second paragraph states, "This involves setup of test equipment and system configuration changes that are impractical on a quarterly or cold shutdown basis." Please explain how it is impractical to test these valves quarterly, based on the definition of "Impracticality" in Template 4 of the NEI White Paper, Revision 1, "Standard Format for Requests from Commercial Reactor Licensees Pursuant to 10 CFR 50.55a."

<u>Response</u>

SSES will revise Relief Request RR-05 to indicate that the setup of test equipment and system configuration changes would impose a hardship on a quarterly basis or cold shutdown basis rather than having it an impracticality. NUREG 1482 Rev. 1 indicates that the NRC staff has determined that the need to set-up test equipment constitutes adequate justification to defer reverse flow testing of a check valve to a refueling outage. A copy of the revised Relief Request RR-05 for Unit 1 and Unit 2 is enclosed.

RR-02

NRC Question No. 10:

Provide the main steam relief valves testing information data from 1999 to present (2004).

Valve S/N	Date Tested	Set Pressure	As-Found Test	Deviation	% Deviation
N63790-00-0019	3/30/1999	1195	1202	7	0.59
N63790-00-0019	3/24/2002	1195	1185	-10	-0.84
N63790-00-0020	3/25/2002	1205	1178	-27	-2.24
N63790-00-0021	4/6/2001	1195	1200	5	0.42
N63790-00-0022	4/1/1999	1205	1197	-8	-0.66
N63790-00-0022	3/24/2002	1205	1199	-6	-0.50
N63790-00-0023	3/30/2003	1205	1185	-20	-1.66
N63790-00-0024	3/28/2003	1205	1196	-9	-0.75
N63790-00-0025	3/30/2003	1205	1169	-36	-2.99
N63790-00-0026	3/31/2003	1195	1174	-21	-1.76
N63790-00-0027	3/24/2002	1195	1162	-33	-2.76
N63790-00-0028	4/6/2001	1195	1169	-26	-2.18
N63790-00-0029	4/1/1999	1205	1232	27	2.24
N63790-00-0029	3/26/2004	1195	1188	-7	-0.59
N63790-00-0030	4/13/2000	1195	1186	-9	-0.75
N63790-00-0031	3/31/2003	1195	1180	-15	-1.26
N63790-00-0032	4/6/1999	1205	1184	-21	-1.74
N63790-00-0032	3/25/2004	1205	1176	-29	-2.41
N63790-00-0033	3/31/2003	1195	1190	-5	-0.42
N63790-00-0034	4/14/2000	1195	1184	-11	-0.92
N63790-00-0081	4/6/2001	1205	1190	-15	-1.24
N63790-00-0082	3/31/2003	1205	1200	-5	-0.41

Valve S/N	Date Tested	Set Pressure	As-Found Test	Deviation	% Deviation
N63790-00-0083	3/28/2003	1175	1161	-14	-1.19
N63790-00-0084	3/28/2004	1195	1184	-11	-0.92
N63790-00-0085	4/14/2000	1175	1143	-32	-2.72
N63790-00-0086	3/29/1999	1195	1166	-29	-2.43
N63790-00-0086	3/28/2004	1175	1191	16	1.36
N63790-00-0087	4/5/2001	1195	1202	7	0.59
N63790-00-0088	4/7/2001	1205	1185	-20	-1.66
N63790-00-0089	4/7/2001	1205	1185	-20	-1.66
N63790-00-0090	3/27/2004	1205	1195	-10	-0.83
N63790-00-0091	3/29/2004	1205	1193	-12	-1.00
N63790-00-0092	3/31/1999	1195	1179	-16	-1.34
N63790-00-0092	3/30/2004	1195	1200	5	0.42
N63790-00-0093	4/14/2000	1205	1191	-14	-1.16
N63790-00-0094	3/30/1999	1205	1224	19	1.58
N63790-00-0094	3/26/2004	1205	1174	-31	-2.57
N63790-00-0095	4/12/2000	1205	1230	25	2.07
N63790-00-0096	4/13/2000	1205	1204	-1	-0.08
N63790-00-0112	3/26/2002	1205	1220	15	1.24
N63790-00-0113	4/6/2001	1175	1193	18	1.53
N63790-00-0128	3/23/2002	1175	1193	18	1.53
N63790-00-0129	4/12/2000	1205	1192	-13	-1.08
N63790-00-0130	3/29/1999	1205	1208	3	0.25
N63790-00-0130	3/24/2002	1205	1184	-21	-1.74
N63790-00-0131	4/4/2001	1205	1219	14	1.16
N63790-00-0132	4/12/2000	1195	1154	-41	-3.43
N63790-00-0133	3/24/2002	1195	1208	13	1.09

RR-04

NRC Question No. 11:

The comprehensive pump test (CPT) was developed to incorporate new philosophy for safety-related pumps. The new testing regimen permits less frequent, more meaningful testing on a biennial basis and allows less restrictive testing quarterly. The Group A test was designed to the criteria primarily on the mechanical condition of the pump (vibration), and CPT was designed to assess the mechanical and hydraulic condition of the pump. It is the NRC staff's view that the Group A test alone does not adequately assess the hydraulic performance of the pumps. Please provide additional justification why the Group A test adequately assesses the hydraulic performance of the pumps. Include the tighter acceptance criteria and increased accuracy requirements of the test gauges required by the CPT in the justification.

Response

The following pumps at SSES are considered Group A pumps:

Pump ID	System	Pump Type
0P504A/B/C/D	Emergency Service Water	Vertical Line Shaft Centrifugal
1P202A/B/C/D 2P202A/B/C/D	Residual Heat Removal	Centrifugal
1P506A/B 2P506A/B	RHR Service Water	Vertical Line Shaft Centrifugal

The OM Working Group on pumps has assigned a team to review the initiative that would eliminate the need to perform a separate Comprehensive Pump Test (CPT) if a Group A test is testing the pump at the same hydraulic conditions. The technical rationale is that quarterly full flow test with no CPT is more effective in evaluating pump performance and detecting degradation as opposed to a quarterly test at less than full flow in conjunction with a biennial CPT.

The only differences between a CPT and a Group A test conducted at the CPT flow rate are:

1. Required use of 0.5% accurate pressure instrument instead of the 2% required for Group A test.
2. CPT upper hydraulic acceptance limit of 3% as opposed to Group A test of 10%.
3. The lower end limits are identical, although CPT uses an Alert range on the low end only.

