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 FACIL: 50-387 Susquehanna Steam Electric Station, Unit 1, Pennsylv 05000387
 50-388 Susquehanna Steam Electric Station, Unit 2, Pennsylv 05000388
 AUTH. NAME: CURTIS, N.W. AUTHOR AFFILIATION: Pennsylvania Power & Light Co.
 RECIP. NAME: SCHWENCER, A. RECIPIENT AFFILIATION: Licensing Branch 2

SUBJECT: Forwards application for amends to Licenses NPF-22 & NPF-14, revising License Condition 2 to extend completion date for Class IE electrical equipment qualification of 851130. Fee paid.

DISTRIBUTION CODE: A048D COPIES RECEIVED: LTR ³⁻¹⁹⁻⁸⁵ ENCL ² SIZE: 8+2
 TITLE: OR/Licensing Submittal: Equipment Qualification

NOTES: 1cy NMSS/FCAF/PM. LPDR 2cys Transcripts. 05000387
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 OL: 03/23/84

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INTERNAL:	ACRS	15	8	8	ADM/LFMB		1	0
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	NRR KARSCH, R		1	1	NRR/DE/EQB	07	2	2
	NRR/DL DIR	14	1	1	NRR/DL/ORAB	06	1	1
	NRR/DSI/AEB		1	1	<u>REG. FILE</u>	04	1	1
	RGN1		1	1				
EXTERNAL:	LPDR	03	2	2	NRC PDR	02	1	1
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Pennsylvania Power & Light Company

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Norman W. Curtis
Vice President-Engineering & Construction-Nuclear
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JAN 30 1985

Director of Nuclear Reactor Regulation
Attention: Mr. A. Schwencer, Chief
Licensing Branch No. 2
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

SUSQUEHANNA STEAM ELECTRIC STATION
PROPOSED AMENDMENT 60 TO LICENSE NPF-14
AND PROPOSED AMENDMENT 14 TO LICENSE NPF-22
ER 100450/100508 FILE 148-01
PLA-2384

Docket Nos. 50-387
50-388

Dear Mr. Schwencer:

The goal of the Susquehanna SES Environmental Qualification Program was to have completed final environmental qualification of Class IE electrical equipment by March 31, 1985 as required by 10CFR50.49(g). Technical problems with respect to testing and installation scheduling have precluded complete satisfaction of that goal. Consequently, we are requesting extensions for certain items of equipment be granted.

The equipment for which qualification will not be completed by March 31, 1985 can be divided into two categories: 1) equipment for which testing will not be completed, and 2) equipment for which modification is required in order to satisfy qualification requirements.

I. Equipment for which testing has not been completed:

A. Conduit Seals

During the qualification process PP&L recognized the need for conduit seals for certain devices, particularly inside containment. In mid-1984, due to continuing problems within the industry with conduit seals, we re-examined the Bechtel Field Construction Specifications. We found that sealing was required in most instances, but if a certain configuration was used, installation crews had the option to eliminate the seals. We were unable to reconstruct the data on where this option had or had not been used, and two unit operation prevented the extensive in-containment field inspection required to either close this issue or identify whether a problem existed.

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In order to accelerate close-out of this qualification issue and the field installation of any modifications that might be required, we took the following contingency steps.

- 1) Identification of all items requiring sealing
- 2) Placed a service order with Wyle Laboratories for consultation as to possible sealing materials and configurations, and testing of these configurations, if necessary.
- 3) Assembly of a Design Change Package providing sealing instructions for all identified items based on nominal installation configurations.

Discussions with Wyle and an independent PP&L investigation indicated that no existing sealing material or methodology that had been qualified to NUREG 0588 Cat. I fully enveloped the Susquehanna SES in-containment requirements and therefore testing of any new seals would be required.

With the end of installation in Unit 2 in mid December 1984 we were able to commence construction of the necessary range of test samples. Testing is now underway with a completion date expected to be after March 31, 1985.

Justification for Continued Operation

This justification is based on the following assumptions -

- 1) All Unit 1 seals will be installed by the end of the Unit 1 first refueling outage and a design basis accident, requiring the seals, during the outage is not a concern. (All Unit 2 Seals have been installed.)
- 2) The seals will pass qualification testing to SSES parameters.

The test reports for the devices being sealed indicate that capability to operate following a DBE is improved by a conduit seal that keeps out moisture. Therefore the question of justification revolves around any uncertainties that the material or configuration might not be able to withstand the Susquehanna SES in-containment post DBE environment.

The sealant materials used, Babbitts Plas-Dux, Bisco Locaseal and Dow Corning Silastic 738 RTV, have all been tested, however, none of the tests fully envelope the Susquehanna SES environment. A search of the literature and test reports on these materials indicates that there is no reason to believe that any of these materials could not,

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by itself, be qualified to the SSES parameters and adequately perform the sealing function if placed in the proper configuration.

To maximize the probability of successful qualification testing, we used the different sealant materials in conjunction with each other in configurations that take advantage of the different physical characteristics of the sealants.

