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50-388 Susquehanna Steam Electric Station, Unit 2, Pennsylva 05000388
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BYRAM,R.G. Pennsylvania Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION
Document Control Branch (Document Control Desk)

SUBJECT: Application for amends to licenses NPF-14 & NPF-22,proposing changes to TS,by modifying current definition to allow movement & replacement of components by adopting CORE ALTERATION definition included in improved standard TS.

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JUL 27 1994

SUSQUEHANNA STEAM ELECTRIC STATION
PROPOSED AMENDMENT NO. 169 TO LICENSE NPF-14 AND
PROPOSED AMENDMENT NO. 123 TO LICENSE NPF-22:
CORE ALTERATION DEFINITION
PLA-4179 **FILES R41-1/A17-2**

Docket Nos. 50-387
and 50-388

Dear Mr. Miller:

The purpose of this letter is to propose changes to the Susquehanna SES Units 1 and 2 Technical Specifications. Currently, the definition of a CORE ALTERATION precludes local power range monitors (LPRMs) and Control Rods in a defueled cell from being moved or replaced without invoking CORE ALTERATION provisions. The proposed Technical Specification change modifies the current definition to allow movement and replacement of these components by adopting the CORE ALTERATION definition included in the Improved Standard Technical Specifications.

The attached analysis discusses the safety basis for the proposed Technical Specification change and concludes that the change involves no significant hazards. The change has been reviewed by the Plant Operations Review Committee (PORC) and the Susquehanna Review Committee (SRC).

We are committed to making this change to enhance refueling outage performance. The proposed change is expected to reduce manpower related refueling outage costs by $750,000 per refueling outage. The proposed change meets the Cost Beneficial Licensing Action criteria.

We are planning to incorporate the proposed change into outage planning for our next refueling outages, as a result we ask that the NRC complete its review by February 10, 1995. Any questions regarding this request should be directed to Mr. Terence Bannon at (610) 774-7918.

Very truly yours,

R. G. Byram

Attachment

cc: NRC Document Control Desk (original)
NRC Region I
Mr. G. S. Barber, NRC Sr. Resident Inspector
Mr. C. Poslusny, Jr. NRC Sr. Project Manager
Mr. W. P. Dornsife, Pa. DER

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JUL 25 2004

BEFORE THE
UNITED STATES NUCLEAR REGULATORY COMMISSION

In the Matter of :

Docket No. 50-387

PENNSYLVANIA POWER & :
LIGHT COMPANY

PROPOSED AMENDMENT No. 169
FACILITY OPERATING LICENSE NO. NPF-14
SUSQUEHANNA STEAM ELECTRIC STATION
UNIT NO. 1

Licensee, Pennsylvania Power & Light Company, hereby files proposed Amendment No. 169 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.

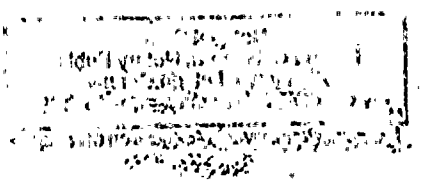
PENNSYLVANIA POWER & LIGHT COMPANY
BY:

R. G. Byram
Sr. Vice President - Nuclear

Sworn to and subscribed before me
this 27th of July, 1994.

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. 123
FACILITY OPERATING LICENSE NO. NPF-22
SUSQUEHANNA STEAM ELECTRIC STATION
UNIT NO. 2

Licensee, Pennsylvania Power & Light Company, hereby files proposed Amendment No. 123 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 27th of July , 1994.

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
CORE ALTERATION DEFINITION

BACKGROUND

The Susquehanna Technical Specification CORE ALTERATION definition identifies what a CORE ALTERATION is and specifies certain evolutions which do not need to be considered CORE ALTERATIONS; it states:

> CORE ALTERATION shall be the addition, removal, relocation or movement of fuel, sources, or reactivity controls within the reactor pressure vessel with the vessel head removed and fuel in the vessel. Normal movement of SRMs, IRMs, TIPs or special movable detectors is not considered a CORE ALTERATION. Suspension of CORE ALTERATIONS shall not preclude completion of the movement of a component to a safe conservative position.

