

PHILADELPHIA ELECTRIC COMPANY

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JOHN S. KEMPER
VICE-PRESIDENT
ENGINEERING AND RESEARCH

February 5, 1985

Docket Nos. 50-277
50-278

Mr. Hugh L. Thompson Jr., Director
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

SUBJECT: Generic Letter 84-24, "Certification
of Compliance to 10 CFR 50.49, Environmental
Qualification of Electric Equipment Important
to Safety for Nuclear Power Plants"

REFERENCE: Letter, S. L. Daltroff, PECO, to J. F. Stolz,
NRC, dated January 9, 1985 (Request for an
Exemption to the 10 CFR 50.49 Schedule
Regarding Environmental Qualification of
Electric Equipment Important to Safety for
Nuclear Power Plants - Peach Bottom
Atomic Power Station)

Dear Mr. Thompson:

The subject Generic Letter, dated December 27, 1984,
requested Philadelphia Electric Company to provide under oath
information relating to compliance with 10 CFR 50.49,
"Environmental Qualification (EQ) of Electric Equipment Important
to Safety", at our Peach Bottom Atomic Power Station (PBAPS). A
related submittal of our response was discussed with your Project
Manager for Peach Bottom Atomic Power Station and found
acceptable because Philadelphia Electric Company did not receive
your letter until January 11, 1985.

This letter and its attachments provide the requested
information. A restatement of the Commission's request,
together with our responses relative to Peach Bottom Units 2 and
3, follows.

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Request A

That Philadelphia Electric Company has in-place and is implementing an Environmental Qualification Program that will satisfy the requirements of 10 CFR Section 50.49 within the currently approved schedule for the plant without further extension.

Response A

Philadelphia Electric Company has an Environmental Qualification Program in place for Peach Bottom Units 2 and 3 that satisfies the requirements of 10 CFR Section 50.49 within the currently approved schedule for Peach Bottom Units 2 and 3, except for the exemptions requested in the Reference letter of January 9, 1985 and identified below.

Since the submission of the January 9, 1985 exemption request, Philadelphia Electric Company has determined that delays in completion of major piping modification work will delay the Unit 2 outage beyond March 31, 1985. As a result, preoperational testing of three EQ modifications:

1. Installation of two new reactor pressure indication loops-emergency procedure instrumentation;
2. Installation of acoustic monitor for SRV-position indication; and
3. Installation of two suppression pool water temperature indicators-emergency procedure instrumentation;

will not be performed until the end of the current refueling outage. A restatement of the Peach Bottom Unit 2 portion of the exemption request submitted January 9, 1985, together with the additional EQ modifications described above, is enclosed as Attachment 1, "Request for an Exemption to the 10 CFR 50.49 Schedule Regarding Environmental Qualification of Electric Equipment Important to Safety for Peach Bottom Atomic Power Station Unit 2."

Philadelphia Electric has also determined that the Unit 3 modification, the installation of two new reactor pressure indication loops-emergency procedure instrumentation, which we identified as a "Regulatory Guide 1.97 modification" in Attachment 1 of our January 9, 1985 exemption request, is also considered an EQ modification. Since this modification is outage related and the Unit 3 refueling outage is not scheduled to start until after March 31, 1985, Philadelphia Electric Company requests an exemption until November 30,

1985 for this modification. A restatement of the Peach Bottom Unit 3 portion of our exemption request submitted January 9, 1985, together with the EQ modification described above, is enclosed as Attachment 2, "Request for an Exemption to the 10 CFR 50.49 Schedule Regarding Environmental Qualification of Electric Equipment Important to Safety for Peach Bottom Atomic Power Station Unit 3."

Request B

That the plant has at least one path to safe shutdown using fully qualified equipment, or has submitted a justification for continued safe operation (JCO) pending full qualification of any equipment not fully qualified.

Response B

One path to safe shutdown post DBA exists through the operation of the Automatic Depressurization System (ADS) and the Residual Heat Removal System (RHR). The necessary ADS and RHR system electrical equipment is qualified; therefore, one path to safe shutdown using qualified equipment exists at PBAPS Units 2 and 3.

Request C

That all other equipment within the scope of 50.49 is either fully qualified or a JCO has been submitted pending full qualification.

Response C

With the exception of the PBAPS Unit 2 modification to install acoustic monitors to monitor SRV-position indication, Attachment 3, "Justification for Continued Operation Pertaining to Environmental Qualification of Equipment Important to Safety", contains all JCO's for equipment listed within Attachments 1 and 2 to this letter. All other equipment within the scope of 50.49 has been qualified.

Request

The certifications described in Requests A, B and C should specifically address all NRC IE Bulletins and Information Notices that identify EQ problems, relevant to Peach Bottom Atomic Power Station, Units 2 and 3. The NRC considers the following IE Bulletin and IE Information Notices to be applicable for

consideration; IE Bulletin 82-04, IE Information Notices 82-11, 82-52, 83-45, 83-72, 84-23, 84-44, 84-47, 84-57, 84-68 and 84-78.

