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SUBJECT: Proposes changes to plant TS,replacing MSL drain leakage requirements w/total allowed secondary containment bypass leakage,based on revised offsite dose analysis.Application for amend & TS encl.

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SUSQUEHANNA STEAM ELECTRIC STATION
PROPOSED AMENDMENT NO. 204 TO LICENSE NPF-14
AND NO. 162 TO LICENSE NPF-22:
TECHNICAL SPECIFICATION CHANGES FOR
SECONDARY CONTAINMENT BYPASS LEAKAGE
PLA-4534 FILES A17-2/R41-2

Docket Nos. 50-387
and 50-388

References: 1) *PLA-4500, "Application of Standard Review Plan 6.5.5 Provisions - Secondary Containment Bypass Leakage Criteria," September 12, 1996.*
2) *PLA-4567, "Revision to Proposed Amendment No. 203 to License NPF-14 and No. 161 to License NPF-22: Technical Specification Changes For Secondary containment Bypass Leakage (5 to 9 scfh)," March 17, 1997.*
3) *PLA-4488, "Proposed Amendment No. 203 to License NPF-14 and No. 161 to License NPF-22: Conversion of the SSES Technical Specifications to the ISTS, NUREG-1433," August 1, 1996.*
4) *PLA-4502, "Revision to Proposed Amendment No. 195 to License NPF-14 and Proposed Amendment No. 153 to License NPF-22: Main Steam Isolation Valve Leak Testing," September 23, 1996.*

The purpose of this letter is to propose changes to the Susquehanna Steam Electric Station Units 1 and 2 Technical Specifications. The proposed Technical Specification changes will replace the Main Steam Line Drain leakage requirements with the total allowed secondary containment bypass leakage, based on a revised offsite dose analysis. The new analysis incorporates changes to the assumptions for suppression pool scrubbing of the leakage flows and the primary to secondary containment water leakage rate as discussed in Section 6.2.3.2.3 of the FSAR. The suppression pool scrubbing assumption was recently used by PP&L and presented to the NRC in Reference 1. The revised offsite and control room doses are slightly higher than the radiological doses previously reviewed by the NRC for Susquehanna Steam Electric Station (SSES). However, the dose results remain well below the 10 CFR 100 and 10 CFR 50 Appendix A GDC 19 limits.

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The change from the MSLD leakage to secondary containment bypass leakage is being made due to newly identified leakage pathways. Based on an analysis performed by PP&L, the primary containment feedwater penetration will not be capable of sustaining a 30 day water seal during a DBA LOCA, as originally documented in the SSES FSAR. Therefore, the potential for air leakage through the large valves in this penetration during a LOCA are now considered SCBL. In addition, PP&L has performed a thorough review of all the primary containment penetrations and identified other potential leakage pathways. Even though PP&L plans to maintain the same maintenance standards for each valve, an increase in the allowed SCBL limit is necessary to accommodate the additional pathways identified. If the leakage from all pathways are required to meet the old SCBL requirement of 5 scfh, more frequent valve maintenance would likely be required which would result in increased dose to plant personnel.

The current Susquehanna Units 1 and 2 Technical Specifications require that leakage through the MSLDs be less than 1.2 scfh per drain. Currently, no other potential secondary containment bypass leakage pathways are required to be tested in accordance with the Technical Specifications. PP&L has previously determined that an unreviewed safety question does not exist for SCBL as high as 9 scfh because the calculated offsite dose does not increase. A revision to the proposed changes to the Technical Specifications for converting to the Improved Technical Specifications (ITS) to increase the SCBL limits in the ITS to 9 scfh has been submitted in Reference 2. Because 9 scfh is not considered large enough to adequately account for the additional SCBL pathways identified, a new offsite dose analysis was performed using 28 scfh secondary containment bypass leakage which resulted in a small increase in the calculated LOCA/LOOP radiological dose. The Technical Specification changes proposed include a requirement to maintain SCBL less than or equal to 25.43 scfh which provides margin to the value used in the new design basis LOCA/LOOP radiological dose analysis. The 25.43 scfh SCBL value reflects good valve performance for the number of leak paths identified. The Technical Specification bases were updated to include a discussion of the new SCBL requirements.

Because the SCBL requirement is not contained in the current Technical Specifications and a value of 9 scfh results in no increase in the calculated offsite dose consequences, PP&L has changed the SCBL requirements to 9 scfh through the 10 CFR 50.59 process. Note that 9 scfh is still expected to be too low to permit replacement of the affected valve seals at their design useful lifetime. Therefore, this submittal proposes to increase the SCBL limit based on new offsite and control room dose analyses with slightly increased dose consequences to allow the valve maintenance to return to a frequency that is more consistent with the maintenance frequency which was established upon initial implementation of 10 CFR 50, Appendix J, Option B. The calculated doses remain far below the 10 CFR 100 and 10 CFR 50, Appendix A, GDC 19 dose limits.

