BEFORE THE
UNITED STATES NUCLEAR REGULATORY COMMISSION

In the Matter of :

Docket No. 50-387

PENNSYLVANIA POWER & :
LIGHT COMPANY

PROPOSED AMENDMENT NO. 206
FACILITY OPERATING LICENSE NO. NPF-14
SUSQUEHANNA STEAM ELECTRIC STATION
UNIT NO. 1

Licensee, Pennsylvania Power & Light Company, hereby files proposed Amendment No. 206 to its Facility Operating License No. NPF-14 dated July 17, 1982.

This amendment contains a revision to the Susquehanna SES Unit 1 Technical Specifications.

PENNSYLVANIA POWER & LIGHT COMPANY
BY:

R. G. Byram
Sr. Vice President - Nuclear

Sworn to and subscribed before me
this 18th of November 1996.

Martha C. Sedora

Notary Public

Notarial Seal
Martha C. Sedora, Notary Public
Allentown, Lehigh County
My Commission Expires Jan. 15, 1998
Member, Pennsylvania Association of Notaries

BEFORE THE
UNITED STATES NUCLEAR REGULATORY COMMISSION

In the Matter of :

Docket No. 50-388

PENNSYLVANIA POWER & LIGHT COMPANY :

PROPOSED AMENDMENT NO. 164
FACILITY OPERATING LICENSE NO. NPF-22
SUSQUEHANNA STEAM ELECTRIC STATION
UNIT NO. 2

Licensee, Pennsylvania Power & Light Company, hereby files proposed Amendment No. 164 to its Facility Operating License No. NPF-22 dated March 23, 1984.

This amendment contains a revision to the Susquehanna SES Unit 2 Technical Specifications.

PENNSYLVANIA POWER & LIGHT COMPANY
BY:

R. G. Byram
Sr. Vice President - Nuclear

Sworn to and subscribed before me
this 8th of November 1996.

Notary Public

Notarial Seal
Martha C. Sedora, Notary Public
Allentown, Lehigh County
My Commission Expires Jan. 15, 1998
Member, Pennsylvania Association of Notaries

SAFETY ASSESSMENT

INCREASE THE MAXIMUM ISOLATION TIMES FOR VALVES ASSOCIATED WITH THE HPCI AND RCIC WARM-UP LINE ISOLATION ALONG WITH THE REACTOR RECIRCULATION PROCESS SAMPLE ISOLATION LINE

BACKGROUND

Several Air Operated Valves and Dampers, including Primary Containment Isolation Valves, were identified as having pilot solenoid valves which required a minimum operating pressure differential (Min. OPD) of 10 or 15 psid and rely on the non-safety Instrument Air and Containment Instrument Gas Systems to shift to their de-energized position. Due to the Min. OPD requirements of the Solenoid Operated Valve (SOV) a degraded air supply has the potential to result in a partially closed valve or valve stroke times slower than Technical Specification requirements. This condition (although determined not to be safety significant) questioned conformance to General Design Criterion 23, which states in part that "the protection system, which includes the Primary Containment Isolation System, shall be designed to fail into a safe state if conditions such as disconnection of the system or loss of energy are experienced (e.g., loss of instrument air)".

An engineering analysis was performed to determine the actual number of SOV's from the total population that fell within this unacceptable condition and needed replacement. In summary the criteria used for determining an SOV's acceptance included its safety function and the AOV or Actuator air supply operating range as compared to the SOV Min. OPD.

Six (6) of the SOVs are being replaced with new ASCO model #NP8320 SOVs based on inside containment Environmental Qualification (EQ) requirements. These six valves, **SV-1/24319, SV-1/24924, and SV-1/25521,** are located within the respective Unit's Drywell (three per Unit) and are maintained within the SSES EQ Program due to their safety function.

Note that the SV-1/24319 solenoid is also required to be changed to support the implementation at SSES of 24 Months Operating Cycles.

DESCRIPTION OF THE PROPOSED CHANGE

Due to the new ASCO model #NP8320's lower flow coefficient (Cv) values the stroke times of the HPCI and RCIC Inboard Warm-Up Line Isolation Valves (HV-1/255100 and HV-1/249F088) will need to be increased from their Technical Specification limit of 3 seconds. The new isolation times for the HPCI and RCIC Inboard Warm-Up Line Isolation Valves (HV-1/255F100 and HV-1/249F088) with the new ASCO model #NP8320 solenoids were determined to be 6 seconds and 12 seconds, respectively.