Response Specifically Addressing NRC IE Bulletins and Information Notices

Philadelphia Electric Company has examined as part of its EQ Program effort, NRC IE Bulletin 82-04 and NRC IE Information Notices 82-11, 82-52, 83-45, 83-72, 84-23, 84-44, 84-47, 84-57, 84-68 and 84-78. Attachment 4, "Responses to NRC IE Bulletins and Information Notices That Identify Environmental Qualification Problems Relevant to Peach Bottom Atomic Power Station," specifically addresses the actions taken by Philadelphia Electric Company.

We are taking this opportunity of providing clarification of certain statements that were included within previous Philadelphia Electric Company submittals regarding Environmental Qualification of Electric Equipment Important to Safety as follows:

By letter dated October 18, 1984, J. F. Stolz (NRC) to E. G. Bauer, Jr. (PECo), the Commission transmitted its "Safety Evaluation Report for Environmental Qualification of Electric Equipment Important to Safety for Peach Bottom Units 2 and 3".

Included within both Safety Evaluation Reports was a restatement of Response A1 of Attachment 1 of Philadelphia Electric Company's letter response dated June 13, 1984 (S. L. Daltroff, PECo, to J. F. Stolz, NRC) to the Commission's May 14, 1984, letter, J. F. Stolz to E. G. Bauer, Jr., "Equipment Qualification of Equipment Important to Safety-Request for Additional Information." This particular response regarded our methodology used to identify equipment (as defined in paragraph (b)(1) of 10 CFR 50.49) required to remain functional during or following design-basis Loss of Coolant Accident (LOCA) or High Energy Line Break (HELB) Accident. As stated in Response A1 of the June 13, 1984 letter, Philadelphia Electric Company determined the role of individual electrical components in supporting the operation of systems identified in the FSAR by concurrently reviewing the 'Q'-list, Electrical Schematic Drawings, Emergency Operating Procedures and Piping and Instrument Diagrams. The response further stated (and was repeated in the Commission's Safety Evaluation Report for Environmental Qualification for Peach Bottom Units 2 and 3) that "Although a review of the Technical Specifications was not conducted, the 'Q'-list contains all the equipment that appears in the Technical Specifications; and therefore, the equipment

within the Technical Specifications has been implicitly included." This statement is inaccurate. The Peach Bottom Atomic Power Station 'Q'-list does not contain all the equipment identified in the Technical Specifications. The statement that should have been made in response to Item A1 is:

Although a review of the Technical Specifications was not conducted, the scope of equipment reviewed, based on the documents identified above (the 'Q'-list, Electrical Schematic Drawings, Emergency Operating Procedures and Piping and Instrument Diagrams), encompasses the scope of equipment required to mitigate a LOCA or HELB accident.

It should be noted that this revised response in no way changes the adequacy and completeness of the list of environmentally qualified equipment at Peach Bottom Atomic Power Station.

Philadelphia Electric Company also wishes to clarify two portions of our submission of February 21, 1984, S. L. Daltroff to J. F. Stolz (Peach Bottom Units 2 and 3 Resolution of Safety Evaluation Reports Relating to IE Bulletin 79-01B, "Environmental Qualification of Class 1E Equipment"). Attachment 2 of the February 21, 1984, letter included a summary of the resolution of all the electrical equipment environmental qualification deficiencies identified by Franklin Research Center in their August 3, 1982, Safety Evaluation Report transmitted to Philadelphia Electric Company by letter, J. F. Stolz to E. G. Bauer, Jr., December 20, 1982.

Page 11 of Attachment 2 of the February 21, 1984, letter presented our Evaluation of the Automatic Valve Corporation's (AVC) Pilot Solenoid valves for steam relief valves and MSIVs. The Evaluation stated that the steam relief valves are reconditioned every refueling outage. This statement is incorrect. The Steam Relief Valves are reconditioned every second refueling outage, but the pilot solenoid valves are not included in the reconditioning. The AVC pilot solenoid valves are in a preventive maintenance program for replacement every third refueling outage. The specific revision to the section "Evaluation" is identified by a vertical bar in the margin of the enclosed Attachment 5 "Revision to PECO Evaluation for Automatic Valve Corporation Pilot Solenoid Valves".

Page 24 of Attachment 2 of the February 21, 1984, letter presented a Technical Discussion of the Reliance ECCS cooler fan motors which included the testing, lubricating and reconditioning schedule of the area coolers. The Technical Discussion stated that the original motor bearings were replaced with sealed

Mr. Hugh L. Thompson, Jr.

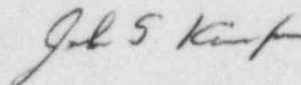
February 5, 1985

Page 6

bearings. This statement is incorrect. The Reliance ECCS cooler fan original motor bearings in the RHR, Core Spray and HPCI are not replaced with sealed bearings, but are instead reconditioned on a five-year cycle. This reconditioning consists of installation of new bearings, dipping the winding (when necessary), cleaning, balancing, lubricating and "hi-pot" testing. The specific revision to the section "Evaluation" is identified by a vertical bar in the margin of the enclosed Attachment 6, "Revision to Technical Discussion of Reliance ECCS Cooler Fan Motors".

