



**Wisconsin Electric** POWER COMPANY  
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February 18, 1983

Mr. H. R. Denton, Director  
Office of Nuclear Reactor Regulation  
U. S. NUCLEAR REGULATORY COMMISSION  
Washington, D. C. 20555

Attention: Mr. R. A. Clark, Chief  
Operating Reactors Branch 3

Gentlemen:

DOCKET NOS. 50-266 AND 50-301  
REVISED RESPONSE REGARDING ENVIRONMENTAL  
QUALIFICATION OF SAFETY-RELATED ELECTRICAL EQUIPMENT  
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

On December 27, 1982, Wisconsin Electric received the Safety Evaluation Reports (SER's) regarding the Environmental Qualification of Safety-Related Electrical Equipment at Point Beach Nuclear Plant, Units 1 and 2. On January 26, 1983 we transmitted our response to the SER's in which we reaffirmed the justifications for continued operation for Point Beach equipment items in NRC Qualification Category I.B, "Equipment Qualification Pending Modifications". This letter also contained an attachment which provided justification for continued operation for Point Beach equipment items identified in the SER's to be in NRC Qualification Category II.A, "Equipment Qualification Not Established". Due to the large total volume of the SER's (approximately 1,000 pages) and the short time available for the requested response (30 days), the attachment to our January 26 letter contained several minor inaccuracies regarding the designation of the lubricants used in safety-related motors, pumps, and valve operators as well as the associated inspection and maintenance intervals. These inaccuracies were only identified after a detailed review of the attachment by the Point Beach Maintenance and Construction Superintendent. A revised justification for continued operation which corrects these inaccuracies and provides additional information is provided as an attachment to this letter.

These minor revisions do not change our judgment that Point Beach, Units 1 and 2, can continue to operate without undue risk to the public health and safety. We believe that the environmental qualification documentation already provided can be supplemented

*Handwritten initials/signature and "A048"*

Mr. H. R. Denton

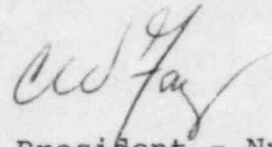
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February 18, 1983

for all Point Beach equipment items assigned to NRC Qualification Category II.A. This supplemental documentation will demonstrate environmental qualification to the provisions of the DOR Guidelines. It is our intention to request a meeting with your staff, specifically Equipment Qualification Branch personnel, so that this supplemental documentation can be reviewed. We will make arrangements for such a meeting through our NRC Project Manager as soon as the required additional documentation is assembled.

This letter is affirmed in accordance with the provisions of 10 CFR 50.54(f). We would be pleased to respond to any questions you may have in this matter.

Very truly yours,



Vice President - Nuclear Power

C. W. Fay

Attachment

Copy to NRC Resident Inspector

Subscribed and sworn to before me  
this 21st day of February 1983.

Deborah Fleischmann  
Notary Public, State of Wisconsin

My Commission expires July 1, 1984.

JUSTIFICATION FOR CONTINUED OPERATION  
EQUIPMENT ITEMS IN NRC QUALIFICATION  
CATEGORY II.A  
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

<u>SER</u> <u>Item</u> <u>No.</u>	<u>PBNP</u> <u>Unit</u>	<u>Equipment</u> <u>Description</u>	<u>Justification for Continued Operation</u>
24	1&2	Safety Injection Pump Motors (Westinghouse Thermalastic Epoxy Class B Insulation)	<p>1. An analysis in the equipment qualification file justifies an in-plant service life of forty years as explained in Note T of our October 11, 1981 response. Periodic in-service tests of the pumps performed monthly and meggar checks of the stator and lead wire insulation resistance performed at refueling intervals in accordance with the PBNP maintenance call-up system should detect any unexpected degradation in the motor or associated leads.</p> <p>2. The motor-to-lead splices were constructed with silicon rubber tape (Scotch #70 or equivalent) insulation with a vinyl tape overall. Scotch #70 tape was satisfactorily tested for radiation (<math>2 \times 10^8</math> Rads gamma) and steam exposure in WCAP 7829. In addition, FRC Report F-C3694 documents the qualification including thermal aging of a similar silicon rubber insulation material used on instrumentation cable.</p> <p>3. The motor bearing system consists of two split-sleeve-type, ring-oiled, radial journal bearings with a housing to keep out dirt and moisture. The motor bearings are lubricated with American Oil Co. ISO-Vg. No. 68 or equivalent. This type of lubricant has been tested satisfactorily for integrated radiation doses in excess of <math>10^7</math> Rads gamma which exceeds the requirements for these motors. The oil is replaced at two year intervals in accordance with the PBNP maintenance call-up system. The oil level and the bearing vibration and temperature are checked during operational checks of these pumps performed at monthly intervals in accordance with PBNP inservice testing requirements. The aging of the bearing/lubricant system is addressed by satisfactory service for over 12 years at PBNP.</p>

