



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

JUL 19 1982

AEOD/E232

MEMORANDUM FOR: Carlyle Michelson, Director
Office for Analysis and Evaluation
of Operational Data

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

Matthew Chiramal, Lead Engineer
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FROM: Frank Ashe
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SUBJECT: POTENTIAL DEFICIENCY IN THE SIGMA LUMIGRAPH
INDICATORS MODEL NUMBER 9270

REFERENCES: (1) Southern California Edison Company, "Licensee
Event Report: 82-001/01T-0 dated January 12, 1982,
"Plant Unit: San Onofre Unit Number 1, Docket No.
50-206.

(2) Letter from D. R. Lynch, International Instruments
Division Sigma Instruments Incorporated, to Procurement
Manager, Southern California Edison Company, Subject:
"P. O. SIS00009 Dated December 18, 1979 Lumigraph
Indicators," dated December 10, 1981.

(3) Memorandum from J. L. Crews, RV, to E. L. Jordan
IE, R. W. Starostecki, RI, R. C. Lewis, RII, R. L.
Spessard, RIII, K. V. Seyfrit, RIV, and V. Potapovs
RIV, "POTENTIAL GENERIC ISSUE: AGING RESISTORS CAUSE
ERRONEOUS READINGS IN SIGMA LUMIGRAPH INDICATORS
(MODEL 9270)," February 3, 1982.

References 1 and 2 above provide a description of a potential deficiency in the Model 9270 Lumigraph Indicator. The deficiency as described relates to the R2 and R6 resistors which are located in the associated alarm and/or indicator circuitry. As stated, the R2 resistor on the alarm unit input assembly board can overheat and in some units the resistors change in value quite considerably thus causing the indicator display to malfunction.

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In addition, the R2 and R6 resistors on the output card of all dual indicators can produce the same result. For a single indicator it is the R2 resistor on the output card which may experience this change in value. The problem is not with the resistor quality, but rather the choice of resistor type and construction (that is, inappropriate application of a particular component for a specific circuit). The resistors are 27,000 ohm, 1 watt, carbon composition units and should be upgraded to 27,000 ohm, 3 watt, wire wound units. While the indicator will malfunction (i.e. provide erroneous indication) as a result of a change in resistance, no loss of alarm will occur in alarm units. Also, possible failures due to this change in resistance may occur from one to many years after these devices are placed into service.

The Plant Systems Unit has conducted followup activities regarding the concern described above. These activities included a search of the data base system of the National Institute of Health (NIH), discussions with headquarters personnel in the Office of Inspection and Enforcement and a discussion with a representative of the manufacturer for these indicators.

The results of the NIH data base search did not identify any other nuclear units which use these specific make and model number indicators. At this time, the headquarters staff of the Office of Inspection and Enforcement (IE) has been identified as having the lead on this item of concern. Based on discussions with IE personnel it appears that they will not be taking further actions on this item since the stated malfunction does not result in the loss of alarm in the alarm unit or the loss of any specific control function.

However, based on a discussion with the representative from the manufacturer it appears that these specific indicators are installed in other nuclear stations. Further, we have verified by way of the resident inspector that they are installed at the North Anna Station and currently this station has not experienced any problems with these devices and further have not replaced the identified resistors. In addition, the Arkansas Nuclear and Maine Yankee Stations may also use these specific indicators. We have advised the IE headquarters staff of these findings and recommend that AEOD conduct no further action regarding this concern. However, we do recommend that this specific item be placed on our "watch" list and if other similar malfunctions occur in these indicators then additional actions should be taken at such time.

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cc: C. J. Heltemes, AEOD
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