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RA05-25

March 9, 2005

United States Nuclear Regulatory Commission
Attention: NRC Region III Administrator
2443 Warrenville Road, Suite 210
Lisle, IL 60532-4352

LaSalle County Station, Unit 1
Facility Operating License No. NPF-11
NRC Docket No. 50-373

Subject: License Condition 2.F(a) Report
Exceeding License Condition 2.C (1)

On February 23, 2005, at 1143 hours, LaSalle County Station (LSCS) Unit 1 exceeded License Condition 2.C (1) thermal power limit of 3489 megawatts thermal (MWth). The cause was due to an increase in reactor recirculation (RR) flow that resulted from RR Flow Control Valves (FCVs) going from approximately 78 percent open to approximately 92 percent open. On February 23, 2005, at 1734 hours, LSCS, in accordance with License Condition 2.F(a) for Unit 1, reported this condition by phone to the U.S. NRC Director, Division of Reactor Projects, Region III. During this call, we reported that current information indicated the actual thermal power level exceeded the licensed thermal power limit by 3.2 percent. This report is being submitted consistent with the requirements of LSCS Unit 1 License Condition 2.F(a), which requires a written follow up report within 14 days.

Our investigation has determined that the thermal power for Unit 1 exceeded the licensed thermal power limit by 3.2 percent (i.e., a peak of 3599.5 MWth). This event is bounded by an Updated Final Safety Analysis Report (UFSAR) analyzed event described in Chapter 15.4.5, "Recirculation Flow Control Failure with Increasing Flow." The safety significance of this event was small because the analysis based on the Powerplex (PPLX) predictor showed that the most limiting thermal limit, Maximum Fraction of Limiting Critical Power Ratio (MFLCPR), increased from 0.942 to 0.951. Thus, the thermal limits were not challenged. Exelon Generation Company's Nuclear Fuels organization and the fuel vendor performed independent evaluations of this transient. These evaluations confirmed the site's results and verified that the event did not challenge the Minimum Critical Power Ratio (MCPR) safety limit and that this event was within the LSCS analyzed transients. Technical Specification requirements for the thermal limits were met throughout the duration of this transient.

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At approximately 1146 hours, the Unit 1 Control Room Supervisor (CRS) (i.e., a Senior Reactor Operator) observed that Unit 1 power had increased from 1194 megawatts electric (MWe) to 1223 MWe and directed Nuclear Station Operator (NSO) (i.e., Reactor Operator) to lower power to 95 percent.

From approximately 1147 to 1148 hours, the NSO started lowering power using the "LOWER" pushbutton on the RR Ganged Flow Control Station. After two attempts to lower power using the RR ganged flow control station, the NSO did not observe the expected response. At approximately 1149 hours, the NSO placed the RR flow control Manual/Automatic stations in manual and lowered each FCV to approximately 80 percent. The FCVs remained at the approximately 80 percent open position.

The following times are based on the plant process computer (PPC). On February 23, 2005, at 1141:06 hours, core flow increases from approximately 99 Mlb/hr to 100.3 Mlb/hr (other core conditions were: 1193 MWe and 1003.2 psig reactor (Rx) pressure). At 1141:18 hours, core flow increase ended at approximately 104.2 Mlb/hr (other core conditions: 1215 MWe, 1006.2 psig Rx pressure, and instantaneous PPLX core thermal power (CTP) 3497 MWth). At 1142:40 hours, Indicated thermal power exceeds 100 percent CTP as recorded by PPLX input to the PPC at a value of 3532.310 MWth (i.e., 101.2 percent) (other core conditions: 1226 MWe, 1006.3 psig Rx pressure, 104.1 Mlb/hr core flow). This also resulted in a PPC "L3" high alarm for instantaneous PPLX CTP increasing above the 101 percent CTP power setpoint. (Note that the PPC "L3" alarm is a short, low decibel, audible tone.) At 1143:40 hours, maximum recorded thermal power was 3599.5 MWth (i.e., 103.2 percent) (other core conditions were 1223 MWe, 1005.1 psig Rx pressure, 103.3 Mlb/hr core flow).

At 1149:40 hours, indicated power was recorded at 3584 MWth on the PPC (other core conditions were: 1002.6 psig Rx pressure, 100.5 Mlb/hr core flow). The other core parameters showed that core flow had been lowered successfully as MWe, Rx pressure, and core flow have returned to acceptable values. The MWth value on the PPC lags the other core parameters by approximately two minutes. This delay is a result of data transfer from the PPC (i.e., core parameters) to PPLX, which collects data for a minute then takes another minute to calculate power and sends the data back to the PPC in terms of MWth.

At 1150:40 hours, indicated power was recorded at 3542 MWth on the PPC (other core conditions were: 1190 MWe, 1001.7 psig Rx pressure, 99.0 Mlb/hr core flow).

At 1151:40 hours, indicated power was recorded at 3471 MWth on the PPC (other core conditions were: 1186.4 MWe, 1001.6 psig Rx Pressure, and 98.0 Mlb/hr core flow).

A review of the work history of the associated RR ganged flow controller has revealed that there has not been any corrective maintenance performed since initial installation in January 2003.

Troubleshooting to date has verified that the as-found ganged controller voltage levels and logic status were correct for plant conditions, i.e., the raise/lower signals were not active, no significant alternating current noise was present at the ganged controller raise/lower inputs, no self-test error messages were in the RR flow control system controller's log, and the ganged controller voltage levels and logic status respond properly to the depression of the raise and lower buttons with no sign of sticking.

Visual inspection of the accessible wiring connections did not reveal anything that would have contributed to the observed failure. Thus far, troubleshooting has not identified any abnormal conditions that would explain this transient.

Troubleshooting of the failure is continuing with a recorder installed to monitor the ganged controller raise/lower inputs for any signs of intermittent noise. The RR FCVs are being maintained in manual while troubleshooting and repairs are completed. The cause of the thermal power level transient was a RR flow excursion. The exact cause of the RR flow excursion remains under investigation, which is being tracked by Corrective Action Program Issue Report 304613.

The PPC L3 alarm for MWth, MWe and Rx Pressure has been changed to a "L4" alarm, which alarms continuously at a much greater decibel level until acknowledged. While this action would not have prevented the event, it would have aided in earlier detection and initiation of action to correct.

Our review of this event to date has determined that there have been no precursors identified that could have reasonably prevented this transient. We are performing a critique of the operating crew performance.

Should you have any questions concerning this letter, please contact Mr. Terrence W. Simpkin, Regulatory Assurance Manager, at (815) 415-2800.

Respectfully,



Susan R. Landahl
Site Vice President
LaSalle County Station

cc: NRC Senior Resident Inspector - LaSalle County Station