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

Very truly yours,



Attachments

cc: J. F. Stolz, Chief, Division of Licensing, USNRC
T. P. Johnson, Site Inspector

COMMONWEALTH OF PENNSYLVANIA :

: SS.

COUNTY OF PHILADELPHIA :

J. S. Kemper, being first duly sworn, deposes and says:

That he is Vice President of Philadelphia Electric Company; that he has read the foregoing partial response to Generic Letter 84-24 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.

John S. Kemper

Subscribed and sworn to
before me this 6TH day
of FEBRUARY, 1985

Judith Y. Franklin
Notary Public

JUDITH Y. FRANKLIN
Notary Public, Phila., Phila. Co.
My Commission Expires July 28, 1987

ATTACHMENT 1
TO
PHILADELPHIA ELECTRIC COMPANY'S
RESPONSE TO GENERIC LETTER 84-24
PERTAINING TO
PEACH BOTTOM ATOMIC POWER STATION
UNITS 2 AND 3
DOCKET NOS. 50-277 AND 50-278

REQUEST FOR AN EXEMPTION TO THE
10 CFR 50.49 SCHEDULE REGARDING
ENVIRONMENTAL QUALIFICATION OF ELECTRIC
EQUIPMENT IMPORTANT TO SAFETY FOR
PEACH BOTTOM ATOMIC POWER STATION - UNIT 2

FEBRUARY 1985

PHILADELPHIA ELECTRIC COMPANY
PEACH BOTTOM ATOMIC POWER STATION
UNITS 2 & 3
DOCKET NOS. 50-277 & 50-278

ATTACHMENT 1

EXEMPTION REQUEST - PEACH BOTTOM UNIT 2

Although most of the Peach Bottom Unit 2 Environmental Qualification modifications are expected to be completed in accordance with the schedule provisions of Section 50.49(g), equipment delivery may adversely impact the completion of certain Environmental Qualification modifications to the extent that the Unit 2 modifications will not be completed before March 31, 1985. In addition, modifications currently being performed to Unit 2 may not be preoperationally tested before the end of Unit 2 refueling outage, which may extend beyond March 31, 1985. Therefore, Philadelphia Electric Company requests, pursuant to the exemption provisions of 10 CFR 50.49(g), an exemption until November 30, 1985, to the implementation schedule of 10 CFR 50.49(g) for the following Peach Bottom Unit 2 Environmental Qualification modifications:

1. Modification: Replacement of valve actuators on two HPCI valves. These actuators are being replaced in order to eliminate the need for actuator motor brakes.

Reason for Delay: Delivery of the valve actuators, ordered June 1984, is not expected until March 1985. Any delay in delivery would result in installation after March 31, 1985.
2. Modification: Replacement of ECCS pump room unit cooler selector switch cams with stainless steel cams.

Reason for Delay: Philadelphia Electric Company had difficulty in obtaining a vendor to provide this component. As a result, stainless steel cams are being fabricated by a vendor who does not have an environmental qualification testing program. The need for Philadelphia Electric Company to perform its own qualification testing for this component has delayed installation. The material was received the week of January 28, 1985, and the modification will be completed at the end of the Unit 2 refueling outage. The refueling outage will be delayed beyond March 31, 1985.
3. Modification: Replacement of safety-related differential pressure switches used to start the backup fan in the Emergency Ventilating System (EVS) for the ECCS pump rooms.

Reason for Delay: Delivery of equipment, which was ordered May, 1984, is now expected by March 31, 1985.

4. Modification: Replacement of suppression pool level switches that are part of the High Pressure Coolant Injection (HPCI) System used to switch HPCI pump suction from the condensate storage tank to the suppression pool upon high suppression pool water level.

Reason for Delay: Preoperational testing for these switches will occur at the end of the Unit 2 refueling outage. The refueling outage will be delayed beyond March 31, 1985.

5. Modification: Replacement of motor brakes which do not have adequate qualification documentation on selected 'Q'-listed Limitorque valve actuator motors.

Reason for Delay: Modification to two of the motor brakes will be delayed because a new motor for each of the two valves will have to be purchased to accommodate the new brakes. Delivery of the new motor is not expected prior to June 1985.

6. Modification: Installation of two (2) new reactor pressure indication loops-emergency procedure instrumentation.

Reason for Delay: Preoperational testing for these pressure transmitters will occur at the end of the Unit 2 refueling outage. The refueling outage will be delayed beyond March 31, 1985.

7. Modification: Installation of Acoustic Monitor for SRV-position indication (TMI-Modification).

Reason for Delay: Preoperational testing for the Acoustic Monitors will occur at the end of the Unit 2 refueling outage. The refueling outage will be delayed beyond March 31, 1985.

8. Modification: Installation of two suppression pool water temperature indicators-emergency procedure instrumentation.

Reason for Delay: Preoperational Testing for the temperature elements will occur at the end of the Unit 2 refueling outage. The refueling outage will be delayed beyond March 31, 1985.

