STARTUP TEST PROCEDURE 26

RELIEF VALVES

1. PURPOSE

A. The purpose of this test is as follows:

1. To verify the proper operation of the primary system relief valves.

2. To determine each relief valve's capacity.

3. To verify that the discharge piping is not blocked.

4. To verify that each relief valve reseats following operation.

5. To obtain a transient recorder signature of each relief valve operation for subsequent comparisons.

6. To confirm proper overall functioning of the Low-Low Set Pressure Relief Logic.

7. To verify proper safety/relief valve discharge line backpressure.

2. CRITERIA

Level 1.

A. There should be positive indication of steam discharge during the manual actuation of each valve.

B. The sum total of the percentage corrected flow rates must be greater than 111.5% of the Nuclear Boiler warranted steam flow at 103% of the spring setpoint pressure of 1165 psig.

C. The Low-Low Set Pressure Relief logic shall function to preclude subsequent simultaneous SRV actuations following the initial SRV actuation due to the original pressurization transient.

Level 2.

A. No observable leakage shall exist following reclosure.

B. The pressure regulator must satisfactorily control the reactor transient and close the control and/or bypass valves by an amount equivalent to the relief valve steam flow.

C. The transient recorder signatures for each valve must be analyzed for a relative system response comparison. The delay time (between trip and motion) shall be less than or equal to 0.1 seconds, and the response time (main disk stroke time) shall be less than or equal to 0.15 seconds.

D. No individual relief valve may have a flow rate (corrected to the setpoint pressure) that, considering measurement uncertainties, is less than 90%, or greater than 122.5%, of its expected flow rate of 862,400 lbs/hr at 103% of the spring setpoint pressure of 1146 psig.

E. No more than 25% of the installed relief valves may have an individual corrected flow rate that is between 90% - 100% of their expected flow rates.

F. The total flow capacity of the safety relief valves used in the Automatic Depressurization System must be equal to or greater than 4.8×10^6 lbs/hr. at 1125 psig when the valve having the highest measured capacity is assumed to be out of service.

G. The selected MSRV with the highest nominal safety spring setting must indicate full open when manually actuated with its accumulator air supply isolated and vented.

H. Discharge line backpressure shall be comparable with information presented on the Nuclear Boiler Process Diagram.

I. When the Low-Low Pressure Relief logic functions, the open/close actions of the SRV's shall occur within $\pm$13 psi and $\pm$20 psi of their design prints respectively.

3. RESULTS

Test Condition 3.

An initial set of data was taken to define the relationship between bypass valve position and bypass valve flow. An additional, confirmatory set of data will be taken during subsequent Test Condition 3 testing. This data will then be used to determine relief valve capacities. No criteria were applicable to the testing already performed.

Further testing at this test condition will include relief valve capacity and timing measurements and low-low set relief logic verfication.