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U.S. Nuclear Regulatory Commission
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Point Beach Nuclear Plant, Units 1 and 2
Dockets 50-266 and 50-301
License Nos. DPR-24 and DPR-27

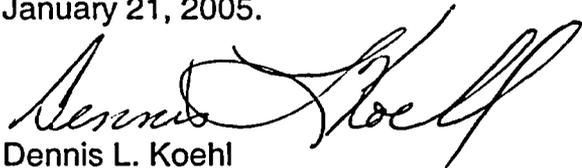
Response to Request for Additional Information
Regarding the Point Beach Nuclear Plant License Renewal Application
(TAC Nos. MC2099 and MC2100)

By letter dated February 25, 2004, Nuclear Management Company, LLC (NMC), submitted the Point Beach Nuclear Plant (PBNP) Units 1 and 2 License Renewal Application (LRA). On December 21, 2004, the Nuclear Regulatory Commission (NRC) requested additional information regarding the Cable Condition Monitoring Program (LRA Section B2.1.8). The enclosure to this letter contains NMC's response to the staff's questions.

Should you have any questions concerning this submittal, please contact Mr. James E. Knorr at (920) 755-6863.

This letter contains no new commitments and no revisions to existing commitments.

I declare under penalty of perjury that the forgoing is true and correct. Executed on January 21, 2005.



Dennis L. Koehl
Site Vice-President, Point Beach Nuclear Plant
Nuclear Management Company, LLC

Enclosure

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cc: Administrator, Region III, USNRC
Project Manager, Point Beach Nuclear Plant, USNRC
Resident Inspector, Point Beach Nuclear Plant, USNRC
PSCW

ENCLOSURE

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2 LICENSE RENEWAL APPLICATION

The following information is provided in response to the Nuclear Regulatory Commission (NRC) staff's request for additional information (RAI) regarding License Renewal Application (LRA).

The NRC staff's questions are restated below, with the Nuclear Management Company (NMC) response following.

B2.1.8-1 Cable Condition Monitoring Program

RAI B2.1.8-1 – Inaccessible Non-EQ Medium-Voltage Cables

NRC Question 1:

Page B-84 (1st paragraph) of the Point Beach Nuclear Plant (PBNP) license renewal application (LRA) states, "This program applies to inaccessible (e.g., in conduit or direct buried) ...". Later on page B-84, the LRA states, "Medium-voltage cables at PBNP were ordered moisture resistant for direct buried or underground service, **but are not used in direct buried applications.**" [Bold emphasis added.]

Please clarify this apparent inconsistency. Which statement is correct? Are any **inaccessible non-EQ medium-voltage cables**, in scope of license renewal that credit the B2.1.8 AMP, used in buried applications?

NMC Response:

None of the inaccessible non-EQ medium-voltage cable that is within the scope of license renewal is direct buried. As stated on page B-84, "Medium-voltage cables used at PBNP are installed in conduit, duct packs/banks, or manholes, which provide a flow path to drain water (e.g., duct packs/banks are sloped)." Since the cables were designed and manufactured for direct buried service but are actually installed in less severe environmental conditions (i.e., in conduit, duct packs/banks, or manholes, which provide a flow path to drain water), they can be expected to have an extended useful life.

NRC Question 2:

On Page B-84 of the PBNP LRA, purposes and an exception to the definition of "significant moisture." The GALL Report defines "significant moisture" as "periodic exposure to moisture that lasts more than a few days (e.g., cable in standing water)." The PBNP LRA (page B-84) states that, "Prolonged exposure to significant moisture is defined as exposures to significant moisture that last more than a few years (e.g., cable in standing water)."

The LRA supports this alternative definition based on a logic that includes consideration of:

- Use of moisture resistant cables
- Reduced likelihood for water treeing in lower voltage cables
- Installation of cables not using less susceptible installation material
- Minimize expose to moisture

While the NRC staff understands that these anecdotal attributes suggest that water treeing would be minimized in these cables, the LRA does not provide any quantified test data supporting this alternate definition. Furthermore, the NRC staff understands that cables managed by this AMP are made by two manufacturers and that one cable type is expected to perform better than the other because it has used a later technology. Please provide to the NRC staff manufacturer or laboratory test results for both types of cables that support a conclusion that water treeing would not occur if the cables were immersed in water for five or more years.

The LRA states that:

"Manhole flooding and groundwater intrusion has been a long standing issue at PBNP and efforts were periodically taken to reduce the exposure of medium-voltage cables to water. In order to better understand the magnitude of the groundwater intrusion problem into the electrical manholes, a new call-up to inspect and pump the flooded manholes was initiated. The new call-up periodically inspects and pumps down the electrical manholes, as necessary. As part of the new call-up, the approximate water level in each manhole is recorded. The recording of the water level will provide the basis for any future changes in frequency to the call-up and any deletion of manhole inspections."

