

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

MONTHLY OPERATIONS REPORT

NO. 80

AUGUST, 1980

PLATE 2008 27 12/80

8009260386

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 August, 1980.

## 1 0 NARRATIVE SUMMARY OF OPERATING EXPERIENCE AND MAJOR SAFETY RELATED MAINTENANCE

### 1.1 Summary

At the beginning of this report period, the plant was in the following operating condition: Reactor power at 50%, turbine generator load at 135 MW, feedwater flow through the emergency feedwater header (due to heater #5 leakage), and average core region outlet temperature of 1188 degrees fahrenheit. The plant continued to operate between 50% and 55% reactor power until 1115 hours on August 4, 1980, at which time a scram occurred.

The scram was caused by feedwater control system problems. The plant protective system responded to the feedwater flow problem by inducing a four circulator steam turbine trip, scram, Loop 1 shutdown, and immediate turbine trip. Recovery from scram was initiated immediately, and the reactor returned to criticality at 0200 hours on August 5, 1980. Investigation of the initiating cause is still underway at this time.

Reactor power was increased to 27% on August 7, 1980, and the turbine generator placed on line. Power escalation was hampered by lack of available feedwater flow (caused by leaking isolation valves around the "B" boiler feedpump), loss of one circulating water pump (caused by a bad bearing), and high air temperatures in the Reactor Building (caused by insufficient cooling capacity of the available service water). Power levels of 50 to 55% were attained by August 16, 1980.

On August 16, 1980, additional problems developed within the secondary coolant system, particularly the boiler feedpump controls, necessitating a reduction in load to 60 MWe. During the period of reduced load for investigation of the feedpump control problem, a hydraulic oil leak developed on PV-2244 (Loop 2 circulator steam turbine bypass valve), causing heavy smoke and a small fire. The leak necessitated isolation of the Loop 2 hydraulic oil system, and reactor power reduction to 2% followed by a manual scram.

Necessary repairs were made to the hydraulic system of PV-2244, the feedpump isolation valve, and the oil spill associated with PV-2244 was cleaned up prior to the reactor being brought critical on August 18, 1980.

Reactor power was escalated as fast as primary and secondary coolant conditions allowed and was at a level of 57% on August 22, 1980. A severe bypass flow condition developed



of the service water piping supplying the reactor building chillers. An additional condition that developed, which also limited plant operation, was the presence of a bad bearing on "A" circulating water pump. This condition coupled with the hot weather, caused high back pressure in the condenser, thus limiting turbine generator load.

Plant operation continued as dictated by conditions described above until August 12, 1980, when a turbine runback occurred. The cause to date has been attributed to action from an improperly set vacuum switch. This switch action is believed to have caused an upset in the feedpump control portion of the secondary coolant control system. Recovery from the turbine runback was made and plant conditions remained stable until August 16, 1980.

On August 16, 1980, a hydraulic oil leak developed on PV-2244 (circulator steam turbine bypass valve) which necessitated isolating Loop 2 hydraulic oil system and Loop 2 group 2 secondary coolant loop. Reactor power was also reduced to 2%, and the reactor scrammed as prescribed by the Emergency Procedures. During the shutdown for repair of the hydraulic oil leak and oil cleanup, the leaking "B" boiler feedpump normal feedwater header isolation valve was repaired, along with repair of "A" boiler feedpump speed control. After completion of the above mentioned work, preparations were made to bring the reactor critical, and criticality was achieved on August 18, 1980, at 1245 hours.

Reactor power was increased to 28%, and the turbine generator synchronized at 1135 hours on August 20. As soon as feedwater chemistry was within specification, the power level was increased to 57% and turbine generator loaded to 160 MWe.

On August 25, 1980, during the piping snubber surveillance, it was discovered that 12 snubbers were inoperable. Per Technical Specification requirements, these problems must be corrected within 72 hours or an orderly plant shutdown is required within 36 hours after expiration of the 72 hours. During this grace period on August 29, 1980, a problem developed with the electro-hydraulic control system for the main turbine generator in that it suffered a loss of  $\pm 24V$  power. The main turbine generator continued to operate on the permanent magnet generation. At 1335 hours while attempting to determine the cause of the loss of  $\pm 24V$  power, the plant electricians inadvertently caused a turbine runback. The resultant transient caused a circulator in each loop to be tripped by plant protective system action. The turbine generator was manually tripped at this time. Since the 12 inoperable snubbers discovered on August 25, 1980, could not be repaired within the allotted time, the "plant shutdown" planned for September 1, 1980, was initiated.