ATTACHMENT 2
TO
PHILADELPHIA ELECTRIC COMPANY'S
RESPONSE TO GENERIC LETTER 84-24
PERTAINING TO
PEACH BOTTOM ATOMIC POWER STATION
UNITS 2 AND 3
DOCKET NOS. 50-277 AND 50-278

REQUEST FOR AN EXEMPTION TO THE 10 CFR
50.49 SCHEDULE REGARDING ENVIRONMENTAL
QUALIFICATION OF ELECTRIC EQUIPMENT
IMPORTANT TO SAFETY FOR PEACH BOTTOM
ATOMIC POWER STATION - UNIT 3

FEBRUARY 1985

PHILADELPHIA ELECTRIC COMPANY
PEACH BOTTOM ATOMIC POWER STATION
UNITS 2 AND 3
DOCKET NOS. 50-277 AND 50-278

ATTACHMENT 2

EXEMPTION REQUEST - PEACH BOTTOM UNIT 3

Although most of the Peach Bottom Unit 3 Environmental Qualification modifications were expected to be completed in accordance with the schedule provisions of Section 50.49(g), a delay in the start of the Unit 3 refueling outage now precludes implementation prior to March 31, 1985. This delay resulted from a lower than expected capacity factor experienced during the current Unit 3 operating cycle. Although our previous schedules had anticipated the refueling outage to be completed prior to March 31, 1985, it now appears that the refueling outage will not begin before March 31, 1985, thereby impacting the scheduled outage modification work to certain equipment. Therefore, Philadelphia Electric Company requests, pursuant to the exemption provisions of 10 CFR 50.49(g), an exemption until November 30, 1985, to the implementation schedule of 10 CFR 50.49(g) for the following Peach Bottom Unit 3 Environmental Qualification modifications.

1. Modification: Replacement of valve actuators on two HPCI valves. These actuators are being replaced in order to eliminate the need for actuator motor brakes.

Reason for Delay: Delivery of the valve actuators ordered June, 1984, is not expected until March 1985. Any delay in delivery would result in installation after March 31, 1985. In addition, the valves will not become available for this work until Unit 3 is shut down for refueling.

2. Modification: Replacement of ECCS pump room unit cooler selector switch cams with stainless steel cams.

Reason for Delay: Philadelphia Electric Company had difficulty in obtaining a vendor to provide this component. As a result, stainless steel cams are being fabricated by a vendor who does not have an environmental qualification testing program. The need for Philadelphia Electric Company to perform its own qualification testing for this component has delayed installation. The material was received the week of January 28, 1985. The modification will be completed by the end of the next refueling outage which is not scheduled to start until after March 31, 1985.

3. Modification: Replacement of safety-related differential pressure switches used to start the backup fan in the Emergency Ventilating System (EVS) for the ECCS pump rooms.

Reason for Delay: Work is outage related and the next refuel outage will not start until after March 31, 1985. Delivery of equipment, ordered May 1984, is now expected by March 31, 1985.

4. Modification: Replacement of motor brakes which do not have adequate qualification documentation on selected 'Q'-listed Limitorque valve actuator motors.

Reason for Delay: This modification is outage related and the refueling outage is not scheduled to start until after March 31, 1985.

5. Modification: Installation of two (2) new reactor pressure indication loops-emergency procedure instrumentation.

Reason for Delay: This modification is outage related and the refueling outage is not scheduled to start until after March 31, 1985.

ATTACHMENT 3
TO
PHILADELPHIA ELECTRIC COMPANY'S
RESPONSE TO GENERIC LETTER 84-24
PERTAINING TO
PEACH BOTTOM ATOMIC POWER STATION
UNITS 2 AND 3
DOCKET NOS. 50-277 AND 50-278

JUSTIFICATION FOR CONTINUED OPERATION
PERTAINING TO
ENVIRONMENTAL QUALIFICATION
OF
EQUIPMENT IMPORTANT TO SAFETY

FEBRUARY 1985

PHILADELPHIA ELECTRIC COMPANY
PEACH BOTTOM ATOMIC POWER STATION
UNITS 2 & 3
DOCKETS 50-277 & 50-278

ATTACHMENT 3

Justification for Continued Operation

Equipment

MO-10-13A,B,C,D)
10-154A,B) Group 1
14-11A,B)
23-20

MO-10-34A,B) Group 2
14-26A,B)

MO-10-25A,B)
10-31A,B)
14-12A,B) Group 3
23-19

Safety Function:

Group 1 - passive essential
Group 2 - normally closed and passive
essential unless a surveil-
lance test is in-progress
coincident with a LOCA.
Group 3 - essential active

Qualification Deficiency:

Lack of material traceability for drive
motor brakes only.

Deficiency Evaluation:

A review of operability requirements
for the Group 1 and 2 valves reveals
that they are normally in their
required position for safety system
function and would not be required
to change position for response to a
safety system initiation signal.

