NRC FORM 366 (7 77)

U. S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT

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Description of Event

During the Startup Physics Testing Program for North Anna Unit 1, Cycle 2, the measured values for F(delta H) exceeded the design value tolerance at hot-zero-power with D-bank inserted, and at 3% power with Banks C and D at the insertion limits. These measurements provide a basis for determining that the existing control rod insertion limits given in Technical Specification Figure 3.1-1 are no longer appropriate for Unit 1, Cycle 2 operation. This event is reportable pursuant to T.S. 6.9.1.8.i.

Probable Consequences of Event

The measured values for F(delta H) do not constitute a violation of Technical Specification limits since power was maintained at less than 5% of rated thermal power. The health and safety of the general public were not affected by this event.

Cause

The cause of the high F(delta H) values is the presence of a quadrant power tilt which was identified through incore flux map analyses. It is believed that the quadrant power tilt is being caused by a non-symmetric isotopic distribution within the irradiated fuel as a result of the quadrant power tilt that was present during Cycle 1 operation.

Immediate Corrective Action

Prior to increasing reactor power above 5% of rated thermal power, a safety evaluation was performed to justify power operation with revised control rod insertion limits. A flux map was taken at approximately 3% power with control bank D at its revised insertion limit, and the measured value for F(delta H) was verified to be acceptable. After obtaining NRC concurrence for power operation in compliance with the revised insertion limit, which was implemented administratively, reactor power was increased to 30%. With D bank near its revised insertion limit at 30% power, flux map results again provided an acceptable measured value for F(delta H).

Scheduled Corrective Action

The revised insertion limits along with the supporting safety evaluation will be submitted to the NRC as a Proposed Technical Specification Change for Unit 1, Cycle 2 operation. An investigation is under way to determine the primary cause of the power tilt.

Actions Taken to Prevent Recurrence

Once the primary cause of the power tilt has been determined, a plan will be developed and implemented that will either eliminate the primary cause for the power tilt, or accomodate its effects.

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