PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

ANNUAL OPERATING REPORT

NO. 9

1979

INTRODUCTION

This report is subritted in accordance with Section AC 7.5.1.b of the Technical Specifications of the Fort St. Vrain Nuclear Generating Station, Unit No. 1, Facility Operating License No. DPR-34.

1.0 NARRATIVE SUMMARY OF OPERATING EXPERIENCE

This report contains the highlights of Fort St. Vrain Unit No. 1 operation under the provisions of the Nuclear Regulatory Commission Operating License, DPR-34. This report is for the year of 1979.

1.1 January

The 1D helium circulator experienced another unplanned trip on January 2, 1979. Four plant protective system logic chips were found to be failed after this trip. These chips had been tested to be functional the previous day. The plant was returned to 64% reactor power (200 MWe) on January 4, 1979, following cleanup of the primary system helium. Later on January 4, 1979, the primary coolant moisture levels increased because of a valve failure in the circulator buffer helium dryer system. Due to the primary coolant oxidant impurity level exceeding 10 ppm, the reactor power level was reduced to 30% of rated.

The reactor power level was increased as the helium impurity levels allowed and reached 60% of rated (190 MWe) on January 7, 1979. On January 5, 1979, the "C" boiler feed pump was taken off line due to high vibration. The pump casing was found to be eroded and the plant was to be limited to about 195 MWe during the eight weeks estimated to repair the pump.

The plant operated at 63% power (195 MWe) until January 19, 1979. At that time it was decided to reduce power to less than 30% and shutdown Loop 2 to repair a secondary coolant leak on steam generator trim valve TV-2228-1. The furmanite leak repair process attempted previously in the week did not work. As the power reduction was in progress, a problem developed with Loop 2 main steam bypass valve PV-2230 which resulted in loss of control of the secondary coolant flow. The main turbine generator was tripped off the line at 2140 hours.

As a result of the turbine trip, the reactor power was reduced to 2% awaiting the repair of TV-2228-1 and PV-2230.

Reactor power was increased to 25% on January 22, 1979, at 0700 hours and to 30% at 2300 hours. Power was held at that level until 2300 hours on January 24, 1979, awaiting primary coolant oxidants to reach acceptable levels to increase power. Power was increased to 63% (195 MWe) at that time.

A problem occurred with the helium dryer which necessitated bypass operation during repair. Operation with the helium dryer bypassed caused primary coolant oxidants to increase beyond acceptable limits for operation at 63% power and power was reduced to 42% for cleanup. Cleanup was achieved on January 30, 1979, and power was increased to 60%.

1.0 NARRATIVE SUMMARY OF OPERATING EXPERIENCE

1.1 January (Cont'd)

A reactor scram occurred at 1338 hours on January 30, 1979, due to a dip in instrument bus 2 voltage caused by a short circuit during repair of a Gaitronics communications unit.

The reactor was restarted and returned to critical on January 30, 1979, at 2015 hours. A problem developed in "B" feed water pump which caused it to be declared inoperable.

This problem, in conjunction with the inoperable "C" feed pump, did not permit continued operation at power.

1.2 February

The reactor was shutdown for refueling on February 8, 1979, after all required practice starts by licensed personnel and license candidates were completed. Shutdown had previously been scheduled for March 1, 1979, but due to boiler feed pump problems which could not be repaired in time to permit any significant power operation prior to March 1, 1979, the decision was made to start the refueling shutdown early.

Helium circulator C-2103 (1C) which had been scheduled for removal for inspection, was removed on February 28, 1979, and the spare circulator was prepared for installation.

The main turbine generator overhaul was started on March 5, 1979, as scheduled, with completion scheduled for May 4, 1979. General Electric Company was the prime contractor for the job with three erectors on site.

Primary coolant circulation was maintained by one water turbine driven circulator. Motive force was the condensate header through the condensate/firewater booster pumps. Several tests were run to verify proper core cooling under those conditions which proved satisfactory cooling could be achieved with that mode of operation. Use of the motor driven feed pump for water turbine motive force would have been necessary prior to the addition of the condensate/firewater booster pumps.

Decay heat removal was by the secondary coolant via the decay heat exchanger. Secondary coolant flow was limited to Loop 1 at that time as Loop 2 was shutdown and isolated for maintenance.

The main condenser was cleared out and drained in preparation for the main turbine generator overhaul. Eddy current testing and acid cleaning of the condenser tubes was scheduled for that period.

1.0 NARRATIVE SUMMARY OF OPERATING EXPERIENCE

1.2 February (Cont'd)

Installation of the additional temporary auxiliary boiler was completed with testing in progress at the time to allow placing the new boiler into service. This was to be accomplished by March 9, 1979.

Fuel loading was continually hampered by problems encountered with the fuel handling equipment, particularly the fuel handling machine itself. At that time, removal of the fuel and required reflectors from region 35 had been completed. Tests, RT-520 (Region Constraint Devices), RT-518 (Region 35 Inspection), and RT-518B (Region 35 Reflector Block Graphite Specimen), were also completed in conjunction with Refueling Procedure RF-1.

1.3 March

Refueling shutdown progressed on schedule. Regions refueled at the end of March included Region 35, Region 5, Region 21, and Region 28. Region 17 and Region 10 still required refueling. Region 27, Region 24, Region 30, Region 22, and Region 25, required insertion of layer 12 reflector element containing a PGX graphite sample and a fuel test element. A complete inspection of Region 13 down to the core support block was also planned. Of the 1,280 activities to be completed during the refueling shutdown, 716 had been completed.

The main turbine generator overhaul completion date of May 4, 1979, was reported by General Electric to have slipped to May 24, 1979.

Completion of the installation of helium circulator C-2103 was estimated to be approximately three weeks away.

The main condenser cleaning was completed by Dowell contract with what appeared to be good results. Eddy current testing of the tubes indicated tube failures continued and plans were made to plug an additional 400 tubes.

Repair and cleaning of the circulating water cooling tower was getting started and was scheduled to be completed in approximately three weeks.

Valve repacking on Loop 2 secondary coolant piping, condensate header, 150 pound steam headers A and B, and the deaerator piping system comprising some 1,300 valves, was completed. Valve packing on Loop 1 secondary coolant completion was scheduled for April 30, 1979.

System 91 (hydraulic oil for valve operation) Loop 2 shutdown maintenance and system revision activities were completed and System 91 Loop 1 was shutdown and undergoing the same process.

1.0 NARRATIVE SUMMARY OF OPERATING EXPERIENCE

1.4 April

Refueling shutdown continued to progress on schedule. The six regions scheduled for refueling were completed. Fuel test elements were placed in Region 27, Region 24, Region 30, Region 22, and Region 25. The PGX graphite sample in the layer 12 reflector elements was also placed in those five regions. An inspection of the Region 13 core support block was planned. A test of the installation of the region constraint devices was performed on Region 18 for the purpose of identifying any problems prior to the scheduled installation of region constraint device test later in the year. Following completion of the region constraint devices, the stylus block for the scratcher assembly was inserted into Region 18. The modified control rod drive work was completed with one modified drive placed in Region 35 and one placed in Region 5.

Installation of helium circulator C-2103 continued.

The main condenser eddy current testing indicated wall thinning and/or leaks in 648 tubes. Plugging of the tubes was in progress.

Cleaning of the circulating water cooling tower was completed.

Loop 1 and Loop 2 secondary coolant piping, valve, and control system overhaul was completed in April and both loops received flow from the condensate system at the time.

System 91 (hydraulic oil system) overhaul and system modification were essentially completed by April 25, 1979, and these systems were being returned to service. The additional auxiliary boiler was placed in service on April 5, 1979, and final testing was completed.

1.5 May

The first refueling of the reactor was completed with an inspection of Region 13 core support block. This inspection was performed at the request of the Nuclear Regulatory Commission. The core support block was free of any questionable markings.

RT-523A, Region Constraint Device Handling Test, was completed. Region constraint devices were installed on the core and removed without difficulty. Several diagnostic devices were installed to assist in trouble-shooting the core fluctuation problem. A relative motion detector (scratcher and pad) was installed in the upper plenum to detect relative motion between Region 18 and Region 35. Also, modified control rod drives with special instrumentation were installed in Regions 5 and 35.

1.0 NARRATIVE SUMMARY OF OPERATING EXPERIENCE

1.5 May (Cont'd)

Core fluctuation data system using the multiplexing technique was being installed and checked out.

All three boiler feed pumps were disassembled and were in various stages of repair at the end of May.

The 1C circulator change-out was extended approximately two weeks when the internal piping was discovered to have a bent steam inlet baffle plate. Spare internals assembly was subsequently installed and 1C circulator change-out was completed on May 29, 1979.