One potential concern was the capability of the seals to withstand the pressure spike that occurs at the beginning of a large pipe LOCA. We addressed this in the following ways:

- (1) We designed configurations with backing and, wherever possible, have the pressure tend to press the seal against a solid backing or compress the seal into a restriction, thereby tightening the seal.
- (2) We pressure tested an unaged nominal configuration seal at approx. 70 psi and room temperature with successful results.

In summary, the use of materials that have passed significant qualification tests in configurations that take advantage of the physical properties of the material combined with the successful pressure test of a sample configuration provides a high degree of assurance that the seals would perform their safety related function following an accident and will pass the qualification test.

B. Silicone Rubber Insulated Cable

Silicone rubber insulated cable is used inside containment for limit switch and solenoid valve circuits. The silicone rubber insulated cable replaced cable originally supplied as part of vendor packages. The replacement was made since the previously supplied cable was furnished without qualification documentation. The silicone rubber insulated cable (rated at 200°C) was selected based upon vendor qualification test reports. The work which remains to be done is to qualify this cable to Susquehanna SES parameters.

Justification for Continued Operation

There is a test in progress to qualify this cable.

We have received reports of previous tests on this cable. Based on these reports we have a high degree of confidence that the cable will pass qualification for Susquehanna SES.

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C. NSIS Cable

Anaconda NSIS FR-EP cable is used inside containment for connecting electrical devices. It is used for applications in which a high temperature cable (such as silicone rubber insulated) is not required.

This cable has been tested by Anaconda to environmental conditions which envelope the SSES conditions for all parameters except, perhaps, beta radiation. The vendor test has been accepted industry-wide as a valid basis for qualification of the cable.

Justification for Continued Operation:

The existing qualification for this cable envelopes SSES for all conditions except perhaps beta radiation. The precise levels and effect of beta radiation on cable which is largely in enclosures such as conduit and terminal boxes is uncertain.

The cable is being tested in conjunction with the test for conduit seals. Previous qualification testing provides a high degree of confidence that this cable will perform it's intended safety function during a LOCA and that the cable will pass the planned testing.

II. Equipment for which modifications are required:

There are a number of equipment items that are having modifications implemented in order to achieve qualification. These modifications require an outage to complete. The intent has always been to complete these items during the extended period available while the Unit 1 refueling is taking place or during the Unit 2 pre-commercial outage.

The following is a brief description of the modifications which are currently scheduled for completion during the first refueling outage of Unit 1 which is presently scheduled to begin in February, 1985 and end in May, 1985.

<u>Plant Modification Request No.</u>	<u>Title</u>
82-0423	Replace HVAC Motors (10)
83-0105	Replace Namco Limit Switches on Standby Liquid Control
83-0265	Add Conduit Seals to Rosemount Transmitters
83-0414	Replace HVAC Motors (4)
83-0444	Replace Core Spray Pressure Transmitters
83-0503	Replace Travis Transmitters
84-3029	Upgrade HPCI Turbine Controls
84-3030	Relocate SGTS Radiation Monitors
84-3043	Replace PDSL Switches in Common Plenum
84-3112	Miscellaneous Conduit Sealing



The following information was obtained from the records of the
 Department of the Interior, Bureau of Land Management, on
 the subject of the above-captioned tract of land.
 The tract of land described in the above-captioned
 instrument is situated in the County of [County Name],
 State of [State Name], and is more particularly
 described as follows: [Description of land tract]
 The above-described tract of land is owned by [Owner Name],
 who is the holder of the title to the same.
 The above-captioned instrument is a valid and legal
 conveyance of the above-described tract of land,
 and the same is hereby approved and confirmed.
 This document is a true and correct copy of the
 original instrument on file in the office of the
 County Clerk of the County of [County Name],
 State of [State Name], on the [Date] day of [Month],
 19[Year].
 [Signature/Stamp Area]

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Non-Conformance
Report No.
84-1084

Title
Replace Terminal Block and Locking Nut on
Target Rock Solenoid Valve SV-22651

Justification for Continued Operation

- 1) All Unit 2 equipment, with the exception of Modifications to Target Rock Solenoid Valve SV-22651 (see Item No. 4 below) will be installed prior to March 31, 1985.
- 2) All Unit 1 equipment will be installed by the end of the Unit 1 first refueling outage and since the unit will be shutdown, the effects of an accident are less severe.
- 3) Common equipment modifications (PMR 84-3030 and PMR 84-3043) will be installed by the end of the Unit 1 first refueling outage. Following is justification for operation for the period between March 31, 1985 until the end of that outage:

Sensor & Converter D12-N017A&B (PMR 84-3030)

These devices monitor the radiation levels in the standby gas treatment system exhaust duct. Their safety related function is to provide an isolation signal to the containment vent and purge valves on high radiation. This is intended primarily as protection against a radiation release in the degraded core, non-LOCA scenario. For a LOCA the containment vent and purge valves receive a direct LOCA isolation signal and the devices only serve as additional backup.

