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10 CFR 50.90

NUCLEAR ENGINEERING & SERVICES DEPARTMENT

April 3, 1992

Docket Nos. 50-352
50-353

License Nos. NPF-39
NPF-85

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Subject: Limerick Generating Station, Units 1 and 2
Technical Specifications Change Request

Gentlemen:

Philadelphia Electric Company is submitting Technical Specifications (TS) Change Request No. 90-20-0, in accordance with 10 CFR 50.90, requesting amendments to the TS (Appendix A) of the Operating License Nos. NPF-39 and NPF-85 for Limerick Generating Station (LGS), Units 1 and 2, respectively. This submittal requests that the TS Surveillance Requirements (SRs) for the Standby Liquid Control (SLC) system be changed to: 1) use the daily check of the SLC pump suction piping temperature to verify system operability, rather than heat tracing operability; 2) verify that the piping is not blocked by pumping from the storage tank to a test drum, rather than to the test tank; and 3) require only one SLC storage tank heater to be operable, rather than two which are currently required.

The current TS SRs do not permit removing the heat tracing system or storage tank heaters from service without declaring the SLC system inoperable. When the SLC system is declared inoperable as a result of removing the heat tracing system or storage tank heaters from service, the plant must be placed in a hot shutdown condition unless the heat tracing system or storage tank heaters are returned to service within eight (8) hours. In addition, TS SRs require that SLC fluid be pumped from the storage tank to the test tank every 18 months to determine if any heat traced piping is blocked. This flow test is also required when the heat tracing system is found to be inoperable. Following this

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test, portions of the system must be drained and flushed with demineralized water prior to restoring the system to operation. As a result of this flushing, over 1000 gallons of waste water is generated requiring a significant amount of manpower to ensure the proper disposal of this waste water.

Information supporting this Change Request is contained in Attachment 1 to this letter, and the proposed replacement pages for the LGS, Units 1 and 2, TS are contained in Attachment 2. We request that, if approved, the Amendments be effective 30 days from the date of issuance.

If you have any questions or require additional information, please do not hesitate to contact us.

Very truly yours,

G. J. Beck
Manager
Licensing Section

Attachments

cc: T. T. Martin, Administrator, Region I, USNRC (w/ attachments)
T. J. Kenny, USNRC Senior Resident Inspector, LGS (w/ attachments)
W. P. Dornsife, Commonwealth of Pennsylvania (w/ attachments)

COMMONWEALTH OF PENNSYLVANIA :

: ss.

COUNTY OF CHESTER :

D. R. Helwig, being first duly sworn, deposes and says:

That he is Vice President of Philadelphia Electric Company; the Applicant herein; that he has read the foregoing Application for Amendments to Facility Operating License Nos. NPF-39 and NPF-85 (Technical Specifications Change Request No. 90-20-0) to revise the Standby Liquid Control system surveillance requirements, and knows the contents thereof; and that the statements and matters set forth therein are true and correct to the best of his knowledge, information and belief.

D. R. Helwig

Vice President

Subscribed and sworn to
before me this 3rd day
of April 1992.

Catherine A. Mendez

Notary Public

NOTARIAL SEAL
CATHERINE A. MENDEZ, Notary Public
Tredyffrin Twp., Chester County
My Commission Expires Sept. 4, 1993

ATTACHMENT 1

LIMERICK GENERATING STATION
UNITS 1 AND 2

Docket Nos. 50-352
50-353

License Nos. NPF-39
NPF-85

TECHNICAL SPECIFICATIONS CHANGE REQUEST

No. 90-20-0

"Revision of Standby Liquid Control
Surveillance Requirements"

Supporting Information for Changes - 6 pages

Philadelphia Electric Company (PECo), Licensee under Facility Operating License Nos. NPF-39 and NPF-85 for Limerick Generating Station (LGS), Units 1 and 2, respectively, requests that the Technical Specifications (TS) contained in Appendix A of the Operating Licenses NPF-39 and NPF-85 be amended as proposed herein to change the Standby Liquid Control (SLC) Surveillance Requirements (SRs). Specifically, this Change Request proposes to: 1) use the daily check of the SLC pump suction piping temperature to determine system operability, rather than heat tracing system operability; 2) verify that the piping is not blocked by pumping from the storage tank to a test drum, rather than to the test tank; and 3) require only one SLC storage tank heater to be operable, rather than two which are currently required.