The Group 3 valves are normally
closed and would be required to open
post LOCA; however, they are located
outside primary containment, and
based on a 3-hour time lag between
inside and outside containment, they
would experience no adverse
temperature or humidity during the
period in which their operation
might be required.

The 10-25A,B valves would be
required to open post-HELB; however,
both valves would not be subjected
to the immediate effects of the same
HELB and therefore the potential for
common mode failure of these valves

does not exist. Furthermore, discussions with the manufacturer indicate that typical actuator drive motor stall torque is approximately 4 times greater than the static brake torque capability; therefore, it can be concluded and demonstrated by field experience that the motor can position the actuator regardless of brake failure.

Equipment: LS-23-91A,B

Safety Function: Automatically transfers HPCI suction from CST to torus on high torus water level.

Qualification Deficiency: Radiation qualification test.

Deficiency Evaluation: The radiation dosage level is below the threshold value for most materials; the probability of a failure caused by radiation is insignificant.

Equipment: N3692,N3693,N3772,N3773,N3783,N3784,N3884,N3885,N3994,N3995 (GE-CR-2940 Position Selector Control Switch)

Safety Function: Maintain area coolers control circuit continuity post accident - time required is consistent with associated ECCS system performance requirements.

Qualification Deficiency: Test documentation radiation level too low.

Deficiency Evaluation: A temporary modification has been completed to ensure that the control stations will not fail in such a way as to disable the area coolers. The contacts required for operation of the switch under post LOCA conditions will not render the area coolers inoperable. Also, the contacts which are used to manually initiate operation of the HPCI, RCIC and Core Spray area coolers for surveillance testing during normal plant operation have been removed to avoid the possibility of the operation of all coolers in the event of a switch failure.

Operation of all area coolers cannot be supported by the ESW System. This temporary rewire guarantees that the area coolers will operate as required post LOCA.

Equipment:

DPS-20400-03,04,05,06,07,08,09,10
11,12,13,14,15,16,17,18,19,20.

Safety Function:

Maintain electrical continuity for area cooler control circuit post accident, passive essential.

Qualification Deficiency:

No qualification documentation for this equipment has been located.

Deficiency Evaluation:

Dwyer Differential Pressure Switches (DPS's) have been environmentally tested by Franklin Research Center for PECO. The switches functioned successfully through baseline functional testing, thermal aging, radiation aging, seismic testing and for 4.5 days into the DBA simulation which represents a postulated post DBA period of 13.5 days. The test switches were thermally aged for periods of 20 years and 40 years before DBA testing which adds to the margin of the DPS's installed at PBAPS which are only 10 years old. The DPS failure was such that the pressure actuated diaphragm became increasingly stiff during the test and eventually would not move when pressurized to open the micro switch within the DPS. No electrical insulation failure or structural failure occurred which would affect the operation of safety-related equipment for the entire 31 days of the DBA simulation. The DPS's are used to control the operation of area coolers in ECCS rooms. The failure of the DPS such that it will not change state does not affect the operation of the running area cooler. These switches are installed in the discharge side of the area cooler fans which would reduce their operating temperature by 10 degrees F and in addition, a 10 degree F margin was added to the general area postulated DBA

temperature resulting in a DBA test temperature margin of +20 degrees F. Failure of the DPS could affect the capability of the backup area cooler from automatically initiating on the loss of the running cooler.

The RHR system (LPCI Model) has four pump/motors located in four different rooms with two area coolers/RHR room. The failure mode of the DPS is such that it will not change state after 13.5 days post DBA and initiate operation of the backup area cooler for the RHR pump/motor. The existence of the backup area coolers is not required to meet system requirements or the single failure criteria; as redundant RHR equipment can meet the cooling requirements resulting from a DBA.

Based on the results of the FRC test, the RHR area coolers will start at the onset of an accident and cycle between the lead fan and backup fan (if required due to loss of lead fan) for 13.5 days. Ten minutes after the start of the DBA, only two RHR pumps are required to effect an emergency shutdown, (ref. Table 8.5.2a PBAPS FSAR). If the DPS's failed 13.5 days after the beginning of a LOCA and the backup area cooler did not start, an increase in room temperature would be indicated in the control room and the operator would take appropriate action to start the redundant equipment in one of the other 3 RHR rooms. Operation of the RHR pump/motor initiates operation of the area coolers with the DPS in the closed position. The DPS is normally in the closed position during system shutdown and does not have to change state to initiate operation of the area coolers; therefore, it will perform its safety function.

Based on the failure mode of the DPS, the fact that the DPS does not

have to change state to initiate operation of the area coolers and the RHR pump/motors are redundant, PECO concludes that PBAPS can continue to operate without undue risk to public health and safety.

