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WILLIAM D. HARRINGTON  
SENIOR VICE PRESIDENT  
NUCLEAR

BECO 85-020

January 29, 1985

Mr. Harold R. Denton, Director  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, D. C. 20555

License DPR-35  
Docket 50-293

- References: (1) W. D. Harrington to D. B. Vassallo, BECo Ltr 83-129  
dated 5/17/83  
(2) W. D. Harrington to D. B. Vassallo, BECo Ltr 84-099  
dated 7/9/84  
(3) W. D. Harrington to D. B. Vassallo, BECo Ltr 84-119  
dated 8/3/84  
(4) W. D. Harrington to D. B. Vassallo, BECo Ltr 84-162  
dated 9/24/84  
(5) W. D. Harrington to D. B. Vassallo, BECo Ltr 84-187  
dated 11/1/84

Dear Mr. Denton:

SUMMARY

The purpose of this letter is to request a scheduler extension until November 30, 1985 to complete the environmental qualification of equipment and certain facets of the overall qualification program for Pilgrim Nuclear Power Station. This extension request is prepared in accordance with the requirements of 10CFR50.49 (g) and (h). The attachment to this letter provides you with a matrix containing equipment items with a basis for their extension requests and a reference to applicable justifications for continued operation (for each piece of equipment).

Boston Edison has implemented an aggressive effort to achieve final qualification as required by 10CFR50.49 within the schedule provided in paragraph (g) of the rule. Of approximately 700 components requiring environmental qualification in our program, nearly 500 will be environmentally qualified by the March 31, 1985 Rule deadline. Approximately 200 of the equipment items cannot be completed by March 31, 1985 for reasons stated in Attachment 1 to this letter. This letter also provides you with clarification of some of the elements of our overall qualification program and constitutes part of this extension request.

DISCUSSION

As stated in our May 17, 1983 submittal (Reference 1), Boston Edison intended to achieve full compliance with the environmental qualification rule by March 31, 1985. We met with your staff in May 1984 as part of the effort to resolve

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qualification deficiencies identified by the Franklin Technical Evaluation Report. References 2, 3 and 4 provided your staff with BECo's resolution of deficiencies and justification for continued operation for equipment for which complete qualification could not be established at the time of these submittals.

Since our May 17, 1983 submittal, Boston Edison has proceeded with a systematic evaluation of each piece of equipment identified in the master list of equipment as part of the overall qualification plan. Pilgrim Nuclear Power Station went into its Refueling Outage #6 in December 1983 which concluded on December 30, 1984. This was the only refueling outage since the rule was issued. Emphasis was placed on plant walkdowns in the early part of the outage to obtain additional information to supplement the ongoing qualification process. The outcome of these evaluations was reflected in our submittals (References 2, 3 and 4).

Replacement of equipment to support environmental qualification was integrated into the outage schedule in a prioritized fashion. Replacement items were prioritized by system, location, availability and ability to effect the change while on line. This resulted in qualifying a major portion of the equipment inside the drywell and some equipment outside the drywell. However, a number of equipment replacements had to be deferred due to start up commitments, replacement equipment availability (long procurement lead times) and the complexities of integrating equipment replacements with critical scheduled activities during the final weeks of the outage.

Attachment 1 includes equipment that Boston Edison intends to qualify by testing. Due to test sample unavailability, long durations required for testing, and busy test lab schedules, completion of the qualification testing cannot be achieved prior to the Rule deadline. Therefore, we are requesting scheduler extension for this equipment to November 1985.

Boston Edison is evaluating the feasibility of replacing equipment during plant operation between now and November 1985. If equipment cannot safely be replaced on-line, an outage will be scheduled prior to November 1985.

Equipment qualification is a multi-faceted program to ensure continued qualification of equipment from the time it is initially qualified. BECo will establish and maintain auditable documentation files for each piece of equipment in the master list. Once qualification is established, fully auditable documentation files and provisions for maintaining qualification will be established. Boston Edison will complete this effort by November 1985.

Changes to the master list are initiated by new information or plant design modifications. These changes are integrated into the equipment qualification program using in-house BECo procedures.

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As a result of the May 1984 meeting with your staff, and subsequent discussions, Boston Edison was requested to perform an evaluation of 10CFR50.49 (b)(2) requirements and identify equipment under this item based on the methodology described by your staff. This evaluation was recently completed by BECo. We are planning to integrate the equipment identified under this category into the qualification program. We intend to qualify this equipment by November 1985.