The permanent two loop dump modification to the plant protective system was incorporated and the functional tests revealed that high moisture trips would occur on restoration of power following a loss of bus voltage. Modification of the dew point moisture monitor switching module was determined to be required to correct the high moisture trips on restoration of power. The time delay relays which were removed from Loop 1 as a temporary fix were to be re-installed until that problem could be properly evaluated.

The reactor was taken critical at 0340 hours on May 26, 1979, with a reactivity discrepancy of +.002 $\Delta\rho$. Following criticality, the reactor was shutdown, and shutdown margin was demonstrated with the instrumented control rod drives installed and the maximum worth control rod drive withdrawn. The reactor was operated at approximately 0.1% power for 18 hours.

The control data computer was upgraded to a new System 17 Control Data computer. The new computer utilizes CRT displays and soft disc packs.

Main turbine generator overhaul continued. Dye penetrant checks of the throttle valve seats revealed cracks in the #1, #2, and #3 valve seats. Considerable difficulty was encountered in removing the throttle valve seats. Commercial Machine Works from Illinois was contracted to remove them by pulling with hydraulic hand jacks.

1.6 June

The reactor was operated intermittently at various power levels, not exceeding 2% of rated power during the month of June.

Main turbine generator overhaul was completed, with the pinning of the three throttle valve seats and the installation of the outer insulating material.

The installation of the time delay relays in the Loop 1 steam/water dump valves control circuitry was completed per Change Notice 1066.

1.0 NARRATIVE SUMMARY OF OPERATING EXPERIENCE

1.6 June (Cont'd)

The time delay relays ensure that a two loop dump cannot occur and allow the plant to be operated at power. The installation of the time delay relays was required when the functional tests revealed that high moisture trips occurred on restoration of power following a loss of bus voltage.

Reheat attemperation valves FV-22119, FV-22120, PV-22151, and PV-22152, were removed and two Masoneilan single high pressure drop flow control valves (one per loop) were installed. The single stage reheat spray water pressure and flow control valves tended to oscillate in the automatic mode for flows less than 20K pounds per hour. The multi-stage, critical service valves provide better flow control and longer life.

Nuclear Regulatory Commission testing of the license candidates was accomplished on June 11 and 12, 1979. The testing consisted of bringing the reactor critical and the Control Room portion of the walk around.

Main turbine generator stop valves were removed for inspection and lapping after excessive leakage was observed in the area of the valve stems. After re-installation, the valves continued to leak around the valve stems. General Electric representatives advised that the leakage rate was acceptable. No further action is planned.

Emergency condensate check valves V-2256 and V-2257 tended to stick shut. Disassembly of the check valves revealed that the disc and seat area appeared to be in good condition. At the recommendation of the manufacturer, the seat angle of the disc was increased from approximately 20 degrees to approximately 22 degrees by machining. The check valves were tested after re-assembly and did not exhibit any tendency to stick shut.

The testing of all Class I snubbers was successfully completed on June 18, 1979.

On June 26, 1979, at 1724 hours, 480 volt switchgear 5 tripped due to a short circuit caused by water spray from a hose which was being used for resin barrel flushing. Two phases of the transformer shorted accompanied by yellow and gray smoke. The plant had been operating at approximately 1.5% of rated power. The fault on the 480 volt switchgear 5 was reflected into the 4160 volt buses and 480 volt buses and resulted in a decrease in the essential 480 volt bus voltage before the high and low side breakers on switchgear 5 tripped to isolate the transformer. As a result of the voltage drop on the 480 volt buses, the operating bearing water pumps tripped in both loops and all four circulators tripped on loss of bearing water. Backup bearing water was not in service, nor required by applicable LCO's 4.2.1 and 4.2.2. A Loop 1 shutdown and two loop trouble scram automatically occurred. The temporary auxiliary boiler tripped, which caused an

1.0 NARRATIVE SUMMARY OF OPERATING EXPERIENCE

1.6 June (Cont'd)

interruption of steam flow to the 1A boiler feed pump and subsequent decrease in feedwater flow to Loop 2 steam generators. Condenser vacuum was lost as was control of both startup bypass valves, PV-22129-1 and PV-22130-1. The primary coolant flow was interrupted for a period of 15 minutes. This event was determined to be a reportable occurrence per Fort St. Vrain Technical Specification AC 7.5.2(a)5. Damage to equipment as a result of the short circuit to the load center #5 transformer was limited to the transformer and the 2/0 feeder cable between the 4160 switchgear and the #5 load center. The transformer and 2/0 feed cable were replaced and load center #5 was returned to service. Calibration checks of the associated protective 4160 relays were completed by the Relay Department. All protective relaying components were found to be accurately calibrated and functioning properly.

1.7 July

The turbine generator was placed on line at 1416 hours on July 23, 1979. This was the first time the generator had been placed on line since the scheduled outage which began the first week of February. The turbine generator was manually tripped at 0520 hours on July 24, 1979, due to a generator field ground alarm. The problem was traced to a faulty field temperature transducer which had shorted and provided a path from the field windings to ground. A faulty field ground detection relay was also discovered. It was subsequently repaired and re-installed. The field temperature transducer was on order and was to be installed as soon as it arrived on site. The turbine generator was again placed on line at 0450 hours on July 26, 1979. Turbine temperatures were allowed to stabilize and the turbine overspeed tests were completed with General Electric Company representatives on graveyard shift on July 27, 1979. The turbine generator tripped automatically at 0814 hours on July 28, 1979, due to high vibration of the #3 bearing. The reheat bypass valves closed due to low condensate header pressure and the hot reheat electromatic relief valves opened. A Loop 2 shutdown occurred at 0817 hours when the operator re-opened the reheat bypass valves and closed the reheat electromatic relief valves. This action caused circulators 1B, 1C, and 1D to change speed in excess of the feed water flow/circulator speed limits which resulted in a circulator steam turbine trip. The turbine and the supervisory vibration instrumentation were given a thorough checkout by General Electric Company representatives. No problems were discovered. The turbine generator was placed on line at 1313 hours on July 30, 1979. All instruments indicated normal turbine operation.

1.0 NARRATIVE SUMMARY OF OPERATING EXPERIENCE

1.7 July (Cont'd)

An automatic Loop 2 shutdown, reactor scram, and turbine trip occurred on July 31, 1979. The action was initiated during a transfer of the turbine generator from full arc to partial arc admission mode. The transfer caused a decrease in main steam pressure and an increase in feedwater flow which resulted in a trip of 1B, 1C, and 1D circulators due to a mismatch in circulator speed versus feedwater flow. The trip of 1C and 1D circulators caused the shutdown of Loop 2 feedwater flow at 1015 hours. At 1016 hours, a two loop trouble scram occurred due to a Loop 1 superheat steam temperature low. An automatic turbine trip occurred at 1018 hours which was initiated by the reactor scram. An investigation into the cause of the upset revealed that the turbine ventilator valve had not been electrically connected subsequent to the turbine generator overhaul. This provided a direct path from the #4 gland seal packing directly to the main condenser bypassing the turbine. The open ventilator valve had a direct effect on turbine generator output versus reactor power and was the major contributor in the upset in transferring from full arc to partial arc admission mode.

Buffer helium dryer problems were traced to an apparent breach in a 12-mesh wire screen. This wire screen is located at the bottom of the dryer tower and is designed to contain the desiccant within the tower. The breach in the wire screen had allowed the desiccant to be carried downstream of the dryer towers and collected in the downstream filters. This requires that the filters be changed frequently as the dryer differential pressure increases due to abnormal operating conditions. A temporary on-line fix was made to both towers to allow continued operation. Replacement of the 12-mesh wire screen requires disassembly of the tower which is a coded vessel. The temporary fix consisted of installing a 14-mesh conical screen internal to the heater tube. Several alternatives are being explored to effect a permanent fix during the next scheduled outage.

Reactor power level was reduced from 8% to 2% on July 10, 1979, to repair a bonnet seal leak on HV-2224, Loop 2 main steam stop check valve. The repair and re-assembly was completed on July 14, 1979. On July 23, 1979, a leak in the hydraulic oil supply to HV-2224 resulted in a small insulation fire which was readily extinguished by plant personnel using hand held fire extinguishers. The hydraulic oil supply to the valve was isolated and no permanent damage was done by the fire. The oil leak was traced to a failed "O" ring at a flanged connection of the bypass line. HV-2224 developed an oil leak at the lower operator cylinder head on July 30, 1979. The operator was disassembled and scheduled to be repaired when plant conditions are such that process pressure may be removed from the valve.

1.0 NARRATIVE SUMMARY OF OPERATING EXPERIENCE

1.7 July (Cont'd)

The helium circulator removed from 1C penetration was shipped to General Atomic Company in San Diego on July 26, 1979. The circulator was scheduled to be disassembled and inspected per the requirements of Technical Specification Surveillance Tests SR 5.2.17 and 5.2.18, refurbished, and returned to Fort St. Vrain.