Under the 1989 ASME Boiler & Pressure Vessel Code, pump testing was performed in accordance with the 1987 OM Standard Part 6 through the 1988 OMa Addenda. In this version, the Code changed from an upper 3% hydraulic limit to a 10% upper limit. The basis for this change was the Code now included a mechanical evaluation (vibration) in terms of velocity (in. per sec.) as an alternative to displacement (mils). SSES performs vibration testing using velocity measurements. Although it is possible for a degrading pump to improve, it is highly unlikely. If the pump is degrading, it is much more likely that the pump differential pressure or flow will be less than the reference value as opposed to greater than the reference value.

Under the 1998 ASME OM Code through OMb 2000 Addenda, the vibration and hydraulic criteria are not less restrictive than prior ASME Code editions for quarterly Group A pumps but are more restrictive only on the upper required action range for Group A CPT. The quarterly testing performed at SSES is already within ± 20% of the pump design flow.

Quarterly testing at full flow will result in eight (8) tests over a two- (2) year period as opposed to one CPT. The difference in instrument accuracy requirements is 1.5%. Instrument accuracy is only one part of the total uncertainty when collecting data. Increasing the number of data points (quarterly testing at full flow) reduces the uncertainty. Temperature effects are one item of uncertainty that change over the course of the year. With one CPT, it is possible that uncertainty attributed to temperature or gauge inaccuracy may be at its maximum. With eight quarterly tests conducted during all four seasons twice, the aggregate uncertainty would be lower than that associated with one test. Using eight quarterly tests at full flow with a 2% accurate pressure instruments is a better gauge of pump health than one test with a 0.5% accurate pressure instrument.

Since normal plant instrumentation is not accurate to 0.5% of full scale, the performance of CPT would require additional manpower resources for calibration of measuring and test equipment (M&TE), manpower resources to install and remove the M&TE from the system, and in some cases, additional radiation dose to install and remove the M&TE from the system. In addition, twenty (20) separate procedures are required to be developed and maintained. Compliance with the CPT for Group A pumps would result in a hardship and difficulty without a compensating increase in quality or safety.

In addition, SSES has maintained tighter hydraulic acceptance criteria on the RHR pumps than ASME Code requirements. SSES quarterly flow surveillance procedures for the RHR pumps define an acceptable range of 0.93 to 1.02 ΔP_r, imposes an alert range between 0.90 to < 0.93 ΔP_r and between > 1.02 and 1.10 ΔP_r and is inoperable at < 0.90 and >1.10 ΔP_r. Over the last 4 years and 152 test results on the Unit 1 and Unit 2 RHR pumps, the pump differential pressure ranged from 0.97 to 1.01 ΔP_r. Compliance with the CPT for the RHR pumps would result in a hardship and difficulty without a compensating increase in quality or safety.

The Emergency Service Water (ESW) pumps are vertical line shaft centrifugal pumps. The SSES quarterly flow surveillance procedures for these pumps follow the ASME OM Code hydraulic criteria of an acceptable range of 0.95 to 1.10 ΔP_r, imposes an alert range between 0.93 to < 0.95 ΔP_r and inoperable at < 0.93 and >1.10 ΔP_r. The only difference in the CPT, other than the use of 0.5% pressure gauges, is lowering the high required action range from 1.10 to 1.03 ΔP_r. Since the discharge pressure indicator was replaced in May 2003 for the ESW B and D pumps (0P504B and D), the pump differential pressures have ranged from 0.96 to 1.03 ΔP_r. Over the last four years and 47 test results on the ESW A and C pumps (0P504A and C), the pump differential pressures have ranged from 0.95 to 1.09 ΔP_r. An investigation of the high-side readings has indicated a problem with the discharge pressure indicator for the ESW A and C pumps, and the indicator was replaced in November 2004. SSES establishes pump curves for the ESW pumps on a periodic basis (at least once every two years) as part of the individual system monitoring plan that is used to trend pump performance. Pump performance is evaluated for the potential of adverse pump interaction. The pump curves developed for the ESW pumps have not indicated any significant degradation of the ESW pumps. In addition, SSES performs a flow balance of the ESW system every three years. Compliance with the CPT for the ESW pumps would result in a hardship and difficulty without a compensating increase in quality or safety.

The RHR Service Water (RHRSW) pumps are vertical line shaft centrifugal pumps. The SSES quarterly flow surveillance procedures for these pumps follow the ASME OM Code hydraulic criteria of an acceptable range of 0.95 to 1.10 ΔP_r, imposes an alert range between 0.93 to < 0.95 ΔP_r and inoperable at < 0.93 and >1.10 ΔP_r. The only difference in the CPT, other than the use of 0.5% pressure gauges, is lowering the high required action range from 1.10 to 1.03 ΔP_r. Over the last 4 years and 32 test results on the Unit 1 RHRSW pumps (1P506A and B), the pump differential pressures have ranged from 0.96 to 1.04 ΔP_r. Over the last four years and 23 test results on the Unit 2 RHRSW pump 2P506A, the pump differential pressures have ranged from 0.97 to 1.06 ΔP_r. Over the last four years and 16 test results on the Unit 2 RHRSW pump 2P506B, the pump differential pressures have ranged from 0.97 to 1.10 ΔP_r. An investigation of the high side readings has indicated a problem with the discharge pressure indicator for the Unit 2 RHRSW B pump and the indicator is scheduled for recalibration in December 2004. The results of the quarterly flow surveillances do not indicate pump degradation and the high side readings are indicative of instrumentation problems that are being addressed by SSES. Compliance with the CPT for the RHRSW pumps would result in a hardship and difficulty without a compensating increase in quality or safety.

Enclosure 2 to PLA-5837

Revised Relief Requests RR-01 and RR-05 to Susquehanna SES Unit 1 Third Ten-Year Interval In-Service Testing Program Plan

RELIEF REQUEST 1RR-01

Relief in accordance with 10 CFR 50.55a (a)(3)(i)

Alternative Provides Acceptable Level of Quality and Safety

1. **ASME Code Component(s) Affected**

Valve Number	System	Cat.	Safety Class
Check Valve Group CV02			
011033	Emergency Service Water	C	3
011034	Emergency Service Water	C	3
011035	Emergency Service Water	C	3
011036	Emergency Service Water	C	3
011037	Emergency Service Water	C	3
011038	Emergency Service Water	C	3
011039	Emergency Service Water	C	3
011040	Emergency Service Water	C	3
Check Valve Group CV03			
011513	Emergency Service Water	C	3
011514	Emergency Service Water	C	3

Function

These check valves are in the cooling water lines to the Emergency Diesel Generators. They have an open safety function to provide Emergency Service Water to the Emergency Diesel Generators jacket water coolers, lube oil coolers and intercoolers. They have a closed safety function to prevent backflow when the cooling is being supplied by the opposite loop of Emergency Service Water.

RELIEF REQUEST 1RR-01
(Continued)

These valves have no containment isolation function. The open and close safety functions of these valves are currently verified by valve disassembly. These valves are part stroked open during quarterly Emergency Service Water flow verification (in-service pump test).