Equipment within the scope of 10CFR 50.49 (b)(3) that is not included in the current qualification program as identified in our Reference (5) submittal will be qualified by the end of Refueling Outage #8.

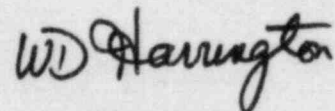
As part of our overall qualification program, BECo will ensure that installation, plant specific maintenance, surveillances, and spare parts procurement procedures and activities will be commensurate with the as qualified requirements for equipment identified in the master list. Based on our requested extensions to November 1985 for qualifying additional equipment and having auditable data files for this equipment, we believe it prudent to request a scheduler extension for the implementation of the entire maintenance program to November 1985. This will ensure the proper implementation of this program as a whole.

Attachment 2 includes justification for continued operation for certain equipment (TER 183, 199, 200, 201 and 223) that requires conduit entry seals to assure qualification. These JCO's were overlooked in prior reviews and are included to comply with the requirements of 10CFR50.49 (h).

#### CONCLUSION

In conclusion, Boston Edison is seeking a scheduler extension to November 30, 1985 to complete its environmental qualification program. This request includes all items contained in Attachment 1 as well as items described in the body of this letter. We would be pleased to answer any questions you may have regarding this request.

Very truly yours,



TAV/ns

Attachments: 1) Matrix of Equipment Requiring Extension  
2) Justification for Continued Operation



Replacement Equipment Requiring Extension

Plant Identifier	TER Number	Equipment Task Ready	Basis for Extension Request		Pending Action	JCO REF. No. 2/.
			Design Package	Basis		
DPIS 261-2A through -2S (16)	172	10/7/84	84-12A	Late delivery of replacement switches would not allow implementation during recent outage	Existing Barton 278's contain mercury contacts. Existing switch cases will be replaced with Barton 288A instrument cases with snap acting switches. This effectively changes the device to a Barton 288A.	Page 94
LIS 263-57A, -57B, -58A, -58B, -72A, -72B, -72C, -72D	210, 211, 212, 213, 214	7/15/84 (Replacement Equipment deemed unacceptable)	84-76 (Pending testing)	Deadband to reset snap-action switches was found to present operational problems during installation. Four units (TER items 224, 225, 227, 226) were replaced. Deadband of snap-action switches would result in operational problems for remaining units (TER items 210, 211, 212, 213, 214). Boston Edison intends on replacing this equipment with an analog trip system in RFO #7.	Yarway mercury switch units will be tested to show qualification to PNPS conditions. Test initiation is pending procurement of Yarway Units identical to those installed in PNPS to assure "as installed" configuration.	Pages 120, 121, 118 and 119
SVL -61, -82, -83	None (New Master List items)	10/7/84	84-14A (pending station review)	Late delivery of replacement equipment would not allow implementation during recent outage	ASCO Solenoids will be replaced with ASCO NP8320 units. On-line replacement is being assessed.	Pages 190 and 188
VAC 204A, 204B, 204C, 204D	92	Forecast mid-Feb 1985	84-15	Material will not be delivered until mid-February 1985.	On-line replacement of these motors is being assessed.	Pages 72 and 73

Replacement Equipment Requiring Extension

2/BEC Co Ltr. 84-162, dated 9/24/84

Plant Identifier	TER Number	Equipment Task Ready	Basis for Extension Request		Pending Action	JCO REF. No. 2/
			Design Package	Basis		
MO 2301-3 2301-5 2301-6 2301-10	28 16 None 27	11/1/84	84-16B (pending review)	Late delivery of Limitorque Motors would not allow implementation during recent outage	Replacement of motors on valve operators required to assure qualification.	Pages 38, 39, 40, 36, 37 and 169
MO 1001-43A MO 1001-60	40 9	10/15/84	84-16C	Late delivery of Limitorque Motors would not allow implementation during recent outage.	Replacement of motors on valve operators required to assure qualification.	Pages 15 and 51
MO 3805 3806	None (New Master List Items)	10/15/84	84-16D	Late delivery of equipment would not allow implementation during recent outage.	A modification to the area in which these Limitorque operators are located is being considered.	Page 168
MO 1001-34B	34	10/15/84	84-16E (Pending Vendor Information)	Late delivery of equipment and late receipt of valve vendor drawings would not allow implementation during recent outage	Replacement of Limitorque Actuator required to document qualification.	Pages 54 and 55
MO 1301-17 1301-25 1301-26 1301-49 1301-60	19 26 25 None 41	11/5/84	84-16F (pending vendor information)	Late delivery of Limitorque motors and late receipt of vendor information would not allow implementation during recent outage.	Replacement of motors required to document qualification	Pages 25, 35, 56 and 167
MO 1001-23A 1001-26A 2301-14 2301-35 2301-36 2301-8 2301-9	11 11 29 31 30 18 28	11/7/84	84-16G (pending review)	Late delivery of equipment would not allow implementation during recent outage.	Replacement of Limitorque Actuators (2) or motors (5) required to document qualification.	Pages 16, 23, 24, 39, 40, 41, 42 43 and 44

