William E. Caldwell, Jr.
Vice President

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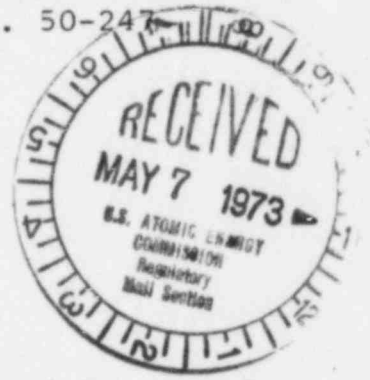
Telephone (212) 460-5181

May 4, 1973

Re: Indian Point Unit No. 2
Docket No. 50-247



Mr. John F. O'Leary, Director
Directorate of Licensing
U. S. Atomic Energy Commission
Washington, D. C. 20545

Dear Mr. O'Leary

This report of an Abnormal Occurrence is submitted in accordance with the requirements of Section 6.6.1 of the Unit No. 2 Technical Specifications:

On April 26, 1973 at approximately 8:30 A.M., Number 22 Main Steam Line Isolation Valve failed to close in response to a manual signal initiated by the Control Room Operator. The signal was initiated for the purpose of testing valve closure time. At the time of the occurrence, the reactor was shutdown with all control rods inserted. The Reactor Coolant System pressure and temperature were 2235 psig and 525°F, respectively, and the reactor coolant boron concentration was 1790 ppm. With this concentration of boron and all control rods fully inserted, the reactor was subcritical by at least 10 percent delta k/k.

Initial investigation of the occurrence revealed that both of the solenoid-operated air cylinder exhaust valves (two in parallel) failed to open.

The remaining three Main Steam Line Isolation Valves were also tested and these results were found to be satisfactory. However, it was noted that only one of the two air exhaust solenoids associated with Nos. 23 and 24 Main Steam Line Isolation Valves functioned.

2374

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Mr. John F. O'Leary May 4, 1973

Description and Evaluation of Safety Implications

Each of the steam generators is equipped with an isolation valve in its main steam line. These valves contain a free swinging disc which is normally held up out of the main steam flow path by an air piston. The isolation valves are automatically closed upon receipt of a signal from the steam line break protection system as described in Section 7 of the FSAR. They may also be closed by manual action.

The safety implications of this occurrence stem primarily from the fact that four out of sixteen solenoid valves failed to function properly, and not the fact that one isolation valve failed to close. This is so because: (1) there was no actual steam break, and it was, therefore, not essential that the isolation valve close, (2) the safety analysis presented in Section 14.2.5 of the FSAR shows that the core is protected even if one of the four isolation valves should fail to close, and (3) a repeat failure of four solenoids, in a certain combination, could result in two steam line isolation valves not closing in response to an actual pipe rupture signal. If the postulated pipe rupture was a large one downstream of the isolation valves, the related safety effect could be significant.

Determination of Cause

Each of the four subject solenoid valves was thoroughly examined to determine the cause of its malfunctioning. On the basis of these examinations, it has been concluded that the cause was the same in each case, and that each of the malfunctions resulted from binding of the linkage connecting the solenoid armature to the valve it is intended to operate. The binding was caused by a combination of hardening of the lubricant used at the several pivot points associated with each solenoid, and contamination of the lubricant through long-term exposure to the dust-laden air commonly caused to exist at a construction site.

Corrective Action to Prevent Recurrence

As a means for preventing recurrence, the linkage associated with each of the four subject solenoids has been thoroughly cleaned of all lubricant. In addition, the lubricant is to be removed from the remaining twelve solenoid valves prior to initial criticality of the reactor.

Mr. John F. O'Leary May 4, 1973

A reevaluation as to the need for lubrication has been made, and we have concluded that none is required in this particular application. The solenoid linkage will, therefore, be left free of lubricant to prevent recurrence.

To assure that the potential for similar malfunctions does not exist elsewhere within the Unit No.2 facility, we are currently reviewing the records to determine in what other applications this type of solenoid has been employed. In any case where the same or similar solenoid is used, we will take steps to remove all traces of lubricant.

Each of the solenoid valves will be thoroughly tested to insure its operability following the above described corrective and preventive maintenance efforts. In addition, periodic inspection of solenoid valve linkage is to be incorporated in our preventive maintenance program.

Conclusion

Although, as stated previously, a malfunction of four of the sixteen solenoid valves associated with the Unit No. 2 main steam isolation valves carries with it safety implications, we do not believe the probability of recurrence is significant. The cause of these particular malfunctions was identified, and the principal ingredient necessary to cause repetition, i.e., the lubricant, either has been eliminated or will be within the next several days. Our Nuclear Facilities Safety Committee reviewed the circumstances relating to this abnormal occurrence and has approved the corrective measures instituted as a result thereof.

Very truly yours

Peter Zarakas

Peter Zarakas
Assistant Vice President