Valve Number	System	Cat.	Safety Class
Check Valve Group CV05			
149F011	Reactor Core Isolation Cooling	C	2
149F030	Reactor Core Isolation Cooling	C	2

Function

These check valves are in the Reactor Core Isolation Cooling (RCIC) pump suction lines. They have an open safety function to provide a flow path for the RCIC pump while taking suction from the condensate storage tank (149F011) or the suppression pool (149F030). They have a closed safety to prevent diversion of RCIC flow when the alternate suction path is being used. These valves have no containment isolation function. The open and close safety functions of these valves are currently verified by valve disassembly.

Valve Number	System	Cat.	Safety Class
Check Valve Group CV09			
149F021	Reactor Core Isolation Cooling	C	2

Function

This check valve is in the Reactor Core Isolation Cooling (RCIC) pump minimum flow line. It has an open safety function to provide a minimum flow path for protection of the pump. This valve has a containment isolation function although it is not Appendix J tested. This line terminates below the minimum suppression pool level which provides a water seal. The open and close safety function of these valves is currently verified by valve disassembly. This valve is part stroked open during the quarterly Reactor Core Isolation Cooling flow verification (in-service pump test).

RELIEF REQUEST 1RR-01
(Continued)

Valve Number	System	Cat.	Safety Class
Check Valve Group CV24			
150F047	Reactor Core Isolation Cooling	C	2
156F052	High Pressure Coolant Injection	C	2

Function

These check valves are located in the discharge of the Reactor Core Isolation Cooling (RCIC) and High Pressure Coolant Injection (HPCI) vacuum condenser pumps and provide the ASME Code boundary between the RCIC/HPCI pump suction and the discharge of the vacuum tank condenser pump. They have a closed safety function to maintain RCIC/HPCI water inventory in the event of a line break of the non-Code piping. Under ISTC-5221(a)(3), it is required that these check valves also be verified to partially open. These valves have no containment isolation function. The close safety function of these valves is currently verified by valve disassembly.

Valve Number	System	Cat.	Safety Class
Check Valve Group CV08			
151F046A	Residual Heat Removal	C	2
151F046B	Residual Heat Removal	C	2
151F046C	Residual Heat Removal	C	2
151F046D	Residual Heat Removal	C	2

RELIEF REQUEST 1RR-01
(Continued)

Function

These check valves are in the Residual Heat Removal pump minimum flow lines. They have an open safety function to provide a minimum flow path for pump protection. Under ISTC-5221(a)(2), it is required that these check valves also be verified for closure. These valves have no containment isolation function. The open safety function of these valves is currently verified by valve disassembly. These valves are part stroked open during the quarterly Residual Heat Removal flow verification (in-service pump test).

Valve Number	System	Cat.	Safety Class
Check Valve Group CV10			
152005	Core Spray	C	2

Function

This check valve is located in the suppression pool fill line. It has a safety function to close if the line is being used for filling the suppression pool (manual up-stream valve 152028 open) to maintain Core Spray water inventory. This valve has no containment isolation function. The close safety function of this valve is currently verified by valve disassembly.

Valve Number	System	Cat.	Safety Class
Check Valve Group CV22			
152F029A	Core Spray	C	2
152F029B	Core Spray	C	2
152F030A	Core Spray	C	2
152F030B	Core Spray	C	2

RELIEF REQUEST 1RR-01
(Continued)

Function

These check valves are in the keep fill lines for the Core Spray system. They have a closed safety function to prevent loss of inventory during Core Spray system operation. Under ISTC-5221(a)(3), it is required that these check valves also be verified to partially open. These valves have no containment isolation function. The close safety function of these valves is currently verified by valve disassembly. The open function of these valves is continually verified during plant operation by proper operation of the keep fill system.

Valve Number	System	Cat.	Safety Class
Check Valve Group CV11			
152F036A	Core Spray	C	2
152F036B	Core Spray	C	2
152F036C	Core Spray	C	2
152F036D	Core Spray	C	2

Function

These check valves are in the Core Spray pump minimum flow lines. They have an open safety function to provide a minimum flow path for pump protection. Under ISTC-5221(a)(2), it is required that these check valves also be verified for closure. These valves have no containment isolation function. The open safety function of these valves is currently verified by valve disassembly. These valves are part stroked open during the quarterly Core Spray flow verification (in-service pump test).

Valve Number	System	Cat.	Safety Class
Check Valve Group CV14			
153071A	Fuel Pool Cooling & Cleanup	C	3
153071B	Fuel Pool Cooling & Cleanup	C	3

RELIEF REQUEST 1RR-01
(Continued)

Function

These check valves are in the alternate flow path to the fuel storage pool. They have an open safety function to provide fuel storage pool cooling. Under ISTC-5221(a)(2), it is required that these check valves also be verified for closure. These valves have no containment isolation function. The open safety function of these valves is currently verified by valve disassembly. These valves are part stroked open during periodic pressure testing required by ASME Boiler and Pressure Vessel Code, Section XI.

Valve Number	System	Cat.	Safety Class
Check Valve Group CV06			
155F019	High Pressure Coolant Injection	C	2
155F045	High Pressure Coolant Injection	C	2

Function

These check valves are in the High Pressure Coolant Injection (HPCI) pump suction lines. They have an open safety function to provide a flow path for the HPCI pump while taking suction from the condensate storage tank (155F019) or the suppression pool (155F045). They have a closed safety to prevent diversion of HPCI flow when the alternate suction path is being used. These valves have no containment isolation function. The open and close safety functions of these valves are currently verified by valve disassembly.

RELIEF REQUEST 1RR-01
(Continued)

Valve Number	System	OM Cat.	Safety Class
Check Valve Group CV13			
155F046	High Pressure Coolant Injection	C	2

Function

This check valve is in the High Pressure Coolant Injection (HPCI) pump minimum flow line. It has an open safety function to provide a minimum flow path for protection of the pump. This valve has a containment isolation function although it is not Appendix J tested. This line terminates below the minimum suppression pool level which provides a water seal. The open and close safety function of this valve is currently verified by valve disassembly. This valve is part stroked open during the quarterly High Pressure Coolant Injection flow verification (in-service pump test).

Valve Number	System	Cat.	Safety Class
Check Valve Group CV25			
011193A	Emergency Service Water	C	2
011193B	Emergency Service Water	C	2
012807A	RHR Service Water	C	2
012807B	RHR Service Water	C	2

Function

These check valves are in the Emergency Service Water and RHR Service Water biocide injection lines and provide the ASME Code boundary between Emergency Service Water and RHR Service Water and the biocide injection line. They have a close safety function to provide and maintain Emergency Service Water and RHR Service Water inventory in the event of a line break in the non-code piping. Under ISTC-5221(a)(3), it is required that these check valves also be verified to partially open. These valves have no containment isolation function. The closed safety function of these valves had been verified by checking a telltale drain valve upstream of the check valves.