Replacement Equipment Requiring Extension

Plant Identifier	TER Number	Equipment Task Ready	Basis for Extension Request		Pending Action	JCO RI . No. 2/.
			Design Package	Basis		
MO 1001-29A 1001-21 1001-28B 1001-7A 1001-29B	22 24 17 40 17	11/1/84	84-16H (pending review)	Late delivery of equipment would not allow implementation during recent outage.	Replacement of Limitorque Actuator (1) and motors (4) required to document qualification.	Pages 32, 33, 34, 30, 31, 49, 50, and 22
MO 1400-24A 1400-24B 1440-25A 1400-25B	13 10 12 10	11/1/84	84-16I (Pending vendor information) 12/1/84	Late delivery of material and vendor information would not allow implementation during recent outage.	Replacement of Limitorque Actuators required to document qualification.	Pages 19, 17 and 18
MO 4009A 4009B 4083	None (New Master List items)	10/15/84	84-16J	Late delivery of motors and consideration of area design modification precluded replacement during recent outage.	Limitorque motors will require replacement or modification to the area will be required. On-line area modification is being assessed.	Pages 170 and 172
DPT 1001-604A, 604B	223	11/7/84	84-17 (pending station review)	Late delivery of CONAX ECSA conduit seals would not allow implementation during recent outage.	Rosemount 1152 transmitters require conduit entry seals to assure qualification. On-line replacement is being assessed.	New JCO to address conduit seals
MCC D7 D8 D9 B17 B18 B20	88 88 88 89 90 89	1/30/85 Forecast	84-18	Design modification on-going to enclose motor control centers and protect from humidity, temperature, and pressure environments. Equipment delivery has effected completion.	Complete environmental enclosure construction and operations testing. Complete analysis of materials for radiation levels.	Pages 65, 66, 67, 68 and 69

Replacement Equipment Requiring Extension

Plant Identifier	TER Number	Basis for Extension Request			Pending Action	JCO REF. No. 2/.
		Equipment Task Ready	Design Package	Basis		
C2206A C2207A C2206B C2250A C2250B C2257A C2257B	120 183 121 199 120 200 122 210 122 112 112	11/15/84	(pending station review)	Late delivery of terminal blocks and conduit entry seals would not allow implementation during outage.	Replace various wiring and terminal blocks with qualified equipment. Provide entry seals where required to assure qualification.	New JCO's to Address Conduit Seals
J217, 32, 444, 451, 561, 599, 600, 601, 602, 603, 604, 606, 720, 463, 866, 874	None (New Master List items)	11/15/84	84-53 (pending station review)	Due to late delivery and identification of this equipment, implementation could not be achieved during the recent outage.	Replace terminal blocks with qualified block or splice assembly.	Pages 154, 156, 157, 158, 161, 162, 163 and 164
MO 1001-16A -16B -18A -18B -19 -32 -34A -36A -36B -37A -37B -43B -43C -43D -7B -7C	40 37 40 35 None 23 40 40 32 40 37 37 40 37 37 40	11/7/84	84-60	Due to the late delivery of component parts, complete inspection and upgrade (if necessary) could not be implemented during the recent outage.	Inspect Limitorque Motor operators and replace components as required to establish qualification.	Pages 52, 53, 166, 34, 47, 51 and 50



