

NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
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PNEUMATIC TIME DELAY RELAY SETPOINT DRIFT

DESCRIPTION OF CIRCUMSTANCES:

Millstone Unit 2 and North Anna Unit 1 facilities experienced repeated diesel-generator starting failures; several of which investigation revealed were caused by setpoint drift on the pneumatic time delay relays used in the control circuitry for the diesel-generator. The relays involved are identified as ITE Imperial, Catalog Nos. J20T3/J13P20 and J20T3/J13P30. The affected diesel-generators are Fairbanks Morse units by Colt Industries.

These types of time delay relays are used in several different applications in the control circuitry for the diesel-generator. One of these relays is used to bypass the normal low oil pressure shutdown functions during diesel-generator startup. At Millstone Unit 2 the relay had drifted approximately 10 seconds from the required 20 second delay which allowed the low oil pressure trip circuit to shut down the diesel-generator before the oil pressure had time to build up. At North Anna Unit 1, excessive drift of similar ITE time delay relays was also observed during preoperational testing of the diesel-generators.

ITE Imperial has identified the time delay relays involved at Millstone Unit 2 as coming from the 1972 and 1973 production runs. The catalog specification for this vintage of relays requires a trip-point setting repeat accuracy of ± 15 percent. Units manufactured in 1974 or later have demonstrated a repeat accuracy of ± 3 to 4 percent, well within the catalog specification of ± 15 percent.

Month and year of production for the time delay relays in question can be determined by the six or seven digit bold white number on the timer head. The first two or three digits indicate the month and year of production. (The last four digits provide other coded information.) For example: 124056 indicates a production date of January 1972; 1234056 indicates a production date of December 1973.

According to the time delay relay manufacturers, the potential for setpoint drift is a common characteristic of most pneumatic relays, irrespective of manufacturer. The magnitude of setpoint drift is related to the repeat accuracy specified for the device and the mode in which it will operate, that is, energized or deenergized. In most cases energized units tend to be susceptible to greater deviations from setpoint because of the temperature effects on the internal parts of the unit.

ACTION TO BE TAKEN BY LICENSEES AND PERMIT HOLDERS:

FOR ALL POWER REACTOR FACILITIES WITH AN OPERATING LICENSE OR CONSTRUCTION PERMIT:

1. If you have been notified of the potential problem, describe the actions taken regarding corrective measures to identify and resolve any setpoint drift problems with the ITE time-delay relays.
2. In addition to Item 1 above, pneumatic time delay relays intended for use in safety related systems and specifying a repeat accuracy range of ± 15 percent or greater should be demonstrated to provide satisfactory operation. You are requested to provide your basis for concluding that existing pneumatic time delay relays are functioning as required, or provide your plans to assure satisfactory operation.

Reports for facilities with operating licenses should be submitted within 30 days after receipt of this Bulletin, and reports for facilities with construction permits should be submitted within 60 days after receipt of this Bulletin. Your report should include the date when the above actions were or will be completed.

Reports should be submitted to the Director of the NRC Regional Office and a copy should be forwarded to the NRC Office of Inspection and Enforcement, Division of Reactor Inspection Programs, Washington, D. C. 20555.

Approval of NRC requirements for reports concerning possible generic problems has been obtained under 44 U.S.C 3152 from the U. S. General Accounting Office. (GAO Approval 8-180255 (R0072), expires 7/31/77)