In addition to the SCBL changes discussed above, Technical Specification changes which combine the leakage through the MSIV, main steam line drains, HPCI drain lines, and RCIC drain

lines are proposed. The addition of the HPCI and RCIC Steam Line Drains to the Tech Spec for MSIV leakage is being performed as a result of the modification which eliminated the MSIV Leakage Control System (MSIV LCS). At the time this modification was performed, these lines were not identified as potential SCBL pathways. However, because leakage from the HPCI and RCIC drain lines are part of the same pathway to the condenser which is now used by the main steam line drains (MSLD) and included in the Technical Specifications, they must be combined with the MSIV's and MSLD to be less than 300 scfh. The justification for this change is the same justification provided in the ITS submittal (Reference 3) which adds the MSLD to this Technical Specification. The test pressure change to allow testing at P_a was previously proposed in Reference 4. One additional change to delete a footnote related to the removal of the MSIV Leakage Control System is included because this system has been removed from Susquehanna SES.

The attached evaluation for this proposed amendment concludes that the proposed changes to the SSES Unit 1 and Unit 2 Technical Specifications do not involve a significant hazards consideration. In addition, the proposed changes do not create a potential for a significant change in the types or a significant increase in the amount of any effluent that may be released offsite, nor do the changes involve a significant increase in individual or cumulative occupational radiation exposures. Accordingly, the changes meet the eligibility criteria for a categorical exclusion as set forth in 10 CFR 51.22(c)(9). Therefore, in accordance with 10 CFR 51.22 (b), an environmental assessment of the changes is not required.

This Technical Specification amendment request was approved by the Susquehanna SES Plant Operations Review Committee and reviewed by the Susquehanna Review Committee. In accordance with 10 CFR 50.91, the State of Pennsylvania has been provided a copy of this letter.

PP&L plans to implement the proposed changes during next year's Unit 1 Refueling and Inspection Outage scheduled to begin in March of 1998. Therefore, we request that NRC complete the review of this change request by February 6, 1998 to support our scheduled implementation dates. Any questions regarding this proposed amendment should be directed to Mr. A. J. Roscioli at (610) 774-4019.

Very truly yours,

R. G. Byram

Attachment

copy: NRC Region I
Mr. K. Jenison NRC Sr. Resident Inspector - SSES
Mr. C. Poslusny, Jr. NRC Sr. Project Manager - OWFN
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SAFETY ASSESSMENT

SECONDARY CONTAINMENT BYPASS LEAKAGE TECHNICAL SPECIFICATION CHANGE AND ASSOCIATED OFFSITE DOSE ANALYSIS

BACKGROUND

As documented in several Condition Reports, PP&L has identified various secondary containment bypass leakage pathways that are not discussed in the FSAR. The FSAR Section 6.2.3.2.3 evaluated the potential secondary containment bypass leakage (SCBL) pathways and concluded that the Main Steam Line Drains (MSLDs) were the only leakage pathway of concern. The Loss of Coolant Accident/ Loss of Offsite Power (LOCA/LOOP) offsite dose analyses were performed assuming that 5 scfh is released directly to the environment which bounds the leakage permitted for this pathway. The current Susquehanna Units 1 and 2 Technical Specifications require that leakage through the MSLDs be less than 1.2 scfh per drain. Currently, no other potential secondary containment bypass leakage pathways are required to be tested in accordance with the Technical Specifications. PP&L has previously determined that an unreviewed safety question does not exist for SCBL as high as 9 scfh because the calculated offsite dose does not increase. Because 9 scfh was not considered large enough for the new SCBL pathways identified, a new radiological dose analysis was performed using 28 scfh secondary containment bypass leakage which resulted in a small increase in the calculated LOCA/LOOP offsite and control room doses. The 25.43 scfh proposed SCBL Technical Specification requirement provides approximately 9% margin to the 28 scfh SCBL assumption used in the new LOCA/LOOP radiological analysis. This Technical Specification SCBL requirement reflects good valve performance for the number of leak paths identified.

The FSAR Section 15.6.5.5.1.2 lists the assumed primary to secondary containment leakage (also called ESF system leakage outside primary containment) as 5 GPM but does not indicate the specific systems where leakage is expected. This leakage into secondary containment is treated by SGTS and, hence, is a small contributor to the offsite and control room doses calculated for the LOCA/LOOP event. PP&L's valve testing program is designed to assure that the maximum leakage expected during a LOCA/LOOP event is less than the amount used in the radiological dose analysis. The revised dose analysis uses a higher leakage flow (i.e., 20 gpm) to assure the expected leakage for the LOCA/LOOP event is well within the value assumed in the dose analysis, considering that new leakage pathways have been identified and factored into the valve testing program.