Fifty-one irradiated elements from the Cycle 1 core (49 fuel blocks and two reflector blocks) were surveyed per RT-525. Five of the elements were examined as part of the prescribed PIE program under the auspices of the DOE funded program. The survey was to determine the exact dimensions of the elements and was performed in the plant hot service facility. The dimensional checks were performed with a robot specifically designed by General Atomic Company for this purpose. Results of the inspection were reported as a part of the DOE program.

1.8 August

The Turbine generator was placed on line at 1504 hours on August 3, 1979, and remained on line until 1937 hours August 11, 1979. At that time, a reactor scram, turbine trip, and Loop 2 shutdown was precipitated by a loss of speed signal to 1D helium circulator.

The Turbine generator was placed on line at 1830 hours August 12, 1979. The plant was operated at reduced power levels (150 MWe) due to continuing problems with helium circulator speed circuitry.

On August 17, 1979, a Loop 1 shutdown, two loop trouble scram, turbine trip, and an approximate three minute loss of forced cooling occurred at 1523 hours. The plant shutdown was caused by an inadvertent grounding of the 120 volt AC power feed to cabinet I-36B.

The Turbine generator was placed on line at 1150 hours on August 20, 1979, and remained on line until 1518 hours August 24, 1979. Power was reduced and the turbine was taken off line due to high primary coolant oxidant levels.

The turbine was placed on line at 1253 hours August 26, 1979, and remained on line until the plant was shutdown on September 1, 1979, to evaluate seismic qualification of Class I 2-1/2 inch and larger piping and hangers.

Testing consisted of core region thermocouple traverses - RT-524, base data on FM fluctuation data system at 46% power - RT-486, reheat steam attemperation tuning - RT-501, and fluctuation testing - RT-500F. PCRV deflection measurement was completed at 625 psia PCRV pressure on August 9, 1979. Fuel element surveillance program was completed, equipment decontaminated, and shipped to General Atomic Company in San Diego.

1.0 NARRATIVE SUMMARY OF OPERATING EXPERIENCE

1.8 August (Cont'd)

Maintenance was performed on the following valves: V-21268-2, backup bearing water header relief valve, V-2256, condensate check valve, and HV-2224, main steam stop check valve.

The overhaul of "C" boiler feedpump was completed. The boiler feedpump was test run and returned to service.

1.9 September

The plant was shutdown September 1, 1979, and essentially remained in a shutdown condition for the month of September.

The plant shutdown was necessary to resolve problems discovered in a sample audit of Class I 2-1/2 inch and larger piping and hangers which was conducted in response to I & E Bulletin No. 79-14.

Fluctuation testing (RT-500F) was completed up to 50% power prior to shutting down.

The reactor was taken critical at 0543 hours on September 15, 1979, and remained at less than 2% power until September 28, 1979. Rise to power after hanger discrepancies were resolved was hampered by loss of condensate through leaking relief valves. Water recovery systems were devised to recover condensate. These relief valves will be repaired at the next scheduled shutdown. Reactor power remained at less than 11% for the remainder of September, 1979.

1.10 October

The turbine generator was placed on line at 1303 hours October 2, 1979. Rise to power above 30% was hindered by condensate water conductivity and inadequate condensate in storage tanks to regenerate the demineralizer beds. The generator remained on line until 0800 hours October 14, 1979. At that time, attempts to repair a faulty buffer helium dryer on line resulted in a complete plant shutdown.

Rise to power commenced on October 18, 1979, and was delayed several days due to secondary water chemistry problems. The generator was synchronized and placed on line at 2303 hours on October 23, 1979.

Calibration of instrumented control rod drives in Regions 5 and 35 was completed per RT-486, Part III, at 60% power. Fluctuation testing per RT-500G was completed in the 60 to 70% power range prior to the scheduled plant shutdown on October 26, 1979.

1.0 NARRATIVE SUMMARY OF OPERATING EXPERIENCE

1.10 October (Cont'd)

Surveillance tests were accomplished at various plant conditions during the orderly shutdown.

The main condenser was isolated in preparation for condenser tube replacement and loop 2 was isolated for the Loop 2 outage items. The reactor vessel was depressurized and refueling floor equipment checked out in preparation for the installation of the region constraint devices.

1.11 November

The Fort St. Vrain outage which started on October 29, 1979, continued through the month of November. The outage was about 75% complete at the end of November. Major accomplishments to this point were:

Installation of all core region constraint devices was completed on November 25, 1979. Eighteen core regions were entered for the installation of 84 region constraint devices.

Change Notice 473 manual isolation valves, V- 11615 and V-211616, installed in Loop 1 and Loop 2 pelton wheel supply header.

Buffer helium dryer valves were disassembled. The valve seats were inspected and repaired. Desiccant was removed from all valves and lines. The dryer towers were removed and disassembled. The center stand pipe in both towers was found to be distorted, apparently due to thermal stress. The dryer towers were repaired and re-installed.

Loop 2 outage items were completed. Loop 1 was isolated for work on November 24, 1979.

Main condenser retubing continued. Retubing in the north water box was completed. All of the tubes were inserted in the south water box. The rolling of tubes was in progress.

1.12 December

Primary coolant moisture levels had incresed during the month, following the flooding of 1C circulator bearing cartridge The water ingress was attributed to work being done on the low pressure separator.

The 1B circulator would not self-turbine following an extended shutdown period. Unsuccessful attempts were made using condensate and emergency feedwater to the pelton wheel. The circulator was finally rotated by using a combination of increased bearing water flow while applying emergency feedwater to the pelton wheel.

1.0 NARRATIVE SUMMARY OF OPERATING EXPERIENCE

1.12 December (Cont'd)

The Fort St. Vrain maintenance outage, whic started on October 29, 1979, and continued through the month of November, was completed on December 17, 1979, when the main condenser was returned to service. Normal plant valve lineups were verified and the reactor was taken critical on December 25, 1979. Reactor power was held at approximately 1.5% for primary and secondary coolant system clean-up. A reactor scram and Loop 2 shutdown occurred on December 30, 1979, following the operation of 1C circulator at speed. High moisture levels were attributed to the ingress which occurred on December 7, 1979. Following this shutdown, maintenance on two major Loop 2 components was started.

FORT ST. VRAIN SIGNIFICANT MAINTENANCE SUMMARY

IDENTIFICATION NUMBER AND DATE	SYSTEM/ COMPONENT	CAUSE OF MALFUNCTION	RESULTS OF MALFUNCTION	NATURE OF MAINTENANCE	CORRECTIVE ACTION	TIME REQUIRED FOR COMPLETION	EFFECT ON SAFE OPERATION OF THE REACTOR
77-10-64 5-15-79	CRS C3-5 Pipe Snubber	Normal use	Oil leak.	Corrective	Replaced faulty parts.	8 Hours	None
78-1-199 4-16-79	V-31872	Normal use	Valve leaks at bonnet.	Corrective	Replaced bonnet gasket.	4 Hours	None
78-4-426 5-26-79	HV-2249	Normal use	Seal ring leaks.	Corrective	Replaced seal ring.	1 Month	None
78-6-702 2-26-79	PV-22168	Normal use	Valve fitting leaks.	Corrective	Repaired fittings.	8 Hours	None
78-7-182 4-7-79	V-46722	Normal use	Bonnet leaks.	Corrective	Replaced bonnet gasket.	4 Hours	None
78-8-283 2-27-79	TV-2228-1	Normal use	Leaking bonnet flange.	Corrective	Replaced bonnet gasket.	8 Hours	None
78-10-90 1-16-79	TT-2225-2	Normal use	Output oscillating.	Corrective	Replaced failed magnetic amplifier and capacitor.	2 Days	None
78-10-103 5-5-79	V-2214	Normal use	Valve leaks through.	Corrective	Lapped seat and disc.	24 Hours	None
78-10-339 2-23-79	V-23271	Normal use	Valve leaked through.	Corrective	Repaired valve seat and disc.	3 Days	None
78-10-466 2-27-79	PV-22168	Normal use	Leaking at pilot valve flange.	Corrective	Repaired valve flange.	8 Hours	None
78-11-293 4-17-79	V-21743	Normal use	Valve leaks through.	Corrective	Rebuilt valve.	1 Week	None
78-11-410 3-15-79	PV-2230	Normal use	Packing leak.	Corrective	Replaced packing.	8 Hours	None
78-11-415 3-15-79	PV-22130	Normal use	Packing leak.	Corrective	Repacked valve.	8 Hours	None
78-11-420 3-23-79	HV-2224	Normal use	Packing leak.	Corrective	Repacked valve.	8 Hours	None
78-11-425 3-15-79	PV-22154	Normal use	Packing leak.	Corrective	Repacked valve.	8 Hours	None
78-12-356 4-28-79	PT-9105 Instrument Line	Normal use	Leak at welded fitting.	Corrective	Repaired fitting.	8 Hours	None
79-1-1 1-2-79	SM-21161 Cable	Normal use	Loss of circulator speed indication.	Corrective	Jumpered to operable cable.	1 Day	None
79-1-25 1-2-79	PPS Module FSL-2212-1	Normal use	Indicator trip at all times.	Corrective	Replaced failed integrated circuit.	2 Hours	None

