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Director of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
Attn: Mr. Steven A. Varga, Chief
Operating Reactors Branch No. 1
Division of Licensing
Washington, DC 20555

Reference: Beaver Valley Power Station, Unit No. 1
Docket No. 50-334, License No. DPR-66
N-1 Loop Operation

Gentlemen:

In response to your letter of January 29, 1981, attached please find the responses to your questions on N-1 Loop Operation for the Beaver Valley Power Station. I would like to request an expeditious review of the attached questions and N-1 Loop Operation for Beaver Valley.

Very truly yours,

C. N. Dunn
Vice President, Operations

cc: D. A. Beckman, Resident Inspector
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Question 1: Describe the modifications you propose to make to the reactor protection system to facilitate changing of the overpower trip setpoints when changing to operation modes with less than a full complement of reactor cooling loops (N-1). Describe how these modifications will satisfy the requirements of IEEE Std. 279-4.15 and Branch Technical Position EICSB 12 (attached) regarding multiple set points and their control, and how administrative control of the control cabinets is maintained both for the initial modification and for each subsequent changeover.

Response to Question 1:

The following actions regarding the reactor protection system will be completed with the reactor subcritical in Mode 3 prior to operation with 1 loop out of service.

- a. The overtemperature ΔT trip setpoint will be reduced by resetting constant K_1 to 1.1 as per Table 2.2-1 of the technical specifications.
- b. The overpower ΔT and overtemperature ΔT bistable associated with the out of service loop will be placed in the trip condition as per specification 3/4.4.1.
- c. For operation above the nominal P-8 setpoint (31%), reset the P-8 setpoint to 71% for operation with loop stop valves closed in the inactive loop as per specification 3/4.4.1.

Compliance with the above actions is also specified in existing plant procedures written specifically for operation in the N-1 (2) loop mode and is administratively controlled.

Branch Technical Position EICSB 12 allows plants without automatic setpoint reduction to reset the setpoint manually to the more restrictive value with the reactor subcritical as specified in the plant technical specifications. Beaver Valley meets this requirement as described above.

Setpoints appropriate for operation with one loop out of service have been included in the technical specifications as described above. The resetting of the overtemperature ΔT trip setpoint will be carried out in accordance with the technical specifications and prescribed administrative procedures and only under the direction of authorized supervision. The requirements of IEEE Standard 279-4.15 are therefore satisfied. Subsequent entry into the reactor protection cabinets is similarly controlled.

Question 2: What instrument readings and indications in the control room will change for (N-1) cooling loop mode of operation and what recalibrations, adjustments and temporary notices will be required to avoid anomalous indications as required by IEEE Std. 279-4.202?

Response to Question 2:

The following instrument readings and indications will be anomalous during N-1 (2) loop operation.

Idle Loop

- | | | |
|--|---|-----|
| 1. Wide Range RTD's | } | (a) |
| 2. RTD Narrow Range T_{AVG} and ΔT | | |
| 3. Steam Generator Pressure | } | (b) |
| 4. Steam Generator Level | | |
| 5. Steam Flow | | |
| 6. Feed Flow | | |
| 7. Reactor Coolant System Flow | | (c) |

- a. Reactor coolant loop is isolated - instruments will read temperature of stagnant coolant.
- b. If the steam generator is isolated, steam generator pressure and level will be independent of the operating portion of the plant with the qualification that integrity limits will not be exceeded (1600 psi Δp primary to secondary, <200 psi if temperature <70°F), if the steam generator is not isolated steam pressure will equal operating steam pressure; level will be independently controlled. Steam flow and feed flow will be 0.
- c. Reactor Coolant System Flow will be 0.

The following instrument readings will change during N-1 (2) loop operation.

Operating Loops

1. ΔT in %

Will be equivalent to the 100% power ΔT of the maximum allowed power of 66%. Since T_{AVG} is programmed according to turbine impulse pressure, T_{AVG} will be equivalent to the 65% power T_{AVG} , this will cause T_{HOT} and T_{COLD} to be lower than they would be at 100% power. However, T_{HOT} may be higher than normally observed at 65% power and T_{COLD} may be lower.

2. Reactor Coolant System Flow

Will probably indicate slightly higher than it would for 3 loop operation due to decreased system resistance.

It is not anticipated that any recalibrations or adjustments will be required for N-1 (2) loop operation.