This Change Request for LGS, Units 1 and 2, provides a discussion and description of the proposed TS changes, a safety assessment of the proposed TS changes, information supporting a finding of No Significant Hazards Consideration, and information supporting an Environmental Assessment.

We request that, if approved, the Amendments to the LGS Units 1 and 2 TS become effective 30 days after the date of issuance.

Discussion and Description of the Proposed Changes

The current TS SRs require that the SLC system be demonstrated operable at least once per 24 hours by verifying that the heat tracing circuit installed on the pump suction piping is operable by determining that the temperature of the pump suction piping is greater than or equal to 70 degrees F (i.e., SR 4.1.5.a.3). In addition, the current SRs stipulate that at least once per 18 months all heat traced piping be verified to be unblocked by pumping from the SLC storage tank to the test tank, and then draining and flushing the piping with demineralized water (i.e., SR 4.1.5.d.2). Furthermore, at least once per 18 months, the SLC storage tank heaters (i.e., "A" and "B") shall be demonstrated operable by verifying the expected temperature rise of the sodium pentaborate solution in the storage tank after the heaters are energized (i.e., 4.1.5.d.3).

We propose to change SR 4.1.5.a.3 such that the SLC system will be demonstrated operable once per 24 hours by simply verifying that the pump suction piping temperature is equal to or greater than 70 degrees F, rather than by verifying heat tracing operability. In addition, we propose to revise the 18 month SR 4.1.5.d.2 to verify that the pump suction piping is unblocked by pumping from the SLC storage tank to test drums, rather than the test tank. Furthermore, we propose to change the 18 month SR 4.1.5.d.3 to demonstrate that only the "A" storage tank heater is operable, rather than both heaters.

These proposed TS changes will increase SLC system maintenance flexibility, reduce the possibility of unnecessarily declaring the system inoperable which could result in an unwarranted plant shutdown, and significantly reduce the amount of waste water and manpower necessary to drain and flush the SLC system following surveillance testing.

Safety Assessment

The SLC system provides a redundant, independent, and alternate method of making the reactor core subcritical, and maintaining it subcritical, as the reactor cools. The system makes possible an orderly and safe shutdown in the event that not enough control rods can be inserted into the reactor core to accomplish normal shutdown. The normal reactivity control systems are the Control Rod Drive (CRD) system or the Alternate Rod Insertion (ARI) system. The SLC system is designed to compensate for the positive reactivity effects associated with a reactor shutdown from rated full power to a cold shutdown condition at any time during core life.

To satisfy this design objective, a solution containing boron is injected into the reactor core. The boron absorbs thermal neutrons and, when present in sufficient concentration in the reactor, will cause the reactor to become subcritical. This neutron absorber solution is an aqueous solution of sodium pentaborate and is stored in a storage tank. The saturation temperature of the sodium pentaborate solution is approximately 60 degrees F at the recommended concentration of 13.4%. The boron injection capacity of the system also meets the requirements of 10 CFR 50.62, "Requirements for the Reduction of of Risk from Anticipated Transients Without Scram (ATWS) Events for Light-Water-Cooled Nuclear Power Plants."

The equipment containing the sodium pentaborate solution is installed in an area were the ambient air temperature is maintained within the range of 65 degrees F to 104 degrees F. An electrical resistance heating system containing two heaters provides a heat source which maintains the temperature of solution in the storage tank between 75 degrees F to 85 degrees F to prevent precipitation of the sodium pentaborate from the solution. Each of the two (2) heaters is powered from a separate Class 1E power supply. However, only one (1) heater is necessary for maintaining storage tank temperature. The second heater provides a backup heating source and is used primarily during mixing operations. In addition, heat tracing with automatic temperature control provides a heating source for the pump suction piping between the storage tank and pump inlet to prevent precipitation of sodium pentaborate in the suction piping. This piping heat tracing system is nonsafety-related and does not receive electrical power from a safety-related power supply. The heat tracing is provided because the sodium pentaborate solution, at its maximum concentration of 13.8%, has the potential to precipitate out of solution if the temperature falls below approximately 61 degrees F.