RELIEF REQUEST 1RR-01
(Continued)

Valve Number	System	Cat.	Safety Class
Check Valve Group CV12			
149F063	Reactor Core Isolation Cooling	C	2
149F064	Reactor Core Isolation Cooling	C	2
155F076	High Pressure Coolant Injection	C	2
155F077	High Pressure Coolant Injection	C	2

Function

These check valves are in the Reactor Core Isolation Cooling and High Pressure Coolant Injection turbine exhaust lines. They have an open safety function to prevent a vacuum relief path for the turbine exhaust line. They have a close safety function to prevent steam flow into the suppression chamber. These valves have no containment isolation function. The open and closed safety functions of these valves are currently verified by valve disassembly.

Valve Number	System	Cat.	Safety Class
Check Valve Group CV04			
149016	Reactor Core Isolation Cooling	C	2
155013	High Pressure Coolant Injection	C	2

RELIEF REQUEST 1RR-01
(Continued)

Function

These check valves are located in the keep fill lines for the Reactor Core Isolation Cooling (RCIC) and High Pressure Coolant Injection (HPCI) systems. They have a closed safety function to prevent loss of inventory during Reactor Core Isolation Cooling (RCIC) and High Pressure Coolant Injection (HPCI) system operation. Under ISTC-5221(a)(3), it is required that these check valves also be verified to partially open. These valves have no containment isolation function. The close safety function of these valves is currently verified by valve disassembly. The open function of the valves is continually verified during plant operation by proper operation of the keep fill system.

Valve Number	System	Cat.	Safety Class
Check Valve Group CV07			
156F048	High Pressure Coolant Injection	C	2
156F057	High Pressure Coolant Injection	C	2

Function

These check valves are located on the outlet of the High Pressure Coolant Injection (HPCI) Lube Oil Cooler and in the HPCI Lube Oil Cooler return line to the HPCI Booster pump. They have an open safety function to provide a flow path for cooling water from the turbine lube oil cooler. Under ISTC-5221(a)(2), it is required that these check valves also be verified for closure. These valves have no containment isolation function. The open safety function of these valves is currently verified by valve disassembly.

2. Applicable Code Requirement

ASME OM Code 1998 Edition through OMb-2000 Addenda

ISTC-5221(c)(3), "Valve Obturator Movement"

**RELIEF REQUEST 1RR-01
(Continued)**

"At least one valve from each group shall be disassembled and examined at each refueling outage; all valves in each group shall be disassembled and examined at least once every eight years."

3. **Basis for Relief**

Pursuant to 10 CFR 50.55a "Codes and Standards" paragraph (a)(3), relief is requested from the requirements of ASME OM Code ISTC-5221(c)(3). The basis of the relief request is that the proposed alternative would provide an acceptable level of quality and safety.

The components listed above are check valves with no external means for exercising and no external position indication. Due to a lack of installed flow or pressure indication and a lack of test connections, it is not possible to use other means to verify the open and/or close exercising of these check valves. Disassembly of the valves is the most feasible method to verify operability and can be accomplished during system outages, which may be conducted on line. The check valves have been grouped by valve manufacturer, design, service, size, materials of construction, and orientation as required by ASME OM Code 1998 through 2000 Addenda, Section ISTC-5221(c)(1).

Prior to performing a system outage on-line, its effect on risk is evaluated in accordance with requirements of 10 CFR 50.65(a)(4), "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear power Plants."
This requirement states in part that "Before performing maintenance activities (including but not limited to surveillance, post-maintenance testing, and corrective and preventive maintenance), the licensee shall assess and manage the increase in risk that may result from the proposed maintenance activities."

SSES complies with the requirements of 10 CFR 50.65(a)(4) via application of a program governing maintenance scheduling. The program dictates the requirements for risk evaluations as well as the necessary levels of action required for risk management in each case. The program also controls operation of the on-line risk monitor system, which is based on probabilistic risk assessment (PRA). With the use of risk evaluation for various aspects of plant operations, SSES has initiated efforts to perform additional maintenance, surveillance, and testing activities during normal operation. Planned activities are evaluated utilizing risk

RELIEF REQUEST 1RR-01
(Continued)

insights to determine the impact on safe operation of the plant and the ability to maintain associated safety margins. Individual system components, a system train, or a complete system may be planned to be out of service to allow maintenance, or other activities, during normal operation.

Disassembly and inspection may involve a system breach. However, the valves are isolated and the associated section of piping drained during disassembly. Thus, the system breach does not increase the risk due to internal flooding or internal system loss-of-coolant accident. The risk associated with these activities would be bounded by the risk experienced due to the system outage. Therefore, disassembly and testing of these valves during scheduled system outages while on-line would have no additional impact on core damage frequency.

As more system outages are performed on-line, it is evident that selected refueling outage in-service testing activities, (e.g., valve exercising and disassembly) could be performed during these system outage windows (SOW) without sacrificing the level of quality or safety. In-service testing performed on a refueling outage frequency is currently acceptable in accordance with ASME OM Code, 1998 Edition through 2000 Addenda. By specifying testing activities on a frequency commensurate with each refueling outage, ASME OM Code, 1998 Edition through 2000 Addenda, establishes an acceptable time period between testing. Historically, the refueling outage has provided a convenient and defined time period in which testing activities could be safely and efficiently performed. However, an acceptable testing frequency can be maintained separately without being tied directly to a refueling outage. In-service testing performed on a frequency that maintains the acceptable time period between testing activities during the operating cycle is consistent with the intent of ASME OM Code, 1998 Edition through 2000 Addenda.

Over time, approximately the same number of tests will be performed using the proposed operating cycle frequency as would be performed using the current refueling outage frequency. Thus, in-service testing activities performed during the proposed operating cycle test frequency provide an equivalent level of quality and safety.

RELIEF REQUEST 1RR-01
(Continued)

4. **Proposed Alternate Testing**

Pursuant to 10 CFR 50.55a(a)(3)(i), SSES proposes an alternative testing frequency for performing in-service testing of the valves identified above. At least one valve from each group will be tested on a frequency of once each operating cycle in lieu of once each refueling outage as currently allowed by ASME OM Code, 1998 Edition through 2000 Addenda, ISTC-5221(c)(3) "Valve Obturator Movement." All valves in each group will be tested at least once every eight years as required by ASME OM Code, 1998 Edition through 2000 Addenda, ISTC-5221(c)(3).

