PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

MONTHLY OPERATIONS REPORT

NO. 100

April, 1982

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 April, 1982.

1.0 NARRATIVE SUMMARY OF OPERATING EXPERIENCE AND MAJOR SAFETY RELATED MAINTENANCE

1.1 Summary

The reactor was brought critical five times during the month. It spuriously scrammed four times and was manually scrammed once to leave the reactor shut down at month's end.

At the beginning of the month, reactor power was limited by high moisture and then by Loop 2 steam generator penetration leakage.

On April 12, the modification to maintain steam generator penetration pressure at slightly above cold reheat pressure was put in service (see Amendment 26 to the Technical Specifications).

The turbine generator was placed on line on April 14, but faulty servo assemblies on turbine valves prevented increasing load.

Early in the month, some activity was detected in the water of Loop 1, System 46. Analysis indicated that some of the isotopes present were short-lived, indicating a leak of primary coolant to the system. The leak was temperature dependent and disappeared as reactor power was increased. It was subsequently determined that due to high moisture levels which had been experienced in the primary coolant, it was necessary to demonstrate the functionability of the reserve shutdown system (Nuclear Regulatory Commission requirement). The control rod drive in region 19 was selected for the reserve shutdown functional test due to its apparent reaction to the high primary coolant moisture. Therefore, on April 20, 1982, reactor power was decreased to remove and replace control rod drive 19. During this power reduction, the System 46 leak was located, and a core support floor tube was isolated by the end of the month.

1.2 Operations

At the beginning of the month, the prestressed concrete reactor vessel was being pressurized after having been evacuated to less than 1 psia for moisture removal. Forced cooling was shut down and circulator static seals were set, while the prestressed concrete reactor vessel pressure was below atmospheric pressure, to prevent further ingress of moisture.

Co · support floor cooling tubes were cut in and forced cooling was established by 0350 hours on April 1.

The reactor was brought critical on April 2, but scrammed about three hours later while performing a surveillance on the plant protective system. It was brought to critical again the same day.

Early on April 3, a continuous air monitor in the Reactor Building alarmed. An investigation revealed leaks from the bellows of the moisture monitor sample return valve in B-2 and B-4 penetrations. The tertiary covers, which had been removed for work on the moisture monitors, were replaced, and the tertiary space vented to the gas waste system. Subsequently, leaks were found in B-3 and B-5 penetrations resulting in four of the six low level moisture monitors being inoperable.

On April 5, a noise spike caused one of the high level moisture monitors to trip. As a result, the reactor scrammed and Loop 2 was shut down and dumped. Loop 2 was recovered, and the reactor was brought to critical again the same day.

On April 7, some low level contamination was discovered in the water of Loop 1, System 46.

On April 10, work was started on the final portions of a design modification which provides capability to control the pressure of Loop 2 steam generator penetration relative to cold reheat pressure and to monitor the penetration. Work was completed on Easter weekend, and the system was placed in service on April 12.

On April 13, with four of the six low level moisture monitors manually tripped, a high level moisture monitor spuriously tripped, causing a reactor scram and Loop 2 shutdown and dump. The loop was recovered, and the reactor brought back to critical again the same day.

While the reactor was still cool, an alarm was received indicating high pressure in a top barrel subheader of

Loop 1, System 46. The pressure in Loop 1 was indeed found to be abnormally high. The surge tank was depressurized to normal, and an investigation of the leak began.

On April 14, reactor power was increased to 30%, and the turbine generator was synchronized and load was increased to 70 MWe. The number three control valve went shut while on full arc admission and the intercept valves were very erratic. On April 15, at 1545 hours, while investigating these problems, the intercept valves closed, causing the circulators' speed to decrease resulting in a programmed high reactor pressure scram, Loop 2 shutdown, and dump. The loop was recovered, and the reactor again brought critical early on April 16.

Over the next several days, attempts were made to clear the turbine electro hydraulic control system of problems, but with new servo assemblies not available, the problems were not resolved.

At 0700 hours on April 20, with the plant load at 70 MWe, the cooling tower drift accumulated on the main bus insulators and caused the north bus to trip. The bus was back in service later the same day. The turbine was shut down and reactor power decreased on April 20 to functionally test the reserve shutdown system. Simultaneously, a further investigation into the source of the primary coolant in-leakage into Loop 1 of System 46 was initiated. The leak appeared to be temperature dependent so reactor power was decreased until the pressure began to increase in the Loop 1, System 46 surge tank. This occurred at about 10%. The location of the leak was later determined to be a tube in the core support floor. High pressure feedwater heater number 6 was also found to be leaking from the tube to shell side. On April 26, while Loop 2 was cleared out for work on the main steam safety valves, Loop 1 circulators tripped, and the reactor was manually scrammed.

On April 28, the prestressed concrete reactor vessel was depressurized, and on April 29 and April 30, the leaking System 46 tube was isolated, the control rod drive in region 19 was changed out, and a reserve shutdown hopper test was performed. The design modification to replace K_2 relay on the control rod drive in region 1 was completed.

