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BUTLER, W. R. Project Directorate I-2

SUBJECT: Application for amend to Licenses NPF-14 & NPF-22, revising liquid effluent instrumentation Table 3.3.7.10-1, "Radioactive Liquid Effluent Monitoring Instrumentation." Fee paid.

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Director of Nuclear Reactor Regulation
Attn.: Dr. W. R. Butler, Project Director
Project Directorate I-2
Division of Reactor Projects
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

SUSQUEHANNA STEAM ELECTRIC STATION
PROPOSED AMENDMENTS 106 TO LICENSE
NO. NPF-14 AND 56 TO LICENSE NO.
NPF-22: REVISIONS TO LIQUID EFFLUENT
INSTRUMENTATION TABLE
PLA-2951 FILES A17-2, R41-2

Docket Nos. 50-387
and 50-388

Dear Dr. Butler:

The purpose of this letter is to transmit proposed changes to the SSES Units 1 and 2 Technical Specifications. The changes revise Table 3.3.7.10-1, "Radioactive Liquid Effluent Monitoring Instrumentation".

BACKGROUND: There are two problems being addressed by this proposed change to the Technical Specifications:

1. Technical Specification Table 3.3.7.10-1, footnote *, currently requires that if any discharge valve interlock is in an off-normal condition or is not functioning, the monitor, including the sample pump, must be in operation. As a result, during periods when no releases are being made, the monitor and the sample pump may be required to operate for extended periods without liquid flow to pump. Operation in this mode could jeopardize the operability of the radiation monitoring system.

2. A modification to the Unit 1 and Unit 2 Cooling Tower Blowdown flow instrumentation is being installed during the Unit 2 Second Refueling and Inspection Outage. It revises the operation of the cooling tower blowdown low flow interlocks described in Technical Specification Table 3.3.7.10-1 such that their current description requires clarification.

DESCRIPTION OF CHANGE: (See attached marked-up pages). For item 1 above, rewrite the footnoted information to associate the blowdown flow interlocks with Instrument 3b (which has been renamed for clarity) instead of Instrument 1a, and revise ACTIONS 100 and 102 to incorporate proper remedial requirements

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when effluent releases are not occurring and a discharge valve interlock is malfunctioning. These actions replace the inappropriate actions previously required via footnote *.

For item 2, the reference to "Unit 1 cooling tower blowdown low flow or Unit 2 cooling tower blowdown low flow", previously provided in footnote *, is revised to read simply "cooling tower blowdown low flow" under new footnote **.

SAFETY ANALYSIS: The purpose of the radioactive liquid effluent monitoring instrumentation is to " . . . monitor and control, as applicable, the releases of radioactive materials in liquid effluents during actual or potential releases of liquid effluents" (Ref.: Technical Specification Bases). In the Susquehanna Safety Evaluation Report (NUREG-0776) the staff concluded that the design of the Liquid Radioactive Effluent Monitoring system met all necessary design criteria; i.e.:

> "The process and effluent radiological monitoring and sampling system provides a mechanism to monitor releases of radioactive material in the plant gaseous and liquid process and effluent streams in order to control these releases. The liquid and gaseous streams will be monitored continuously and sampled for radioactivity. Discharges will be terminated automatically by the monitors should they detect radiation levels that are above a predetermined value."
>
> and:
>
> "The locations and types of effluent and process monitoring devices and sampling methods have been reviewed. We concluded that the normal and potential release pathways will be monitored, based on plant design and on continuous monitoring and sampling locations. The sampling and monitoring provisions have been determined to be adequate for detecting radioactive material leakage to normally uncontaminated systems and for monitoring plant processes which affect radioactivity releases. We consider the monitoring and sampling provisions to meet the requirements of General Design Criterion 60, 63 and 64 of 10 CFR Part 50, Appendix A, and the guidelines of Regulatory Guide 1.21."