Check valve groups CV04, CV07, CV09, CV10, CV13, CV14, and CV24 include identical Unit 2 valves. One check valve from the group will be disassembled and inspected during an operating cycle every 24 months, and all check valves in the group will be disassembled and inspected at least once every eight years.

Similar relief has been approved for Entergy's Grand Gulf Nuclear Station, Unit 1 (TAC No. MB6900).

5. **Duration of Relief Request**

This proposed alternative is requested for the duration of the Third Ten-Year Interval Susquehanna Steam Electric Station Unit 1 IST Program (June 1, 2004 through May 31, 2014).

RELIEF REQUEST 1RR-05

Relief in Accordance with 10 CFR 50.55a (a)(3)(i)

Alternative Provides Acceptable Level of Quality and Safety

1. ASME Code Component(s) Affected

Valve Number	System	Cat.	Safety Class
149F028	Reactor Core Isolation Cooling	A/C	2
149F040	Reactor Core Isolation Cooling	A/C	2
155F049	High Pressure Coolant injection	A/C	2

Function

Check Valve 149F028 is the Reactor Core Isolation Cooling (RCIC) Vacuum Pump discharge check valve to the suppression pool. It has a close safety function for containment isolation. Check Valve 149F040 is the Reactor Core Isolation Cooling (RCIC) Turbine Exhaust check valve to the suppression pool. It has an open safety function to provide a flow path from the RCIC turbine exhaust to the suppression pool and a close safety function for containment isolation. Check Valve 155F049 is the High Pressure Coolant Injection (HPCI) Turbine Exhaust check valve to the suppression pool. It has an open safety function to provide a flow path from the HPCI turbine exhaust to the suppression pool and a close safety function for containment isolation.

2. Applicable Code Requirement

ASME OM Code 1998 Edition through OMb-2000 Addenda

ISTC-3522(c), "Category C Check Valves"

"If exercising is not practical during operation at power and cold shutdowns, it shall be performed during refueling outages."

RELIEF REQUEST 1RR-05
(Continued)

3. **Basis for Relief**

Pursuant to 10 CFR 50.55a, "Codes and Standards," paragraph (a)(3), relief is requested from the requirements of ASME OM Code ISTC-3522(c). The basis of the relief request is that the proposed alternative would provide an acceptable level of quality and safety.

The components listed above are check valves with no external means for exercising and no external position indication. The only means to verify closure is by Appendix J local leakage rate testing. This involves set-up of test equipment and system configuration changes that are a hardship without a compensating increase in quality or safety on a quarterly or cold shutdown basis. The Appendix J testing can be performed at intervals other than refueling outages such as during system outage windows.

Prior to performing a system outage on-line, its effect on risk is evaluated in accordance with requirements of 10 CFR 50.65(a)(4), "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." This requirement states in part that "Before performing maintenance activities (including but not limited to surveillance, post-maintenance testing, and corrective and preventive maintenance), the licensee shall assess and manage the increase in risk that may result from the proposed maintenance activities."

SSES complies with the requirements of 10 CFR 50.65(a)(4) via application of a program governing maintenance scheduling. The program dictates the requirements for risk evaluations as well as the necessary levels of action required for risk management in each case. The program also controls operation of the on-line risk monitor system, which is based on probabilistic risk assessment (PRA). With the use of risk evaluation for various aspects of plant operations, SSES has initiated efforts to perform additional maintenance, surveillance, and testing activities during normal operation. Planned activities are evaluated utilizing risk insights to determine the impact on safe operation of the plant and the ability to maintain associated safety margins. Individual system components, a system train, or a complete system may be planned to be out of service to allow maintenance or other activities during normal operation.

**RELIEF REQUEST 1RR-05
(Continued)**

Appendix J testing may involve a system breach, if required to repair a failed valve. However, during the disassembly process to perform maintenance, the subject valve is isolated and the associated section of piping drained. Thus, the system breach does not increase the risk due to internal flooding or internal system loss-of-coolant accident. The risk associated with these activities would be bounded by the risk experienced due to the system outage. Therefore, closure testing of these valves by Appendix J during schedule system outages while on-line would have no additional impact on core damage frequency.

As more system outages are performed on-line, it is evident that selected refueling outage in-service testing activities, (e.g., closure testing by leak testing) could be performed during these system outage windows (SOW) without sacrificing the level of quality or safety. In-service testing performed on a refueling outage frequency is currently acceptable in accordance with ASME OM Code, 1998 Edition through 2000 Addenda. By specifying testing activities on a frequency commensurate with each refueling outage, ASME OM Code, 1998 Edition through 2000 Addenda, establishes an acceptable time period between testing. Historically, the refueling outage has provided a convenient and defined time period in which testing activities could be safely and efficiently performed. However, an acceptable testing frequency can be maintained separately without being tied directly to a refueling outage. In-service testing performed on a frequency that maintains the acceptable time period between testing activities during the operating cycle is consistent with the intent of ASME OM Code, 1998 Edition through 2000 Addenda.

Over time, approximately the same number of tests will be performed using the proposed operating cycle frequency as would be performed using the current refueling outage frequency. Thus, in-service testing activities performed during the proposed operating cycle test frequency provide an equivalent level of quality and safety.

4. <u>Proposed Alternate Testing</u>

Pursuant to 10 CFR 50.55a(a)(3)(i), SSES proposes an alternative testing frequency for performing in-service testing of the valves identified above. The valves will be closure tested by Appendix J on a frequency of at least once per

**RELIEF REQUEST 1RR-05
(Continued)**

operating cycle in lieu of once each refueling outage as currently allowed by ASME OM Code, 1998 Edition through 2000 Addenda, ISTC-3522(c), "Category C Check Valves." The open safety function of Check Valve 149F040 will be demonstrated quarterly in conjunction with the RCIC flow verification (in-service pump test). The open safety function of Check Valve 155F049 will be demonstrated quarterly in conjunction with the HPCI flow verification (in-service pump test). As required by ISTC-5221(a)(3), the open function of Check Valve 149F028 will be demonstrated quarterly in conjunction with the RCIC flow verification (in-service pump test).

5. **Duration of Relief Request**

This proposed alternative is requested for the duration of the Third Ten-Year Interval Susquehanna Steam Electric Station Unit 1 IST Program (June 1, 2004 through May 31, 2014).

