January 10, 1973

Director, Directorate of Licensing
USAEC
Washington, D.C. 20545

Docket Number 50-293
License DPR-35, Amendment No. 1

Abnormal Occurrence AO-72-19

In accordance with Pilgrim Nuclear Power Station Technical Specification 6.6.A.3, we hereby report on Abnormal Occurrence AO-72-19, which occurred on December 30, 1972.

Summary of Occurrence

On December 30, 1972 while the reactor was in hot standby condition, the RCIC system became inoperable as a result of loss of RCIC turbine oil pressure. The RCIC system was in standby in the test mode to assist in technical specification surveillance of the core spray. The RCIC system has been made inoperable for maintenance prior to the occurrence, therefore with the inoperability of the RCIC system, all control rods were inserted and reduction of reactor pressure toward 105 psig was initiated in accordance with Technical Specification 3.5.E.3. The RCIC system was returned to operable status about ten hours after the RCIC system became inoperable and the RCIC system was repaired and returned to operable status within thirteen hours after the occurrence.

Immediate Corrective Action

The problem was traced to worn gears in the drive train of the turbine driven oil pump. These gears were replaced, clearances set and verified and oil system drained and refilled with new oil. The RCIC system was then successfully functionally tested to confirm operability.

Subsequent Investigations and Corrective Actions

To investigate the reason for the wearing of the RCIC oil pump drive train gears, the vendor, Terry Turbine, was contacted and additional operational tests and inspections were performed under the direction of their representative. The inspection of the drive train gear clearances and gear tooth lash did not reveal any cause for the worn gears. Runout measurements were made of the turbine shaft on which the drive gear is mounted which checks satisfactory alignment and straightness of the turbine shaft. Testing to remedy for the worn gears could be determined, the speed will be increased on a monthly basis after turbine operation until 100 hours operation is achieved to determine if excessive gear wear is recurring.

During operational tests of the RCIC system on January 8, a resistor burned out in the flow signal converter because of an accidental ground that occurred while electrical measurements were being taken coupled with excessive current from a high setting on the test mode flow control potentiometer. This failure caused the RCIC turbine governor control system to become inoperable. A new flow signal converter was obtained from the vendor and installed. On January 10, the system was satisfactorily functionally tested and returned to operable status. The technician who was taking the electrical measurements when the accidental ground occurred has been reinstructed in the proper procedure and care required while applying test instruments. In addition, procedural controls were implemented to prevent excessively high settings on the test mode flow control potentiometer for both the RCIC and HPCI systems since these systems have similar circuits.

Because the RCIC system was inoperable from the flow signal converter failure, an operational surveillance test was run on the HPCI system on January 9. During the performance of this test, a gasket failed on the gland seal steam exhauster unit. The gasket was replaced and the system satisfactorily tested within eight hours from the time of gasket failure. The blown gasket resulted from above normal pressures (200 psi vs. 150 psi rated pressure) on the coolant water side of the gland seal steam exhauster during the starting of the HPCI system. The basic cause of the above normal pressure was slow response of pressure control valve 2301-46 which reduces the cooling water supply to the gland seal steam exhauster from 200 psi to about 65 psi. The pressure control valve was limited to an opening of 50% of stroke which is acceptable for all modes of operation and controller adjustments were made for quicker response of the valve on the initial start of the HPCI system. The system was successfully started two times after the response time adjustments were made with no further gasket problems. The investigation also revealed the slow response problem of the pressure control valve was accentuated by an over-sized trim in the valve. The trim is rated for 450 gpm in accordance with the original specification, however, the true flow requirement is 70 gpm. New trim has been ordered from the valve vendor and will be installed when received. This additional corrective action will further reduce the probability of gland seal steam exhauster gasket failures in the future.

Respectfully submitted,

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