The purpose of the analysis of the proposed changes to resolve items 1 and 2, which is provided below, is to determine if the staff's evaluation of compliance to the pertinent regulatory criteria remains valid.

- Item 1: The proposed rewording is appropriate and safe for the following reasons:

  a. The cooling tower blowdown low flow interlock is associated with the devices which monitor Unit 1 and Unit 2 cooling tower blowdown flow, and therefore should be required to support Instrument 3b. Currently, it is grouped with the interlocks associated with the sample pump and radiation monitor in 1a because it has a similar function in that it provides automatic closure signals to the liquid radwaste discharge

valves; this function is not being changed. The affect of this change is to force ACTION 102:

"With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue for up to 30 days provided the flow rate is estimated at least once per 4 hours during actual releases. Pump curves generated in situ may be used to estimate flow."

instead of ACTION 100:

"With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases may continue for up to 14 days provided that prior to initiating a release:

a. At least two independent samples are analyzed in accordance with Specification 4.11.1.1.1, and

b. At least two technically qualified members of the Facility Staff independently verify the release rate calculations and discharge line valving;

Otherwise, suspend release of radioactive effluents via this pathway."

This is acceptable because the subject interlocks require input from the flow instrumentation required in 3b to perform their function, and this instrumentation is intended by the Technical Specifications to be governed by ACTION 102. Currently, however, it is by default governed by ACTION 100 because of its impact on the functioning of the interlocks. It is logical that the cooling tower blowdown flow interlocks should have less restrictive remedial requirements than the interlocks which are associated with the radiation monitor because it is inherently safer to have an inoperable interlock on dilution flow with operable interlocks on radiation than vice versa.

b. The monitor and sample pump are currently required via footnote * to be in operation when any interlock is malfunctioning. This is inappropriate from a human factors viewpoint because remedial actions do not belong in footnotes.

More importantly, however, it is an unacceptable action because it is required even when releases are not occurring, and this could jeopardize system reliability and operability by forcing extended dry operation of the pump. Proposed ACTIONS 100 and 102 have been written to address the appropriate actions under release and non-release conditions. When releases are occurring, the existing ACTION is applied in each case; therefore no change has occurred. When releases are not occurring, rather than operating the sample pump and monitor, the following ACTION is proposed:

"If effluent releases are not occurring and the cause of the inoperable channel is a discharge valve interlock in an off-normal condition or not functioning, maintain at least one isolation valve closed between each source of release and the liquid radwaste discharge valves."

This action ensures that a second valve to maintain isolation redundancy would be closed should either discharge isolation valve inadvertently open due to the failed interlock; this obviates the need to ensure the monitor and sample pump are running in order to monitor an inadvertent release.

c. Editorial changes to rename Instrument 3b in Tables 3.3.7.10-1 and 4.3.7.10-1 "Cooling Tower Blowdown" are also proposed.

d. Footnote * in Table 4.3.7.10-1 is inappropriate as a consequence of the newly proposed action statements discussed in b above. Formerly, the Technical Specifications required a remedial action to be taken (i.e., monitor and sample pump operation via footnote 4 in Table 3.3.7.10-1) when any interlock was malfunctioning. This "action", in order to be valid, was forced to be periodically surveilled via the daily Channel Check required by footnote * in Table 4.3.7.10-1. This is no longer necessary because the monitor/sample pump operation requirement has been deleted in favor of providing assurance of redundant isolation via upstream valves. Footnote * has therefore been deleted.

Based on the information presented above, the changes to the Technical Specifications in support of Item 1 will improve the safe operation of Susquehanna SES.

o <u>Item 2</u>: (Reference attached Safety Evaluation Report No. 87-9013.)

The Technical Specifications (Section 3.3.7.10) require that instrument alarm/trip setpoints be determined in accordance with the methodology and parameters described in the Offsite Dose Calculation Manual (ODCM). Section 2.0 of the ODCM indicates that the minimum dilution flow required to support a liquid effluent release is 5000 gpm.