Enclosure 3 to PLA-5837

Revised Relief Requests RR01 and RR05 to Susquehanna SES Unit 2 Third Ten-Year Interval In-Service Testing Program Plan

RELIEF REQUEST 2RR-01

Relief in Accordance with 10 CFR 50.55a (a)(3)(i)

Alternative Provides Acceptable Level of Quality and Safety

1. **ASME Code Component(s) Affected**

Valve Number	System	Cat.	Safety Class
Check Valve Group CV17			
249F011	Reactor Core Isolation Cooling	C	2
249F030	Reactor Core Isolation Cooling	C	2

Function

These check valves are in the Reactor Core Isolation Cooling (RCIC) pump suction lines. They have an open safety function to provide a flow path for the RCIC pump while taking suction from the condensate storage tank (249F011) or the suppression pool (249F030). They have a closed safety to prevent diversion of RCIC flow when the alternate suction path is being used. These valves have no containment isolation function. The open and close safety functions of these valves are currently verified by valve disassembly.

Valve Number	System	Cat.	Safety Class
Check Valve Group CV09			
249F021	Reactor Core Isolation Cooling	C	2

Function

This check valve is in the Reactor Core Isolation Cooling (RCIC) pump minimum flow line. It has an open safety function to provide a minimum flow path for protection of the pump. This valve has a containment isolation function although it is not Appendix J tested. This line terminates below the minimum suppression pool level which provides a water seal. The open and close safety function of these valves is currently verified by valve disassembly. This valve is part stroked open during the quarterly Reactor Core Isolation Cooling flow verification (in-service pump test).

RELIEF REQUEST 2RR-01
(Continued)

Valve Number	System	Cat.	Safety Class
Check Valve Group CV24			
250F047	Reactor Core Isolation Cooling	C	2
256F052	High Pressure Coolant Injection	C	2

Function

These check valves are located in the discharge of the Reactor Core Isolation Cooling (RCIC) and High Pressure Coolant Injection (HPCI) vacuum condenser pumps and provide the ASME Code boundary between the RCIC/HPCI pump suction and the discharge of the vacuum tank condenser pump. They have a closed safety function to maintain RCIC/HPCI water inventory in the event of a line break of the non-Code piping. Under ISTC-5221(a)(3), it is required that these check valves also be verified to partially open. These valves have no containment isolation function. The close safety function of these valves is currently verified by valve disassembly.

Valve Number	System	Cat.	Safety Class
Check Valve Group CV15			
251F046A	Residual Heat Removal	C	2
251F046B	Residual Heat Removal	C	2
251F046C	Residual Heat Removal	C	2
251F046D	Residual Heat Removal	C	2

Function

These check valves are in the Residual Heat Removal pump minimum flow lines. They have an open safety function to provide a minimum flow path for pump protection. Under ISTC-5221(a)(2), it is required that these check valves also be

RELIEF REQUEST 2RR-01
(Continued)

verified for closure. These valves have no containment isolation function. The open safety function of these valves is currently verified by valve disassembly. These valves are part stroked open during the quarterly Residual Heat Removal flow verification (in-service pump test).

Valve Number	System	Cat.	Safety Class
Check Valve Group CV10			
252005	Core Spray	C	2

Function

This check valve is located in the suppression pool fill line. It has a safety function to close if the line is being used for filling the suppression pool (manual upstream valve 252028 open) to maintain Core Spray water inventory. This valve has no containment isolation function. The close safety function of this valve is currently verified by valve disassembly.

Valve Number	System	Cat.	Safety Class
Check Valve Group CV23			
252F029A	Core Spray	C	2
252F029B	Core Spray	C	2
252F030A	Core Spray	C	2
252F030B	Core Spray	C	2

Function

These check valves are in the keep fill lines for the Core Spray system. They have a closed safety function to prevent loss of inventory during Core Spray system operation. Under ISTC-5221(a)(3), it is required that these check valves also be verified to partially open. These valves have no containment isolation function. The close safety function of these valves is currently verified by valve disassembly. The open function of these valves is continually verified during plant operation by proper operation of the keep fill system.

RELIEF REQUEST 2RR-01
(Continued)

Valve Number	System	Cat.	Safety Class
Check Valve Group CV16			
252F036A	Core Spray	C	2
252F036B	Core Spray	C	2
252F036C	Core Spray	C	2
252F036D	Core Spray	C	2

Function

These check valves are in the Core Spray pump minimum flow lines. They have an open safety function to provide a minimum flow path for pump protection. Under ISTC-5221(a)(2), it is required that these check valves also be verified for closure. These valves have no containment isolation function. The open safety function of these valves is currently verified by valve disassembly. These valves are part stroked open during the quarterly Core Spray flow verification (in-service pump test).

Valve Number	System	Cat.	Safety Class
Check Valve Group CV14			
253071A	Fuel Pool Cooling & Cleanup	C	3
253071B	Fuel Pool Cooling & Cleanup	C	3

Function

These check valves are in the alternate flow path to the fuel storage pool. They have an open safety function to provide fuel storage pool cooling. Under ISTC-5221(a)(2), it is required that these check valves also be verified for closure. These valves have no containment isolation function. The open safety function of these valves is currently verified by valve disassembly. These valves are part stroked open during periodic pressure testing required by ASME Boiler & Pressure Vessel Code, Section XI.

RELIEF REQUEST 2RR-01
(Continued)

Valve Number	System	Cat.	Safety Class
Check Valve Group CV19			
255F019	High Pressure Coolant Injection	C	2
255F045	High Pressure Coolant Injection	C	2

Function

These check valves are in the High Pressure Coolant Injection (HPCI) pump suction lines. They have an open safety function to provide a flow path for the HPCI pump while taking suction from the condensate storage tank (255F019) or the suppression pool (255F045). They have a closed safety to prevent diversion of HPCI flow when the alternate suction path is being used. These valves have no containment isolation function. The open and close safety functions of these valves are currently verified by valve disassembly.

Valve Number	System	OM Cat.	Safety Class
Check Valve Group CV13			
255F046	High Pressure Coolant Injection	C	2

Function

This check valve is in the High Pressure Coolant Injection (HPCI) pump minimum flow line. It has an open safety function to provide a minimum flow path for protection of the pump. This valve has a containment isolation function although it is not Appendix J tested. This line terminates below the minimum suppression pool level which provides a water seal. The open and close safety function of this valve is currently verified by valve disassembly. This valve is part stroked open during the quarterly High Pressure Coolant Injection flow verification (in-service pump test).

RELIEF REQUEST 2RR-01
(Continued)

Valve Number	System	Cat.	Safety Class
Check Valve Group CV20			
211132	Emergency Service Water	C	3
211134	Emergency Service Water	C	3

Function

Check Valve 211132 is in the Emergency Service Water (ESW) supply line to the Emergency Switchgear and Load Center Room "A" Cooler. Check Valve 211134 is in the Emergency Service Water (ESW) supply line to Emergency Switchgear and Load Center Room "B" Cooler. The open safety function of these valves is currently verified by disassembly.

