



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

MAY 31 1983

MEMORANDUM FOR: Karl V. Seyfrit, Chief
Reactor Operations Analysis Branch
Office for Analysis and Evaluation
of Operational Data

FROM: Matthew Chiramal, Lead Engineer
Plant Systems Unit
Reactor Operations Analysis Branch

SUBJECT: TR NO. AEOD/T316
THERMAL NON-REPEATABILITY PROBLEM WITH
BARTON MODEL 763 AND 764 ELECTRONIC
TRANSMITTERS.

AEOD/T316

Forwarded herewith is the subject technical review report for your consideration.

Since the manufacturer has issued the requisite Part 21 reports to alert users of the transmitters and IE is planning to issue an Information Notice to alert licensees of the problem and corrective actions, we consider the subject problem to be adequately addressed.

Matthew Chiramal, Lead Engineer
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Enclosure:
As stated

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AEOD Technical Review Report*

UNIT: Calvert Cliffs 1
DOCKET No.: 50-317
LICENSEE: Baltimore Gas and Electric Co.

TR Report No. AEOD/T316
DATE: May 31, 1982
EVALUATOR/CONTACT: M. Chiramal

SUBJECT: THERMAL NON-REPEATABILITY PROBLEM WITH BARTON MODEL
763 & 764 ELECTRONIC TRANSMITTERS

EVENT DATE: August 5, 1982
LER 82-040/01X.

REFERENCE: 1) 10 CFR Part 21 Report from ITT Barton dated
October 29, 1982.
2) Final Report - 10 CFR Part 21 Notification from ITT Barton
dated May 17, 1983.

*This document supports on-going AEOD and NRC activities and does not represent the position or requirements of the responsible NRC program office.

SUMMARY

At Calvert Cliffs Unit 1 on August 5, 1982 while the unit was in Mode 3 the pressurizer pressure transmitters for the four safety-related channels were removed from service for calibration. Further investigation revealed that the steam generator pressure transmitters were also out of calibration. These transmitters were Barton Model 763 and 764 units. Tests done by ITT Barton Instruments found that the output deviations were caused by leakage current paths from the electronics to the case ground after high temperature exposure. ITT Barton submitted a 10 CFR 21 notification dated October 29, 1982 to the NRC and affected users of the transmitters (Reference 1). Barton initiated testing of these transmitters to identify specific cause of the defect and any corrective actions to rectify the units. A final report was submitted by ITT Barton on May 17, 1983 describing the results of the engineering investigations conducted by them and the required actions to prevent recurrence. IE is planning to issue an Information Notice to alert all affected licensees of nuclear plants of the problem and corrective actions.

Based on our review of the problem and corrective actions and proposed future actions by IE, we believe that the problem has been adequately addressed.

DISCUSSION

While Calvert Cliffs Unit 1 was operating in Mode 3, the licensee discovered calibration problems with all four safety-related channels of pressurizer pressure transmitters. The same problem was also found on the steam generator pressure transmitters. These transmitters were Barton Model 763 and 764 units. The transmitters were sent to Barton for testing and investigation. Tests done by Barton on Model 763 and 764 electronic transmitters found that the output deviations are caused by leakage current paths from the electronics to the case ground after high temperature exposure. On October 29, 1982 Barton issued a 10 CFR Part 21 notification stating that the problem with Model 763 and 764 transmitters is exhibited in the form of thermal non-repeatability and results in performance outside Barton's specifications. An initial determination was made that the problem affected transmitters manufactured after September 1, 1981. (The final report from ITT Barton states that units delivered after July 1979 could be affected by the problem). The initial 10 CFR 21 report (Ref. 1) was also forwarded to affected users for information. (The users listed in Reference 1 are: Westinghouse, GE, CE, TVA, Bechtel, Baltimore Gas & Electric, Portland GE, Commonwealth Edison, PG&E, Duke Power, Louisiana P&L, Florida P&L, and Iowa Electric Power & Light).

ITT-Barton submitted a Final Report (10 CFR Part 21) on May 17, 1983. In the final report Barton stated that a leakage current path through the shafts of the zero and span potentiometers to the mounting bracket was detected. This resulted in non-repeatability at 320°F. The solution to this problem is to install a fiberglass insulator between the potentiometer shafts and the mounting bracket.

(Barton has also stated that field repair kits are being prepared and that the kit will contain all of the necessary materials and instructions required for on-site correction of the leakage current problem).

Tests conducted on corrected transmitters has revealed that the test methodology used on all units identified as potentially defective could result in out of specification performance at normal temperatures. Barton has provided their customers with the worst case performance data for their evaluation. Barton also states that the test methods have been changed and specified performance is presently being achieved in production.

FINDINGS

Barton Model 763 and 764 electronic transmitters delivered after July 1979 have been identified to have a potential thermal non-repeatability problem. These units are used at several nuclear power plants (operating and NTOL reactor units). Barton has informed users of these transmitters of the potential problem through 10 CFR Part 21 notifications dated October 29, 1982 and May 18, 1983. Since this is a generic problem that applies to several nuclear power plants, IE is planning to issue an Information Notice alerting all licensees to the potential problem and the manufacturer's solution to the problem.

CONCLUSION

Based on our review we conclude that the actions being taken by Barton and the proposed actions by IE would adequately address the problem associated with Barton Model 763 and 764 electron transmitters.