The PBNP activities to better manage the manhole flooding and groundwater intrusion is a positive step in managing the potential for treeing. However, it has been the NRC staff's experience that just eliminating water in the manholes does not provide reliable information about the presence of water or moisture in the inaccessible regions in conduits or where cables are buried. Therefore, based on the information contained in the LRA, it is not possible to determine if water or moisture is present in the

inaccessible areas, even if the manholes are regularly drained. Please provide information that supports a lack of water in the inaccessible areas once the manholes have been drained. Alternatively, provide information documenting how PBNP will assure that the cables can not be immersed in water for more than a few days.

If this data is not available, will the LRA be revised to use the GALL Report definition for "significant moisture?"

NMC Response:

The statement on page B-84 of the PBNP LRA that, "Prolonged exposure to significant moisture is defined as exposures to significant moisture that last more than a few years (e.g., cable in standing water)," is supported by the recent testing of the cables in service that have been exposed to moisture for more than a few years. Since these tests were conducted on installed cables at PBNP, the test results account for the exposure of cables to water during the past normal seasonal cycles.

NMC has been proactive at PBNP and already tested all in-scope inaccessible non-EQ medium-voltage cables. This testing was performed in 2003 and 2004, and no significant deterioration of the cables was found to exist. This testing included both the cables installed during the original construction of the plant (1966-1971) and those cables installed more recently (1988). The actual conditions during these two extended periods of operation are representative of the ongoing conditions to which the cables will be subjected regarding water exposure or immersion. This testing identified no faults or defects in cables from either time period or manufacturer. These test results and acceptance criteria are available onsite for NRC review.

The design and installation of the duct banks between the switchyard and plant include a 1/2% or greater slope. The duct banks were enclosed in concrete when installed, and no surface slumping along their routes has been observed. Therefore, they are not likely to have settled during their periods of service nor is settlement likely during the period of the extended license. This should ensure continued draining of any water entering the duct banks into the manholes.

The LRA statement detailing PBNP activities taken to better manage manhole flooding and groundwater intrusion through inspection and pumping was intended to show that NMC considers removal of water from the proximity of cables will prolong the lifetimes of these cables. None of the inaccessible non-EQ medium-voltage cables that are within the scope of license renewal have been exempted from this program on the basis that the cables may now be in a dry environment.

To adopt the GALL Report definition of "significant moisture" as "periodic exposure to moisture that lasts more than a few days (e.g., cable in standing water)" would make compliance both impractical and costly. To prove that cables were not exposed for

more than a few days would require an inspection period of a few days or less for the entire life of the cables. It would be necessary to inspect the manholes and duct banks for water every few days during all times of the year, which at PBNP and most sites in the northern portion of the United States, would include during winter weather when these may be buried beneath snow and ice. Access during these periods may be impossible and may create unsafe conditions for plant personnel performing the inspections. In addition, cables designed for direct burial are expected to be exposed to normal groundwater, which is both seasonal and determined by periodic rainfall that can last for more than a few days.

Therefore, both the design of the cables and the testing of the actual installed cables exposed to water provide a practical and technical basis for our definition of "prolonged exposure to significant moisture is defined as exposures to significant moisture that last more than a few years (e.g., cable in standing water)." This definition has not exempted any inaccessible non-EQ medium-voltage cables at PBNP that are within the scope of license renewal from this program.

NRC Question 3:

In the LRA (page B-79 and B-80), it states that B2.1.8 AMP on inaccessible non-EQ medium-voltage cables will perform "testing of a representative sample of in-scope, medium-voltage cables not designed for submergence subject to prolonged exposure to significant moisture and significant voltage once every 10 years to detect deterioration of insulation." The GALL Report is silent on the use of a sampling program, but does not prohibit its use. Therefore, to make a technical evaluation, the NRC needs additional information not currently contained in the LRA. Please clarify if the sampling program will sample:

- The cables in each run or grouping that would be expected to experience the greatest amount time being immersed
- Cables from populations of cables manufactured by different companies and installed at different times

NMC Response:

A sampling program has not yet been developed. Selection of the sample of medium-voltage cables to be tested in the future is yet to be determined but will be based upon the criteria noted in B2.1.8, "Cable Condition Monitoring Program," in element "Parameters to be Monitored or Inspected," on page B-87. The cable sample selection for testing will be based on the severity of prolonged exposure to significant moisture and significant voltage, and the age of the cable. For example, for cables of the same size, construction, voltage and ampere loading, and age run in conduits in the same underground duct bank, the sample may consist of only those cables in the lowest conduits, since they are more likely to be exposed to water.

In addition, cables of recent manufacture and installation, using more modern materials and processes, are more resistant to degradation due to exposure or immersion in water (i.e., water treeing leading to electric treeing) than those cables installed during the original construction of the plant. They are included in this program and have already been tested. They will not reach their fortieth year of operation until 2028.