DESCRIPTION OF PROPOSED CHANGE

The Units 1 and 2 Technical Specification changes consist of:

(1) changes to Section 3.6.1.2 to replace the leakage of 1.2 scf per hour for any one main steam line drain with 25.43 scfh for secondary containment bypass leakage from all sources (Note that the 25.43 scfh SCBL Technical Specification limit provides approximately 9% margin to the 28 scfh value that was used in the offsite dose analysis.),

(2) changes to Section 3.6.1.2 to include the Main Steam Line Drain, HPCI drain, and RCIC drain leakages as part of the 300 scfh leakage requirement, and

(3) changes to Sections 3/4.6.1.2 to delete the note regarding the MSIV Leakage Control System which has been removed from Susquehanna SES.

In addition, changes to Bases Section 3/4.6.1.2 to include a discussion which relates the SCBL Technical Specification to the radiological dose analysis are required.

Refer to the attached marked-up Technical Specifications.

SAFETY ASSESSMENT

The FSAR event of concern, as described in FSAR Chapters 6 and 15, is a design basis LOCA/LOOP resulting in the assumed core damage source term of Regulatory Guide 1.3. The DBA LOCA dose analysis includes 3 components of leakage from primary containment to determine offsite and control room accident doses. These components are: (1) gaseous leakage from primary to secondary containment which is treated by SGTS before release to the environment; (2) water leakage from primary containment piping systems to secondary containment that contains volatile iodines and is treated by SGTS (including "ESF" leakage), and (3) gaseous leakage from primary containment which bypasses secondary containment (SCBL) and is released directly to the environment without treatment by SGTS. The leak path limits evaluated in this safety assessment are SCBL and primary containment water leakage which envelopes a number of individual leak paths identified within the SSES Leakage Rate Test Program.

FSAR Section 6.2.3.2.3 discusses the need to either eliminate potential bypass leakage pathways or account for the contribution of the pathway in the accident dose analysis. The FSAR further notes that the only approved methods for eliminating bypass leakage pathways are a leakage collection system that discharges to SGTS or a 30 day water seal. During the design basis large break LOCA/LOOP, where there is assumed core damage and the break occurs below the feedwater sparger elevation (i.e., recirculation suction line break concurrent with a LOOP), the condensate and condensate transfer systems would be unavailable to maintain water in the feedwater lines and/or keepfill lines until offsite power is restored and the systems can be returned to service. Also, for a break of this size, the available ECCS systems will be unable to reflood the reactor vessel to the point where the feedwater lines will be covered by water.

The Design Basis Accident (DBA) dose analysis in FSAR Section 15.6.5.5.1.2 states that the total SCBL is assumed to be 5 scfh. Branch Technical Position CSB 6-3 states that SCBL must be controlled to the values assumed in the radiological analysis. It should be noted that the original FSAR value does not appear to be based on any expected SCBL pathway performance, but is purely an assumption drawn from the appropriate dose calculation. It further indicates in Section 15.6.5.5.1 that the methods, assumptions, and conditions used in the radiological analysis are in accordance with Regulatory Guide 1.3, Revision 2. Neither of these assumption were changed by

the SSES power uprate or reload submittals. Therefore, the cumulative sum of all SCBL pathways was originally controlled within the accident dose analysis assumption of 5 scfh.

Recently, PP&L changed the licensing basis accident radiological dose analysis to include a SCBL value of 9 scfh. The basis for the 10 CFR 50.59 evaluation was that the offsite and control room dose results did not increase. It should be noted that a SCBL value of 9 scfh is not derived based upon expected valve performance, but rather a limiting value consistent with the input assumption used in the radiological analysis. The 9 scfh SCBL value is still expected to be too low to permit replacement of the affected valve seals at their design useful lifetime. The increase to 9 scfh was considered an interim measure.

This submittal evaluates the increase in the SCBL limit based on a new radiological dose analysis with slightly increased dose consequences. Because 9 scfh is not considered large enough for the new SCBL pathways identified, a new offsite dose analysis was performed using 28 scfh secondary containment bypass leakage which resulted in a small increase in the calculated LOCA/LOOP offsite and control room doses. However, the calculated doses remain far below the 10 CFR 100 and 10 CFR 50, Appendix A, GDC 19 limits. The Technical Specification changes proposed include a requirement to maintain SCBL less than or equal to 25.43 scfh which provides margin to the value used in the new design basis LOCA/LOOP radiological dose analysis. The proposed new SCBL limit recognizes the increased number of potential leakage paths and the need to accommodate acceptable valve performance, while limiting any post-LOCA offsite and control room dose. The new SCBL limit is necessary to allow the valve maintenance to return to a frequency that is more consistent with the maintenance frequency which was established upon initial implementation of 10 CFR 50, Appendix J, Option B.