Replacement Equipment Requiring Extension

Attachment 1  
Page 5 of 9

Plant Identifier	TER Number	Equipment Task Ready	Basis for Extens. on Request		Pending Action	JCO REF. No. 2/
			Design Package	Basis		
1001-7D -28A MO 1201-5 -80 MO 1400-3A -3B -4A -4B MO 4010A 4010B 4060A 4060B 4065	37 22 15 14 40 37 39 36 33 33 38 38 None	11/7/84	84-60	Due to the late delivery of component parts, complete inspection and upgrade (if necessary) could not be implemented during the recent outage.	Inspect Limitorque Motor operators and replace components as required to establish qualification.	Pages 50, 30, 31, 20, 48, 46, 45, and 171
MCC B14 B15 PS 2390A 2390B C150, C151 P202A - F PS4008 4058	None (New Master List Items) None None None	Pending Design	84-64 (Design configuration not complete)	Modification to secondary containment was conducted during recent outage to allow on-line completion of this area modification. The modification is intended to protect this and other equipment from severe environments.	Construction schedule dependent upon design.	Pages 67, 68, 69, 181, 182, 123, 124, 137 - 142, 177, 178, and 183
PS 1360-9A -9B -9C -9D PS 2360-1 2389-A 2389-B 2389-C 2389-D	194 194 194 194 196 207 207 207 207	Mid-November through Mid-May, 1985	84-67	Receipt of replacement switches from Nov. 84 through May 85 does not support implementation by rule deadline.	Replace pressure switches with qualified Static-O-Ring units.	Pages 108, 109, 110, 113, 114, 115, 116, and 117



Replacement Equipment Requiring Extension

Attachment 1  
Page 6 of 9

Plant Identifier	TER Number	Equipment Task Ready	Basis for Extension Request		Pending Action	JCO REF. No. 2/
			Design Package	Basis		
PS 1001-104A -104B -104C -104D -93A -93B -93C -93D PS 1451B 1464A 1464B DPIS 1001-79A -79B	182 209 182 209 182 209 182 209 208 181 208 180 176	Mid-November through mid-May, 1985	84-67	Receipt of replacement switches from Nov. 84 through May 85 does not support implementation by rule deadline.	Replace pressure switches with qualified Static-O-Ring or Barton Units.	Pages 101, 100, 98, 95 and 96
MO 1001-28A 1001-47	22 21		Not Assigned	These Limitorque Motor operators are at an elevation such that they could be subjected to submergence for a short time following a postulated PBOC. It is intended to erect a barrier during operation. However, the design has not been finalized, nor has material been ordered.	Order materials and develop construction schedule by 3/1/85.	Pages 30, 31, 26-29
C61A C61B N921  (Control switches & indicators)	109, 268, 269  (New Master List Items)	Not Planned	Not planned	Boston Edison will test certain components in these panels to assure qualification. Fully qualified replacements have not been identified. Thus obtaining acceptable test samples has delayed initiation of testing.	The components in these panels that are not qualified serve no safety function. Testing will assure they are qualified or that their failure will not effect a safety related function.	Pages 150 and 175

Replacement Equipment Requiring Extension

Plant Identifier	TER Number	Equipment Task Ready	Basis for Extension Request		Pending Action	JCO REF. No. 2/
			Design Package	Basis		
HPCI Turbine Controls (various equipment)	42 152 153 154 155 156 157 158 185	Pending Design	Not Assigned	The HPCI Controls are required only a harsh radiation environment. Analysis of the various component materials has not completely established qualification. Boston Edison intends to initiate a design modification to shield the sensitive components or the controls will be relocated to a mild environment.	Initiate shielding/relocation design study by 1/31/85. Establish construction schedule and order long lead materials by 3/1/85. On-line implementation will be assessed.	Pages 57, 58, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 102, 103
Cable Terminations (Ring tongue & Kerite Splices)	100, With Specific Equipment	Pending Testing	Pending Analysis	Walkdowns were conducted during the recent outage to identify manufacturers, materials, etc. Analysis is to be completed by 1/31/85. Those items for which qualification cannot be assured will be replaced or subjected to testing.	Complete Analysis and identify potential problem areas by 1/31/85. For problem areas procure replacements or test samples. Wyle Laboratories has been contracted to provide expedited testing services.	Pages 185, 186, 75, 76, 70 and 71
Motor Terminations						
Cable GE/Vulkene SIS 57275 SIS 57279	250	Pending Testing	Not planned	Test to be conducted for Pilgrim application. Test plan procedures currently being prepared. Due to long duration of testing program and difficulties obtaining plant specific test specimen, testing completion is expected between April - June 1985.	Testing to include splice assemblies.	Page 125