These motors (including the motor-to-lead splices and bearing/lubricant system) meet the qualification criteria of the DOR Guidelines including the aging criteria as clarified by NRC Generic Letter 82-09, Item 9. Therefore, these motors are considered qualified to the provisions of the DOR Guidelines. Additional documentation will be provided at a later time.

25            1&2            Containment Spray  
Pump Motors  
(Westinghouse Premium Moisture Resistant Class B Insulation)

1. See response to Item 24, Paragraphs 1 and 2, for justification for continued operation regarding the thermal aging/service life of the motor and the qualification of the motor-to-lead splices, respectively.

2. The motor bearing system consists of two shielded, anti-friction, radial, grease-lubricated, ball bearings with housings to keep out dirt and moisture. The bearing housing is greased at approximately three year intervals in accordance with the PBNP maintenance call-up system with a petroleum-based, lithium-soap-thickened grease. This type of lubricant has been tested satisfactorily for integrated radiation doses in excess of 10<sup>7</sup> Rads gamma which exceeds the requirements of these motors. These standby motors are checked for proper operation monthly including temperature and vibration measurements of the bearing system in accordance with PBNP inservice testing requirements as well as checked at refueling intervals by an operations refueling test. The aging of the bearing/lubricant system is addressed by satisfactory service for over 12 years at PBNP as well as tests of anti-friction bearings documented in WCAP 7829.

These motors (including the motor-to-lead splices and bearing/lubricant system) meet the qualification criteria of the DOR Guidelines including the aging criteria as clarified by NRC Generic Letter 82-09, Item 9. Therefore, these motors are considered qualified to the provisions of the DOR Guidelines. Additional documentation will be provided at a later time.

26            1&2            Component Cooling  
Pump Motors  
(Westinghouse Premium Moisture Resistant Class B Insulation)

1. See response to Item 24, Paragraphs 1 and 2, for justification for continued operation regarding the thermal aging/service life of the motor and the qualification of the motor-to-lead splices, respectively. No periodic inservice tests are performed, however, be-



cause these motors are normally operated for one month on and then one month off on a continuous rotating basis.

2. The motor bearing system consists of two shielded, anti-friction, radial, grease-lubricated ball bearings with housings to keep out dirt and moisture. The bearing housing is greased at approximately one-year intervals in accordance with the PBNP maintenance call-up system with a petroleum-based, lithium-soap-thickened grease. This type of lubricant has been tested satisfactorily for integrated radiation doses in excess of 10<sup>7</sup> Rads gamma which exceeds the requirements for these motors. The operating component cooling pumps are checked for proper operation at least once per shift (about once every 8 hours) as required by the auxiliary operator's log sheets. The standby pumps are started and the operating pumps secured by a periodic check on a monthly basis. The aging of the bearing/lubricant system is addressed by satisfactory service for over 12 years at PBNP as well as tests of anti-friction bearings documented in WCAP 7829.

These motors (including the motor-to-lead splices and bearing/lubricant system) meet the qualification criteria of the DOR Guidelines including the aging criteria as clarified by NRC Generic Letter 82-09, Item 9. Therefore, these motors are considered qualified to the provisions of the DOR Guidelines. Additional documentation will be provided at a later time.

27

1&2

Residual Heat

Removal Pump Motors (Westinghouse Therm-alastic Epoxy Class B Insulation).

1. See response to Item 24, Paragraphs 1 and 2, for justification for continued operation regarding the thermal aging/service life of the motor and the qualification of the motor-to-lead splices, respectively.

2. The motor bearing system consists of two shielded, anti-friction, radial, grease-lubricated, ball bearings with housings to keep out dirt and moisture. The bearing housing is greased at approximately one year intervals in accordance with the PBNP maintenance call-up system with a petroleum-based, lithium-soap-thickened grease. This type of lubricant has been tested satisfactorily for integrated radiation doses in excess of 10<sup>7</sup> Rads gamma which exceeds the requirements

of these motors. These motors are checked for proper operation monthly including temperature and vibration measurements of the bearing system in accordance with PBNP inservice testing requirements as well as checked at refueling intervals by an operations refueling test. The motors are also operated each refueling during Residual Heat Removal system operation. The aging of the bearing/lubricant system is addressed by satisfactory service for over 12 years at PBNP as well as tests of anti-friction bearings documented in WCAP 7829.