A similar situation exists with regard to primary containment water leakage (i.e. "ESF Leakage"). FSAR Section 15.6.5.5.1.2 identifies that the ESF leakage assumed for dose calculations is 5 gpm, and that this leakage will be maintained small via normal testing and maintenance. This leakage is specifically designated "ESF" leakage. However, because the water leakage is assumed to be the total amount of potentially contaminated water from all sources which may leak from primary containment into secondary containment post-LOCA, water sources other than "ESF" sources are now included. The addition of these sources requires that the primary containment water leakage limit be revised, again recognizing that valve performance standards will remain high. The water leakage value assumed in the licensing basis offsite dose analysis was not changed by the power uprate or reload submittals. Therefore, the cumulative sum of all primary containment water leakage (including ESF leakage) pathways is currently controlled within the accident dose analysis assumption of 5 gpm. The proposed change would allow the water leakage limit to increase to 20 gpm.

In summary, this safety assessment evaluates increasing the assumed value of SCBL from 9 to 28 scfh and the assumed value of primary containment water leakage from 5 gpm to 20 gpm. It should be noted that values of 28 scfh and 20 gpm are chosen large enough to bound expected valve performance for the number of valves considered yet small enough to assure the impact to offsite and control room dose consequences is minimized. Increasing these values makes them more consistent with performance expectations of the large number of valves involved in the

various leakage pathways. These new values of SCBL and primary containment water leakage result in slight increases in calculated post-accident offsite and control room dose consequences. However, these doses remain well below the regulatory limits of 10CFR100 and 10CFR50, Appendix A, GDC19. This evaluation is applicable to both units because the underlying radiological assessment is common to both.

The addition of the HPCI and RCIC Steam Line Drains to the Tech Spec for MSIV leakage is being performed as a result of the modification which eliminated the MSIV Leakage Control System (MSIV LCS). At the time this modification was performed, these lines were not identified as potential SCBL pathways. However, because leakage from the HPCI and RCIC lines are part of the same pathway to the condenser which is now used by the MSLD and included in the Technical Specifications, they must be combined with the MSIV's and MSLD to be less than 300 scfh. The justification for this change is the same justification provided in the ITS submittal which adds the MSLD to this Technical Specifications (Reference: PLA-4488, August 1, 1996).

The deletion of the footnote related to the MSIV Leakage Control System is justified because this system has been removed from Susquehanna SES. The test pressure change to allow testing at P_a was previously proposed in PLA-4502 (September 23, 1996).

COMPONENTS AFFECTED

The change in SCBL affects containment isolation valves (CIVs) associated with the following containment penetrations (note that this list may be modified based on future investigations and evaluations) in terms of the leakage criteria applied to their isolation:

**	X-9A/B	Feedwater
	X-16A/B	Core Spray
	X-17	RHR Head Spray
	X-39A/B	RHR Drywell Spray Containment Penetrations
*	X-61A	Demineralized Water connection to DW
*	X-88A	N2 Make-up to Drywell
*	X-220B	N2 Make-up to Wetwell

* These pathways have not previously been recognized as possible SCBL and were not considered for leakage requirements within the original 5 scfh limit..

** Although this pathway is now included as part of the overall SCBL, it was not included at the time of the original dose calculation since a water seal was believed to exist for this line.

SAFETY FUNCTIONS OF AFFECTED COMPONENTS

The safety function of interest is the containment isolation function performed by piping and containment isolation valves in each of the SCBL pathways listed above. This proposed change only concerns the leak tightness of the systems and valves in terms of their cumulative contributions to Secondary Containment Bypass Leakage and primary containment water leakage. Other safety functions associated with the various pathways and their associated isolation valves remain unaffected.

POTENTIAL EFFECTS ON SAFETY FUNCTIONS

To assure that no safety function impacts are overlooked, the following design considerations are assumed to be applicable and are investigated further:

- Environmental Qualification
- HVAC Requirements
- Internal Flooding Protection
- Penetration Program
- Inservice Inspection Requirements
- Area Radiation Monitors
- Environmental Protection
- Emergency Plan
- Radiological Assessment

Each of the analysis items is evaluated in turn to determine the impact of changes in SCBL/primary containment water leakage.