Replacement Equipment Requiring Extension

Plant Identifier	TER Number	Equipment Task Ready	Basis for Extension Request		Pending Action	JCO REF. No. 2/
			Design Package	Basis		
Cable S20 CX2 CX4 S1 Z3A CXG	None None None 252 None None	Pending Testing      CXG Pending Analysis Plus Jet Impingement Barrier	Not planned	Boston Edison intends to test these cable types to outside containment environmental conditions. Limited chemical analysis on the insulator and jacket material has shown that all are PE/PVC. Obtaining in-plant samples for testing could not be achieved during the recent outage.	Complete testing procedure and obtain test samples by 2/15/85. Test completion expected in Summer 1985. Wyle Laboratories has been contracted to conduct testing. Jet Impingement Barrier to be installed on line if possible.	Pages 153 and 187
MON 109 113 TSW 1A 1B	7 8 258 258	Pending Analysis	Not assigned	These motor operated dampers and temperature switches are subjected to harsh radiation environment (only) due to a postulated LOCA. Qualified replacement equipment has not been identified and material identification has been delayed.	Boston Edison intends to initiate a design modification or subject the equipment to testing in order to establish qualification. The decision to test or modify is pending completion of analysis.	Pages 14 and 127
P229	None (New Master List item)	Pending Analysis	Not Assigned	This DC pump motor is required in a harsh radiation environment only. Materials analysis is currently being conducted to establish qualification (if possible). If qualification cannot be established, a motor will be procured. Lead time is expected to be 30 weeks or longer.	Complete analysis of motor by 2/15/85. Initiate design package and material procurement if required.	Pages 179 and 180

Replacement Equipment Requiring Extension

Plant Identifier	TER Number	Equipment Task Ready	Basis for Extension Request		Pending Action	JCO REF. No. 2/.
			Design Package	Basis		
Alternate Shutdown (lights and switches)	107 108 264 266	Pending Testing	Not Assigned	Lights and switches qualified to PNPS environmental profiles have not been identified.	Initiate testing program by 1/31/85.	Pages 77, 78, 129, 130, 131, 137-142
AO 203 - 1A, 1B, 1C, 1D AO 203 -2A, 2B, 2C, 2D	85	Pending Testing	Not Assigned	Test Program in progress. Completion expected in January 1985.	Action pending completion of test program.	Pages 61 and 62
MD 1001-63	3	N/A	N/A	Equipment replaced in refueling outage #6	Final Qualification Pending Radiation Analysis and Documentation	Page 4
2301-4	4					Pages 5 and 6
1301-16	4					Page 7
220-1	4					Page 8
1201-2	5					Page 11
1001-50	5					Pages 9 and 10
202-5A } 202-5B }	6					Pages 12 and 13

24BECO Ltr. 84-162, dated 9/24/84



## Attachment 2

BOSTON EDISON COMPANY  
JUSTIFICATION FOR  
CONTINUED OPERATIONEquipment Identification No. PS261-23A  
TER No.

Sheet 1 of 2

Preparer:	<u>WJ Clancy</u>	Date:	<u>12/23/84</u>
Independent Review:	<u>NR E...</u>	Date:	<u>12/23/84</u>
Approval:	<u>L. Higgins</u>	Date:	<u>12/24/84</u>

EQUIPMENT TYPE: Pressure Switch  
MANUFACTURER: Barksdale  
MODEL: B2T-A12SS

PS261-23A provides for automatic closure of the outboard isolation valves in the RHR/shutdown cooling (SDC) suction line and RHR head spray injection lines in response to increasing reactor pressure. This function is provided to preclude overpressurization of the RHR system piping which was designed for low pressure operation. The switch is located in the CRD pump room (zone 1.8). The switch is exposed to a harsh steam environment during a PBOC-5 (HPCI steam line break in the torus compartment) or to a harsh radiation environment during a PBIC/LOCA. Continued operation can be justified on both a technical and systematic basis.

## Technical Analysis

PBOC-5 results in a short term exposure of PS261-23A to superheated steam at a maximum temperature of 247°F. This component was qualification tested as documented in Barksdale Test Procedure 9993 with a saturated steam exposure at 212°F for 6 hours. Although the test temperature is momentarily exceeded by the service profile, superheated steam blanketing and component thermal inertia result in the actual service conditions experienced by the switch being enveloped by the qualification test conditions. In addition, the test pressure and humidity exceed the service conditions. Wyle Labs has performed a radiation materials analysis that has verified that the equipment will withstand the expected accident exposures. The only factor preventing the establishment of qualification of this instrument is that the electrical wire penetration in the body of PS261-23A has not been sealed with RTV as was the case with the tested switch. However, the installed configuration includes an essentially leak tight wrapped flexible conduit that encloses the wires and makes a tight threaded connection to the switch body. Therefore, entry of moisture into the switch body during the short PBOC-5 exposure is not considered plausible and continued operation is considered justified.

## Attachment 2

BOSTON EDISON COMPANY  
JUSTIFICATION FOR  
CONTINUED OPERATION

Equipment Identification No. PS261-23A

TER No.