FORT ST. VRAIN SIGNIFICANT MAINTENANCE SUMMARY

IDENTIFICATION NUMBER AND DATE	SYSTEM/ COMPONENT	CAUSE OF MALFUNCTION	RESULTS OF MALFUNCTION	NATURE OF MAINTENANCE	CORRECTIVE ACTION	TIME REQUIRED FOR COMPLETION	EFFECT ON SAFE OPERATION OF THE REACTOR
79-1-36 1-3-79	PPS Module CT-1BR4	Normal use	Failed tripped.	Corrective	Replaced failed integrated circuit.	2 Hours	None
79-1-45 1-4-79	PPS Module CT-1AR4	Normal use	Failed tripped.	Corrective	Replaced failed integrated circuit.	2 Hours	None
79-1-46 1-4-79	PPS Module CT-2B2	Normal use	Failed tripped.	Corrective	Replaced failed integrated circuit.	2 Hours	None
79-1-47 1-4-79	PPS Module CT-1BR4	Normal use	Input circuit bad.	Corrective	Replaced 5 failed integrated circuits.	2 Hours	None
79-1-48 1-4-79	PPS Module CT-2A2	Normal use	Failed tripped.	Corrective	Replaced failed integrated circuit.	2 Hours	None
79-1-49 1-4-79	PPS Module CC-2A2	Normal use	Failed tripped.	Corrective	Replaced failed integrated circuits.	2 Hours	None
79-1-149 1-8-79	RIS-93252-10	Normal use	Failed to alarm during test.	Corrective	Repaired bad solder joint.	2 Hours	None
79-1-178 1-9-79	PPS Module XDIS-21328	Normal use	Indicator lights did not operate when tripped during test.	Corrective	Replaced fuse and failed integrated circuit.	2 Hours	None
79-1-239 4-17-79	V-7220	Normal use	Valve leaking through.	Corrective	Machined valve disc and lapped seat.	1 Week	None
79-1-248 1-15-79	C-8203	Normal use	Compressor output low.	Corrective	Replaced unloader pressure switch and solenoid valve.	4 Hours	None
79-1-262 4-17-79	V-7263	Normal use	Valve leaked through.	Corrective	Repaired valve seat and disc.	8 Hours	None
79-1-263 4-11-79	V-72173	Normal use	Valve leaked through.	Corrective	Repaired valve seat and disc.	8 Hours	None
79-1-371 1-20-79	HV-22227	Normal use	Packing leak.	Corrective	Repacked valve.	4 Hours	None
79-1-379 1-20-79	TE-22140	Normal use	Spurious single channel scram.	Corrective	Replaced failed temperature element.	4 Hours	None
79-1-382 6-21-79	V-21115	Normal use	Valve stem broken.	Corrective	Rebuilt valve stem and disc assembly.	2 Days	None
79-1-384 2-20-79	P-2109	Normal use	Excessive seal leakage.	Corrective	Replaced mechanical seals.	24 Hours	None
79-1-402 1-22-79	PV-2230 Hydraulic Operator	Normal use	Valve would not respond to controller.	Corrective	Replaced servo valve.	4 Hours	None

FORT ST. VRAIN SIGNIFICANT MAINTENANCE SUMMARY

IDENTIFICATION NUMBER AND DATE	SYSTEM/ COMPONENT	CAUSE OF MALFUNCTION	RESULTS OF MALFUNCTION	NATURE OF MAINTENANCE	CORRECTIVE ACTION	TIME REQUIRED FOR COMPLETION	EFFECT ON SAFE OPERATION OF THE REACTOR
79-1-411 1-22-79	PPS Module CT-2B2	Normal use	Input circuit bad.	Corrective	Replaced failed integrated circuit.	2 Hours	None
79-1-439 2-8-79	SSL-21172 Cable	Normal use	Switch indicated low speed with circulator operating.	Corrective	Repaired cable connector.	8 Hours	None
79-1-513 1-29-79	C-8203 High Discharge Temperature Switch	Normal use	Compressor tripped at normal temperature.	Corrective	Replaced switch.	1 Day	None
79-1-535 1-28-79	Control and Orificing Assembly #43 Electrical Connector	Normal use	Ceramic insulator broken.	Corrective	Replaced ceramic insulator in kind.	2 Hours	None
79-1-540 2-16-79	HV-2204 Hydraulic Operator	Normal use	Oil leak.	Corrective	Replaced failed "O" ring.	2 Hours	None
79-1-556 1-31-79	HV-21352	Normal use	Leaking through.	Corrective	Replaced valve disc.	1 Day	None
79-1-564 2-13-79	HV-2204 Hydraulic Operator	Normal use	Oil leak.	Corrective	Replaced failed "O" ring.	2 Hours	None
79-1-572 1-30-79	P-9102SX Motor	Normal use	Motor failed.	Corrective	Replaced motor.	8 Hours	None
79-1-580 2-6-79	T-2122-3 Gas Charging Valve	Normal use	Valve threads stripped.	Corrective	Replaced valve in kind.	2 Hours	None
79-2-7 1-31-79	PSL-1110-1	Normal use	Switch failed tripped.	Corrective	Tightened loose connection.	1 Hour	None
79-2-21 2-4-79	Control and Orifice Assembly #9 Orifice Position Pot	Normal use	Indicated position incorrect.	Corrective	Replaced pot in kind.	4 Hours	None

FORT ST. VRAIN SIGNIFICANT MAINTENANCE SUMMARY

IDENTIFICATION NUMBER AND DATE	SYSTEM/ COMPONENT	CAUSE OF MALFUNCTION	RESULTS OF MALFUNCTION	NATURE OF MAINTENANCE	CORRECTIVE ACTION	TIME REQUIRED FOR COMPLETION	EFFECT ON SAFE OPERATION OF THE REACTOR
79-2-38 2-6-79	In-Limit Relay for Region 3 Control Rod Drive	Normal use	Relays sticking.	Corrective	Replaced relay.	4 Hours	None
79-2-71 2-5-79	PPS Modules CT-1BR4, CT-2B2	Normal use	Modules failed test.	Corrective	Replaced failed integrated circuits.	4 Hours	None
79-2-75 2-6-79	TS-8249	Normal use	Switch failed.	Corrective	Replaced switch.	4 Hours	None
79-2-110 4-28-79	C-2101 Steam Flange	Normal use	Steam leak.	Corrective	Replaced gasket.	8 Hours	None
79-2-191 2-15-79	V-4508	Water froze in valve.	Valve broken.	Corrective	Replaced valve.	4 Hours	None
79-2-214 4-16-79	V-211002	Normal use	Valve would not open.	Corrective	Replaced bonnet assembly and lap valve disc.	4 Hours	None
79-2-216 2-21-79	HV-2204 Hydraulic Operator	Normal use	Oil leak.	Corrective	Replaced solenoid valve.	4 Hours	None
79-2-222 2-20-79	C-8201S Electrical Breaker	Normal use	Breaker trips erroneously.	Corrective	Replaced broken control device.	4 Hours	None
79-2-243 2-16-79	C-8201 Unloader Solenoid	Normal use	Solenoid failed.	Corrective	Replaced solenoid.	4 Hours	None
79-2-280 2-2-79	Control and Orificing Assembly #20 Control Rod Position Pot	Normal use	Indicated position incorrect.	Corrective	Replaced position pot.	8 Hours	None
79-2-281 2-3-79	Control and Orificing Assembly #43 Orifice Valve Position Pot	Normal use	Indicated position incorrect.	Corrective	Replaced pot.	8 Hours	None