These motors (including the motor-to-lead splices and bearing/lubricant system) meet the qualification criteria of the DOR Guidelines including the aging criteria as clarified by NRC Generic Letter 82-09, Item 9. Therefore, these motors are considered qualified to the provisions of the DOR Guidelines. Additional documentation will be provided at a later time.

28

1&2

Containment Emergency Fan Motors (Westinghouse Thermalastic Epoxy Class F (Class A Temp. Rise) Insulation).

1. An aging analysis was performed which justifies an in-plant service life of forty years based on the qualification tests documented in WCAPs 7829 and 8754. Meggar checks of the motor and lead insulation resistance at refueling intervals and disassembly, cleaning, inspection, and overhaul of the motor, as necessary, at every third refueling are performed in accordance with the PBNP maintenance call-up system. This maintenance should detect any unexpected degradation of the motor or leads. The motor-to-lead splice and bearing/lubricant system qualification are addressed in items 29 and 53, respectively. These motors are considered qualified to the provisions of the DOR Guidelines.

2. The effects of plateout of Beta emitters on the stator insulation materials does not have to be considered since the motor is totally enclosed. The only time the containment atmosphere enters the enclosure is in the first ten seconds or so of an accident when a pressure equalization valve opens to admit enough air and/or steam to equalize pressure between the containment and the enclosure (see WCAP 7829, Figure 18). It is physically unrealistic for any radioactive fission products to have been released to the containment atmosphere in that time.

29	1&2	Motor-to-Lead Splices for Item 28	These splices were remade several years ago at PBNP to conform to the splices tested and qualified by WCAP 7829. Westinghouse Drawing No. 206C391 is the basis for this splice. Separate effects tests for radiation and steam exposure were also conducted satisfactorily on the individual splice materials. Therefore, the splice is considered qualified to the DOR Guidelines.
42	1&2	Okonite Instru- mentation Cable	Documentation on our purchase orders establish that the cable tested in FRC Test Report F-C3694 (Group II cables, Item 4A) is similar to our cable. The differences were analyzed and determined to have no effect on the qualification status of these cables. Our cables have a PVC jacket in lieu of an overall glass braid. The insulation material is identical as confirmed by a telephone conversation with Dr. Jack Lasky of Okonite Company. Therefore, this cable is considered qualified to the DOR Guidelines. Additional documentation will be provided later.
50	1&2	Safety Injection Pump Bearing Lubricant (Ameri- can Oil Co. Indus- trial No. 68 oil)	<p>These pumps have one anti-friction, oil-lubricated, radial, ball bearing and one anti-friction, oil-lubricated, thrust ball bearing with housings to hold the oil and to exclude dirt and moisture. This type of oil has been tested satisfactorily<sup>7</sup> for integrated radiation doses in excess of 10<sup>7</sup> Rads gamma which exceeds the requirements for these pumps. The oil level and the bearing vibration and temperature are checked during operational checks of the pumps performed at monthly intervals in accordance with PBNP inservice testing requirements as well as during operation refueling tests. The oil is replaced at two-year intervals in accordance with the PBNP maintenance call-up system. The aging of the bearing/lubricant system is also addressed by satisfactory service for over 12 years at PBNP as well as tests of anti-friction bearings documented in WCAP 7829.</p> <p>The bearing/lubricant systems meet the qualification criteria of the DOR Guidelines including the aging criteria as clarified by the NRC Generic Letter 82-09, Item 9. Therefore, these bearing/lubricant systems are considered qualified to the provisions of the DOR Guidelines. Additional documentation will be provided later.</p>