The current TS SR (i.e., 4.1.5.a.3) requires that the pump suction line temperature be checked once per 24 hours to verify the operability of the heat tracing. Since the ambient temperature is almost above the low temperature setpoint of 73 degrees F for automatic heat tracing initiation, this SR does not serve its intended purpose. Instead, this SR actually serves to demonstrate SLC system operability by verifying the suction line temperature is such that no sodium pentaborate could

have precipitated from solution. The proposed change to this SR will more clearly state the safety-related function without requiring operability of the nonsafety-related heat tracing. The heat tracing system design and operation will remain the same upon implementation of this proposed change. If this proposed change is approved, administrative controls will be instituted to require Operations personnel to check heat tracing operability if a SLC pump suction piping low temperature condition were present. This will ensure that the heat tracing is available when required. In addition, implementation of these administrative controls will provide an opportunity for plant personnel to take compensatory measures (i.e., temporary heat tracing) in the event the installed heat tracing system is inoperable with out declaring the SLC system inoperable which could result in an unwarranted plant shutdown.

The current TS SR 4.1.5.d.2 requires that, at least once per 18 months, the heat traced piping be checked to verify that it is unblocked by pumping the sodium pentaborate solution from the SLC storage tank to the test tank, and then draining and flushing the associated piping with demineralized water. This action is also required when the the heat tracing circuits have been found to be inoperable. Performance of this test procedure produces a considerable amount of waste solution and injects sodium pentaborate solution into the piping system, which requires flushing to prevent precipitation. The proposed change to this SR will allow this test to be performed; however, rather than pumping from the storage tank to the test tank, the solution will be pumped to a test drum through each discharge line. In addition, flow testing will be performed by pumping demineralized water from the test tank back to the test tank through each loop. Therefore, this proposed change will reduce the amount of piping requiring flushing; thereby, reducing the amount of waste water generated. If this proposed change is approved, a baseline flowrate value will be established following a storage tank to test tank flowpath pump run, and this value will incorporated into the revised surveillance test procedure.

The current TS SR 4.1.5.d.3 requires that, at least once per 18 months, both SLC storage tank heaters (i.e., the "A" and "B" heaters) are demonstrated operable by verifying the expected temperature rise of the sodium pentaborate solution after the heaters are energized. The proposed change to this SR would only require the "A" heater to be operable to maintain SLC system operability. The "A" heater is a 10 KW heater and is used to maintain solution temperature in both automatic or manual modes of operation. The "B" heater is a 40 KW heater and is used in the manual mode only during solution mixing operations. The basis for this proposed change is that the "B" heater, by design, is not required during normal operation to maintain SLC system operability. Heater "A" will automatically initiate in the unlikely event that the solution temperature in the storage tank drops below the the setpoint of 75 degrees F. The normal ambient temperature in the storage tank area is generally above this setpoint. Additionally, low tank temperature is alarmed in the Main Control Room (MCR) to alert

Operations personnel that the "A" heater is not functioning properly. Operations personnel would then take the necessary actions, including energizing the "B" heater, in order to maintain the required solution temperature. In the event that the "A" heater is inoperable while ambient temperatures are greater than 75 degrees F, this proposed change will require that a tank temperature check be performed every eight (8) hours. This proposed change will permit removal of the heater from service for maintenance purposes, but will still ensure that the solution temperature is maintained within the required limits to ensure SLC system operability.

Information Supporting a Finding of No Significant Hazards Consideration

We have concluded that the proposed TS changes to the LGS Units 1 and 2 TS, which involve revising the SLC system SRs, do not involve a Significant Hazards Consideration. In support of this determination, an evaluation of each of the three (3) standards set forth in 10 CFR 50.92 is provided below.