FORT ST. VRAIN SIGNIFICANT MAINTENANCE SUMMARY

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79-2-286 2-21-79	HV-2253 Hydraulic Operator	Normal use	Hydraulic oil leak.	Corrective	Replaced leaking relief valve.	4 Hours	None
79-3-87 5-1-79	HV-2201 Hydraulic Operator Filter Valves	Normal use	Valve leaking through.	Corrective	Replaced valve seat.	8 Hours	None
79-3-120 3-9-79	HV-2364	Normal use	Hand jack inoperative.	Corrective	Replaced worn sleeve.	8 Hours	None
79-3-153 4-2-79	RIS-7324-1 Sample Pump	Normal use	Pump seized.	Corrective	Rebuilt pump.	1 Week	None
79-3-257 10-17-79	H-1301	Normal use	Valve leakage.	Corrective	Repaired leak.	1 Day	None
79-3-385 5-19-79	DC Bus	Normal use	Bus indicating a ground.	Corrective	Cleared ground.	2 Hours	None
79-3-456 3-29-79	PS-1106-1	Normal use	Pressure switch setting out of tolerance, could not be reset.	Corrective	Replaced pressure switch and calibrated.	4 Hours	None
79-3-462 3-29-79	HV-2292 Hydraulic Operator Relief Valve	Normal use	Relief valve leaks through.	Corrective	Replaced valve.	3 Hours	None
79-3-509 4-2-79	HV-22134 Yoke	Normal use	Weld crack.	Corrective	Rewelded.	4 Hours	None
79-4-40 4-4-79	HV-2293 Hydraulic Operator Oil Filter	Normal use	Filter leaking.	Corrective	Replaced "O" ring.	4 Hours	None
79-4-41 4-16-79	P-2110	Normal use	Excess leakage at pump gland seal.	Corrective	Replaced pump mechanical seal.	3 Hours	None
79-4-194 5-29-79	P-2109	Normal use	Pump noisy.	Corrective	Replaced pump seal.	4 Hours	None
79-4-352 4-20-79	P-2170	Normal use	Leaking shaft seal.	Corrective	Replaced seal.	6 Hours	None
79-4-372 4-21-79	MIS-1121	Normal use	Test circuit failed.	Corrective	Replaced failed photo resistor.	4 Hours	None

FORT ST. VRAIN SIGNIFICANT MAINTENANCE SUMMARY

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79-4-423 6-8-79	P-4602S Pump Breaker	Normal use	Breaker operation erratic.	Corrective	Overhauled breaker.	8 Hours	None
79-4-477 4-26-79	PI-21301	Normal use	Indicated pressure incorrect.	Corrective	Replaced pressure indicator with spare.	4 Hours	None
79-4-500 5-17-79	HV-2202 Hydraulic Operator	Normal use	Oil leak at tube fitting.	Corrective	Tightened fitting.	1 Hour	None
79-4-612 5-1-79	V-9165	Normal use	Valve stem broken.	Corrective	Replaced stem.	4 Hours	None
79-5-6 5-1-79	V-9170	Normal use	Valve stem bent.	Corrective	Replaced stem.	4 Hours	None
79-5-18 5-10-79	P-9102SX Motor	Normal use	Motor tripped, running hot.	Corrective	Replaced motor.	1 Week	None
79-5-21 5-10-79	P-9102SX Motor	Normal use	Pump motor breaker trips.	Corrective	Replaced motor.	1 Week	None
79-5-36 5-9-79	Hydraulic System Accumulator 3A	Normal use	Will not hold pressure.	Corrective	Replaced valve.	4 Hours	None
79-5-59 5-10-79	HV-2189-3 Air line	Work in area	Air line broken.	Corrective	Replaced air line.	4 Hours	None
79-5-158 5-29-79	HV-22207 Operator	Normal use	Air tubing broken.	Corrective	Replaced tubing.	8 Hours	None
79-5-171 5-26 79	V-21285	Normal use	Valve leaks through.	Corrective	Replaced valve in kind.	8 Hours	None
79-5-175 5-16-79	Refueling Penetration #25 Secondary Seal	Normal use	Leak at secondary seal.	Corrective	Honed seal surface and cleaned "O" ring.	2 Days	None
79-5-182 5-25-79	HV-2215 Hydraulic Operator	Normal use	Internal bypass flow.	Corrective	Replaced "O" ring.	4 Hours	None
79-5-198 5-11-79	P-2110	Normal use	Shaft seal leakage is excessive.	Corrective	Replaced seal.	18 Hours	None
79-5-263 5-29-79	P-2109	Normal use	Shaft seal failed.	Corrective	Replaced shaft seal.	24 Hours	None

FORT ST. VRAIN SIGNIFICANT MAINTENANCE SUMMARY

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79-5-313 5-11-79	PS-21358	Normal use	Switch would not calibrate.	Corrective	Replaced in kind.	8 Hours	None
79-5-314 5-11-79	PS-21359	Normal use	Switch would not calibrate.	Corrective	Replaced in kind.	8 Hours	None
79-5-319 5-21-79	Hydraulic Power System Accumulator 3A	Normal use	Nitrogen leak at bottom head seal.	Corrective	Replaced "O" ring.	3 Days	None
79-5-326 5-15-79	HV-2201	Normal use	Oil leak.	Corrective	Replaced leaking "O" ring.	4 Hours	None
79-5-395 2-10-79	P-2110	Normal use	Shaft seal failed.	Corrective	Replaced shaft seal.	1 Week	None
79-5-454 5-26-79	P-2110 Motor	Normal use	Motor bearing failed.	Corrective	Replaced motor bearings.	5 Hours	None
79-5-606 2-21-79	MM-1121	Normal use	Heater power level controller failed.	Corrective	Replaced failed transformer.	8 Hours	None
79-5-724 5.23-79	PI-21536-1	Normal use	Indicated pressure incorrect.	Corrective	Repair gauge linkage.	2 Hours	None
79-5-823 5-30-79	V-11677	Normal use	Valve leaks through.	Corrective	Replaced valve disc.	1 Week	None
79-5-865 6-8-79	21/SV-2106	Normal use	Valve would not stroke.	Corrective	Replaced MOOG servo controller.	2 Hours	None
79-5-902 5-31-79	V-211575	Normal use	Valve leaks at seal ring.	Corrective	Replaced seal ring and repaired cut valve bonnet.	4 Hours	None
79-5-908 6-1-79	11/V-11752	Normal use	Yoke turned when valve was operated.	Corrective	Replaced tack welds.	2 Hours	None
79-5-910 5-31-79	HV-2250 Hydraulic Operator Filter	Normal use	Hydraulic oil leak.	Corrective	Replaced "O" ring.	4 Hours	None
79-6-31 6-5-79	P-9102X Motor	Normal use	Motor breaker tripped.	Corrective	Replaced motor.	2 Days	None
79-6-133 6-21-79	22/HV-2247	Normal use	Broken shear pin.	Corrective	Repaired operator.	1 Day	None
79-6-144 8-9-79	FV-21333	Normal use	Packing leak.	Corrective	Repacked valve.	6 Hours	None
79-6-179 6-9-79	V-21522	Normal use	Valve leaks at gasket.	Corrective	Replaced gasket.	4 Hours	None

FORT ST. VRAIN SIGNIFICANT MAINTENANCE SUMMARY

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79-6-197 6-11-79	V-211245	Normal use	Gasket leak.	Corrective	Replaced gasket.	3 Hours	None
79-6-256 6-15-79	HV-31119	Normal use	Packing leak.	Corrective	Repacked valve.	4 Hours	None
79-6-263 6-13-79	Circulator Inlet Thermocouples	Normal use	Indicated temperature incorrect.	Corrective	Rewelded broken leads.	8 Hours	None
79-6-268 6-28-79	P-9101X	Normal use	Low output from pump.	Corrective	Replaced pump with spare.	2 Days	None
79-6-294 6-12-79	HV-2292 Hydraulic Operator	Normal use	Leaking safety valve.	Corrective	Replaced safety valve.	1 Hour	None
79-6-303 6-14-79	V-2256	Normal use	Valve stuck shut.	Corrective	Remachined valve seat and disc.	4 Days	None
79-6-328 6-15-79	V-22185	Normal use	Leak at bonnet gasket.	Corrective	Replaced gasket.	8 Hours	None
79-6-410 6-19-79	P-9106X	Normal use	Pump leaks at gasket.	Corrective	Replaced cover and gasket.	1 Hour	None
79-6-421 6-19-79	HV-2292 Hydraulic Operator	Normal use	Relief valve leaking oil.	Corrective	Replaced leaking valve with spare.	1.5 Hours	None
79-6-436 6-20-79	FT-2214 Instrument Valve	Normal use	Valve leaking.	Corrective	Replaced valve.	2 Hours	None
79-6-451 6-26-79	P-9101X	Normal use	Pump output low.	Corrective	Replaced pump.	4 Hours	None
79-6-486 6-22-79	HV-21206-2, -4	Normal use	Valves leak through.	Corrective	Replaced valves with spares.	8 Hours	None
79-6-514 8-11-79	P-9106X	Normal use	Excess seal leakage.	Corrective	Replaced pump in kind.	8 Hours	None
79-6-516 6-23-79	P-9105X Electrical Connections	Normal use	Motor connections burnt.	Corrective	Repaired/replaced burned connections.	3 Hours	None
79-6-519 6-26-79	SV-2111 Limit Switch	Normal use	Switch failed to operate.	Corrective	Replaced switch spring.	1.5 Hours	None
79-6-537 6-25-79	V-91697	Normal use	Valve leaked.	Corrective	Replaced valve with spare.	1 Hour	None