In addition to the lower flow coefficient of the new ASCO model #NP8320 valve, the Reactor Recirculation Process Sample Line Isolation Valve (HV-1/243F019) will be moved to a lower ambient temperature zone to provide it with a EQ life which supports a 24 Month Operating Cycle. The combined effects of the lower flow coefficient and relocating the solenoid valve will require an increase in the Technical Specification Table 3.6.3-1 isolation time from 2 seconds to 9 seconds.

Thus, Table 3.6.3-1 of Unit 1 & Unit 2 Technical Specification Section 3/4.6.3 will need to be changed (see attached marked-up Table 3.6.3-1 for Unit 1 and Unit 2).

SAFETY ASSESSMENT

The proposed action involves replacing the existing ASCO model #NP8321, 3-way solenoid valves that require a minimum OPD to change to their de-energized position, with new ASCO model #NP8320, 3-way, direct acting solenoid valves that require no minimum OPD to change to their de-energized position. The replacement solenoid valves are capable of operating with the existing 120VAC or 125VDC power feeds presently routed to the ASCO model #NP8321 solenoid valves. The six valves include:

SV-1/24319	**Pilot SOV for Reactor Recirc. Loop B Process Sample Line Isolation Valve, HV-1/243F019**
SV-1/24924	**Pilot SOV for RCIC Steam Warm-Up Line Isolation Valve, HV-1/249F088**
SV-1/25521	**Pilot SOV for HPCI Steam Warm-Up Line Isolation Valve, HV-1/255F100**

Note, SV-1/24319 will need to be moved to a new location due to this SOV being normally energized within an ambient environment that ranges from 90°F to 150°F and does not have an EQ life which supports 24 month operating cycle. The new location has a lower ambient temperature range of 90°F to 135°F, and thus provides an EQ life which supports a 24 month operating cycle for the SV-1/24319. SV-1/24924 and SV-1/25521 are normally de-energized and have EQ lives which support 24 month operating cycle in their present location and are not being relocated.

Safety Functions of the Affected Components

Reactor Recirculation System Loop "B" Process Sample Line

The Reactor Recirculation System Loop "B" Process Sample Line does not perform any safety functions. The Reactor Recirculation Loop "B" Process Sample Line component affected is the inboard isolation valve, HV-1/243F019, whose air supply is fed through SV-1/24319 which is being replaced. During normal plant operation HV-1/243F019 is normally open and the Reactor Recirculation Loop "B" Process Sample Line system continuously monitors reactor coolant chemistry. This sample line is used to meet Technical Specification surveillance requirements when the Reactor Water Clean-up System (RWCU) is out of

service and a reactor coolant sample cannot be obtained from the normal sampling point in the RWCU system.

The safety function of HV-1/243F019 is to close upon receipt of a primary containment isolation signal as listed in Technical Specification Table 3.6.3-1. Automatic closure is initiated on either a Low Low Reactor Vessel Water Level signal (Level 2) or a High Main Steam Line Radiation signal.

Reactor Core Isolation Cooling System (RCIC)

RCIC is a non safety related system that functions as the primary Non-Emergency Core Cooling System source of emergency core cooling. The RCIC component affected is the inboard RCIC Steam Warm-Up Line Isolation Valve, HV-1/249F088, whose air supply is fed through pilot solenoid valve, SV-1/24924, which is being replaced. During normal plant operation HV-1/249F088 is maintained closed. It can be manually opened when an isolation signal is not present to permit steam from the reactor to gradually pressurize and warm the steam supply line downstream of the Inboard RCIC Steam Supply Isolation Valve, HV-1/249F007.

The safety function of the HV-1/249F088 valve is to close, if open, upon initiation of a RCIC isolation signal as listed in Technical Specification Table 3.6.3-1. These isolation signals occur due to low steam supply pressure, high steam discharge pressure or an indication of a steam line rupture or steam leak.