Equipment:	PT-6-105
Safety Function:	Provide reactor pressure indication for operator information.
Qualification Deficiency:	Post-accident operability time of 101 days as opposed to existing qualified post-accident operability time of 7 hours.
Deficiency Evaluation:	Pressure Transmitter PT-6-105 is located in room 403 and provides reactor pressure indication for operator information. PT-2-3-55A,B,C,D are also located in room 403, provide indication for operator information, and are environmentally qualified. In addition to PT-6-105, a new transmitter will be installed to enhance the present level of qualification. The new pressure transmitters will have a post-accident operability time of one year as opposed to a 7-hour post-accident operability time for the redundant instruments PT-2-3-55A,B,C,D. Pressure Transmitters PT-2-3-55A,B,C,D are qualified to temperature, pressure and radiation levels in excess of the postulated DBA conditions. Based on the foregoing, it can be concluded that information will be available for the operator to take the proper action as required by the emergency procedures.
Equipment:	TE-2442A,B TE-3442A,B
Safety Function:	Provide suppression pool water temperature indication for operator information.
Qualification Deficiency:	No EQ documentation available.
Deficiency Evaluation:	Temperature Elements TE-2442A,B and TE-3442A,B are located in the torus

and provide suppression pool water temperature indication for operator information. The only non-metallic materials in the temperature elements, as documented by a telephone conversation with Decher Instrument Company, are the neoprene connection head cover gasket and the ceramic terminal block in the connection head. Based on a review of these materials as listed in EPRI-NP-2129 Report and Standard Handbook for Electrical Engineers, it is concluded that neoprene and ceramics can withstand radiation levels in excess of 1 MR and are not adversely affected by the postulated high temperature operation. Based on the foregoing, it can be concluded that information will be available for the operator to take proper action as required by the emergency procedures.

ATTACHMENT 4
TO
PHILADELPHIA ELECTRIC COMPANY'S
RESPONSE TO GENERIC LETTER 84-24
PERTAINING TO
PEACH BOTTOM ATOMIC POWER STATION
UNITS 2 & 3
DOCKET NOS. 50-277 AND 50-278

RESPONSES TO NRC IE BULLETINS
AND INFORMATION NOTICES
THAT IDENTIFY ENVIRONMENTAL
QUALIFICATION PROBLEMS RELEVANT
TO PEACH BOTTOM ATOMIC POWER STATION

FEBRUARY 1985

PHILADELPHIA ELECTRIC COMPANY
PEACH BOTTOM ATOMIC POWER STATION
UNITS 2 & 3
DOCKET NOS. 50-277 & 278

ATTACHMENT 4

RESPONSES TO NRC IE BULLETINS AND
INFORMATION NOTICES

IE Bulletin 82-04

Deficiencies in Bunker Ramo Primary Containment Electrical Penetration Assemblies:

Response to Bulletin 82-04

Bunker Ramo Primary Containment Electrical Penetration Assemblies are not used at PBAPS; therefore, IE Bulletin 82-04 is not applicable.

IE-IN 82-11

Potential Inaccuracies in Wide Range Pressure Instruments used in Westinghouse Designed Plants.

Response to IE-IN 82-11

PBAPS Units 2 and 3 are not Westinghouse designed plants; therefore, IN 82-11 is not applicable.

IE-IN 82-52

Equipment Environmental Qualification Testing Experience - Updating of Test Summaries Previously Published in IE-IN 81-29; Equipment Environmental Qualification Notices (EEQN 1 thru 11):

Response to IE-IN 82-52 EEQN-1 - Limitorque Valve Operators:

Limitorque Qualification Reports on file at PECO satisfy the Specified Environmental Qualification Parameters for PBAPS Units 2 and 3.

Response to IE-IN 82-52 EEQN-2 - ITT Barton Transmitters:

Barton transmitters installed in Class 1E applications at PBAPS are located in secondary containment and are qualified by Barton report R3-764-9. Barton Transmitters identified in EEQN-2 were tested to levels which exceed PBAPS Environmental conditions for both Primary Containment and Secondary Containment.

Response to IE-IN 82-52 EEQN-3 - D. G. O'Brien Electrical Penetrations:

D. G. O'Brien Electrical Penetrations are not installed at PBAPS Units 2 and 3; therefore, EEQN-3 is not applicable.

Response to IE-IN 82-52 EEQN-4, 5, & 6 - Dresser Safety Valves:

Dresser Safety Valves are not installed at PBAPS Units 2 and 3; therefore EEQN-4, 5 and 6 are not applicable.

Response to IE-IN 82-52 EEQN 7 - Target Rock (PORV's) Model 80X-006-1:

Target Rock Power Operated Relief Valves (PORV) Model 80X-006-1 are not installed at PBAPS Units 2 and 3; therefore, EEQN-7 is not applicable.

Responses to IE-IN 82-52 EEQN-8 - Control Component Incorporated (PORV):

Control Component Incorporated Power Operated Relief Valves (PORV's) are not installed at PBAPS Units 2 and 3; therefore, EEQN 8 is not applicable.

Response to IE-IN 82-52 EEQN-9 - Crosby Safety Valve 3K6:

Crosby Safety Valves 3K6 are not installed at PBAPS Units 2 and 3; therefore EEQN 9 is not applicable.

Response to IE-IN 82-52 EEQN-10 - ASCO SV's NP-1 Series:

PBAPS Units 2 and 3 ASCO SV's are NP-8300 series, which are not the subject of IE-IN 82-52 EEQN-10; therefore, EEQN-10 is not applicable.

