

November 23, 1999

Mr. John K. Wood
Vice President - Nuclear, Perry
FirstEnergy Nuclear Operating Company
P.O. Box 97, A200
Perry, OH 44081

SUBJECT: PERRY NUCLEAR POWER PLANT, UNIT 1 - REQUEST FOR ADDITIONAL INFORMATION RELATED TO LICENSE AMENDMENT REQUESTING 24-MONTH FUEL CYCLE (TAC NO. MA5930)

Dear Mr. Wood:

The staff is continuing its review of your application dated June 17, 1999 (PY-CEI/NRR-2398L), regarding implementation of a 24-month fuel cycle. As a result of this review, the staff has identified a number of areas associated with instrument drift requiring further clarification. Items requiring further clarification are identified in Enclosure 1.

The need to provide the additional information and the agreement of the Perry staff to comply with this request were discussed with members of your staff on November 9 and 18, 1999. A mutually agreed upon due date of January 27, 2000, was established with Mr. James Emley of your staff.

Sincerely,

Original Signed By
Douglas V. Pickett, Sr. Project Manager, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-440
Enclosure: As stated
cc w/encl: See next page

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J. Wood
FirstEnergy Nuclear Operating Company

Perry Nuclear Power Plant, Units 1 and 2

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

REQUEST FOR ADDITIONAL INFORMATION

TECHNICAL SPECIFICATION CHANGES TO SUPPORT 24-MONTH OPERATING CYCLE

PERRY NUCLEAR POWER PLANT, UNIT 1

DOCKET NO. 50-440

1. Attachment 1, Page 5, PNPP Evaluation, second paragraph states that for many of the instances, where the drift exceeded the allowable value, it was due to a Rosemount transmitter oil loss problem. Please provide the cause(s) and justify the surveillance interval extension for the other instances where the drift exceeded the allowable value for the instruments.
2. Attachment 1, Page 6, second line states that there is one Rosemount transmitter that has 49 months to maturity. Since maturity determines the acceptability of the extension of the surveillance interval, explain the basis for the extension of surveillance interval for this transmitter.
3. Attachment 1, Page 6, Step 2, PNPP evaluation: Since the NRC staff has not approved the EPRI TR-103335, "Guidelines for Instrument Calibration Extension/Reduction Programs" Rev.1, dated October, 1998, confirm that the EXCEL spreadsheets which were used to do additional analysis covers the analyses recommended by the NRC. Also the second paragraph states that conservative assumptions were made in extrapolating current drift values to new drift values. Please provide the list of the main conservative assumptions used in the evaluation.
4. GL 91-04 allows the surveillance test interval from 18 months to 24 months operating cycle. However, the licensee's submittal in two instances (SR 3.3.4.1.6 and SR 3.8.4.8) has asked for the extension of surveillance interval from 60 months to 72 months based on the drift analysis. Since the staff has not accepted the extension of surveillance beyond 24 months except in an emergency relaxation, provide the basis for the extension to 72 months.
5. Attachment 5, Page 9, Section 4.4.2, Rigor Levels: This section classifies instruments/components into four levels of rigor. However, since a typical instrument whether it belongs to rigor level 1, 2, 3 or 4 will perform the same, we question the validity of this approach as this has the potential of forcing the data into smaller groups, thus diminishing the power of the statistical tests to discern real trends. Provide the justification for the use of these smaller groups of data.

ENCLOSURE 1

6. Attachment 5, Page 11, Section 4.5.2.4 states that: "For each grouping, a large number of components should be randomly selected from the population so that there is assurance that the evaluated components are representative of the entire population." Please state what is that assurance, how many components were eventually selected and how was the randomization achieved. Please present a table for each grouping and for each rigor level showing the number of instruments in the population and number/percent of instruments selected.
7. Attachment 5, Page 14, Equation for t': The equation for t' is not the typical Student "t" statistic, but what is often called Welch's and sometimes Satterthwaite's approximation. This approximation also has a specific formula for the calculation of the associated degrees of freedom. This formula should also be included in the submittal.
8. Attachment 5, Pages 15-16, Outlier Analysis and Outlier Expulsion: Please indicate whether the actual test excluded any observation on purely statistical criteria. If so, identify these points and their magnitude, and state whether their exclusion rendered the analysis more conservative. Also provide the justification for removal of outlier outside 3.5 sigma for the sample set.
9. Attachment 5, Page 18, Step 3: Division of data into bins leads to the concern that the number and size of the bins are arbitrary. Also, the procedure is invalid if the binning is determined after the data are collected and observed. Please justify the division of the data into bins.
10. Attachment 5, Page 18, Step 4: It appears that the denominator of the equation for χ^2 is incorrect.
11. Attachment 5, Page 19, Step 1: Equation for "T" is correct, but it should be pointed out that x_i represents the data when presented in ascending order of magnitude.
12. Attachment 5, Page 19, Step 2: The expression for $S^2 = (n-1)s^2$ is misleading. "S" is not defined and "s" is defined as the unbiased estimate of sample population variance whereas on page 18 it is defined as the standard deviation of all sample data points.
13. Attachment 5, Page 20, Binomial Pass/Fail Analysis: Please justify the use of the failure proportion as a meaningful statistic as the procedure does not account for the "degree of failure" (size of excursion).
14. Attachment 5, page 20, Bottom equation: Since this is a normal approximation and is valid only when $x \geq 5$, please indicate if any analysis did not meet this criterion.
15. Attachment 5, Page 24, Table 4: All numbers appear to be on the non-conservative side. The formula for X_{crit} is correct but when the formula is applied to example 1 on page 24, the maximum value for mean is calculated as 0.337%, however, Table 4 lists the value of X_{crit} to be only 0.258%.