FORT ST. VRAIN SIGNIFICANT MAINTENANCE SUMMARY

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79-6-590 6-28-79	M-21813	Normal use	Leak at flange.	Corrective	Replaced gasket.	8 Hours	None
79-7-21 7-2-79	C-9201S Breaker	Normal use	Compressor would not start.	Corrective	Replaced breaker.	4 Hours	None
79-7-38 7-15-79	22/HV-2224	Normal use	Seal ring packing leak on valve.	Corrective	Replaced seal ring.	3 Days	None
79-7-79 7-7-79	PPS RWP Module	Normal use	Failed test.	Corrective	Replaced failed IC chip.	2 Hours	None
79-7-89 7-10-79	MM-1120	Normal use	Mirror heater tripped.	Corrective	Replaced heater power controller with spare.	4 Hours	None
79-7-92 7-27-79	P-9102X Flange	Normal use	Flange leak.	Corrective	Replaced failed "O" ring.	6 Hours	None
79-7-99 8-2-79	V-21268-2	Normal use	Valve leak through body wall.	Corrective	Repaired/rebuilt valve body and internals.	4 Days	None
79-7-202 7-13-79	FSL-2213-1 Setpoint Pot	Normal use	Setpoint pot erratic.	Corrective	Replaced worn pot.	2 Hours	None
79-7-341 8-20-79	HV-21226	Normal use	Valve operator broken.	Corrective	Replaced broken spring barrel.	8 Hours	None
79-7-358 11-15-79	22/HV-2242	Normal use	Oil return line on HV-2242 leaking oil.	Corrective	Replaced flex hose.	1/2 Day	None
79-7-407 8-2-79	V-21115	Normal use	Valve operator not operating valve.	Corrective	Reconnected valve operator.	2 Hours	None
79-7-448 7-26-79	S-8201	Normal use	Moisture in exit air.	Corrective	Replaced heater and screen.	8 Hours	None
79-7-496 10-3-79	22/V-2247	Normal use	Valve leakage.	Corrective	Rebuilt valve.	1 Week	None
79-7-538 8-3-79	V-21283	Normal use	Valve leaks through.	Corrective	Replaced valve in kind.	8 Hours	None
79-7-581 7-27-79	PPS Module FSL-2212-1	Normal use	Instrument failed to trip during test.	Corrective	Replaced failed relay, IC chip, and module pin.	4 Hours	None
79-7-598 8-13-79	HV-1102-27 & HV-1104-27	Normal use	Valves leak through.	Corrective	Replaced valve seats.	4 Hours	None
79-7-635 7-31-79	HV-2292 Hydraulic Operator Relief Valve	Normal use	Valve leaks through.	Corrective	Replaced valve in kind.	1 Hour	None

FORT ST. VRAIN SIGNIFICANT MAINTENANCE SUMMARY

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79-7-643 8-1-79	C-8201	Normal use	Compressor short cycling.	Corrective	Replaced unloader solenoid and control switch.	4 Hours	None
79-8-32 10-17-79	21/V-21542	Normal use	Valve body leaking.	Corrective	Repaired valve nozzle and disc.	2 Days	None
79-8-37 8-8-79	MIS-1120	Normal use	Indicated failed thermocouple.	Corrective	Replaced failed integrated circuit.	2 Hours	None
79-8-47 8-11-79	V-82493	Normal use	Valve leaks through.	Corrective	Rebuilt valve seat and disc.	8 Days	None
79-8-119 8-6-79	PPS Module CT-2B2	Normal use	Module failed test.	Corrective	Replaced failed integrated circuit.	2 Hours	None
79-8-130 9-19-79	HV-2238	Normal use	Leak at hinge pin.	Corrective	Replaced hinge pin seal.	8 Hours	None
79-8-153 8-8-79	LCV-4218-1	Normal use	Packing leak.	Corrective	Repacked valve.	4 Hours	None
79-8-188 8-16-79	LSH-21234	Normal use	Switch operation erratic.	Corrective	Replaced gear movement.	2 Hours	None
79-8-226 8-27-79	SM-2112	Normal use	Lost circulator speed indication.	Corrective	Connected spare signal cable.	2 Hours	None
79-8-229 8-27-79	SM-2106	Normal use	Lost circulator speed indication.	Corrective	Conntected spare signal cable.	2 Hours	None
79-8-232 8-18-79	V-7209	Normal use	Packing leak.	Corrective	Repacked valve.	2 Hours	None
79-8-295 8-15-79	SSL-21161	Normal use	Lost circulator speed indication.	Corrective	Replaced speed signal cable.	2 Hours	None
79-8-336 8-28-79	SSL-21161-1/-2	Normal use	Speed signal lost.	Corrective	Replaced speed signal cable.	4 Hours	None
79-8-344 8-16-79	C-8201S	Normal use	Piston loose.	Corrective	Tightened piston nut.	2 Hours	None
79-8-389 8-19-79	91/HV-2251	Normal use	Oil leak at HV-2251.	Corrective	Replaced "O" rings in poppet block.	11 Hours	None
79-8-399 8-21-79	MIS-1121	Normal use	Reflected light low.	Corrective	Replaced light source.	4 Hours	None
79-8-403 8-23-79	C-8201S	Normal use	Compressor would not pump.	Corrective	Replaced failed discharge check valve.	1 Day	None
79-8-434 8-21-79	PPS Module XDIS-21173	Normal use	Module failed test.	Corrective	Replaced failed integrated circuit chip.	2 Hours	None

FORT ST. VRAIN SIGNIFICANT MAINTENANCE SUMMARY

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79-8-483 8-23-79	22/PV-22168	Normal use	Lower flange of valve leaks.	Corrective	Replaced seal ring & follower on main valve; plug seal ring on pilot valve.	2 Hours	None
79-8-497 8-23-79	HV-2202 Hydraulic Operator	Normal use	Hydraulic oil leak.	Corrective	Replaced failed "O" ring.	4 Hours	None
79-8-504 8-23-79	22/HV-2202	Normal use	Slight oil leakage on lower "O" ring of cylinder.	Corrective	Replaced cylinder rings, "O" rings, and barrel of cylinder.	1 Day	None
79-8-580 9-28-79	PDT-21392	Normal use	Indicated differential pressure incorrect.	Corrective	Replaced failed bellows and strain gauge.	24 Hours	None
79-8-600 10-19-79	45/V-45077	Normal use	Electrical fire pump air release valve leaks water.	Corrective	Replaced float and adjusted float arm.	1 Day	None
79-8-625 8-31-79	S-2101, TDR-8 Relay	Normal use	Dryer bypassed and would not reset.	Corrective	Replaced failed relay.	2 Hours	None
79-8-630 10-31-79	22/HV-2292	Normal use	Steady oil leakage.	Corrective	Replaced relief valve.	6 Hours	None
79-9-11 9-14-79	22/HV-2223	Normal use	Valve seal leakage.	Corrective	Replaced seal ring.	2 Days	None
79-9-109 9-28-79	21/SV-2105 Hydraulic Operator	Normal use	Rod end seal leak.	Corrective	Replaced seal.	8 Hours	None
79-9-111 12-17-79	22/HV-2250	Normal use	Operator cylinder to block "O" ring leaking.	Corrective	Installed new "O" ring, piston seal, and rod seal.	1 Day	None
79-9-123 11-28-79	25/HV-2524	Normal use	Valve leaks through.	Corrective	Stem length adjusted to seat valve. Stem clamp and operator nut tightened.	4 Hours	None
79-9-171 9-14-79	CRS-262 Hydraulic Snubber	Normal use	Snubber inoperable.	Corrective	Installed new piston rod eye pin.	8 Hours	None
79-9-177 10-3-79	13/H-1303	Normal use	Slight leak in upper seal of RIV.	Corrective	Replaced seal in kind.	8 Hours	None