Environmental Qualification

The environmental qualification issues dealt with here are those of temperature, pressure, and humidity. Radiation will be discussed in a later section.

EQ impacts from temperature, pressure, and humidity affect only the LOCA (within containment) and High Energy Line Break/Steam Leak Detection (HELB/SLD, outside containment) analyses. For both analyses, SCBL has no effect on the temperature/humidity assumed in the EQ analysis because it bypasses the secondary containment. Post LOCA, normal HVAC does not operate. Room conditions are controlled by ECCS room coolers. Air circulation is provided by the reactor building recirculation system. The major source of primary containment water leakage is assumed to occur through valve seats in valves which isolate seismically designed piping from non-seismic pipe in the reactor building (e.g., CRD headers). During normal operation this piping is intact and without such leakage there is no long term impact on equipment operability. Post-LOCA, impact is minimal because the primary

containment water leakage is subcooled, adding negligible amounts of heat to the reactor building. Assumptions of small, non-specific primary containment water leakage have no impact on the long term system performance associated with EQ. Changes in assumed primary containment water leakage do not change room cooling capability or reactor building recirculation air flow. The same is true for HELB/SLD. These changes do not impact high-flow detection/isolation of HELBs or high room temperature/delta temperature detection of steam leaks. Thus, EQ is not affected by the changes described in this safety evaluation.

HVAC Requirements

This design consideration is put in place to assure that new heat loads are properly accounted for in HVAC calculations for normal operation. As discussed above, changing the post-LOCA SCBL or primary containment water leakage does not introduce any additional heat loading to the reactor building HVAC system. (Normal HVAC is not used post-LOCA.)

Internal Flooding Protection

Changing assumptions of SCBL has no effect on internal flooding in the reactor building because this leakage is gaseous flow through valves within piping. The 20 gpm primary containment water leakage is well within the drain capability of the reactor building and reactor building flooding analysis is not part of the LOCA analysis.

Penetration Program

This design consideration is in place to properly identify and document new penetrations or modifications in existing penetrations in walls so that proper sealing is retained for pressure, flood, fire, etc. Changes to SCBL or assumed primary containment water leakage do not affect building penetrations or seals (e.g., temperatures of contained fluids/gases do not change), and no physical modifications to penetrations or seals are anticipated as a result of these analysis assumptions.

Inservice Inspection Requirements

The Inservice Inspection Requirements (ISI) are part of a program to inspect the ASME reactor pressure boundary to provide reasonable assurance that evidence of structural degradation or loss of leak tight integrity during operation will be found in time to permit corrective actions (Reference: SSES Safety Evaluation, NUREG-0776, Section 5 and 10 CFR 50.55a). The inspection is essentially one of welds and

heat affected zones in piping. Per SSES Safety Evaluation (NUREG-0776) Section 15.3.4, primary containment water leakage into the reactor building (i.e. "ESF Leakage") is assumed only as a contributor to possible iodine doses. Per FSAR Section 15.6.5.5, this system leakage is maintained within limits by normal SSES tests and maintenance. The ISI program at SSES consists of system leakage monitoring surveillance procedures with acceptance criteria of zero leakage. (See discussion of post-LOCA leakage in EQ section above.) No change is planned in the SSES ISI program to accommodate greater SCBL or in-reactor building system leakage.

Area Radiation Monitors

The area radiation monitors are placed so that changes (increases) in local radiation fields in the reactor building may be detected. FSAR Table 12.3-7 and the Section 12 figures show the ARM locations. The ARMs are not required for equipment actuation related to the post-LOCA safe shutdown of the plant. During normal operation, SCBL and primary containment water leakage do not occur. Post-LOCA, in-containment source terms are not affected by the changes in allowed SCBL or primary containment water leakage. Because shielding and building air circulation are not affected, no impact on ARMs will occur. Loss of loop seals affects only FW piping located in the "wing slab" areas of 749' and 719' of the reactor buildings. ARMs on these elevations are located at the north and south ends of the reactor buildings and do not "see" any shine from FW piping. ARMs are not used for isolation functions, but to indicate breaches of primary containment for personnel safety. If primary containment water leakage occurs near an ARM it will be detected. This function is not compromised by the changes described in this safety evaluation.

Environmental Protection

This design consideration covers all manner of effluent from SSES, as well as changes in the physical environment surrounding SSES (noise level, earth moving, etc.). The only changes pertinent to this design consideration subject to this safety assessment involve assumptions of post-accident discharge of radioactive gas and the effect on off-site dose. These concerns are addressed below. No impact on the environment from normal operation will occur.