High Pressure Coolant Injection System (HPCI)

HPCI is an Emergency Core Cooling System whose function is to provide core cooling in the event of a Low Low Reactor Vessel Water Level (Level 2) or High Drywell Pressure signal. The HPCI component affected is the inboard HPCI Steam Warm-Up Line Isolation Valve, HV-1/255F100, whose air supply is fed through pilot solenoid valve, SV-1/25521, which is being replaced. During normal plant operation HV-1/255F100 is maintained closed. It can be manually opened, when an isolation signal is not present to permit steam from the reactor to gradually pressurize and warm the steam supply line downstream of the HPCI Inboard Steam Supply Isolation Valve, HV-1/255F002.

The safety function of the HV-1/255F100 valve is to close, if open, upon initiation of a HPCI isolation signal as listed in Technical Specification Table 3.6.3-1. These isolation signals occur due to low steam supply pressure, high steam discharge pressure or an indication of a steam line rupture or steam leak.

Potential Effects on Safety Function

The proposed replacement of the existing ASCO model NP8321, 3-way, solenoid valves with seismically and environmentally qualified ASCO model NP8320, 3-way, direct acting solenoid valves was examined for potential safety impacts.

As stated above, the inboard RCIC/HPCI Steam Warm-Up Line Isolation Valves affected by this modification have a safety function to close, if open, upon initiation of a RCIC/HPCI isolation signal, respectively. The safety function of the Reactor Recirculation Process Sample Line Isolation Valve is to close upon receipt of a Low Low Reactor Vessel Water Level signal (Level 2) or a High Main Steam Line Radiation signal.

Since the NP8320 solenoid valve has a much smaller flow coefficient than the NP8321 solenoid valve it was understood that there would be an increase in the response times of the containment isolation valve that receives its air supply through the pilot solenoid valve. An engineering calculation was performed to determine the expected change in response time that will occur.

Reactor Recirculation Loop "B" Process Sampling Line:

Due to the lower flow coefficient of the NP8320 and the necessary relocation of SV-1/24319 to achieve an EQ life consistent with a 24 month operating cycle, there is an increase in the Technical Specification limit for closure of the isolation valve, HV-1/243F019, from 2 seconds to 9 seconds.

However, this increased isolation time does not have an adverse effect on the performance of HV-1/243F019 or its safety function to close upon initiation of a containment isolation signal. In support of this conclusion, impacts regarding line breakage of lines this size are addressed in FSAR section 15.6.2 and the results found acceptable. In fact, the line breakage event analyzed in this FSAR section postulates a break outside containment that is not isolable and that does not require operator action for up to 10 minutes.

Additionally, the outboard isolation valve for the Reactor Recirculation Process Sampling Line, HV-1/243F020, closes on the same containment isolation signal as HV-1/243F019, and its Technical Specification isolation time limit remains at 2 seconds.

RCIC and HPCI

Due to the significantly lower flow coefficient of the NP8320 solenoid valve, the stroke times of the RCIC and HPCI Inboard Steam Warm-Up Line Isolation Valves, HV-1/249F088 and HV-1/255F100, will be increased from their Technical Specification limit of 3 seconds. These valves are on 1 inch steam warm-up bypass lines that are in parallel with larger steam supply lines (4 inches for RCIC and 10 inches for HPCI). The RCIC steam supply line's Technical Specification isolation time limit is 20 seconds and HPCI's is 50 seconds. These containment isolation times are derived from the industry standard valve stem travel rate for gate valves of 12 inches per

minute, which was used by GE for standard valve speed. The application of this industry standard to the 1 inch steam warm-up lines resulted in a Technical Specification isolation time limit of 3 seconds.

An Engineering Calculation has determined the new Technical Specification isolation time limits for the RCIC and HPCI Inboard Steam Warm-Up Line Isolation Valves with the new NP8320 solenoid valves installed to be 12 seconds for RCIC and 6 seconds for HPCI. However, the increased isolation times have no adverse effect on the performance of the isolation valves or their safety function to close on initiation of a containment isolation signal. This is because the inboard steam supply isolation valves, 4" HV-1/249F007 (RCIC) and 10" HV-1/255F002 (HPCI) and outboard steam supply isolation valves, 4" HV-1/249F008 (RCIC) and 10" HV-1/255F003 (HPCI) are significantly larger than the 1" steam warm-up line valves and remain open much longer, 8 seconds longer for RCIC and 44 seconds longer for HPCI, before isolating. These larger valves are the limiting components as far as providing containment isolation for the penetration. In addition it is noted that the steam warm-up line valves are only opened for very short periods of time to initially warm up the steam supply lines and are normally closed when RCIC and HPCI are in standby or operating modes.