Response to IE-IN 82-52 EEQN-11 - Environmental Tests of Electrical Terminal Blocks, IE-IN 82-03:

See Response to IE-IN 84-47 and IE-IN 84-78.

Response to IE-IN 82-52 EEQN-11 - Potential Inaccuracies in Wide-range Pressure Instruments in Westinghouse Designed Plants IE-IN 82-11:

PBAPS Units 2 and 3 are not Westinghouse designed plants; therefore, EEQN-11 is not applicable.

IE-IN 83-45

Environmental Qualification Testing of GE-CR-2940 Position Selector Control Switch:

Response to IE-IN 83-45

PECo is replacing the failed componet (Delrin Cam) with a stainless steel cam.

The JCO for this control station is included on page 2 of Attachment 3.

IE-IN 83-72 EEQN 12 thru 24

Environmental Qualification Test Experience, EEQN 12 thru 24:

Response to IE-IN 83-72 EEQN-12 - Environmental Qualification of Epoxy Grouts and Sealers, IE-IN 83-40:

Epoxy Grouts are not used at PBAPS for anchors or seals; therefore EEQN-12 is not applicable.

Response to IE-IN 83-72 EEQN-12 - Environmental Qualification Testing of GE-CR-2940, Position Selector Control Switch, IE-IN 83-45:

See Response to IE-IN 83-45.

Response to IE-IN 83-72 EEQN-13 - Anaconda Flexible Conduit:

Anaconda flexible conduit is installed in primary containment at PBAPS Units 2 and 3 on Class 1E Motor Operated Valves (MOV), Air Operated Valves (AOV), and Safety Relief Valves (SRV). This equipment is electrically connected by an Anaconda flexible conduit to a junction box with drain holes to avoid water accumulation. The junction box, which is not a sealed device, contains a terminal block that has been environmentally qualified.

The MOV's and the solenoid valves on the AOV's and SRV's have been successfully LOCA tested to envelope PBAPS postulated accident conditions. The environmental conditions referenced in EEQN-13 exceed the postulated accident conditions for primary containment at PBAPS Units 2 and 3.

Response to IE-IN 83-72 EEQN 14,15,16,17,18 & 19 - Rockwell POST-LOCA Hydrogen Recombiners:

Rockwell International POST-LOCA Hydrogen Recombiners are not installed at PBAPS Units 2 and 3; therefore, EEQN-14,15,16,17,18 & 19 are not applicable.

Response to IE-IN 83-72 EEQN-20 - Barton Electronic Transmitters:

Barton Electronic Transmitters Model 763 are not installed at PBAPS Units 2 and 3; therefore, EEQN-20 is not applicable.

Response to IE-IN 83-72 EEQN-21 - Barksdale Pressure Switches B2T and D2H:

Barksdale pressure switches models B2T and D2H are not installed at PBAPS Units 2 and 3; therefore, EEQN-21 is not applicable.

Response to IE-IN 83-72 - Static-O-Ring Pressure Switches 5N and 12N Series:

Model 5N Static-O-Ring Pressure Switches are installed at PBAPS, were tested by Franklin Research Center for PECO and successfully meet all acceptance criteria. Model 12N Static-O-Ring Pressure Switches are not used in Class 1E applications at PBAPS Units 2 and 3.

Response to IE-IN 83-72 EEQN-23 - Barton Transmitters:

The failure mode reported in EEQN-23 occurred at 320 degrees Fahrenheit. The maximum temperature the Barton Transmitter will be exposed to at PBAPS Units 2 and 3 is 128 degrees Fahrenheit; therefore, EEQN-23 is not applicable.

Response to IE-IN 83-72 EEQN-24 - Limitorque Valve Operators:

Limitorque Valve Operators have been inspected at PBAPS Units 2 and 3 for properly qualified components and are inspected during each refueling outage. Terminal Blocks are not used in the Limitorque operators at PBAPS.

IE-IN 84-23

Results of the NRC Sponsored Qualification Methodology Research Test on ASCO Solenoid Valves:

Response to IE-IN 84-23

The SV's at PBAPS are rebuilt on a routine Environmental Qualification maintenance schedule. Also, ASCO SV's installed in primary containment are pilot solenoids on AOV's which operate within 5 seconds post DBA and would not be exposed to the extreme environmental conditions as reported in the Franklin Research Center Environmental Qualification test.

IN-IE 84-44

Environmental Qualification Testing of Rockbestos Cables:

Response to IE-IN 84-44

PECO has two representatives on the industry advisory committee to assist in the Rockbestos supplemental qualification test program for Class 1E electrical cable. Also, Bechtel Corporation has prepared a generic test report on Rockbestos cable which addresses the NRC findings.

IE-IN 84-47

Environmental Qualification Tests of Electrical Terminal Blocks:

Response to IE-IN 84-47

Terminal Blocks are not used in instrument circuits in primary containment. Terminal blocks used in secondary containment which are associated with instrumentation will not be exposed to the extreme harsh environmental conditions as described in IE-IN 84-47.

