

PUBLIC SERVICE COMPANY OF COLORADO  
FORT ST. VRAIN NUCLEAR GENERATING STATION

MONTHLY OPERATIONS REPORT

NO. 95

November, 1981

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PDR ADOCK 05000267  
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This report contains the highlights of the Fort St. Vrain, Unit No. 1, activities operated under the provisions of the Nuclear Regulatory Commission Operating License DPR-34. This report is for the month of November, 1981.

## 1.0 NARRATIVE SUMMARY OF OPERATING EXPERIENCE AND MAJOR SAFETY RELATED MAINTENANCE

### 1.1 Summary

The modifications to B-2-3 steam generator penetration piping were completed on November 2. The temporary configuration was agreed upon by the Nuclear Regulatory Commission to allow testing to 100% power for a maximum of a four-week time period. The penetration interspace between the primary and secondary seals could then be operated at slightly above cold reheat pressure to minimize the internal steam generator leak into the cold reheat header. This leak led to a plant shutdown on October 25 when the leak rate exceeded the maximum allowed by the Technical Specifications.

The reactor was pumped up to full density on November 3, and the power was subsequently increased to 70% on November 4. We then commenced testing per RT-500K, and the power was gradually increased in 3% increments. Full power, 100%, operation was achieved at 1547 hours on November 6 and all systems performed as expected. The plant was operated at this power level for several days to gather data to further verify and document system performance.

"B" helium circulator tripped on a buffer upset on November 9. A loop shutdown ensued when "A" circulator also tripped on overspeed. The only 100% data that was missed due to this unexpected upset was the iodine probe analysis. It was then decided to shut the plant down and commence the scheduled loop split modifications to the helium circulator auxiliaries. This shutdown has continued throughout the month with the loop split work now about 50% complete. The targeted completion date is January 4, 1982.

### 1.2 Operations

The modifications to the B-2-3 steam generator penetration piping were completed on November 2. These modifications consisted of removing one of the two safety valves and rupture disks from the Loop 2 penetration piping and installing them on the B-2-3 penetration. A temporary

pipng change was made to feed purified helium from the B-2-3 penetration to the B-2-3 module. These modifications allow operating the B-2-3 penetration at slightly above cold reheat pressure in accordance with the temporary approval granted by the Nuclear Regulatory Commission.

The reactor was pressurized to full density on November 3, 1981, and the reactor power increased until the turbine generator was synchronized at 1306 hours. The power was increased further until reaching 70% on November 4. From this power level, we resumed the RT-500K testing.

The power was increased in 3% increments in accordance with the test to allow data gathering and analysis during the rise. A power level of 100% was achieved at 1547 hours on November 6, 1981, for the first time in the plant's history. All the plant systems operated as expected.

The plant continued to operate at approximately 100% power for several days to gather data for startup test 7-0.

The data for 100% power operation has been reviewed and several of the preliminary conclusions are:

1. The difficulty maintaining deaerator level is probably due to low condensate header pressure which will be corrected during the upcoming shutdown when the pumps are overhauled.
2. The steam generator and primary coolant system performance was acceptable considering the operating restrictions of RT-500K.
3. The prestressed concrete reactor vessel liner cooling system performance was in agreement with the predictions.
4. The feedwater flow measurement needs to be investigated further to determine the effect on the heat balance calculations.
5. The primary coolant activity levels are about one-tenth of the anticipated values.
6. The region constraint devices performed as expected, and there were no significant problems with operating the reactor at 100% power.

The "B" helium circulator tripped at 0155 hours on November 9 due to a buffer system upset. The resultant reheat steam pressure transient caused "A" circulator to trip on overspeed. A Loop 2 shutdown then followed because of the two circulator trips, and the power was ramped down to about 30%. The power was then reduced further, and the turbine generator taken off at 0436 hours. The reactor was eventually scrammed, and the scheduled shutdown activities were commenced. This unexpected circulator trip prevented obtaining the iodine analysis at 100%, but the other "B" series startup test data was gathered.

The loop split modification began on November 9. The Stearns-Roger construction work force was able to complete a considerable amount of the prefabrication work prior to November 9 because of the delays in the shutdown schedule. In fact, 28% of the work was completed prior to November 9. The work was about 50% complete at month's end, and the estimated completion date is still January 4, 1981. The turbine generator work should also be completed by General Electric by January 4.