Therefore, the increase in isolation times will have no adverse effect on the performance of these isolation valves or their safety function to close on initiation of a containment isolation signal. To ensure that containment integrity is not compromised, the replacement solenoid valves selected will be environmentally and hydrodynamically qualified to ensure that they function properly under the specified accident conditions. Additionally, the new ASCO model NP8320 solenoid valves have the same mode of operation as the existing ASCO model NP8321 which are being replaced assuring that no control logic differences are introduced.

NO SIGNIFICANT HAZARDS CONSIDERATIONS

INCREASE THE MAXIMUM ISOLATION TIMES FOR VALVES ASSOCIATED WITH THE HPCI AND RCIC WARM-UP LINE AND WITH THE REACTOR RECIRCULATION PROCESS SAMPLE LINE

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.**

   Chapters 6, 9 and 15 of the FSAR, current operating cycles Reload Summary Reports for Units 1 and 2, Design Basis Document DBD046 (Seismic and Hydrodynamic Loads), and NUREG-0776 (Safety Evaluation Report for SSES), were reviewed to determine if the proposed action has an effect on the spectrum of analyzed anticipated operational transients or postulated design basis accidents.

   The proposed modifications involve replacing the pilot solenoid valves on the Reactor Recirculation Loop "B" Process Sample Line Isolation Valve (HV-1/243F019) and the inboard RCIC and HPCI Steam Warm-Up Line Isolation Valves (HV-1/249F088 and HV-1/255F100). They do not alter any system operation or control logic other than to increase the time it takes for the associated containment isolation valve to close. As discussed above, the effects of the increased isolation times for RCIC and HPCI impacted lines are bounded by the larger parallel lines with isolation times much greater than the new isolation times for the smaller lines. In the case of the Reactor Recirculation Loop "B" Process Sample Line, the worst case scenario for a line of that size is addressed in FSAR Section 15.6.2 and the results have been found acceptable. In fact, the line breakage event analyzed in this FSAR section postulates a break outside containment that is not isolable and that does not require operator action for up to 10 minutes.

   The modifications enhance isolation valve performance by ensuring proper operation in the event of a degraded air system.

   Failures within the Process Sampling, RCIC or HPCI systems or their components are not postulated as causes of accident scenarios nor is increasing the stroke time of the subject containment isolation valves. These systems provide safety features utilized to mitigate the consequences of the accidents. However, the failure mode of the replacement solenoid valve is similar in each case to that of the solenoid valve being replaced in that it closes upon loss of power or loss of air supply. The current ability of the plant design to meet the single failure criterion is unchanged by this modification.

Based on the above discussion, the proposed action does not involve a significant increase in the probability or consequences of an accident as previously evaluated.

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

Chapters 6, 9 and 15 of the FSAR were reviewed to determine if the proposed action has the potential of creating a postulated initiating event which is different than the analyzed anticipated operational transients or postulated design basis accidents addressed. The review did not identify a postulated initiating event which would create the possibility for an accident of a different type due to replacing the pilot solenoid valves of the affected Reactor Recirculation Loop "B" Process Sample Line or RCIC or HPCI Steam Warm-Up Line isolation valves.

Also, the Reactor Recirculation Process Sample Line, as part of the Process Sampling System described in FSAR section 9.3.2.3, does not perform any safety functions. It is simply an alternate means for in line reactor water chemistry monitoring upon the loss of the RWCU system, and its loss does not create any possibility for unevaluated accidents or malfunctions.

Thus, replacing the pilot solenoid valves on the affected Reactor Recirculation Process Sample Line, RCIC Steam Warm-Up Line, and HPCI Steam Warm-Up Line isolation valves as well as relocating the Process Sample Line solenoid valve for EQ purposes 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.**

The proposed action involves replacing existing pilot solenoid valves on containment isolation valves for the Process Sampling, RCIC, and HPCI Systems, as listed above, with direct acting solenoid valves to ensure proper valve operation in the event of a degraded air or gas system as well as relocating the Process Sampling pilot solenoid valve for EQ purposes.

a. **Reactor Recirculation Loop "B" Process Sample Line**

The limiting condition for the operation of the Reactor Recirculation Loop "B" Process Sample Line Inboard Isolation Valve (HV-1/243F019) is governed by Technical Specification Section 3/4.6.3 and its Bases which presently requires this valve to close within 2 seconds as defined in Technical Specification Table 3.6.3-1. The proposed modifications involve replacing the pilot solenoid valve of the normally open isolation valve (HV-1/243F019) with a direct acting pilot solenoid valve as well as relocating the pilot solenoid valve to assure an EQ life which supports a 24 month operating cycle. The combined effects of a lower flow coefficient and relocating the

solenoid valve will require an increase in the Technical Specification Table 3.6.3-1 isolation time from 2 seconds to 9 seconds.