The provisions of the definition set limits on work which can be performed with the vessel head removed and fuel in the vessel. Applying this definition to refueling outage work planning requires that certain systems and components be kept or placed in service to support maintenance and testing evolutions involving control rods and other incore components. These requirements exceed those associated with an alternative definition of CORE ALTERATION included in NUREG 1433 (as amended). Adoption of the revised definition for a CORE ALTERATION will eliminate the need for time consuming refueling outage evolutions associated with the CORE ALTERATION condition. Two areas of benefit are in the change-out of LPRMs and Control Blades during a refueling outage using the fuel shuffle methodology. The revised CORE ALTERATION definition would allow these activities to be performed without being considered CORE ALTERATIONS.

The safety analysis provided here will show that the revised CORE ALTERATION definition included in NUREG 1433 (as amended) can be safely adopted at Susquehanna SES.

DESCRIPTION OF CHANGE

Modify Susquehanna Technical Specifications to adopt the definition for a CORE ALTERATION included in NUREG 1433 (as amended); which is:

> CORE ALTERATION shall be the movement of any fuel, sources, or reactivity control components within the reactor pressure vessel with the vessel head removed and fuel in the vessel. The following exceptions are not considered to be CORE ALTERATIONS:

a. movement of source range monitors, local power range monitors, intermediate range monitors, traversing incore probes, or special movable detectors (including undervessel replacement); and

b. control rod movement, provided there are no fuel assemblies in the associated core cell.

Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.

A mark-up of Technical Specification CORE ALTERATION definition, showing the proposed changes, is attached to this analysis.

SAFETY ANALYSIS

Analysis

This safety analysis evaluates the differences between the revised definition for a CORE ALTERATION, as included in NUREG 1433 (as amended), and the current Susquehanna CORE ALTERATION definition to verify that the revised definition does not increase the likelihood or severity of any postulated reactivity events during shutdown, or reduce current safety margins.

To perform this analysis the revised CORE ALTERATION definition was divided into its three constituent sentences:

(1) CORE ALTERATION shall be the movement of any fuel, sources, or reactivity control components within the reactor pressure vessel with the vessel head removed and fuel in the vessel.

(2) The following exceptions are not considered to be CORE ALTERATIONS:

a. movement of source range monitors, local power range monitors, intermediate range monitors, traversing incore probes, or special movable detectors (including undervessel replacement); and

b. control rod movement, provided there are no fuel assemblies in the associated core cell.

(3) Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.

Sentences (1) and (3) do not depart technically, or from a regulatory perspective, from similar sentences in the current CORE ALTERATION definition. Sentence (1) in the proposed definition eliminates the clarifying terms "addition, removal, relocation", but leaves "movement" as the modifier on the types of activities considered to be CORE ALTERATIONS. This does not change the intent of sentence (1) since "addition, removal, relocation" can all be adequately described as types of "movement". Minor grammatical deviations are also included in the revised definition. As a result, sentences (1) and (3) are deemed equivalent to the current Susquehanna Technical Specification CORE ALTERATION definition.

Sentence (2a) of the revised CORE ALTERATION definition deletes the modifier "Normal" in describing detector movement which is not considered to be a CORE ALTERATION. Sentence (2a) adds local power range monitors to the list of detectors included in the definition. Sentence (2a) clarifies that undervessel replacement of detectors is not considered a CORE ALTERATION.

Deleting the modifier "Normal" in describing detector movement which is not considered a CORE ALTERATION has no practical effect on the limitations in detector movement described under the current definition. The identified detectors are currently allowed to be moved, within the confines of existing Technical Specification limits on detector operability and position for OPCON 5 (Technical Specifications 3/4.3.1 and 3/4.9.2), without having to consider the movement a CORE ALTERATION and this is also true under the revised definition. The word "Normal" was used to describe the retraction of SRMs, IRMs, TIPs or special movable detectors to below the core. Since the revised definition adds local power range monitors (LPRMs) to the list of detectors, the word "Normal" needed to be removed since the LPRMs are fixed detectors.

