50-267

Public Service Company of Colorado P

P. O. Box 361, Platteville, Colorado 80651

December 15, 1978
Fort St. Vrain
Unit No. 1
P-78202

Mr. Karl V. Seyfrit, Director
Nuclear Regulatory Commission
Region IV
Office of Inspection and Enforcement
611 Ryan Plaza Drive
Suite 1000
Arlington, Texas 76012

REF: Facility Operating License
No. DPR-34

Docket No. 50-267

Dear Mr. Seyfrit:

Enclosed please find corrected pages to the eighth Startup Report for Fort St. Vrain Nuclear Generating Station, Unit No. 1.

Very truly yours,

for Don Warembourg
Manager, Nuclear Production

DW/alk

cc: Director, I and E
Director, MIPC

7812200164

Part 16D - Throttle Pressure Control

Data collected furing performance of Part 16D is shown on Figures B-7.16D.1 through B-7.16D.5.

Part 17D - Module Main Steam Temperature Trim Control

Data collected during performance of Part 17D is shown on Figures B-7.17D.1 through B-7.17D.5.

Part 20F - Load Change Response

Data collected during performance of the load change under automatic control is shown in Figures B-7.20F.1 through F-7.20F.12

Startup Test B-7, Plant Automatic Control System Performance Tests

Comp rison of Predicated and Measured Data

Part 2D - Feedwater Flow Control

Tuning of the high range feedwater controllers consisted of making 30K lb/hr step changes in setpoint. Loop II proportional band required adjustment to meet quarter amplitude damping. Loop I was left unchanged.

Final gain settings are, proportional band (PB) 200% and reset of 0.25 minutes for FC-2205, PB 150% and reset of 0.25 minutes for FC-2206. The differential pressure across FV-2205 and FV-2206 is sent through a low select which is then used as the demand input to the feedpump controls. Since Loop 2 is the low loop this causes a coupling with the feed pump control and is the reason for the higher gain requirements in Loop 2.

Part 3D - Deaerator Level Control

The deaerator level tuning consisted of tuning LIC-2175 and FIC-3175, LIC-3175 was tuned first with FIC-3175 bypassed. Then FIC-3175 was tuned with both controller in operation. Quarter amplitude damping was achieved.

The level controller LIC-3175 was tuned first, even though it was not the inner loop controller, because it can be used to control the deaerator level with FIC-3175 bypassed.

Figure B-7.3D.1 shows the response of deaerator level (LT-3175) and condensate flow (FM-3151-2) to an increase of 2 inches in LIC-3175 setpoint, with the gains as found, PB of 50% and reset of 1.5 minutes. Figure B-7.3D.1 also shows the response to a decrease of 2 inches in setpoint with the PB of LIC-3175 changed to 100%.

Part 20F- (continued)

The reheat steam temperature was about 1000°F at the start of the load change and decreased to 940°F at 30% load. The main steam temperature was about 990°F at the start of the load change and decreased to about 890°F at 30% load. The steam temperatures drooped the right amount but they did not follow a ramp function down. The main steam temperature started to droop first and then reheat steam temperature started to droop. This reheat steam temperature droop caused the main steam temperature to droop even more. It is possible that the main steam and reheat steam temperature control systems were interacting to cause the resulting steam temperature droops. The hold portion of the up ramp caused a larger perturbation in the steam temperature than the load change itself.

Both main steam temperature controls went to zero during the main steam temperature droop and the reheat steam temperature control decreased to 30% during the reheat steam temperature droop. If this condition exists during steady state operations, the circulator speed and reactor power characterizers could be reprogrammed to better match the steady state circulator speed and reactor power requirements. This will be monitored during future automatic operation at low power.

The feedwater flow experienced some oscillations on the down ramp and up ramp. The feedwater flow oscillations appear to be caused by the oscillation on the extraction steam pressure to 'BFP-1A' and 'BFP-1C'.

Reactivity Coefficient Measurements (B-8)

This test was not scheduled during the report period.

TABLE B-9.1

SUMMARY OF ROD GROUP 4A DIFFERENTIAL WORTH MEASUREMENTS

Rod #	Avg. Pos.	Δp/Inch
20	87.0	0.161×10^{-4}
20	79.0	0.150×10^{-4}
26	86.9	0.259×10^{-4}
26	77.0	0.206×10^{-4}
32	87.1	0.153×10^{-4}
32	77.0	0.136×10^{-4}
20+26+32	81.6	0.501×10^{-4}
20	92.2	0.180×10^{-4}
20	81.6	0.146×10^{-4}
26	91.4	0.291×10^{-4}
26	81.6	0.239×10^{-4}
32	91.8	0.189×10^{-4}
32	81.5	0.156×10^{-4}
20	145.0	0.167×10^{-4}
20	136.0	0.184×10^{-4}
26	145.0	0.298×10^{-4}
26	135.0	0.334×10^{-4}
32	145.1	0.244×10^{-4}
32	135.0	0.282×10^{-4}
20	131.1	0.205×10^{-4}
20	121.0	0.185×10^{-4}
26	131.0	0.335×10^{-4}
26	121.0	0.302×10^{-4}

TABLE B-9.1 (continued)

Rod #	Avg. Pos.	Δp/Inch
32	131.0	0.285×10^{-4}
32	120.8	0.259×10^{-4}
20+26+32	145.0	0.714×10^{-4}
20	176.2	0.076×10^{-4}
20	164.2	0.103×10^{-4}
26	176.0	0.153×10^{-4}
26	164.0	0.216×10^{-4}
32	176.1	0.121×10^{-4}
32	163.4	0.167×10^{-4}
20	157.0	0.140×10^{-4}
20	146.2	0.165×10^{-4}
26	156.0	0.288×10^{-4}
26	146.0	0.289×10^{-4}
32	155.8	0.214×10^{-4}
32	146.0	0.248×10^{-4}

COMPARISON OF ACTUAL AND PREDICTED PERFORMANCE

Table B-9.2 shows a comparison of the measured and predicted integral rod worths for the rod groups measured through the startup test program so far. The acceptance criteria limits are also shown.

Figure B-9.1 shows the measured differential rod worth points and the least squares fitted curves from which the integral worth is obtained for rod group 4A. The integral worth curve for this rod group is shown in Figure B-9.2.