Sheet 2 of 2

Preparer:

WJ ConwayDate: 12/23/84

Independent Review:

NR E...Date: 12/23/84

Approval:

R. H. ...Date: 12/24/84

## Systematic Analysis

As previously discussed, this pressure switch provides for automatic closure of the outboard isolation valves in the RHR/SDC suction line and RHR head spray injection lines to preclude overpressurization of the RHR piping. It is desirable that this protective function neither be rendered inoperable or inadvertently activated as a result of the harsh environment exposure. Therefore, each of these concerns must be addressed.

This pressure switch is only required to actively function if the outboard isolation valves are open and RHR is in SDC service. However, a PBOC or PBIC is not a credible event for the low temperature and pressure conditions within the reactor coolant system during shutdown cooling operation. Therefore a harsh environment exposure to this pressure switch during a time when active operation is required is not a credible scenario. In addition it should be noted that in the highly unlikely event that a harsh environment exposure did occur with the outboard valves open, RHR system overpressure protection would be redundantly assured by closure of the inboard valves at the command of PS261-23B. PS261-23B is a qualified model 6TA static-o-ring pressure switch which was installed during RFO-6.

The second concern involves precluding the inadvertent operation of PS261-23B. If a harsh environment developed as a result of a PBOC during normal operation and PS261-23A changed state, there would be little impact since the valves would already be shut. When the plant had been placed in a cold shutdown condition, the effects of the failure of PS261-23A could be overcome (in order to initiate SDC) by maintaining the reset control switch (16AS33 or control room panel 905) in the reset position or by jumping out the PS261-23A relay contacts (DD-47 and DD-48 in panel 941) in the cable spreading room. Crediting operators intervention to overcome this failure is credible since it will not be required until approximately 5 hours into the accident.

## Attachment 2

BOSTON EDISON COMPANY  
JUSTIFICATION FOR  
CONTINUED OPERATION

Equipment Identification No. PS263-49B, 50B

TER No. 199

Sheet 1 of 1

Preparer:

*J. Rogers*Date: 12/21/84

Independent Review:

*W. R. Ennis*Date: 12/21/84

Approval:

*R. G. Gering*Date: 12/26/84EQUIPMENT TYPE: Pressure Switch  
MANUFACTURER: Barksdale  
MODEL: B2T-M12SS6E

The function of these pressure switches is to provide a 900 psig reactor low pressure permissive to the LPCI Loop Selection Logic. These pressure switches are located on Reactor Building Elevation 51'. These switches are exposed to a harsh radiation environment following a PBIC and a harsh steam environment following a PBOC 2B or 2T (Reactor Water Cleanup Pipe Breaks). These switches are considered qualified pending installation of a Conax seal assembly to prevent moisture intrusion.

The purpose of the LPCI Loop Selection Logic is to detect the broken recirculation loop and direct LPCI injection into the unbroken loop in the event of a PBIC. These switches are required to operate only if both recirculation pumps are not running. If both pumps are not running, a signal is generated to trip both pumps. (It should be noted that the most likely scenario is that both pumps are running and, as a result, these switches would be bypassed by the LPCI Loop Selection Logic). These switches must detect reactor pressure of 900 psi before the logic will continue. The purpose of this delay is to optimize break detection sensitivity by allowing initial perturbations and momentum effects to stabilize. However, a PBIC does not result in a harsh steam environment at the switch location and the absence of a seal assembly would not affect the operability of the switch.

A PBOC 2B or 2T results in a harsh steam environment of 15.26 psia and 190°F at the switch location. The installed configuration includes an essentially leak tight wrapped flexible conduit that encloses the switch wires and makes a tight threaded connection to the switch body. Entry of moisture into the switch body during the short PBOC 2B or 2T exposure is not considered plausible. In addition, the switches in the other logic train have been provided with Conax seal assemblies and are considered qualified. Thus, an alternative means of performing the safety function is assured.

Therefore, continued operation is justified.



## Attachment 2

BOSTON EDISON COMPANY  
JUSTIFICATION FOR  
CONTINUED OPERATION

Equipment Identification No. PS263-53B  
TER No. 200

Sheet 1 of 2

Preparer:	<u><i>A. A. Clary</i></u>	Date:	<u><i>12/23/84</i></u>
Independent Review:	<u><i>NR Ein</i></u>	Date:	<u><i>12/24/84</i></u>
Approval:	<u><i>R. H. George</i></u>	Date:	<u><i>12/24/84</i></u>

EQUIPMENT TYPE: Pressure Switch  
MANUFACTURER: Barksdale  
MODEL: B2T-A12SS

PS263-53B provides for automatic RHR pump startup and isolation of drywell and torus spray penetrations in response to a low reactor pressure indication. The switch is located in the open area of the reactor building 51 ft elevation (zone 1.12) and is exposed to a harsh radiation and steam environment during a PBOC-2T (RWCU break in the heat exchanger compartment) or to a harsh radiation environment during any other PBOC or PBIC. Continued operation can be justified on both a technical and systematic basis.