The plant will remain shutdown down for required surveillance testing and selected maintenance until the latter part of September.

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

POOR ORIGINAL

OPERATING DATA REPORT

DOCKET NO. 50-267

DATE 800902

COMPLETED BY J. W. Gahm

TELEPHONE (303) 785-2253

OPERATING STATUS

1. Unit Name: Fort St. Vrain
2. Reporting Period: 800801 through 800831
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

NOTES

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: Nuclear Regulatory Commission restriction 70% pending resolution of temperature fluctuations.

	This Month	Year to Date	Cumulative
11. Hours in Reporting Period	<u>744</u>	<u>5,855</u>	<u>10,272</u>
12. Number of Hours Reactor Was Critical	<u>619.4</u>	<u>4,343.1</u>	<u>6,875.9</u>
13. Reactor Reserve Shutdown Hours	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
14. Hours Generator On-Line	<u>517.7</u>	<u>2,974.9</u>	<u>3,957.1</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>217,522</u>	<u>1,350,116</u>	<u>1,828,071</u>
17. Gross Electrical Energy Generated (MWh)	<u>66,793</u>	<u>429,129</u>	<u>569,925</u>
18. Net Electrical Energy Generated (MWh)	<u>60,272</u>	<u>393,379</u>	<u>516,963</u>
19. Unit Service Factor	<u>69.6%</u>	<u>50.8%</u>	<u>38.5%</u>
20. Unit Availability Factor	<u>69.6%</u>	<u>50.8%</u>	<u>38.5%</u>
21. Unit Capacity Factor (Using MDC Net)	<u>24.5%</u>	<u>20.4%</u>	<u>15.3%</u>
22. Unit Capacity Factor (Using DER Net)	<u>24.5%</u>	<u>20.4%</u>	<u>15.3%</u>
23. Unit Forced Outage Rate	<u>24.5%</u>	<u>30.1%</u>	<u>44.0%</u>

24. Shutdowns Scheduled Over Next 6 Months (Type, Date, and Duration of Each): Through September 30, 1980, to complete required surveillance testing.

25. If Shut Down at End of Report Period, Estimated Date of Startup: October 1, 1980

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>

UNIT SHUTDOWNS AND POWER REDUCTIONS

DOCKET NO. 50-267

UNIT NAME Fort St. Vrain

DATE 800902

COMPLETED BY J. W. Gahn

TELEPHONE (303) 785-2253

REPORT MONTH August, 1980

NO.	DATE	TYPE	DURATION	REASON	METHOD OF SHUTTING DOWN REACTOR	LER #	SYSTEM CODE	COMPONENT CODE	CAUSE AND CORRECTIVE ACTION TO PREVENT RECURRENCE
80-15	800804	F	65.2	II	3	N/A	N/A	N/A	Reactor scram and turbine trip occurred due to loss of all four circulators.
80-16	800816	F	102.7	A	2	50-267/80-45/03-L	AD	PIPEXX	Turbine tripped and reactor manually scrammed as a conservative measure due to rupture of a hydraulic oil supply line.
80-17	800829	S	58.4	II	1	N/A	N/A	N/A	Following a turbine runback as a result of personnel working on the EHC system, the turbine was manually tripped and the reactor shut down. This began the scheduled shutdown for surveillance testing.

SUMMARY: Scheduled shutdown for surveillance testing throughout the month of September.

AVERAGE DAILY UNIT POWER LEVEL

Docket No. 50-267

Unit Fort St. Vrain

Date 800902

Completed By J. W. Gahm

Telephone (303) 785-2253

Month August, 1980

DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)
1	128
2	133
3	132
4	57
5	-0-
6	-0-
7	37
8	81
9	107
10	105
11	103
12	123
13	129
14	137
15	152
16	9

DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)
17	-0-
18	-0-
19	-0-
20	25
21	65
22	106
23	147
24	146
25	146
26	148
27	146
28	137
29	66
30	-0-
31	-0-

\*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.	June 1, 1981
3. Scheduled date for restart following refueling.	September 1, 1981
4. Will refueling or resumption of operation thereafter require a technical specification change or other license amendment?	No
If answer is yes, what, in general, will these be?	
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)?	The Plant Operations Review Committee will review any questions associated with the core reload.
If no such review has taken place, when is it scheduled?	January 1, 1981
5. Scheduled date(s) for submitting proposed licensing action and supporting information.	-----
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.	a) 1482 HTGR fuel elements b) 82 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.\*

\*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.