Adding local power range monitors to the list of detectors which can be moved without invoking CORE ALTERATION requirements, allows for the removal of these detectors for repair and replacement. Replacement of these components does not impact the reactivity of the core. Technical Specification 3/4.3.1 defines the minimum number of LPRMs required to be maintained operable in OPCON 5 and during Shutdown Margin Demonstration. The addition of LPRMs to the CORE ALTERATION definition does not change the operability requirements for the LPRMs under Technical Specification 3/4.3.1.

The parenthetical clarification that undervessel replacement of detectors is not considered a CORE ALTERATION is consistent with the intent of the definition to allow activities that do not have the potential to increase core reactivity. Detector operability and position is controlled under Technical Specifications as discussed above. In addition, Special Movable Detectors can be used in place of SRMs under Technical Specification 3/4.9.2 as long as the Special Movable Detectors are connected to the normal SRM circuits. However, undervessel replacement of detectors does not have any impact on core reactivity.

Sentence (2b) is an addition to the current definition concerning the movement of control rods when there are no fuel assemblies in the associated core cell. Removal of a Control Rod from a defueled cell results in a negligible increase in core reactivity. Appropriate Technical Specification controls and refueling interlocks are applied during the fuel movements preceding the control rod removal to protect from or mitigate a reactivity excursion event. Per Technical Specification 3/4.9.10.2(c), adequate core shutdown margin must exist during refueling when multiple control rods and the surrounding fuel assemblies are removed from the core. The removal of a control rod from a defueled cell will have a negligible effect on the core shutdown margin. In addition, the design of a control rod precludes its replacement without all fuel assemblies in the cell removed. The addition of the control rod movement provisions to the Technical Specification CORE ALTERATION definition, is consistent with the intent of the definition to allow activities that do not have the potential to significantly increase core reactivity.

In the unlikely event that the wrong control rod was inadvertently withdrawn from a fueled cell during evolutions which were not intended to be CORE ALTERATIONS, adequate protective measures are provided by core monitoring instrumentation required to be operable in OPCON 5. Under this scenario, assuming the inadvertent control rod withdrawal resulted in a significant reactivity addition, the Reactor Protection System (RPS) would respond by inserting all control rods via the Scram function. The RPS monitors for recriticality during OPCON 5 with SRMs (except during specific controlled evolutions), IRMs, and APRMs. The Scram circuitry is completely redundant from the insert and withdrawal circuitry for the control rods.

CONCLUSION

Adopting the Technical Specification CORE ALTERATION definition from NUREG 1433 (as amended) does not impact the safe operation of the Susquehanna SES. The definition in NUREG 1433 (as amended) was compared with the current Susquehanna Technical Specification CORE ALTERATION definition to determine if differences between the definitions were safety significant. The criteria used to judge the safety significance of the changes was the potential for the revised definition to increase the probability or consequences of a reactivity event, or reduce current safety margins. The revised definition was found to be largely consistent with the currently adopted Susquehanna CORE ALTERATION definition. The differences between the definitions were found to be non-impacting to core reactivity, and will not result in a significant reduction in the margin of safety.

NO SIGNIFICANT HAZARDS CONSIDERATIONS

I. This proposal does not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed change eliminates two previous evolutions, LPRM and Control Rod movement from a defueled cell, from being considered CORE ALTERATIONS. Thus the issue is whether the elimination of these constraints could contribute to a significant increase in the probability or consequences of a reactivity event.

Adding local power range monitors to the list of detectors which can be moved without invoking CORE ALTERATION requirements allows for the removal of these detectors for repair and replacement. Movement of these components does not impact the reactivity of the core. Therefore, allowing the movement of these detectors without invoking CORE ALTERATION provisions, does not contribute to a significant increase in the probability or consequences of a reactivity event.