Calculations have shown that for a significant core degradation event, following performance of the sensor and converter safety related function, the buildup of radiation levels in the SGTS filters will result in radiation shine on the sensors and converters that would result in a permanent isolation signal and could degrade the equipment's functional capability. This deficiency relates only to the functioning of the equipment in the post-accident/cleanup stage of recovery and would lead to dependance on stack radiation monitoring and grab sample analysis, steps that would be used whether or not the sensor and converter were functioning.

Therefore, the location related deficiency does not prevent these devices from performing their safety related function. Rather it may impede post event cleanup activities. This will be resolved during the Unit 1 first refueling outage by relocation of the devices.

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Differential Pressure Switch PDSL 07544A,B (PMR 84-3043)

These switches start the standby recirculation fan when the lead fan fails. These fans are qualified and not expected to fail. Should the switch fail so as to start the standby fan with the lead fan still running, an engineering examination indicates that the electrical support systems can handle this configuration and that there is a high degree of confidence that the ductwork can support the resulting flow. Therefore, the justification revolves around the probability that the following sequence will occur during the time period in question (i.e. from March 31, 1985 to completion of the modification during the Unit 1 first refueling outage): DBE, failure of the qualified lead fan, failure of the installed switch. We judge this probability to be sufficiently low so as to justify continued operation during the period in question.

Two alternative modifications are available. One, install a qualified switch; second, alter the basic logic removing the switch and its safety related function. One of these will be selected during the outage based on operational considerations and our ability to support the modification during the outage.

4) Target Rock Solenoid Valve SV-22651 (NCR 84-1084)

The safety function of this valve is to maintain containment isolation after a LOCA. Mechanical backup is provided inside containment. In order to achieve qualification, the valve terminal block and a locking nut require replacement. This modification can only be accomplished when the valve is de-energized. This requires the unit to be in shutdown. In addition, the parts necessary to complete this modification are currently not available. Delivery is expected in the near future. Installation of the modification will occur prior to November 30, 1985.

PP&L believes that operation with the installed valve is justified for the following reasons:

The valve is designed to fail in the safe shutdown position on a loss of coil power.

The only observed test failure occurred near the end of valve dynamic testing where the cumulative test effects were excessively fatiguing. Repetitive fatigue conditions experienced during SSES dynamic testing are not expected to occur in the plant operating environment. The valve operated successfully during all previous phases of the SSES test including aging and radiation.



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SSES's HELB conditions were enveloped by the heat and humidity test run on an identical valve which was tested without hydrodynamic loads. Also supportive of the valve's capability to withstand the HELB condition is the thermal aging test on the SSES 75KK model valve.

With the exception of the items listed above, the equipment qualification program for Class IE electrical equipment will be completed by March 31, 1985. PP&L, therefore, requests that the Units 1 and 2 operating licenses be amended as follows:

License Condition 2.C(18) to License No. NPF-14

Revise this license condition to read as follows:

Prior to March 31, 1985, PP&L shall environmentally qualify all electrical equipment according to the provisions of 10 CFR 50.49 except as follows:

- (a) All modifications in accordance with PLA-2384 shall be completed prior to startup following the first refueling outage, which is prior to November 30, 1985.
- (b) Testing and qualification of conduit seals, silicone rubber insulated cable and NSIS cable will be completed prior to November 30, 1985.

License Condition 2.C.(7) to License No. NPF-22

Revise this license condition to read as follows:

Prior to March 31, 1985, PP&L shall environmentally qualify all electrical equipment according to the provisions of 10 CFR 50.49 except as follows:

- (a) All modifications of Unit 1 and Unit 2 common equipment shall be completed prior to the startup following the first refueling outage for Unit 1 which is prior to November 30, 1985.
- (b) Testing and qualification of conduit seals, silicone rubber insulated cable and NSIS cable will be completed prior to November 30, 1985.
- (c) Modifications to the Target Rock Solenoid Valve SV-22651 shall be completed prior to November 30, 1985.



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Pursuant to 10 CFR 50.91(2)(1), PP&L has determined that the proposed license amendment involves no significant hazards consideration.

Based on the above provided information, delaying the completion of the program to environmental qualify Class IE electrical equipment will not:

- 1) Involve a significant increase in the probability or consequences of an accident previously evaluated.
- 2) Create the possibility of a new or different kind of accident from the type previously evaluated.
- 3) Result in a significant reduction in the margin of safety.

Pursuant to 10 CFR 50.91(b)(1), copies of this application have been provided to the Commonwealth of Pennsylvania.

Pursuant to 10 CFR 170.21, the application fee for a Category A Amendment is enclosed.

Should a nonconformance to the qualification program be identified in the future, PP&L will resolve it utilizing the plant's existing procedure regarding the control and processing of nonconformances.

Should you have any question regarding this request, please call Mr. W. W. Williams (215) 770-7856.

Very truly yours,



N. W. Curtis
Vice President-Engineering & Construction-Nuclear

Attachment

cc: M. J. Campagnone US NRC
R. H. Jacobs US NRC

Thomas M. Gerusky, Director
Bureau of Radiation Protection
Pennsylvania Department of Environmental Resources
P.O. Box 2063
Harrisburg, PA 17120