#### Technical Analysis

PS263-53B provides for automatic RHR pump startup and isolation of drywell and torus spray penetrations in response to a low reactor pressure indication. The switch is located in the open area of the reactor building 51 ft elevation (zone 1.12) and is exposed to a harsh radiation and steam environment during a PBOC-2T (RWCU break in the heat exchanger compartment) or to a harsh radiation environment during any other PBOC or PBIC. PBOC-2T results in a short term exposure of PS263-53B to superheated steam at a maximum temperature of 189°F and a maximum pressure of 15.26 psia. This component was qualification tested as documented in Barksdale Test Procedure 9993 with a saturated steam exposure at 212°F and 14.95 psia for 6 hours. The PBOC-2T pressure profile exceeds the test pressure for a short time. In addition, PS263-53B is not installed in the as tested configuration since the electrical wire penetration in the switch body is not sealed with RTV as was the case with the tested switch. However, the electrical wires are enclosed in wrapped flexible conduit that makes an essentially leak tight threaded termination in the switch body. Therefore, the short term relatively low pressure spike experienced by this switch is not expected to result in moisture intrusion into the switch body. Wyle Labs has performed a radiation materials analysis that has verified that the equipment will withstand the expected accident exposures. Continued operation is therefore considered justified.



## Attachment 2

BOSTON EDISON COMPANY  
JUSTIFICATION FOR  
CONTINUED OPERATION

Equipment Identification No. PS263-53B  
TER No. 200

Sheet 2 of 2

Preparer:

*W. J. Conway*

Date:

*12/23/84*

Independent Review:

*NR Egan*

Date:

*12/24/84*

Approval:

*W. J. Conway*

Date:

*12/24/84*

### Systematic Analysis

As previously discussed, this switch provides for automatic startup of the RHR train B pumps and automatic isolation of the torus and drywell spray penetrations to ensure the delivery of maximum RHR capacity in the LPCI mode. It is desirable that this function neither be rendered inoperable or inadvertently actuated as a result of a harsh environment exposure. Therefore, each of these concerns must be addressed.

This pressure switch is required to actively function during any transient resulting in automatic LPCI initiation. During a PBIC, or any PBOC other than PBOC-2T the switch will function as expected since it will only be exposed to a harsh radiation environment for which it is qualified. During a PBOC-2T, the switch will also be exposed to superheated steam. Although the switch is expected to operate per the preceding technical analysis, all required functions are redundantly assured by the sister switch (PS263-53A). PS263-53A is a qualified model 6TA Static-O-Ring pressure switch which was installed during RFO-6.

The second concern involves precluding the inadvertent operation of PS263-53B. If a harsh PBOC-2T steam environment caused PS263-53B to actuate prior to reaching a low reactor pressure condition, little impact would occur since LPCI initiation requires concurrent low reactor pressure and level. Even if LPCI initiation did begin the only effects would be RHR pump startup in recirculation mode and the torus and drywell spray valves being signalled to remain in their normally closed position. Actual injection would not occur unless reactor vessel pressure dropped to the LPCI/LPCS permissive level causing separate circuitry to open the injection isolation valves. If required, the torus and drywell isolation valves could be opened (for example to establish torus cooling) once 2/3 core coverage was achieved or if the key controlled bypass switch on panel 903 was activated. It is reasonable to assume operator intervention since this would not be required until 15 - 30 minutes into the transient at the earliest and is explicitly called for per procedure 2.2.19. If neither of these functions were required, LPCI/RHR would be manually secured. Therefore, continued operation is justified.

## Attachment 2

BOSTON EDISON COMPANY  
JUSTIFICATION FOR  
CONTINUED OPERATION

Equipment Identification No. PS263-51C, D  
TER No. 201

Sheet 1 of 1

Preparer: \_\_\_\_\_

Date: 12/21/84

Independent Review: \_\_\_\_\_

Date: 12/21/84

Approval: \_\_\_\_\_

Date: 12/24/84

EQUIPMENT TYPE: Pressure Switch  
MANUFACTURER: Barksdale  
MODEL: B2T-M12SS/B2T-A12SS

These pressure switches bypass the MSIV closure and low condenser vacuum scrams when reactor pressure is less than 600 psig and the mode switch is in the Refuel, Startup, or Shutdown positions. These switches are located on Reactor Building Elevation 51' and are exposed to a harsh radiation environment following a PBIC and a harsh steam environment following a PBOC 2B or 2T (Reactor Water Cleanup Pipe Break). These switches are considered qualified pending installation of a Conax seal assembly to prevent moisture intrusion.