Removal of a Control Rod from a defueled cell results in a negligible increase in core reactivity. Appropriate Technical Specification controls and refueling interlocks are applied during the fuel movements preceding the control rod removal to protect from or mitigate a reactivity excursion event. In addition, the design of a control rod precludes its replacement without all fuel assemblies in the cell removed. Therefore, allowing the movement of control rods from a defueled cell without invoking CORE ALTERATION provisions, does not contribute to a significant increase in the probability or consequences of a reactivity event.

The proposed Technical Specification change to adopt the revised CORE ALTERATION definition (NUREG 1433, as amended) does not effect the probability or consequences of an accident previously evaluated.

II. This proposal does not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed change eliminates two previous evolutions, LPRM and Control Rod movement from a defueled cell, from being considered CORE ALTERATIONS. Thus the issue is whether the elimination of these constraints could create the possibility of a new or different kind of accident from any accident previously evaluated.

For local power range monitors, Technical Specification 3/4.3.1 defines the minimum number of LPRMs required to be maintained operable in OPCON 5 and during Shutdown Margin Demonstration. The addition of LPRMs as an exclusion under the CORE ALTERATION definition does not change the operability requirements for the LPRMs

under Technical Specification 3/4.3.1. Thus the ability of the LPRMs to perform their monitoring function is not affected by the proposed CORE ALTERATION definition change. In addition, movement of these components does not impact the reactivity of the core. Therefore, allowing the movement of these detectors without invoking CORE ALTERATION provisions, does not create the possibility of a new or different kind of accident from any accident previously evaluated.

For Control Rods, in the unlikely event that the wrong control rod was inadvertently withdrawn from a fueled cell during evolutions which were not intended to be CORE ALTERATIONS, adequate protective measures are provided by design and core monitoring instrumentation required to be operable in OPCON 5. Withdrawal of a single control rod from a cell containing fuel is bounded by Shutdown Margin analysis and demonstration. However, assuming the inadvertent control rod withdrawal resulted in a significant reactivity addition, the Reactor Protection System (RPS) would respond by inserting all control rods via the Scram function. The RPS monitors for recriticality during OPCON 5 with SRMs (except during specific controlled evolutions), IRMs, and APRMs. The Scram circuitry is completely redundant from the insert and withdrawal circuitry for the control rods. Therefore, allowing the movement of control rods from a defueled cell without invoking CORE ALTERATION provisions, does not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed Technical Specification change to adopt the revised CORE ALTERATION definition (NUREG 1433, as amended) does not create the possibility of a new or different kind of accident from any accident previously evaluated.

III. This change does not involve a significant reduction in a margin of safety.

To evaluate the potential effect on safety margin, the proposed change was evaluated as to its effect on Shutdown Margin. Shutdown Margin defines the amount of reactivity by which the reactor is subcritical, and thus is a measure of the safety margin in avoiding unanticipated criticality events.

The movement of LPRMs does not impact the reactivity of the core, and thus does not reduce the Shutdown Margin. Removal of a Control Rod from a defueled cell results in a negligible increase in core reactivity. Therefore, the removal of a Control Rod from a defueled cell will have a negligible effect on the core Shutdown Margin. Per Technical Specification 3/4.9.10.2(c), adequate core Shutdown Margin must exist during refueling when multiple control rods and the surrounding fuel assemblies are removed from the core. Appropriate Technical Specification controls and refueling interlocks are applied during the fuel movements preceding the control rod removal to protect from or mitigate a reactivity excursion event. In addition, the core is analyzed to maintain Shutdown Margin even with the withdrawal of the highest worth rod from a fueled cell.

The proposed Technical Specification change to adopt the revised CORE ALTERATION definition (NUREG 1433, as amended) does not involve a significant reduction in a margin of safety.

IMPLEMENTATION

It is requested that this change be approved as soon as possible but no later than February 10, 1995 with implementation within 30 days of the date of issuance.