Valve Number	System	Cat.	Safety Class
Check Valve Group CV21			
211133	Emergency Service Water	C	3
211135	Emergency Service Water	C	3

Function

Check Valve 211133 is in the Emergency Service Water (ESW) return line from the Emergency Switchgear and Load Center Room "A" Cooler. Check Valve 211135 is in the Emergency Service Water (ESW) return line from the Emergency Switchgear and Load Center Room "B" Cooler. The open safety function of these valves is currently verified by disassembly.

**RELIEF REQUEST 2RR-01
(Continued)**

Valve Number	System	Cat.	Safety Class
Check Valve Group CV18			
249F063	Reactor Core Isolation Cooling	C	2
249F064	Reactor Core Isolation Cooling	C	2
255F076	High Pressure Coolant Injection	C	2
255F077	High Pressure Coolant Injection	C	2

Function

These check valves are in the Reactor Core Isolation Cooling and High Pressure Coolant Injection turbine exhaust lines. They have an open safety function to prevent a vacuum relief path for the turbine exhaust line. They have a close safety function to prevent steam flow into the suppression chamber. These valves have no containment isolation function. The open and closed safety functions of these valves are currently verified by valve disassembly.

Valve Number	System	Cat.	Safety Class
Check Valve Group CV04			
249016	Reactor Core Isolation Cooling	C	2
255013	High Pressure Coolant Injection	C	2

Function

These check valves are located in the keep fill lines for the Reactor Core Isolation Cooling (RCIC) and High Pressure Coolant Injection (HPCI) systems. They have a closed safety function to prevent loss of inventory during Reactor Core Isolation Cooling (RCIC) and High Pressure Coolant Injection (HPCI) system operation. Under ISTC-5221(a)(3), it is required that these check valves also be verified to partially open. These valves have no containment isolation function. The close

RELIEF REQUEST 2RR-01
(Continued)

safety function of these valves is currently verified by valve disassembly. The open function of the valves is continually verified during plant operation by proper operation of the keep fill system.

Valve Number	System	Cat.	Safety Class
Check Valve Group CV07			
256F048	High Pressure Coolant Injection	C	2
256F057	High Pressure Coolant Injection	C	2

<u>Function</u>

These check valves are located on the outlet of the High Pressure Coolant Injection (HPCI) Lube Oil Cooler and in the HPCI Lube Oil Cooler return line to the HPCI Booster pump. They have an open safety function to provide a flow path for cooling water from the turbine lube oil cooler. Under ISTC-5221(a)(2), it is required that these check valves also be verified for closure. These valves have no containment isolation function. The open safety function of these valves is currently verified by valve disassembly.

2. <u>Applicable Code Requirement</u>

ASME OM Code 1998 Edition through OMb-2000 Addenda

ISTC-5221(c)(3) "Valve Obturator Movement"

"At least one valve from each group shall be disassembled and examined at each refueling outage; all valves in each group shall be disassembled and examined at least once every eight years."

3. <u>Basis for Relief</u>

Pursuant to 10 CFR 50.55a "Codes and Standards" paragraph (a)(3) relief is requested from the requirements of ASME OM Code ISTC-5221(c)(3). The basis of the relief request is that the proposed alternative would provide an acceptable level of quality and safety.

RELIEF REQUEST 2RR-01
(Continued)

The components listed above are check valves with no external means for exercising and no external position indication. Due to a lack of installed flow or pressure indication and a lack of test connections, it is not possible to use other means to verify the open and/or close exercising of these check valves. Disassembly of the valves is the most feasible method to verify operability and can be accomplished during system outages which may be conducted on line. The check valves have been grouped by valve manufacturer, design, service, size, materials of construction, and orientation as required by ASME OM Code 1998 thorough 2000 Addenda, Section ISTC-5221(c)(1).

Prior to performing a system outage on-line, its effect on risk is evaluated in accordance with requirements of 10 CFR 50.65(a)(4), "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear power Plants." This requirement states in part that "Before performing maintenance activities (including but not limited to surveillance, post-maintenance testing, and corrective and preventive maintenance), the licensee shall assess and manage the increase in risk that may result from the proposed maintenance activities."

SSES complies with the requirements of 10 CFR 50.65(a)(4) via application of a program governing maintenance scheduling. The program dictates the requirements for risk evaluations as well as the necessary levels of action required for risk management in each case. The program also controls operation of the on-line risk monitor system, which is based on probabilistic risk assessment (PRA). With the use of risk evaluation for various aspects of plant operations, SSES has initiated efforts to perform additional maintenance, surveillance, and testing activities during normal operation. Planned activities are evaluated utilizing risk insights to determine the impact on safe operation of the plant and the ability to maintain associated safety margins. Individual system components, a system train, or a complete system may be planned to be out of service to allow maintenance or other activities during normal operation.

Disassembly and inspection may involve a system breach. However, the valves are isolated and the associated section of piping drained during disassembly. Thus, the system breach does not increase the risk due to internal flooding or internal system loss-of-coolant accident. The risk associated with these activities would be bounded by the risk experienced due to the system outage. Therefore, disassembly and testing of these valves during scheduled system outages while on-line would have no additional impact on core damage frequency.

RELIEF REQUEST 2RR-01
(Continued)

As more system outages are performed on-line, it is evident that selected refueling outage in-service testing activities, (e.g., valve exercising and disassembly) could be performed during these system outage windows (SOW) without sacrificing the level of quality or safety. In-service testing performed on a refueling outage frequency is currently acceptable in accordance with ASME OM Code, 1998 Edition through 2000 Addenda. By specifying testing activities on a frequency commensurate with each refueling outage, ASME OM Code, 1998 Edition through 2000 Addenda establishes an acceptable time period between testing. Historically, the refueling outage has provided a convenient and defined time period in which testing activities could be safely and efficiently performed. However, an acceptable testing frequency can be maintained separately without being tied directly to a refueling outage. In-service testing performed on a frequency that maintains the acceptable time period between testing activities during the operating cycle is consistent with the intent of ASME OM Code, 1998 Edition through 2000 Addenda.

Over time, approximately the same number of tests will be performed using the proposed operating cycle frequency as would be performed using the current refueling outage frequency. Thus, in-service testing activities performed during the proposed operating cycle test frequency provide an equivalent level of quality and safety.

4. <u>Proposed Alternate Testing</u>

Pursuant to 10 CFR 50.55a(a)(3)(i), SSES proposes an alternative testing frequency for performing in-service testing of the valves identified above. At least one valve from each group will be tested on a frequency of once each operating cycle in lieu of once each refueling outage as currently allowed by ASME OM Code, 1998 Edition through 2000 Addenda ISTC-5221(c)(3) "Valve Obturator Movement." All valves in each group will be tested at least once every eight years as required by ASME OM Code, 1998 Edition through 2000 Addenda, ISTC-5221(c)(3).

