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October 18, 1984 18 P 1:48

Mr. James P. O'Reilly, Regional Administrator
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Re: Catawba Nuclear Station, Unit 1
Docket No. 50-413

Dear Mr. O'Reilly:

Pursuant to Technical Specification 3.4.9.3, Action Statement C, please find attached a Special Report concerning the automatic opening of a pressurizer power-operated relief valve.

Very truly yours,

Hal B. Tucker

Hal B. Tucker

RWO:slb

Attachment

cc: Director
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

NRC Resident Inspector
Catawba Nuclear Station

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On September 15, 1984, at 0352 hours, Pressurizer Power Operated Relief Valve (PORV) 1NC32B automatically opened, and remained open for 29 seconds to relieve a pressure increase in the Reactor Coolant (NC) System caused by an NC Pump start. One PORV was able to relieve the minor pressure transient. This Catawba incident is reportable pursuant to Technical Specification 3.4.9.3, Action Statement C, which requires submittal of a Special Report pursuant to Technical Specification 6.9.2.

A Power Operated Relief Valve (PORV) opens when necessary to relieve pressure, thereby mitigating system pressure transients by relieving to the pressurizer relief tank. The pressurizer PORV's can be placed in the MANUAL or AUTOMATIC Mode. In MANUAL, the PORV will open; in AUTOMATIC, the PORV will open when the Reactor Coolant (NC) System Wide Range Pressure Transmitter actuates the Process Control Interlock. While in the AUTO Mode, the PORV's are aligned to open at either the upper high pressure setpoint (2335 PSIG) or the lower high pressure setpoint (400 PSIG), selected depending upon system conditions. 1NC32B was set to the low setpoint at this time.

At 0352 hours on 9/15/84, Unit 1 was in Mode 5, Cold Shutdown. Reactor Coolant (NC) System pressure was approximately 370 PSIG and Tave was approximately 140^{o}F. Reactor Coolant was being circulated by the Residual Heat Removal (ND) System, Train A. At 0352:03 hours, NC Pump 1B was started. Coincident with the pump start, NC System wide range pressure started increasing. At 0352:38 hours, Pressurizer PORV 1NC32B began to open, reaching the fully open position in about two seconds. The valve stayed fully open for approximately 29 seconds. Valve 1NC32B closed at 0353:10 hours, and NC System wide range pressure indicated 371 PSIG. During this incident PORV 1NC32B was in the Low Pressure Mode.

The NC System Pressure Strip Chart Recorder was not functioning at the time of the incident. Also, Computer Point A0719 (NC System Wide Range Pressure) was set up on temporary alarm at 376 PSIG, providing pressure printout on the Alarm Typer only when it reached 376 PSIG increasing or decreasing. Therefore, the Alarm Typer did not print maximum NC pressure during the transient. However, the Nuclear Control Operator (NCO) was observing the Operator aid computer at the time of the incident. The maximum NC pressure observed was 397 PSIG.

During this incident a difference of 12^{o}F existed between the Reactor Coolant and the secondary side, with the secondary side being the higher. When Reactor Coolant is flowing through the Steam Generators under this condition, the possibility exists for an increase in NC pressure due to thermal expansion. However, a 12^{o}F Delta-T with an NC Pump Start has been evaluated, and the effect on NC pressure due to thermal expansion is considered to be very minimal.

Experiences at McGuire Nuclear Station have indicated that when the first NC Pump is started, NC pressure will often increase 30 to 40 PSIG. The Catawba NC Pump Operating Procedure, OP/1/A/6150/02A, did not provide guidance to the Operator on the potential pressure increases when starting an NC Pump. Minor pressure transients were expected by Operations, however, specific values had not been experienced.

Work Request 82LAP was initiated to check the calibration of Loop 1NC5140. The "as-found" data was within tolerance.

A change was made to the NC Pump Operating Procedure, OP/1/A/6150/02A, inserting the following limits and precautions step:

> "Starting an NC Pump when NC System is >350 PSIG may cause a pressurizer PORV to open when in low pressure mode."

The Shift Operators will be made aware of the recent change made to OP/1/A/6150/02A by means of an Operator Update.

Verification of Subsequent Corrective Action was completion of Work Request 82LAP and Procedure change number 8 to OP/1/A/6150/02A.

Verfication of Planned Corrective Action will be a completed Operator Update.

SAFETY ANALYSIS

Given an NC temperature of 140^{o}F and a 0^{o}F cooldown rate, 675 PSIG is the maximum allowable NC pressure before metal nil ductility concerns are encountered. Maximum NC pressure during this transient was approximately 400 PSIG, never coming near the 675 PSIG limit. (See Tech Spec, figure 3.4.3.)

All steam relieved through the PORV went directly to and was contained in the Pressurizer Relief Tank. The health and safety of the public was not affected by this incident.