This increase in isolation time does not reduce the margin of safety as defined in the Technical Specification Section Basis, because breakage of lines of this size is addressed in the Susquehanna SES FSAR Section 15.6.2 and the results found acceptable. In fact, the line breakage event analyzed postulates a break outside containment that is not isolable and that does not require operator action for up to 10 minutes. Also, it is noted that the outboard isolation valve, HV-1/243F020 , also closes on the same containment isolation signal, and its Technical Specification isolation time limit remains 2 seconds.

The failure mode of the affected Reactor Recirculation Loop "B" Process Sample Line Inboard isolation valve is to close on loss of power or air supply, therefore, the proposed modifications do not affect the operability of the isolation valve or reduce the margin of safety.

b. RCIC

The limiting condition for operation of the RCIC system is governed by Technical Specification Section 3/4.7.3 and its Bases which requires RCIC to be operable as the primary non-ECCS source of emergency core cooling. The proposed modifications involve replacing the pilot solenoid valve of the normally closed Steam Warm-Up Line Isolation Valve (HV-1/249F088). This valve can be manually opened in the absence of an isolation signal to permit steam from the reactor to pressurize and warm the steam supply line downstream of the HV-1/249F007 valve.

Installation of the direct acting solenoid valve will require an increase in the Technical Specification Section 3/4.6.3 isolation time for the RCIC Steam Warm-Up Line Isolation Valve (HV-1/249F088) from 3 seconds to 12 seconds but does not reduce the margin of safety as defined in the Technical Specification Section Basis. The increase in closure time for the HV-1/249F088 isolation valve does not compromise the overall line isolation due to the fact that the impact of these 1" warm up line valves is enveloped by the impact of the much larger 4" RCIC inboard and outboard isolation valves (HV-1/249F007 and HV-1/249F008), which remain open an additional 8 seconds before isolating. The 4" valves are the limiting components for providing containment isolation for this line.

The failure mode of the affected RCIC Steam Warm-Up Line Isolation Valve is to close, if open, on loss of power or air supply, therefore, the proposed modifications do not affect the operability of the isolation valve or reduce the margin of safety.

c. HPCI

The limiting condition for operation of the HPCI system is governed by Technical Specification Section 3/4.5.1 and its Bases which requires HPCI to be operable for proper Emergency Core Cooling System operation. Operability includes the HPCI pump and a flow path capable of taking suction from the suppression pool and delivering the water to the reactor vessel. The proposed modifications involve replacing the pilot solenoid valve of the normally closed Steam Warm-Up Line Isolation Valve (HV-1/255F100). This valve can be manually opened in the absence of an isolation signal, to permit steam from the reactor to pressurize and warm the steam supply line downstream of the HV-1/255F002 valve.

Installation of the direct acting solenoid valve will require an increase in the Technical Specification Section 3/4.6.3 isolation time for the HPCI Steam Warm-Up Line Isolation Valve (HV-1/255F100) from 3 seconds to 6 seconds but does not reduce the margin of safety as defined in the Technical Specification Section Basis. The increase in closure time for the HV-1/255F100 isolation valve does not compromise the overall line isolation due to the fact that the impact of these 1" warm up line valves is enveloped by the impact of the much larger 10" HPCI inboard and outboard isolation valves (HV-1/255F002 and HV -1/255F003) which remain open an additional 44 seconds before isolating. The 10" valves are the limiting components for providing containment isolation for this line.

The failure mode of the affected HPCI Steam Warm-Up Line Isolation Valve is to close, if open, on loss of power or air supply, therefore, the proposed modifications do not affect the operability of the isolation valve or reduce the margin of safety.

Thus, based upon a review of the Technical Specification, their Bases, the FSAR and NUREG 0776 (Safety Evaluation Report for SSES), the replacement of the pilot solenoid valves does not involve a significant reduction in a margin of safety.

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.