FORT ST. VRAIN SIGNIFICANT MAINTENANCE SUMMARY

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79-9-188 9-18-79	V-211069	Normal use	Valve leaks through.	Corrective	Replaced valve in kind.	1 Week	None
79-9-272 9-17-79	NIM1135-1	Normal use	Spurious scram on single channel.	Corrective	Replaced failed component.	8 Hours	None
79-9-357 9-21-79	48/K-4803	Normal use	Governor oil leak.	Corrective	Repaired leak.	1 Hour	None
79-9-370 9-20-79	V-82473	Normal use	Check valve leaked back.	Corrective	Replaced valve in kind.	4 Hours	None
79-9-376 9-20-79	LS-21287	Normal use	False low level alarm.	Corrective	Repaired broken terminal.	4 Hours	None
79-9-382 9-20-79	MM-1117	Normal use	Spurious trip.	Corrective	Replaced light source.	4 Hours	None
79-9-389 9-21-79	C-8203X	Normal use	Compressor not pumping.	Corrective	Replaced failed discharge valves.	1 Day	None
79-9-418 10-3-79	91/P-9102X	Normal use	High vibration.	Corrective	Replaced pump.	6 Days	None
79-9-439 9-26-79	22/FT-2205	Normal use	Flow control drift.	Corrective	Replaced force motor on transmitter.	8 Hours	None
79-9-445 9-25-79	Instrument Line for PT-9137-4	Normal use	Line leaks.	Corrective	Rewelded line.	8 Hours	None
79-9-462 10-2-79	11/HV-11145-2	Normal use	Valve will not drive closed with handswitch in position #1.	Corrective	Replaced motor and all internals in kind.	12 Hours	None
79-9-466 10-16-79	21/V-21268-2	Normal use	V-21268-2 (emergency feedwater safety) leaking through.	Corrective	Replaced disc seat and blowdown gaskets and rings. Welded on body and disc holder.	1 Day	None
79-9-467 9-27-79	PDT-21390	Normal use	Indicated differential pressure incorrect.	Corrective	Replaced failed transistors.	4 Hours	None
79-9-470 11-27-79	22/PV-22167	Normal use	PV-22167 leaking through.	Corrective	Replaced seat and installed new disc.	1 Day	None
79-9-489 10-17-79	13/H-1301	Normal use	R-drive retract limit switch not operating properly.	Corrective	Replaced switch in kind and reset.	1 Day	None
79-9-539 9-30-79	MM-1120	Normal use	Spurious trip.	Corrective	Replaced failed light source.	8 Hours	None

FORT ST. VRAIN SIGNIFICANT MAINTENANCE SUMMARY

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79-10-24 10-2-79	98/HRS-194	Normal use	No oil showing in reservoir - hydraulic snubber inoperable.	Corrective	Filled snubber reservoir.	1 Hour	None
79-10-73 10-11-79	13/H-1302	Normal use	Broken connector and internals on RIV.	Corrective	Rewire and repair broken connector.	8 Hours	None
79-10-82 10-5-79	98/HOS-29	Normal use	Reservoir lock nut loose; snubber reservoir out of position.	Corrective	Tightened lock nut.	1 Hour	None
79-10-93 10-5-79	21/HV-21352	Normal use	Valve leaked through.	Corrective	Replaced valve disc.	8 Hours	None
79-10-124 10-10-79	92/M-92815	Normal use	Air leakage around sediment bowl to M-92815.	Corrective	Replace "O" ring and bowl filters.	3 Hours	None
79-10-134 10-8-79	82/V-82758	Normal use	Air leak at valve.	Corrective	Repaired air leak.	1 Hour	None
79-10-161 10-9-79	93/XDIS-21176	Normal use	During voltage verification at 406-P9, low voltage was observed.	Corrective	Chip Z-9 at CT-1-AL3 replaced.	4 Hours	None
79-10-162 10-9-79	93/SSL-21172-1	Normal use	Low voltage at 506-P9.	Corrective	Replaced chip Z-35 in CT-1-BR4.	4 Hours	None
79-10-235 10-15-79	93/RIS-93252-10	Normal use	Monitor reading upscale.	Corrective	Replaced detector tube-calibrated RIS	4 Hours	None
79-10-241 11-24-79	22/HV-22225	Normal use	Lower valve body flange leakage on Loop 1 main steam bypass trap isolation.	Corrective	Replaced gaskets in kind.	3 1/2 Hours	None
79-10-260 10-16-79	21/V-21268-1	Normal use	Leakage on safeties on emergency feedwater header.	Corrective	Seat and disc replaced.	8 Hours	None
79-10-263 10-15-79	93/CT-1-BR4	Normal use	Low voltage on CT-1-BR4 400 bay - plant protective system.	Corrective	Replaced ships, verify operability.	4 Hours	None
79-10-274 10-18-79	21/PV-21243-1	Normal use	Valve and outlet pipe cold with line pressurized at power.	Corrective	Replaced operator "O" rings.	2 Days	None
79-10-282 10-15-79	21/HV-21352	Normal use	Valve leaked through.	Corrective	Replaced valve disc.	8 Hours	None
79-10-283 11-28-79	21/HV-21345	Normal use	Valve leakage in buffer helium dryer valve.	Corrective	Replaced disc, checked stroke, and repacked.	1/2 Day	None

FORT ST. VRAIN SIGNIFICANT MAINTENANCE SUMMARY

IDENTIFICATION NUMBER AND DATE	SYSTEM/ COMPONENT	CAUSE OF MALFUNCTION	RESULTS OF MALFUNCTION	NATURE OF MAINTENANCE	CORRECTIVE ACTION	TIME REQUIRED FOR COMPLETION	EFFECT ON SAFE OPERATION OF THE REACTOR
79-10-306 11-28-79	21/HV-21346	Normal use	Valve and cross tower leakage on buffer helium dryer system.	Corrective	Replaced disc, checked stroke, and repacked.	1/2 Day	None
79-10-307 11-28-79	21/HV-21347	Normal use	Valve and buffer helium dryer cross tower leakage via HV-21347.	Corrective	Replaced disc, checked stroke, and repacked.	4 Hours	None
79-10-308 11-28-79	21/HV-21348	Normal use	Valve and buffer helium dryer cross tower leakage.	Corrective	Replaced disc, checked stroke, and repacked.	4 Hours	None
79-10-309 11-28-79	21/HV-21349	Normal use	Valve and buffer helium dryer cross tower leakage.	Corrective	Replaced disc, checked stroke, and repacked.	4 Hours	None
79-10-310 11-28-79	21/HV-21350	Normal use	Valve and buffer helium dryer cross tower leakage.	Corrective	Replaced disc, checked stroke, and repacked.	4 Hours	None
79-10-311 11-28-79	21/HV-21351	Normal use	Valve and buffer helium dryer cross tower leakage.	Corrective	Replaced disc, checked stroke, and repacked.	4 Hours	None
79-10-312 11-28-79	21/HV-21352	Normal use	Valve and buffer helium dryer cross tower leakage.	Corrective	Replaced disc, checked stroke, and repacked. Built up stem and machined new threads.	4 Hours	None
79-10-313 11-28-79	21/HV-21353	Normal use	Valve and buffer helium dryer cross tower leakage.	Corrective	Replaced disc, checked stroke, and repacked.	4 Hours	None
79-10-314 11-28-79	21/HV-21354	Normal use	Valve and buffer helium dryer cross tower leakage.	Corrective	Replaced disc, checked stroke, and repacked.	4 Hours	None
79-10-315 11-28-79	21/HV-21355	Normal use	Valve and buffer helium dryer cross tower leakage.	Corrective	Replaced disc, checked stroke, and repacked.	4 Hours	None
79-10-316 11-28-79	21/HV-21225	Normal use	Valve leakage.	Corrective	Replaced disc, checked stroke, and repacked.	4 Hours	None
79-10-317 11-28-79	21/HV-21226	Normal use	Valve leakage.	Corrective	Replaced disc, checked stroke, and repacked.	4 Hours	None
79-10-331 11-26-79	21/FT-2169	Normal use	Continuous alarms on "B" circulator buffer supply flow due to ground in current loop.	Corrective	Replaced strain gauge on FT-2169 and calibrated instrument.	1/2 Day	None

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79-10-339 11-15-79	21/P-2103S	Normal use	Packing leak on inboard packing gland of P-2103S.	Corrective	Installed new packing gland. Repaired crack in pump casing.	1 Day	None
79-10-359 11-6-79	22/HV-22228	Normal use	Gasket seal ring leak - valve blowing steam.	Corrective	Replaced seal.	6 Hours	None
79-10-396 10-22-79	82/V-8218	Normal use	Safety release arm for V-8218 safety relief worn through.	Corrective	Replaced manual trip mechanism.	1 Hour	None
79-10-420 10-23-79	93/CT-2B2	Normal use	Low voltage at 606 P1 (CT-2B2).	Corrective	Replaced chip, Z-43 verified instrument operability.	4 Hours	None
79-10-424 10-25-79	21/V-211074	Normal use	Valve leakage.	Corrective	Replaced vent valve assembly.	2 Days	None
79-10-437 10-23-79	11/MM-1120	Normal use	MM tripped on low reflected light.	Corrective	Replaced light source.	1/2 Day	None
79-10-455 11-5-79	82/C-8201S	Normal use	Instrument air compressor providing insufficient output.	Corrective	Installed new piston, piston rod and 4 discharge valves, and rebuilt 4 valves per quarterly inspection.	5 Days	None
79-10-466 10-24-79	21/SSH-21162-2	Normal use	Speed switch reading erratic.	Corrective	Replaced "C" circulator speed cable in kind.	4 Hours	None
79-10-467 10-29-79	93/RIS-93252-10	Normal use	RIS-93252-10, Loop 1 hot reheat activity monitor trips on spurious noise.	Corrective	Replaced capacitor in kind.	4 Hours	None
79-10-534 10-27-79	22/HV-2224	Normal use	Both "open" and "close" position lights lit with valve closed.	Corrective	Installed new limit switch.	4 Hours	None
79-10-539 12-3-79	22/V-22370	Normal use	Emergency condensate bypass check valve was stuck closed.	Corrective	Cleaned and lubricated shaft and valve.	8 Hours	None
79-10-615 10-31-79	11/NIM-1131	Normal use.	Low output from channel.	Corrective	Replaced pre-amp.	1 Hour	None
79-11-21 12-10-79	21/FCV-2151	Normal use	Off-line helium dryer pressurization with purge shut off.	Corrective	Replaced stem assembly, spool, and bonnet. Calibrated valve.	4 Hours	None