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

There were no indications of failed fuel particles or fuel rods during the report period. However, on April 26, 1982, while performing an inspection of elements that had been removed during the second refueling, a crack on one face of element 1-2415 was observed. Note that the fuel was in no way affected.

The crack extended across the minimum cross-section between a coolant hole and one face of the element (approximately one-half inch), vertically down the full length of the block (31.2 inches), and terminated at the lower exit of the coolant hole.

Engineering/physics calculations are being performed by General Atomic Company which will address the conditions specifically experienced by the fuel element. A decision concerning the ultimate disposition of this fuel element will be made after the various possibilities have been evaluated.

4.0 MONTHLY OPERATING DATA REPORT

Attached

OPERATING DATA REPORT

DOCKET NO. 50-267
DATE 820507
COMPLETED BY L. M. McBride
TELEPHONE (303) 785-2224

OPERATING STATUS

NOTES

1. Unit Name: Fort St. Vrain
2. Reporting Period: 820401 through 820430
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	719.0	2,879.0	24,840.0
12.	Number of Hours Reactor Was Critical	535.3	637.2	15,215.6
13.	Reactor Reserve Shutdown Hours	0.0	0.0	0.0
14.	Hours Generator On-Line	86.2	86.2	9,994.5
15.	Unit Reserve Shutdown Hours	0.0	0.0	0.0
16.	Gross Thermal Energy Generated (MWH)	62,491.6	62,491.6	4,996,436.4
17.	Gross Electrical Energy Generated (MWH)	5,691	5,691	1,697,047
18.	Net Electrical Energy Generated (MWH)	160	-7,205	1,547,054
19.	Unit Service Factor	12.0	3.0	40.2
20.	Unit Availability Factor	12.0	3.0	40.2
21.	Unit Capacity Factor (Using MDC Net)	0.1	0.0	18.9
22.	Unit Capacity Factor (Using DER Net)	0.1	0.0	18.9
23.	Unit Forced Outage Rate	38.2	38.2	34.1

24. Shutdowns Scheduled Over Next 6 Months (Type, Date, and Duration of Each): None

25. If Shut Down at End of Report Period, Estimated Date of Startup: 5/3/82

26. Units In Test Status (Prior to Commercial Operation):

	Forecast	Achieved
INITIAL CRITICALITY	N/A	N/A
INITIAL ELECTRICITY	N/A	N/A
COMMERCIAL OPERATION	N/A	N/A

AVERAGE DAILY UNIT POWER LEVEL

Docket No. 50-267

Unit Fort St. Vrain

Date 820507

Completed By L. M. McBride

Telephone (303) 785-2224

Month April 1982

DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)	DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)
1	0.0	17	50.5
2	0.0	18	23.3
3	0.0	19	41.3
4	0.0	20	23.4
5	0.0	21	0.0
6	0.0	22	0.0
7	0.0	23	0.0
8	0.0	24	0.0
9	0.0	25	0.0
10	0.0	26	0.0
11	0.0	27	0.0
12	0.0	28	0.0
13	0.0	29	0.0
14	0.0	30	0.0
15	38.2	31	N/A
16	0.0		

*Generator on line but no net generation.

UNIT SHUTDOWNS AND POWER REDUCTIONS

DOCKET NO. 50-267
UNIT NAME Fort St. Vrain
DATE 820507
COMPLETED BY L. M. McBride
TELEPHONE (303) 785-2224

REPORT MONTH April, 1982

NO.	DATE	TYPE	DURATION	REASON	METHOD OF SHUTTING DOWN REACTOR	LER #	SYSTEM CODE	COMPONENT CODE	CAUSE AND CORRECTIVE ACTION TO PREVENT RECURRENCE
81-026	820401	S	331.3	B	2	N/A	CBI	XXXXXX	Loop-split modification.
82-001	820415	F	35.3	F	3	N/A	IBH	INSTRU	High pressure scram - PPS.
82-002	820418	F	10.0	H	4	N/A	HBD	INSTRU	Turbine manually tripped due to electro-hydraulic control system upset during maintenance. Reactor remained critical.
82-003	820418	F	5.0	A	4	N/A	HBD	VALVEX	Turbine manually tripped for maintenance. Reactor remained critical.
82-004	820419	F	2.9	A	4	N/A	HBD	INSTRU	Turbine trip due to low hydraulic control pressure. Reactor remained critical.
82-005	820420	S	251.7	B	2	N/A	CJB	XXXXXX	Manual shutdown to change-out control rod drive (CRD) in region 19 as per request of NRC.

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.	1992 under Agreements AT(04-3)-633 and DE-SC07-79ID01370 between Public Service Company of Colorado, General Atomic Company, and DOE.*

* The 1992 estimated date is based on the understanding that spent fuel discharged during the term of the Agreements will be stored by DOE at the Idaho Chemical Processing Plant. The storage capacity has evidently been sized to accomodate eight fuel segments. It is estimated that the eighth fuel segment will be discharged in 1992.