Emergency Plan

Changes to allowed SCBL or primary containment water leakage have no impact on the emergency plan staffing, timing, physical location, etc. As described below, on-site and off-site dose impact is within allowed regulatory limits and remains qualitatively the same. No radiation monitoring instrumentation is affected. Thus, no impact on the emergency plan occurs.

Radiological Assessment

The possible radiological impacts of changes in allowed SCBL or primary containment water leakage are limited to EQ and calculated radiological dose. Both potential impacts are assessed.

The effects of these changes on EQ temperature, pressure, and humidity limits are discussed above. The impact on EQ radiation dose is addressed here. The EQ equipment radiation dose is the combination of a general area cloud dose inside the reactor building resulting from recirculation of primary containment shell leakage, and specific gamma shine through piping which is assumed to contain post-LOCA contaminated water or gas. No alteration of the primary containment source term or reactor building recirculation occur as a result of the changes addressed in this safety evaluation. Thus, changes in SCBL do not affect calculated EQ dose.

As noted previously, the only accident of concern to the proposed action that is evaluated in FSAR Chapters 6 and 15 is a DBA LOCA concurrent with a LOOP which results in a rapid depressurization of the RPV and feedwater lines and prevents the ECCS systems from reflooding the RPV to a level that would cover the feedwater spargers with water. A LOOP event also prevents restart of various pump(s) to reseal various SCBL pathways with water.

The changes in assumed post-LOCA SCBL and primary containment water leakage affect calculated offsite dose. The SCBL contains both noble gases and iodine and is unscrubbed by SGTS, but is of relatively low flow rate compared to SGTS. The primary containment water leakage into the reactor building contains no noble gases, and the volatized iodine is processed by SGTS. SGTS is designed to remove radio-iodine, but has little effect on noble gases and consequential whole body dose. Thus, increasing SCBL increases the assumed iodine released and thyroid dose, with little effect on whole body dose. Increasing the primary containment water leakage leads to small increases in thyroid dose, with essentially no impact on whole body dose. The dose analyses performed to support this safety assessment account for these effects and are summarized in the table below. The revised licensing basis is the subject of this safety assessment, i.e. 28 scfh SCBL and 20 gpm primary containment water leakage.

Summary of Licensing Basis Dose Calculations

	Limits (rem)	Dose Calculation Results (rem)		
		5 scfh, 5 gpm No scrubbing*	9 scfh, 5 gpm Scrubbing**	28 scfh, 20 gpm Scrubbing***
Thyroid:				
2 hr site boundary	300	125.61	41.44	125.31
30 day LPZ	300	41.74	20.59	35.76
Whole Body:				
2 hr site boundary	25	2.22	2.18	3.48
30 day LPZ	25	0.37	0.36	0.42
Control Room:				
Thyroid	30	18.55	8.78	15.54
Whole Body	5	0.76	0.74	0.79
Skin	75	12.17	11.9	12.63

* Results from NRC approved change for removal of the MSIV LCS (Reference: PLA-4228, November 21, 1994).

** This analysis forms the basis for a previous 10 CFR 50.59 evaluation and proposed ITS change (PLA-4567, March 17, 1997).

*** This analysis supports this proposed Technical Specification change.

The revised licensing dose analysis is consistent with Standard Review Plan (SRP) Section 6.5.5 which permits consideration of suppression pool scrubbing of iodine. While scrubbing is effective for removing iodine and results in significant reductions in thyroid doses, it is not effective for reducing whole body doses. The proposed increases in allowed SCBL and primary containment water leakage result in small increases in calculated whole body doses. However, these doses remain far below regulatory limits.

The changes in the DBA dose analysis assumptions allow a change in the assumption for SCBL from the previous value of 9 scfh to a new value of 28 scfh. Such a change is consistent with the guidance provided in Branch Technical Position CSB 6-3, which states that the radiological dose analysis assumption for SCBL should be established in a realistic manner considering the design limitations and test sensitivities of the equipment acting as SCBL barriers. Based on this, it is appropriate to increase the assumed SCBL value to account for the additional contribution from the newly added pathways. Technical Specifications will be changed to establish a limit of 25.43 scfh for testing purposes which will become the limiting value for SCBL resulting from the various SCBL pathways. This Technical Specification limit provides for approximately 9% margin from the SCBL value used in the radiological dose analyze. These analyses also assume a primary containment water leakage rate of 20 gpm.

