



Public Service Electric and Gas Company 80 Park Place Newark, N.J. 07101 Phone 201/430-7000

February 8, 1980

Director of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Mr. Olan D. Parr, Chief
Light Water Reactors Branch 3
Division of Project Management

Gentlemen:

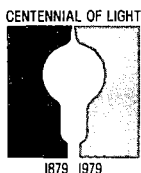
SPECIAL LOW POWER TEST PROGRAM
NO. 2 UNIT
SALEM NUCLEAR GENERATING STATION
DOCKET NO. 50-311

Public Service Electric and Gas wishes to advise you that we are proceeding with the development of a special low power test program to be performed on Salem 2 during the initial startup program at power levels up to five percent. A summary of each of the special low power tests to be performed are provided in the enclosure to this letter. The detailed procedures and safety evaluations of these tests will be provided for your review and approval prior to performing the tests.

The test program is designed to demonstrate the capability of Salem 2 to attain and maintain natural circulation under a number of different plant conditions as well as provide hands-on training for our operating staff.

It is our intent to have each Salem 2 licensed operator participate in the conduct of at least one of the tests that demonstrate natural circulation capability during the initial startup program.

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It should be noted, however, that while every effort will be made to attain the test objectives, some modifications to the program may become necessary should the need become apparent during the development of the detailed test procedures or preparation of the safety evaluations.

Should you have any questions in this regard, please do not hesitate to contact us.

Very truly yours,



R. L. Mittl
General Manager -
Licensing and Environment
Engineering and Construction

Enclosure

1. Natural Circulation Verification

Purpose

Verify establishment of natural circulation in the primary system

Initial Conditions

Reactor Coolant Pumps operating

Steam Generators being fed by normal feedwater supply

Pressurizer Heater controlling pressure

Reactor Power = 3%

Normal primary system temperature and pressure

Test Description

Test will be initiated by tripping of all reactor coolant pumps. The operator will verify establishment of natural circulation by observing response of the hot leg and cold leg temperature instrumentation in each loop. Core exit thermocouples will be monitored to assess core flow distribution.

II. Natural Circulation with Simulated Loss of Offsite Power

Purpose

Verify that natural circulation cooling can be established and maintained following loss of offsite power.

Initial Conditions

Reactor Power 1%.

Reactor Coolant Pumps operating.

Auxiliary Feed System operating on offsite power.

Pressurizer Heaters controlling pressure.

Normal primary system temperature and pressure.

Test Description

Test will be initiated by a simulated loss of offsite power.

Reactor coolant pumps will be tripped, auxiliary feed pump and pressurizer heater loads will be transferred to diesel power.

The operator will verify establishment of natural circulation by response of hot leg and cold leg temperature instrumentation in each loop. Core exit thermocouples will be monitored to assess the core flow distribution.

III. Natural Circulation with Loss of Pressurizer Heaters

Purpose

Verify establishment of natural circulation and determine the rate of decrease of margin to saturation while in this mode and the ability to reestablish margin through cooldown and makeup.

Initial Conditions

Reactor Power = 3%

Reactor Coolant Pumps operating

Secondary system steam flow adjusted to maintain constant primary coolant temperature.

Steam generators being fed by normal feedwater supply

Pressurizer heaters controlling pressure

Test Description

Test will be initiated by tripping pressurizer heaters and reactor coolant pumps. Establishment of natural circulation will be verified by observing response of hot leg and cold leg temperature instrumentation in each loop. Core exit thermocouples will be monitored to assess the core flow distribution. The operator will observe the saturation meter to verify margin. Prior to reaching saturation, secondary side steam flow will be increased to affect cooldown and reestablishment of saturation margin will be verified. In conjunction with cooldown, the operator feeds the primary system to compensate for shrinkage.

IV. Effect of Steam Generator Isolation (Secondary Side) on Natural Circulation

Purpose

Verify the effects of steam generator isolation (secondary side) on natural circulation.

Initial Conditions

Reactor Power 3%

All steam generators fed by normal feedwater supply

Reactor coolant pumps on

Secondary system steam flow adjusted to maintain constant temperature.

Test Description

Trip reactor coolant pumps and verify establishment of natural circulation. Cooldown using steam dumps to provide sufficient margin to steam generator safeties. Isolate steam generators one at a time until two are isolated or primary system temperature starts to increase. Hot and cold leg temperature will be monitored to ensure that sufficient heat is being removed by the natural circulation process. The steam generators will be returned to service one at a time and the re-establishment of natural circulation will be verified in each loop. Core exit thermocouples will be monitored to assess core flow distribution.

V. Natural Circulation at Reduced Pressure

Purpose

Verify operation and test accuracy of primary system saturation meter.

Provide operations personnel with online experience in using saturation meter to monitor and control margin to saturation.

Provide operational verification so that changes in saturation margin will not affect natural circulation provided adequate margin to saturation exists.

Initial Conditions

Reactor Power = .3%

Reactor coolant pumps operating

Steam generators being fed by normal feedwater supply

Pressurizer heaters controlling pressure

Reactor coolant system pressure normal

Secondary system steam flow adjusted to maintain constant temperature

Test Description

Test is initiated by tripping of reactor coolant pumps and verifying establishment of natural circulation. Primary system pressure will be reduced as primary system temperature is held constant. Accuracy of saturation meter will be verified during pressure reductions. The effect of each pressure reduction on natural circulation will be observed. Core exit thermocouples will be monitored to assess core flow distribution.

VI. Determine the cooldown capability of the charging and letdown system.

Purpose

Determine the cooldown capability of the charging and letdown system with the secondary plant isolated.

Initial Conditions

Reactor shutdown

Pressurizer heaters controlling pressure

Reactor coolant pumps running

All steam generators fed by normal feedwater flow

Test Description

Trip three reactor coolant pumps. Cooldown using steam dumps to provide margin to steam generator safeties. Isolate all steam generators. Establish charging and letdown for maximum cooling capability. Verify the cooldown capability of the charging and letdown system from the hot and cold leg temperatures in the active loop. This will be accomplished by periodically interrupting feed and bleed to permit heatup. Core exit thermocouples will be monitored to assess core flow distribution.

VII. Simulated Loss of All Onsite and Offsite AC Power to Auxiliary Feedwater System

Purpose

To verify:

1. Hot standby conditions can be maintained,
2. Auxiliary feedwater can be controlled by manual means; i.e., with loss of AC power and control air,
3. Ability of 125-volt battery to supply 125-volt vital AC, and
4. Selected equipment areas do not exceed maximum design temperature.

Initial Conditions

Reactor at hot standby

Reactor Coolant Pumps operating.

Pressurizer heaters controlling primary system pressure.

Test Description

Test will be initiated by:

1. Tripping pressurizer heaters,
2. Removing AC power from auxiliary feedwater components and main steam power reliefs,
3. Tripping selected space and equipment coolers,
4. Tripping vital battery chargers and AC power to inverter,,
5. Isolating main feedwater and main steam lines,
6. Establishing manual control of auxiliary feedwater,
7. After two hours, terminating the test by restoring AC power and returning equipment to normal service.