1) The proposed TS changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

The Standby Liquid Control (SLC) system is one of several systems design. to mitigate an Anticipated Transient Without Scram (ATWS) event. It is an accident mitigation system, and therefore, the implementation of the proposed change will not increase the probability of an accident. The SLC system is required to inject sodium pentaborate solution into the reactor vessel to control reactivity in the event the normal reactivity control systems are not functioning properly. The normal reactivity control systems are the Control Rod Drive (CRD) or the Alternate Rod Insertion (ARI) systems. The proposed TS changes do not affect the operation of the normal reactivity control systems (i.e., CRD or ARI systems). The proposed changes do not impact any other plant equipment or involve modifications to plant hardware. The probability of a malfunction of any SLC system components, or other equipment important to safety, is not affected by this proposed change since no physical changes are made and the proposed changes to the surveillance requirements (SRs) provide an equivalent level of assurance that the equipment will operate as designed. Therefore, the probability of an accident previously evaluated is not increased.

The proposed change to the SR for determining pump suction line temperature will continue to be a part of verifying SLC system operability by performing an identical check of suction piping temperature, but the heat tracing system will no longer be required operable. The heat tracing system is nonsafety-related and is powered from a nonsafety-related power supply. Upon

implementation of the proposed changes, the heat tracing will be administratively controlled such that it can be removed from service, when required, if the ambient temperature in the suction piping area, or alternate heating methods, will maintain the the suction piping temperature above 70 degrees F.

The proposed change to the SR concerning the blockage flow test will still utilize a similar flowpath (i.e., from the storage tank to the pump suction) but will be performed in a manner different from the current method. The test will require pumping the sodium pentaborate solution into a measurable test drum instead of the test tank. The drum will serve an identical purpose as that of the test tank, and the test will still identify any blockage which adversely impacts pump operation. In addition, flow testing will be performed by pumping demineralized water from the test tank back to the test tank. This will minimize waste sodium pentaborate in the system piping; thereby, further reducing the chance for flow blockage due to precipitation.

The current SR for storage tank heaters requires that both heaters be operable in order to satisfy the SLC system operability requirements. The "A" heater provides the safety-related automatic heat source for maintaining storage tank temperature while the "B" heater provides a backup source primarily used during mixing operations. Therefore, an operable "A" heater only is necessary to ensure SLC system operability. Since the "B" heater is manually actuated, and is only used during mixing operations, removing it from service to support maintenance activities is acceptable with respect to the requirements to maintain the SLC system operable, although the out-of-service periods should be kept to a minimum. A low storage tank temperature alarm is provided in the Main Control Room (MCR) to alert Operations personnel, so compensatory actions such as energizing the "B" heater, can be performed. This proposed change will require that in the event that the "A" heater is inoperable, compensatory surveillances be perfcrmed every eight (8) hours to determine storage tank temperature.

Therefore, the consequences of accidents previously evaluated remain unchanged since the proposed changes to the SRs will provide an equivalent level of assurance that the SLC system will be available to perform its design function.

2) <u>The proposed TS changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.</u>

The SLC system is a redundant and diverse system to the CRD and ARI systems. The SLC system is an accident mitigation system, and therefore, the proposed changes will not create the possibility of a new or different kind of accident. The proposed TS changes do

not add or delete any equipment, and do not involve any systems or equipment which could create an accident. In addition, the proposed changes do not create the possibility of a new or different failure of any other equipment important to safety. The proposed changes to the SRs provide the same level of assurance that the SLC system will be available and capable of performing its design function.

Administrative controls will be provided to ensure that the SLC system heat tracing is in service when needed. The testing conditions and parameters as proposed, are equivalent to the current testing methods so that the system/equipment will not be subjected to more severe conditions than currently exists.

3) The proposed TS changes do not involve a significant reduction in a margin of safety.

The proposed changes to the SLC system SRs do not reduce the margin of safety since no physical changes are being made and the proposed SRs provide an equivalent level of assurance that the SLC system will be available and capable of performing its design function.

Information Supporting an Environmental Assessment

An environmental assessment is not required for the changes proposed by this Change Request because the requested changes to the LGS Units 1 and 2 TS conform to the criteria for "actions eligible for categorical exclusion" as specified in 10 CFR 51.22(c)(9). The proposed changes do not involve a significant hazards consideration as discussed in the preceding section. The proposed changes do 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 changes do not involve an increase in the individual or cumulative occupational radiation exposure.

Conclusion

The Plant Operations Review Committee and the Nuclear Review Board have reviewed these proposed changes to the LGS Units 1 and 2 TS and have concluded that its does not involve an unreviewed safety question, or a significant hazards consideration, and will not endanger the health and safety of the public.