The current SSES DBA-LOCA dose calculation was revised to include the increases in SCBL and primary containment water leakage into the reactor building discussed above and the effects of suppression pool scrubbing as described in Section 6.5.5 of the Standard Review Plan (NUREG-0800). Suppression pool retention of iodine in the scrubbing process decreases the net amount of iodine available for release from primary containment to the environment, thereby reducing the radiological dose consequences of the DBA LOCA. SRP Section 6.5.5, Revision 0 permits a scrubbing decontamination factor (DF) of 10 to be applied with no requirement for independent evaluation by the NRC reviewer. Based on General Electric (GE) research (NEDO-25420) demonstrating realistic suppression pool decontamination factors of 100 to 1000 actually existing in practice, a suppression pool scrubbing DF of 10 was selected to be applied to the SSES DBA-LOCA methodology. This decontamination factor was then adjusted to account for suppression pool bypass leakage as required in SRP 6.5.5, resulting in a net DF of 7.96. (Note that the net decontamination factor is insensitive to changes in SCBL.) With this net scrubbing DF of 7.96 applied to the SSES DBA-LOCA methodology, assuming SCBL of 28 scfh and water leakage of 20 gpm, post LOCA doses were calculated. The results of this calculation show that the offsite and control room thyroid, whole body, and skin doses remain below the regulatory limits of 10CRF100 and 10CFR50, Appendix A, GDC 19 to which SSES is licensed.

As noted above, the calculation was performed using the guidance provided in SRP Section 6.5.5. This section of the SRP identifies the acceptance criteria to the NRC staff for crediting a plant with suppression pool scrubbing. Since this section of the SRP was issued after SSES was licensed, an evaluation of the current design against the acceptance criteria of SRP Section 6.5.5 was performed to ensure that the conditions associated with suppression pool scrubbing could be satisfied. This evaluation (Reference: PLA-4510, September 27, 1996) shows that SRP Section 6.5.5 identifies specific acceptance criteria for evaluating the use of suppression pool scrubbing in a licensee's accident dose analysis. SSES conforms to the guidance provided in SRP Section 6.5.5, with exception of certain specific requirements contained within ANSI standards and Reg. Guide 1.52 regarding design details, testing and instrumentation. The ANSI standards provide specific details regarding design and testing intended to improve maintenance and testability of the SGTS and CREOASS systems. The failure to meet these specific ANSI requirements does not detract from the ability of these systems to perform their intended safety functions, which are the same with or without scrubbing. Similarly, the addition of the instrumentation identified in Reg. Guide 1.52, while improving testability, will not aid in improving the ability of SGTS and CREOASS to perform their safety functions. The emphasis in SRP 6.5.5 for evaluation of criteria applicable to SGTS and CREOASS is to ensure that credit for suppression pool scrubbing is not used to justify removal or reduction in capabilities of SGTS or other secondary containment atmosphere control systems as engineered safety features. By definition, SCBL is not subject to SGTS filtering and this change in SCBL is used for dose calculations only. That is, no modification or reduction in current capability of the SGTS or CREOASS

will result from this change to SCBL or primary containment water leakage. It should be noted that SSES was licensed with SGTS and CREOASS systems that were designed to remove iodine without the benefit of the scrubbing phenomena. Therefore, operation with essentially 8 times less iodine concentration represents a less challenging condition for these systems. Performance requirements for these systems, however, will remain unchanged.

In summary, the review of the SSES design against the acceptance criteria of SRP 6.5.5 concludes that the use of suppression pool scrubbing for dose calculations is acceptable. The proposed change in SCBL and primary containment water leakage cause a small increase in the offsite and control room doses over those previously evaluated; however, the calculated doses remain well below the established licensing limits.

NO SIGNIFICANT HAZARDS CONSIDERATIONS

SECONDARY CONTAINMENT BYPASS LEAKAGE TECHNICAL SPECIFICATION CHANGE AND ASSOCIATED RADIOLOGICAL DOSE ANALYSIS

Pennsylvania Power & Light Company has evaluated the proposed Technical Specification change in accordance with the criteria specified by 10 CFR 50.92 and has determined that the proposed change does not involve a significant hazards consideration. The criteria and conclusions of our evaluation are presented below.

1. **The proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.**

   Of the potential accidents described in FSAR Chapters 6 and 15, only a "Decrease in Reactor Coolant Inventory" as described in FSAR Section 15.6.5 is affected by the proposed action. The specific accident of concern is a design basis LOCA concurrent with a LOOP which results in RPV depressurization and failure to recover RPV level above the FW spargers. For this accident, the current licensing basis offsite and control room dose analyses assume a secondary containment bypass leakage rate of 9 scfh and primary containment water (called ESF) leakage of 5 gpm. The current licensing basis analyses do not attribute this leakage to any specific pathway.

   The proposed action does not increase the probability of a previously analyzed accident in any way. The condition of concern is the result of an accident and as such does not contribute to the initiation of an accident as analyzed in the FSAR.