IE-IN 84-57

Operating Experience Related to Moisture Intrusion in Safety-Related Electrical Equipment at Commercial Power Plants:

Response to IE-IN 84-57

Equipment installed at PBAPS has moisture seals installed if the qualification test requires that seals be installed. Maintenance requirements demand that equipment gaskets be replaced with new gaskets whenever disturbed and gasket replacement intervals defined for Class 1E equipment surveillance and maintenance activities assure that equipment is in proper operating condition.

IE-IN 84-68

Potential Deficiency in Improperly Rated Field Rated Wiring to Solenoid Valves:

Response to IE-IN 84-68

PBAPS has recently installed Valcor SV's with 200 degrees Celsius field run wire which exceeds the possible maximum temperature inside the valve body (138 degrees Celsius) by 62 degrees Celsius.

IE-IN 84-78

Underrated Terminal Blocks That May Adversely Affect Operation of
Essential Electrical Equipment:

Response to IE-IN 84-78

Beau Products 76000 series Terminal Blocks are not installed in
Limiterque Valve Operators at PBAPS. Electrical Connections in
Limiterque Valve Operators are made directly to the torque switch
and limit switch and the motor leads are spliced directly to the
source leads; therefore, IE-IN 84-78 is not applicable.

ATTACHMENT 5
TO
PHILADELPHIA ELECTRIC COMPANY'S
RESPONSE TO GENERIC LETTER 84-24
PERTAINING TO
PEACH BOTTOM ATOMIC POWER STATION
UNITS 2 AND 3
DOCKET NOS. 50-277 AND 50-278

REVISION TO PECO EVALUATION FOR
AUTOMATIC VALVE CORPORATION
PILOT SOLENOID VALVES

FEBRUARY 1985

PECo Evaluation

FRC Item Number: 43, 44, 45 Unit 2
43, 44, 45 Unit 3

Description of Item: Pilot solenoid valves for steam relief
valves and MSIV's
Automatic Valve Corporation (AVCO)

Summary of TER

<u>Item</u>	<u>Unit</u>	<u>Deficiencies</u>
43	2 & 3	1
44	2 & 3	1
45	2 & 3	1

Documented evidence of qualification inadequate.

Evaluation: GE Letter G-HE-8-198 transmitted Environmental Qualification Test Results and Procedures for Automatic Valve Corporation SV's model numbers C-5450, and 4988-33 and 34. A Technical Evaluation Report on PBAPS Unit 2 dated 11/80 conducted by A. E. Finkel of the NRC indicates that the only deficiency is aging. The Steam Relief Valves are reconditioned every second refueling outage and the Pilot Solenoid Valves at Peach Bottom are replaced every third refueling outage. The MSIV's at Peach Bottom are reconditioned every refueling outage.

Conclusion: Based on the above information, it is concluded that the AVC SV's are environmentally qualified for the postulated accident conditions at PBAPS.

ATTACHMENT 6
TO
PHILADELPHIA ELECTRIC COMPANY'S
RESPONSE TO GENERIC LETTER 84-24
PERTAINING TO
PEACH BOTTOM ATOMIC POWER STATION
UNITS 2 AND 3
DOCKET NOS. 50-277 AND 50-278
REVISION TO TECHNICAL DISCUSSION
OF RELIANCE ECCS COOLER FAN MOTORS

FEBRUARY 1985

TECHNICAL DISCUSSION

FRC Item No.: 86, 90 Unit 2
 86, 90 Unit 3

Description of Item: Reliance ECCS cooler fan motors.

Summary of TER

<u>Item</u>	<u>Unit</u>	<u>Deficiencies</u>		
86	2 & 3	4	5	10
90	2 & 3	4	5	10

A supplemental report to NUC-9 is appended by letter from Reliance Electric. This letter restricts the applicability of the supplemental report to the motor insulation system. The PECO analysis (Ref. 112) correlates the insulation system organic materials list to radiation damage thresholds. Additional evidence of qualification should be provided for the motor lead splice and bearing lubricant and should address the thermal aging and radiation exposure of the motor as a whole.

Evaluation: As noted in the TER, PECO reference 112 is a radiation analysis for the organic materials which comprise the motors' electrical insulation system. The radiation analysis of the motor is complete in that all the organic materials within the motor are addressed. The motor splice insulation qualification is covered by System Component Evaluation Worksheets which are located in the Electrical Power System part of the database. The extension of this analysis is not necessary since the remaining materials are metallic. The RHR, Core Spray and HPCI area cooler motors are reconditioned every five (5) years which consists of installing new bearings, dipping the winding (when necessary), cleaning, balancing, lubricating and hi-pot testing. In addition, the RHR, Core Spray, and HPCI area coolers are tested monthly in accordance with PEAPS technical specifications and lubricated every three (3) months.

Conclusion: Based on the above information, it is concluded that the Reliance fan motors are environmentally qualified for the postulated accident conditions at PBAPS.