Numerous major shutdown activities being accomplished concurrently include: 1) removal of the plateout probe, 2) removal of circulator water pump isolation valves, 3) overhaul of large condensate pumps, 4) modification of main steam desuperheater, 5) prestressed concrete reactor vessel rupture disk surveillance, 6) repair of several hydraulic valve operators, 7) removal of "B" hydrogen getter, and 8) instrument and valve calibrations. Internal maintenance in the reactor is also being performed to install a new neutron source in region 15.

During removal of a region constraint device from the core, an incorrect position signal from the fuel handling machine caused the region constraint device to be knocked against another region constraint device, resulting in a lock up of the fuel handling machine. The fuel handling machine grapple was eventually removed from the region constraint device, and an examination, using the camera viewing system, revealed the region constraint device to be resting precariously against another region constraint device and a region orifice valve. The fuel handling machine manipulator is now being installed and tests are being run in the hot service facility to demonstrate the fuel handling machine's ability to pick up the region constraint device in this unusual position.

2.0 SINGLE RELEASES OF RADIOACTIVITY OR RADIATION EXPOSURE IN EXCESS OF 10% OF THE ALLOWABLE ANNUAL VALUE

None

3.0 INDICATION OF FAILED FUEL RESULTING FROM IRRADIATED FUEL EXAMINATIONS

None

4.0 MONTHLY OPERATING DATA REPORT

Attached

OPERATING DATA REPORT

DOCKET NO. 50-267  
 DATE 811201  
 COMPLETED BY L. M. McBride  
 TELEPHONE (303) 785-2224

OPERATING STATUS

NOTES

1. Unit Name: Fort St. Vrain
2. Reporting Period: 811101 through 811130
3. Licensed Thermal Power (Mwt): 842
4. Nameplate Rating (Gross MWe): 342
5. Design Electrical Rating (Net MWe): 330
6. Maximum Dependable Capacity (Gross MWe): 342
7. Maximum Dependable Capacity (Net MWe): 330

8. If Changes Occur in Capacity Ratings (Items Number 3 Through 7) Since Last Report, Give Reasons:

None

9. Power Level To Which Restricted, If Any (Net MWe): 231

10. Reasons for Restrictions, If Any: NRC restriction of 70% pending resolution of temperature fluctuations.

	This Month	Year to Date	Cumulative
11. Hours in Reporting Period	<u>720</u>	<u>8,016</u>	<u>21,217</u>
12. Number of Hours Reactor Was Critical	<u>209.0</u>	<u>5,443.2</u>	<u>14,578.4</u>
13. Reactor Reserve Shutdown Hours	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
14. Hours Generator On-Line	<u>135.5</u>	<u>4,215.0</u>	<u>9,908.3</u>
15. Unit Reserve Shutdown Hours	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
16. Gross Thermal Energy Generated (MWH)	<u>97,826.4</u>	<u>2,225,852.0</u>	<u>4,933,944.8</u>
17. Gross Electrical Energy Generated (MWH)	<u>35,671</u>	<u>819,562</u>	<u>1,691,356</u>
18. Net Electrical Energy Generated (MWH)	<u>31,700</u>	<u>754,958</u>	<u>1,554,259</u>
19. Unit Service Factor	<u>18.8</u>	<u>52.6</u>	<u>46.7</u>
20. Unit Availability Factor	<u>18.8</u>	<u>52.6</u>	<u>46.7</u>
21. Unit Capacity Factor (Using MDC Net)	<u>13.3</u>	<u>28.5</u>	<u>22.2</u>
22. Unit Capacity Factor (Using DER Net)	<u>13.3</u>	<u>28.5</u>	<u>22.2</u>
23. Unit Forced Outage Rate	<u>31.1</u>	<u>28.8</u>	<u>34.0</u>

24. Shutdowns Scheduled Over Next 6 Months (Type, Date, and Duration of Each): Maintenance/modification shutdown December 1, 1981 through January, 1982.