The present hardware configuration (i.e. one flow switch for each unit) allows for release from liquid radwaste when either unit's flow exceeds 5000 gpm. The normal blowdown rate during two unit operation is 2500-3500 gpm per unit. This means that blowdown flow in one unit must be increased to 5000 gpm while discharging from radwaste. This logic is inefficient, since during two unit operation, the combined blowdown flow is normally in excess of 5000 gpm, and this meets the ODCM criteria.

The proposed modification will continue to use 5000 gpm for the minimum blowdown flow permissive to ensure that minimum dilution flow is available prior to allowing the radwaste discharge valves to be opened. However, implementation of the 5000 gpm minimum will allow contribution from both cooling towers during two unit operation.

The physical change to the plant relies on an electronic summer and a single flow switch which provides the interlock function.

Based on this description of the modification, it is proposed that the description of the interlocks currently provided in footnote * be revised under new footnote ** to describe a single cooling tower blowdown low flow interlock.

This change is editorial in nature and will not pose any adverse impact on the safe operation of Susquehanna SES.

Based on the above analysis of the proposed changes, none of the regulatory criteria relied upon in the previous staff evaluation has been adversely affected.

NO SIGNIFICANT HAZARDS CONSIDERATIONS

The proposed changes do not:

I. **Involve a significant increase in the probability or consequences of an accident previously evaluated.**

Item 1a: This change couples the blowdown flow interlock with its associated flow instrumentation rather than with the radiation monitor. This allows ACTION 102 to be taken instead of ACTION 100 when the flow interlock is malfunctioning. Given the unmonitored release of liquid effluents as the event of concern, neither its probability nor its consequences will increase significantly because the interlocks on radiation will prevent any unacceptable release from occurring during operation under ACTION 102 - if any of these interlocks are inoperable, ACTION 100 must be in affect.

- Item 1b: This change removes an inappropriate requirement (i.e., that the sample pump be operated under dry conditions), and replaces it with actions which will provide assurance that an inadvertent release will not occur (based on single failure criteria). This more positive action lessens the probability of an inadvertent release. Any adverse affect on the consequences of the event would have to result from the single failure criterion being violated; this is not considered credible.

- Item 1c: This change involves renaming an instrument based on a plant-specific convention. Such an action is wholly editorial in nature and poses no impact on previous safety analyses.

- Item 1d: As discussed under SAFETY ANALYSIS above, this item is directly tied to Item 1b. I.e., it is only required because the operation of the sample pump and monitor is being replaced by the redundant isolation requirement. Therefore, the answer to Item 1b applies here as well.

- Item 2: This change is the result of the correction of an overly conservative design deficiency. The requirement to monitor for 5000 gpm dilution flow has not changed, and although the change will describe a single interlock instead of two, monitors on blowdown flow from each unit still exist; their inputs are simply combined to remove unnecessary conservatism. This action will not result in an increase in the probability or consequences of any previous accident evaluation.

II. Create the possibility of a new or different kind of accident from any accident previously evaluated.

- Item 1a: This change involves the use of a different action statement for an equipment malfunction. This action will allow effluent releases with this malfunction for a longer time, but will not cause any new events because no hardware changes or new operational actions result (see Item 1b for discussion of revision of operational actions in new actions 100 and 102).

- Item 1b: For the cases where effluent releases are not occurring, an operational change is proposed in both Actions 100 and 102. The Actions are revised to ensure redundant isolation rather than continuous monitoring. The redundant isolation is being accomplished by existing valves, and therefore no new events are postulated. The lack of continuous monitoring does not create a new concern because of the redundant isolation; i.e., based on single failure criteria, the redundant valve precludes the need for continuous monitoring to prevent an inadvertent release.

- Item 1c: This change involves renaming an instrument based on a plant-specific convention. Such an action is wholly editorial in nature and will not create any new concerns.

- Item 1d: As discussed previously, this item is a direct result of the change in 1b; therefore the answer to 1b applies here.