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| 51 | 1&2 | <p>Component Cooling Pump Bearing Lubricant (American Oil Co. Industrial No. 46 oil)</p>               | <p>These pumps have one anti-friction, oil-lubricated, radial, ball bearing and one anti-friction, oil-lubricated, thrust, ball bearing with housings to hold the oil and to exclude dirt and moisture. This type of oil has been tested satisfactorily for integrated radiation doses in excess of 10<sup>7</sup> Rads gamma which exceeds the requirements for these pumps. The operating pump (one of two for each PBNP unit) is checked once each shift in accordance with the auxiliary operator log sheets. The standby pump is started and the operating pump secured at monthly intervals in accordance with the PBNP periodic check system. The oil is replaced at one year intervals in accordance with the PBNP maintenance call-up system. The aging of the bearing/lubricant system is also addressed by satisfactory service for over 12 years at PBNP as well as tests of anti-friction bearings documented in WCAP 7829.</p> <p>The bearing/lubricant systems meet the qualification criteria of the DOR Guidelines including the aging criteria as clarified by the NRC Generic Letter 82-09, Item 9. Therefore, these bearing/lubricant systems are considered qualified to the provisions of the DOR Guidelines. Additional documentation will be provided later.</p> |
| 52 | 1&2 | <p>Containment Spray and RHR Pump Bearing Lubricant (American Oil Co. Rykon Industrial No. 32 oil)</p> | <p>These pumps have one anti-friction, oil-lubricated, radial ball bearing and one anti-friction, oil-lubricated, thrust, ball bearing with housings to hold the oil and to exclude dirt and moisture. This type of oil has been tested satisfactorily for integrated radiation doses in excess of 10<sup>7</sup> Rads gamma which exceeds the requirements for these pumps. The oil level and bearing vibration and temperature are checked during operational checks of the pumps performed at monthly intervals in accordance with PBNP inservice testing requirements as well as operations refueling tests performed at refueling intervals. In addition, the RHR pumps are operated during refueling outages during operation of the RHR system. The oil is replaced at one-year intervals on the RHR pumps and three-year intervals on the containment spray pumps, which are used for standby service only. The aging of the bearing/lubricant systems is also addressed by satisfactory service for over 12 years at PBNP as well as tests of anti-friction bearings documented in WCAP 7829.</p>   |



The bearing/lubricant systems meet the qualification criteria of the DOR Guidelines including the aging criteria as clarified by the NRC Generic Letter 82-09, Item 9. Therefore, these bearing/lubricant systems are considered qualified to the provisions of the DOR Guidelines. Additional documentation will be provided later.

53

1&2

Containment Emergency Fan Cooler Bearing Lubricant (Chevron SRI grease)

The containment emergency fan cooler motors use open anti-friction, grease-lubricated, radial ball bearings with sealed housings. The bearings are air-cooled by the same integral, air-to-water heat exchanger assembly which provides closed-cycle cooling and protection from accident environments for the motor. The bearings are checked and greased at refueling intervals with Chevron SRI grease in accordance with the PBNP maintenance call-up system. The motors are disassembled including cleaning, inspection, and regreasing of the bearings every third refueling. The motors and fans are checked for proper operation including checks for noise, vibration, air and cooling water flow, and running current on a monthly interval in accordance with PBNP periodic check and Technical Specification requirements. In addition, the motors are normally running at approximately one-third design load and a vibration switch alarms in the control room if vibration exceeds a pre-set level. The bearing lubricant tested in the qualification tests documented by WCAP 7829 was Westinghouse Style No. 773A773 which is Chevron BRB #2 grease. Chevron and Westinghouse both discontinued this grease several years ago but Chevron now supplies SRI grease which is documented to be equivalent (actually better) than BRB #2 grease. The Chevron BRB #2 grease was tested for irradiation and "working" to simulate the conditions in containment following a design-basis LOCA as documented in the PBNP FSAR, pp. 6-3-16 through 19. The results show that the grease was still suitable after irradiation to  $1.8 \times 10^8$  Rads gamma which exceeds the requirements of these motors. Based on the above

documentation and the satisfactory service at PBNP for over 12 years, it is concluded that the bearing/lubricant system will perform its safety function satisfactorily. Additional documentation will be provided later.

2. The fan bearings consist of open anti-friction, grease-lubricated, spherical roller bearings with sealed pillow-block housings. The bearings and seals are disassembled, cleaned, inspected, and regreased at refueling intervals and the bearings are greased once in between refuelings in accordance with the PBNP maintenance call-up system. The same grease is used for the fan bearing as described in paragraph 1 for the motor bearings(i.e., Chevron SRI). The grease used in the labyrinth seals of the bearing housings and qualified by WCAP 7829 was Westinghouse Style No. M-53701TT which is E.I. Dupont de Nemours & Co., Inc. Krytox 240 AC Fluorinated grease. Based on the above documentation and the satisfactory service at PBNP for over 12 years, it is concluded that the bearing/lubricant system will perform its safety function satisfactorily. Additional documentation will be provided later.