A PBIC does not produce a harsh steam environment at the switch location. Therefore, the absence of a seal assembly will not affect operability of the switch.

A PBOC 2B or 2T results in a harsh steam environment of 15.26 psia and 190°F at the switch location. Failure of the switches due to moisture intrusion could result in a bypass of the MSIV closure and low condenser vacuum scrams. However, reactor scram will be initiated on low reactor water level of +9' prior to a low-low reactor water level of -49" being attained (MSIV closure is initiated at -49"). It can also be reasonably expected that an operator will be able to initiate reactor scram if plant conditions warrant. Also, PS263-51A and B are equipped with Conax seal assemblies and are considered qualified. Proper operation of these switches will preclude the possibility of bypassing a reactor scram on MSIV closure. Thus, an alternative means of accomplishing the safety function exists.

In addition to this systematic argument, the installed configuration includes an essentially leak tight wrapped flexible conduit that encloses the switch wires and makes a tight threaded connection to the switch body. Entry of moisture into the switch body during the short PBOC 2B or 2T exposure is not considered plausible and continued operation is justified.

## Attachment 2

BOSTON EDISON COMPANY  
JUSTIFICATION FOR  
CONTINUED OPERATION

Equipment Identification No. PS263-55C, D

TER No. 201 (C, D)

Sheet 1 of 1

Preparer:

*JL Rogers*

Date: 12/21/84

Independent Review:

*NR E...*

Date: 12/21/84

Approval:

*R. G. Hayes*

Date: 12/26/84

EQUIPMENT TYPE: Pressure Switch  
MANUFACTURER: Barksdale  
MODEL: B2T-A12SS

These pressure switches scram the reactor on high reactor vessel pressure. These switches are located on Reactor Building Elevation 51'. They are exposed to a harsh radiation environment following a PBIC and a harsh steam environment following a PBOC 2B or 2T (Reactor Water Cleanup Pipe Break). These switches are considered qualified pending installation of a Conax seal assembly to prevent moisture intrusion.

A PBIC does not produce a harsh steam environment at the switch location. Therefore, the absence of a seal assembly will not affect operability of the switch.

For PBOC 2B or 2T, reactor scram occurs on low reactor water level. Failure of the switch due to moisture intrusion would not prevent the low water level scram. Also, PS263-55A and B have been provided with seal assemblies and are considered qualified. These switches are capable of providing a reactor scram on high pressure. Finally, the installed configuration includes an essentially leak tight wrapped flexible conduit that encloses the switch wires and makes a tight threaded connection to the switch body. Entry of moisture into the switch body during the short PBOC 2B or 2T exposure is not considered plausible. Therefore continued operation is justified.

## Attachment 2

BOSTON EDISON COMPANY  
JUSTIFICATION FOR  
CONTINUED OPERATION

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Equipment Identification No. DPT1001-604A, B  
TER No. 223 Sheet 1 of 1

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Preparer:	<u>NR Eni</u>	Date:	<u>12/23/84</u>
Independent Review:	<u>WS Cloney</u>	Date:	<u>12/23/84</u>
Approval:	<u>R. L. Grijew</u>	Date:	<u>12/24/84</u>

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EQUIPMENT TYPE: Level Transmitter  
MANUFACTURER: Rosemount  
MODEL: 1152

These transmitters sense torus water level and send a signal to indicators and recorders in the Control Room on C170/C171. The transmitters do not initiate any automatic protective actions.

The transmitters are qualified with the exception of the installation of a conduit seal. Continued operation can be justified on both a systematic and a technical basis.

From a systematic perspective the only break to adversely affect the transmitters is a HPCI break in the torus compartment. The break will be sensed by DPIS2352/2353 and will then be isolated. The reactor will not have to be shutdown and the reactor water level will be maintained by the feedwater system. Therefore, torus water level will not be a concern.

In addition to this systematic argument, the installed configuration includes an essentially leak tight wrapped flexible conduit that encloses the switch wires and makes a tight threaded connection to the switch body. Entry of moisture into the switch body during the short PBOC 5 exposure is not considered plausible and continued operation is justified.