RELIEF REQUEST 2RR-01
(Continued)

Check valve groups CV04, CV07, CV09, CV10, CV13, CV14, and CV24 include identical Unit 1 valves. One check valve from the group will be disassembled and inspected during an operating cycle every 24 months and all check valves in the group will be disassembled and inspected at least once every eight years.

Similar relief has been approved for Entergy's Grand Gulf Nuclear Station, Unit 1 (TAC No. MB6900).

5. **Duration of Relief Request**

This proposed alternative is requested for the duration of the Third Ten-Year Interval Susquehanna Steam Electric Station Unit 2 IST Program (June 1, 2004 through May 31, 2014).

RELIEF REQUEST 2RR-05

Relief in Accordance with 10 CFR 50.55a (a)(3)(i)

Alternative Provides Acceptable Level of Quality and Safety

1. **ASME Code Component(s) Affected**

Valve Number	System	Cat.	Safety Class
249F028	Reactor Core Isolation Cooling	A/C	2
249F040	Reactor Core Isolation Cooling	A/C	2
255F049	High Pressure Coolant injection	A/C	2

Function

Check Valve 249F028 is the Reactor Core Isolation Cooling (RCIC) Vacuum Pump discharge check valve to the suppression pool. It has a close safety function for containment isolation. Check Valve 249F040 is the Reactor Core Isolation Cooling (RCIC) Turbine Exhaust check valve to the suppression pool. It has an open safety function to provide a flow path from the RCIC turbine exhaust to the suppression pool and a close safety function for containment isolation. Check Valve 255F049 is the High Pressure Coolant Injection (HPCI) Turbine Exhaust check valve to the suppression pool. It has an open safety function to provide a flow path from the HPCI turbine exhaust to the suppression pool and a close safety function for containment isolation.

2. **Applicable Code Requirement**

ASME OM Code 1998 Edition through OMb-2000 Addenda

ISTC-3522(c) "Category C Check Valves"

"If exercising is not practical during operation at power and cold shutdowns, it shall be performed during refueling outages."

RELIEF REQUEST 2RR-05
(Continued)

3. **Basis for Relief**

Pursuant to 10 CFR 50.55a "Codes and Standards" paragraph (a)(3) relief is requested from the requirements of ASME OM Code ISTC-3522(c). The basis of the relief request is that the proposed alternative would provide an acceptable level of quality and safety.

The components listed above are check valves with no external means for exercising and no external position indication. The only means to verify closure is by Appendix J local leakage rate testing. This involves setup of test equipment and system configuration changes that are a hardship without a compensating increase in quality or safety on a quarterly or cold shutdown basis. The Appendix J testing can be performed at intervals other than refueling outages such as during system outage windows.

Prior to performing a system outage on-line, its effect on risk is evaluated in accordance with requirements of 10 CFR 50.65(a)(4), "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear power Plants." This requirement states in part that "Before performing maintenance activities (including but not limited to surveillance, post-maintenance testing, and corrective and preventive maintenance), the licensee shall assess and manage the increase in risk that may result from the proposed maintenance activities."

SSES complies with the requirements of 10 CFR 50.65(a)(4) via application of a program governing maintenance scheduling. The program dictates the requirements for risk evaluations as well as the necessary levels of action required for risk management in each case. The program also controls operation of the on-line risk monitor system, which is based on probabilistic risk assessment (PRA). With the use of risk evaluation for various aspects of plant operations, SSES has initiated efforts to perform additional maintenance, surveillance, and testing activities during normal operation. Planned activities are evaluated utilizing risk insights to determine the impact on safe operation of the plant and the ability to maintain associated safety margins. Individual system components, a system train, or a complete system may be planned to be out of service to allow maintenance, or other activities, during normal operation.

RELIEF REQUEST 2RR-05
(Continued)

Appendix J testing may involve a system breach if required to repair a failed valve. However, during the disassembly process to perform maintenance, the subject valve is isolated and the associated section of piping drained. Thus, the system breach does not increase the risk due to internal flooding or internal system loss-of-coolant accident. The risk associated with these activities would be bounded by the risk experienced due to the system outage. Therefore, closure testing of these valves by Appendix J during schedule system outages while on-line would have no additional impact on core damage frequency.

As more system outages are performed on-line, it is evident that selected refueling outage in-service testing activities, (e.g., closure testing by leak testing) could be performed during these system outage windows (SOW) without sacrificing the level of quality or safety. In-service testing performed on a refueling outage frequency is currently acceptable in accordance with ASME OM Code, 1998 Edition through 2000 Addenda. By specifying testing activities on a frequency commensurate with each refueling outage, ASME OM Code, 1998 Edition through 2000 Addenda, establishes an acceptable time period between testing. Historically, the refueling outage has provided a convenient and defined time period in which testing activities could be safely and efficiently performed. However, an acceptable testing frequency can be maintained separately without being tied directly to a refueling outage. In-service testing performed on a frequency that maintains the acceptable time period between testing activities during the operating cycle is consistent with the intent of ASME OM Code, 1998 Edition through 2000 Addenda.

Over time, approximately the same number of tests will be performed using the proposed operating cycle frequency as would be performed using the current refueling outage frequency. Thus, in-service testing activities performed during the proposed operating cycle test frequency provide an equivalent level of quality and safety.

4. <u>Proposed Alternate Testing</u>

Pursuant to 10 CFR 50.55a(a)(3)(i), SSES proposes an alternative testing frequency for performing in-service testing of the valves identified above. The valves will be closure tested by Appendix J on a frequency of at least once per operating cycle in lieu of once each refueling outage as currently allowed by ASME OM Code, 1998 Edition through 2000 Addenda, ISTC-3522(c)

RELIEF REQUEST 2RR-05
(Continued)

"Category C Check Valves." The open safety function of Check Valve 249F040 will be demonstrated quarterly in conjunction with the RCIC flow verification (in-service pump test). The open safety function of Check Valve 255F049 will be demonstrated quarterly in conjunction with the HPCI flow verification (in-service pump test). As required by ISTC-5221(a)(3), the open function of Check Valve 249F028 will be demonstrated quarterly in conjunction with the RCIC flow verification (in-service pump test).

5. <u>Duration of Relief Request</u>

This proposed alternative is requested for the duration of the Third Ten-Year Interval Susquehanna Steam Electric Station Unit 2 IST Program (June 1, 2004 through May 31, 2014).

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P & ID
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R.C.I.C. TURBINE PUMP",
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P & ID
REACTOR CORE ISOLATION
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SHEET 2**

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P & ID
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UNIT 1
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D-12

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D-14

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