25. If Shut Down at End of Report Period, Estimated Date of Startup: February 1, 1982

Units In Test Status (Prior to Commercial Operation):	Forecast	Achieved
INITIAL CRITICALITY	<u>N/A</u>	<u>N/A</u>
INITIAL ELECTRICITY	<u>N/A</u>	<u>N/A</u>
COMMERCIAL OPERATION	<u>N/A</u>	<u>N/A</u>

DOCKET NO. 50-267  
 UNIT NAME Fort St. Vrain  
 DATE 811201  
 COMPLETED BY L. M. McBride  
 TELEPHONE (303) 785-2224

REPORT MONTH November, 1981

NO.	DATE	TYPE	DURATION	REASON	METHOD OF SHUTTING DOWN REACTOR	LER #	SYSTEM CODE	COMPONENT CODE	CAUSE AND CORRECTIVE ACTION TO PREVENT RECURRENCE
81-024	811101	F	61.1	H	4	81-068/03L-0	CJA	PENETR	Steam generator B.2.3 penetration leakage of helium.
81-025	811109	F	0.0	H	4	N/A	CBI	INSTRU	Power reduction due to loop shutdown.
81-026	811109	S	523.4	B	2	N/A	CBI	XXXXXXX	Loop-split modification.

AVERAGE DAILY UNIT POWER LEVEL

Docket No. 50-267

Unit Fort St. Vrain

Date 811201

Completed By L. M. McBride

Telephone (303) 785-2224

Month November, 1981

DAY AVERAGE DAILY POWER LEVEL  
(MWe-Net)

1	<u>0.0</u>
2	<u>0.0</u>
3	<u>32.6</u>
4	<u>196.3</u>
5	<u>232.4</u>
6	<u>290.4</u>
7	<u>309.8</u>
8	<u>316.4</u>
9	<u>27.9</u>
10	<u>0.0</u>
11	<u>0.0</u>
12	<u>0.0</u>
13	<u>0.0</u>
14	<u>0.0</u>
15	<u>0.0</u>
16	<u>0.0</u>

DAY AVERAGE DAILY POWER LEVEL  
(MWe-Net)

17	<u>0.0</u>
18	<u>0.0</u>
19	<u>0.0</u>
20	<u>0.0</u>
21	<u>0.0</u>
22	<u>0.0</u>
23	<u>0.0</u>
24	<u>0.0</u>
25	<u>0.0</u>
26	<u>0.0</u>
27	<u>0.0</u>
28	<u>0.0</u>
29	<u>0.0</u>
30	<u>0.0</u>
31	<u>N/A</u>

\*Generator on line but no net generation.

REFUELING INFORMATION

1. Name of Facility.	Fort St. Vrain Unit No. 1
2. Scheduled date for next refueling shutdown.	October 1, 1983
3. Scheduled date for restart following refueling.	December 1, 1983
4. Will refueling or resumption of operation thereafter require a technical specification change or other license amendment?	Yes
If answer is yes, what, in general, will these be?	Use of type H-451 graphite.
If answer is no, has the reload fuel design and core configuration been reviewed by your Plant Safety Review Committee to determine whether any unreviewed safety questions are associated with the core reload (Reference 10CFR Section 50.59)?	-----
If no such review has taken place, when is it scheduled?	-----
5. Scheduled date(s) for submitting proposed licensing action and supporting information.	Not scheduled at this time; to be determined.
6. Important licensing considerations associated with refueling, e.g., new or different fuel design or supplier, unreviewed design or performance analysis methods, significant changes in fuel design, new operating procedures.	-----
7. The number of fuel assemblies (a) in the core and (b) in the spent fuel storage pool.	1482 HTGR fuel elements 250 spent HTGR fuel elements
8. The present licensed spent fuel pool storage capacity and the size of any increase in licensed storage capacity that has been requested or is planned, in number of fuel assemblies.	Capacity is limited in size to about one-third of core (approximately 500 HTGR elements). No change is planned.

REFUELING INFORMATION (CONTINUED)

9. The projected date of the last refueling that can be discharged to the spent fuel pool assuming the present licensed capacity.	1986 under the Three Party Agreement (Contract AT (04-3)-633) between DOE, Public Service Company of Colorado (PSCo), and General Atomic Company.*
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\*The 1986 date is based on the understanding that spent fuel discharged during the term of the Three Party Agreement will be shipped to the Idaho National Engineering Laboratory for storage by DOE at the Idaho Chemical Processing Plant (ICPP). The storage capacity has evidently been sized to accommodate fuel which is expected to be discharged during the eight year period covered by the Three Party Agreement.