- Item 2: This change, which replaces unit specific flow interlocks with a common interlock, does not create any new failure modes because there is no interdependence between the two interlocks now. Therefore, two independent functions are being replaced by a single function with the same potential failure modes.

III. Involve a significant reduction in a margin of safety.

- Item 1a: This change allows a less restrictive action to be taken if the flow instrumentation is inoperable. This does not result in a significant reduction in safety margin because:

  a. As mentioned previously, evidence exists that Action 102 was intended to be associated with the flow instrumentation, and

b. The flow instrumentation is less important than the radiation instrumentation in guarding against an unacceptable release.

o Item 1b: This change improves safety in the following ways:

a. it removes an action requirement from a footnote;
b. it deletes an action that could jeopardize equipment integrity; and
c. it ensures positive protection against an inadvertent release.

o Item 1c: This change involves renaming an instrument based on a plant specific convention. Such an action is wholly editorial in nature and has no impact on safety margin.

o Item 1d: As discussed previously, this item is a direct result of the change in 1b; therefore the answer to 1b applies here.

o Item 2: The current design of SSES is overly conservative in that it may require greater than the minimum dilution flow necessary to the requirements specific in the ODCM. The ODCM requirement of 5000 gpm ensures all necessary safety margin. This change will continue to provide this safety margin and therefore, no significant reduction is being proposed.

IMPLEMENTATION

The modification described as "Item 2" throughout this proposal will be performed during the Unit 2 Second Refueling and Inspection Outage. It is therefore requested that this proposed amendment be approved prior to the beginning of that outage (current schedule: March 5, 1988) and conditioned to become effective upon startup following that outage (current schedule: May 3, 1988). PP&L will keep the staff informed of changes to these dates.

Pursuant to 10CFR170, the appropriate fee is enclosed. Any questions on this proposed should be directed to Mr. R. Sgarro at (215) 770-7916.

Very truly yours,

H. W. Keiser
Vice President-Nuclear Operations

Attachments

cc: NRC Document Control Desk (original)
NRC Region I
Mr. J. Stair, NRC Resident Inspector-SSES
Mr. M. C. Thadani, NRC Project Manager-Bethesda
Mr. T. M. Gerusky, Pennsylvania DER

BEFORE THE
UNITED STATES NUCLEAR REGULATORY COMMISSION

In the Matter of :

PENNSYLVANIA POWER & LIGHT COMPANY : Docket No. 50-387

PROPOSED AMENDMENT NO. 106

FACILITY OPERATING LICENSE NO. NPF-14

SUSQUEHANNA STEAM ELECTRIC STATION
UNIT NO. 1

Licensee, Pennsylvania Power & Light Company, hereby files proposed Amendment No. 106 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:

H. W. Keiser
Vice President - Nuclear Operations

Sworn to and subscribed before me
this 15th of December, 1987.

Notary Public

MARTHA C. BARTO, NOTARY PUBLIC
ALLENTOWN, LEHIGH COUNTY
MY COMMISSION EXPIRES JAN. 15, 1990
Member, Pennsylvania Association of Notaries

BEFORE THE
UNITED STATES NUCLEAR REGULATORY COMMISSION

In the Matter of :

PENNSYLVANIA POWER & LIGHT COMPANY : Docket No. 50-388

PROPOSED AMENDMENT NO. 56

FACILITY OPERATING LICENSE NO. NPF-22

SUSQUEHANNA STEAM ELECTRIC STATION
UNIT NO. 2

Licensee, Pennsylvania Power & Light Company, hereby files proposed Amendment No. 56 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:

H. W. Keiser
Vice President - Nuclear Operations

Sworn to and subscribed before me
this 15th of December, 1987.

Martha C. Barto
Notary Public

MARTHA C. BARTO, NOTARY PUBLIC
ALLENTOWN, LEHIGH COUNTY
MY COMMISSION EXPIRES JAN. 15, 1990
Member, Pennsylvania Association of Notaries