54

1&2

Limitorque Valve  
Motor Operator  
Lubricant (American Oil Co. Amolith #1 EP or AMDEX #2 EP greases)

These greases are petroleum-base greases with lithium or calcium-soap-thickeners and extreme pressure (EP) additives. A number of similar greases were radiation tested satisfactorily to  $2.7 \times 10^7$  Rads and higher as documented in an ASLE paper. This radiation level exceeds the requirements of these motor operators at PBNP. These operators are checked for proper operability at refueling intervals and/or quarterly in accordance with PBNP inservice testing requirements. These operators are overhauled including replacement of greases at five-year intervals in accordance with PBNP maintenance call-up system. The greases have shown excellent service in over twelve years of operation at PBNP. Similar greases have been used in numerous qualification tests of Limitorque

operators under LOCA and SLBA conditions. Therefore, continued safe operation of PBNP is assured until additional documentation is generated regarding similarity and aging.

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| 55 | 1&2 | Pump Motor<br>Bearing Lubricant<br>(American Oil Co.<br>Amolith #2 grease)  | See response to Items 25, 26, and 27 regarding the motor bearing/lubricant system qualification.   |
| 56 | 1&2 | Limitorque Valve<br>Operator Geared<br>Limit Switch<br>Assembly Lubricant<br>(Mobil Oil Co.<br>No. 28 grease)                 | Mobil 28 grease is a synthetic lubricant which has been radiation tested satisfactorily to $3 \times 10^5$ Rads mixed gamma/neutron radiation and tested satisfactorily in bearings at temperatures of 580°F. These operators are checked for proper operability at refueling intervals and/or quarterly in accordance with PBNP inservice testing requirements. These operators are overhauled including replacement of greases at five-year intervals in accordance with the PBNP maintenance call up system. This grease is listed as an acceptable lubricant by Limitorque for qualified Model SMB valve operators. Therefore, this lubricant is considered qualified for use on all Limitorque valve operator geared limit switch assemblies at PBNP. |
| 61 | 1&2 | Power Operated<br>Relief Valve<br>Blocking Valve<br>Limitorque Motor<br>Operators (Peerless Motor with<br>Class B insulation) | This item is not required to mitigate a LOCA or HELB accident and is not considered safety-related. Therefore, lack of qualification documentation does not affect plant safety.   |
| 62 | 1&2 | Safety Injection<br>Line Valve<br>Limitorque Motor<br>Operators (Peerless Motor with Class B<br>insulation)                   | These valves are administratively maintained in their required shut position for safety injection and are, therefore, not normally required to operate on receipt of a safety injection signal. These valves may be opened within 14 hours of a small-break LOCA to aid in coolant mixing to prevent boron precipitation. As discussed in Mr. Sol Bursteins' letter to your staff dated May 7, 1975 regarding "ECCS Long Term Cooling," boron precipitation is not a problem at PBNP even if these valves failed to open within 14 hours of a LOCA. Therefore, PBNP can continue to operate safely until this item is resolved.  |

63	1&2	Safety Injection Line Valve Limiterque Motor Operators (Reliance Motors with Class B insulation)	These valves are administratively maintained open during normal operation which is their required position upon receipt of a safety injection signal. If these valves were initially closed, they would open immediately upon receipt of a safety injection signal. Their required operating time should be 1/2 hour and not 14 hours as stated on the SCEWs. Similar valve operators operated satisfactorily for 8 hours in simulated LOCA conditions as documented in WCAP 7410L. Therefore, PBNP can continue to operate safely until this item is resolved.
65	1&2	Auxiliary Feedwater Pump Steam Supply Valve Limitorque Operators (Peerless Motor with Class B Insulation)	Limitorque has confirmed that the valve motor operators at PBNP are identical to those tested in Limitorque Test Report No. B0003 except for the Peerless motors. A Limitorque analysis has determined that Peerless motors with Class B insulation are equivalent to the Reliance motors with Class B insulation environmentally tested as documented in Limitorque Test Report No. B0003 and Westinghouse WCAP 7410-L. Since the temperature/pressure profile used for qualification of these valves is extremely conservative, the operators are judged to be able to perform their safety function based on a combination of the two test reports. Since these valves are located in an area normally maintained between 65°F and 85°F and based on their satisfactory service for over 12 years at PBNP, no significant thermal aging degradation has occurred up to this point. Therefore, the continued safe operation of PBNP is assured until this item is resolved.