   Of concern is whether or not the proposed action significantly increases the consequences of an accident as previously evaluated. Calculations of off-site dose assuming SCBL of 28 scfh, primary containment water leakage of 20 gpm, and crediting suppression pool scrubbing show decreases in thyroid dose, but slight increases in whole body dose when compared with dose calculations performed to support the removal of the MSIV-LCS. This result is expected because the effect of suppression pool scrubbing is factored into the revised licensing basis analysis. Suppression pool scrubbing is effective in reducing iodine release but has no assumed effect on the removal of noble gases. Since the methodology/assumptions for scrubbing are acceptable to the NRC per the guidance in SRP Section 6.5.5 and the values for decontamination factors are conservative, the judgment may be made that considerable margin is preserved within the analysis.

   Although the whole body dose with SCBL of 28 scfh and water leakage of 20 gpm is increased from the previously approved MSIV-LCS dose analysis, the increase is small (about 1 rem at the two hour site boundary; less than 0.1 rem 30 day LPZ). The total dose including the increase is still well below the 10CFR100 whole body regulatory limit of 25 rem to which SSES was licensed. No change in operating procedures is anticipated. Calculated post accident control room thyroid dose decreases as a result of this change, and the increase in control room whole body dose is less than 0.05 rem, well below the

10CFR50, Appendix A, GDC19 dose limits outlined in NUREG-0800. Thus, no appreciable effect on operator response will occur as a result of this change.

The addition of the HPCI and RCIC Steam Line Drains to the Tech Spec for MSIV leakage is being performed as a result of the modification which eliminated the MSIV Leakage Control System (MSIV LCS). At the time this modification was performed, these lines were not identified as potential SCBL pathways. However, because leakage from the HPCI and RCIC drain lines are part of the same pathway to the condenser which is now used by the main steam line drains (MSLD) and included in the Technical Specifications, they must be combined with the MSIV's and MSLD to be less than 300 scfh. This change only affects the accounting of the various drain leakages in the valve testing program. The justification for this change is the same justification provided in the ITS submittal (PLA-4488, August 1, 1996) which adds the MSLD to this Technical Specification.. The test pressure change to allow testing at P_a was previously proposed in PLA-4502, September 23, 1996. One additional change to delete a footnote related to the removal of the MSIV Leakage Control System is included because this system has been removed from Susquehanna SES.

Since the increase in SCBL and primary containment water leakage result in only a small increase in the doses previously evaluated by the NRC and the other changes do not affect the dose analyses, the proposed change does not result in a significant increase in the consequences of an accident previously evaluated.

2. **The proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.**

Because the FSAR analysis already assumes SCBL and ESF leakage occur and the other changes do not affect the type of accident that are postulated to occur, the proposed change does not present the possibility of an accident of a different type. Additionally, the change in dose analysis methodology does not create an accident or malfunction of a different type since it only involves the analysis of the effects of such accidents or malfunctions.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. **The proposed change does not involve a significant reduction in a margin of safety.**

This question addresses changes in system parameters only. Dose consequences are addressed in Section 1 above. The only Technical Specification dealing with SCBL is T.S. 3.6.1.2 which requires the leakage from any one Main Steam Line Drain (MSLD) Valve to be less than or equal to 1.2 scfh when tested at Pa (45.0 psig). As noted earlier, the current licensing basis accident dose analysis assumes a total of 9 scfh for bypass leakage and 5 gpm for primary containment water leakage but does not attribute them to any

particular source. The proposed action increases the assumed SCBL from 9 to 28 scfh and water leakage from 5 gpm to 20 gpm. These leakage rates are insignificant in terms of SGTS flows or water loss from ECCS systems. These leakage rates do not affect building temperatures or pressures so that they become closer to acceptance limits. Likewise, no other system parameter values become closer to limits as a result of these changes in leakage. Consequently, the existing margin of safety between the licensing basis analysis and system parameter acceptance limits is not reduced. The changes to the HPCI, RCIC, and main steam line drain leakage only affect the accounting for the various leakages in the leakage testing program. The deletion of the footnote is administrative because the MSIV Leakage Control System has been removed from the Susquehanna SES. The change in test pressure was previously evaluated in PLA-4502, September 23, 1996. Thus, no decrease in margin of safety results.

ENVIRONMENTAL CONSEQUENCES

An environmental assessment is not required for the proposed change because the requested change conforms to the criteria for actions eligible for categorical exclusion as specified in 10 CFR 51.22(c)(9). The requested change will have no impact on the environment. The proposed change does not involve a significant hazards consideration as discussed above. The proposed change does not involve a significant change in the types or significant increase in the amounts of any effluents that may be released offsite. In addition, the proposed change does not involve a significant increase in the individual or cumulative occupational radiation exposure.