FORT ST. VRAIN SIGNIFICANT MAINTENANCE SUMMARY

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79-11-57 11-5-79	11/NR-1133-1	Normal use	Pinched high voltage cable resulting in low count rate.	Corrective	Repaired cable.	2 Hours	None
79-11-128 11-8-79	93/XT-93471C	Normal use	Instrument out of tolerance.	Corrective	Adjusted instrument.	1 Hour	None
79-11-129 11-8-79	93/XT-93471B	Normal use	Instrument out of tolerance.	Corrective	Re-adjusted and recalibrated as required	1 Hour	None
79-11-130 11-8-79	93/XT-93471A	Normal use	Instrument out of tolerance.	Corrective	Recalibrated and re-adjusted.	1 Hour	None
79-11-137 11-9-79	82/C-8201	Normal use	Short cycling of compressor.	Corrective	Re-adjusted unloader.	1 Hour	None
79-11-140 11-9-79	93/XT-93470C	Normal use	Instrument out of tolerance.	Corrective	Recalibrated and re-adjusted.	1 Hour	None
79-11-144 11-9-79	93/XE-93470B	Normal use	Did not respond to ultrasonic calibrator.	Corrective	Repaired solder joint.	1 Hour	None
79-11-145 11-9-79	93/XE-93470A	Normal use	Did not respond to ultrasonic calibrator.	Corrective	Repaired solder joint.	1 Hour	None
79-11-153 12-6-79	82/V-8233	Normal use	V-8233 (discharge of C-8201) leaks through.	Corrective	Check valve replaced with rebuilt valve.	8 Hours	None
79-11-160 11-25-79	82/V-82473	Normal use	Leaking discharge check valve on "C" instrument air compressor.	Corrective	Installed new check valve.	1 Day	None
79-11-161 11-26-79	82/V-82492	Normal use	Isolation valve on "C" instrument air compressor leaking through.	Corrective	Valve disassembled, cleaned, and returned to service.	24 Hours	None
79-11-163 11-9-79	93/XE-93479A	Normal use	Would not respond to ultrasonic calibrator.	Corrective	Repaired solder joint.	1 Hour	None
79-11-167 11-9-79	98/BFS-412 Snubber	Normal use	Snubber inoperable due to empty oil reservoir.	Corrective	Refilled oil reservoir.	1 Hour	None
79-11-193 11-13-79	45/P-4501S	Normal use	Diesel fire pump would not start in automatic.	Corrective	Repaired battery terminal.	1 Hour	None
79-11-195 11-22-79	98/CR-154	Normal use	Broken hanger.	Corrective	Repaired broken hanger.	8 Hours	None
79-11-197 12-2-79	11/Control Rod Drive Penetration #6 Secondary Seal	Normal use	Control rod drive #6 penetration secondary seal leakage too high to meet specifications.	Corrective	Replaced seal in kind.	1 Day	None

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79-11-199 11-20-79	11/Control Rod Drive Penetration #25 Secondary Seal	Normal use	Control rod drive #25 penetration secondary seal leakage too high to meet specifications.	Corrective	Replaced seal in kind.	1 Day	None
79-11-213 11-16-79	82/C-8201	Normal use	Loaded erratically.	Corrective	Replaced pressure switch.	1 Hour	None
79-11-238 11-23-79	21/HV-21352	Normal use	Leakage on HV-21352.	Corrective	Existing threads on valve stem built up and rethreaded.	1 Day	None
79-11-275 11-17-79	13/H-1301	Normal use	Fuel handling machine grapple probe failed to remain in receive position.	Corrective	Fuel handling machine repaired per procedure.	1/2 Day	None
79-11-307 12-5-79	93/HV-21203-3 & HV-21191-3	Normal use	Powering plant protective system logic up and down causes a decrease in "A" brake and seal supply bottle pressure due to valve leakage.	Corrective	Replaced both valves with rebuilt valves.	1 Day	None
79-11-310 11-26-79	13/H-1301	Normal use	Fuel handling machine grapple head rotation problem.	Corrective	Repaired faulty regulator.	3 Days	None
79-11-311 11-26-79	22/Pipe	Normal use	Pipe elbow leakage on pipe between V-22320 and PDT-22232-2.	Corrective	Replaced coupling.	7 Hours	None
79-11-318 11-26-79	82/S-8201	Normal use	"A" instrument air dryer off line tower won't depressurize properly.	Corrective	Freed up stuck check valve and cleaned dessicant from solenoid valve.	1 Day	None
79-11-331 11-28-79	82/C-8203	Normal use	C-8203 instrument air compressor trips on high discharge air temperature.	Corrective	Replaced defective exhaust valves.	8 Hours	None
79-11-351 12-2-79	11/Control Rod Drive #27 Secondary Penetration	Normal use	Region 27 secondary seal leakage exceeds specifications.	Corrective	Replaced gasket in kind.	1 Day	None

FORT ST. VRAIN SIGNIFICANT MAINTENANCE SUMMARY

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79-11-352 11-26-79	11/Region 37 Secondary Seal	Normal use	Region 37 secondary seal leakage exceeds specifications.	Corrective	Replaced gasket in kind.	1 Day	None
79-11-362 12-1-79	21/HV-2154-1	Normal use	Air leaking through "O" ring and up stem of air operated valve.	Corrective	Replaced "O" ring.	1 Day	None
79-11-363 11-27-79	21/P-2103S	Normal use	Outboard motor bearing on pump runs hot.	Corrective	Outboard bearing and oil seal replaced.	4 Days	None
79-11-375 12-3-79	46/HV-46248-2	Normal use	Handjack will not disengage due to stuck pin	Corrective	Removed stuck pin.	2 Hours	None
79-11-387 9-14-79	22/HV-2223	Normal use	Packing leak.	Corrective	Replaced packing.	8 Hours	None
79-11-438 12-13-79	98/CR-125	Normal use	Bolt missing in pipe clamp for CR-125.	Corrective	Bolt re-installed.	1/2 Hour	None
79-12-49 12-8-79	91/P-9105X	Normal use	Inboard seal leak on hydraulic power supply pump P-9105X.	Corrective	Installed new pump and coupling.	4 Days	None
79-12-63 12-9-79	92/K-9204X	Normal use	"A" diesel carrying an inordinate amount of load.	Corrective	Changed injectors on K-9204X and adjusted governor.	4 Hours	None
79-12-79 12-7-79	11/MM-1120	Normal use	Dirty moisture monitor mirror and light guide windows. Bad manifold "V" seal and window seals.	Corrective	Cleaned mirror and windows. Replaced seals.	1 Day	None
79-12-86 12-7-79	31/HV-31121	While manually closing valve, a nut snapped off the operator.	Broken on valve operator.	Corrective	Replaced valve operator housing cover.	2 Hours	None
79-12-148 12-13-79	91/P-9106X	Normal use	Worn pump coupling on hydraulic power supply pump.	Corrective	Changed out pump coupling.	1 Day	None
79-12-150 12-21-79	91/P-9102X	Normal use	Pump coupling needs replaced.	Corrective	Replaced pump coupling.	8 Hours	None
79-12-190 12-8-79	92/K-9201	Normal use	No voltage output at 1A diesel generator (K-9201).	Corrective	Replaced surge suppressor.	5 Hours	None
79-12-192 12-10-79	21/HV-2153-1	Normal use	Air line to HV-2153-1 operator loose and leaking.	Corrective	Repaired broken line.	2 Hours	None

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79-12-212 12-12-79	91/HV-2293	Normal use	Stainless steel line leaking oil on HV-2293.	Corrective	Replaced relief valve.	1 Day	None
79-12-280 12-13-79	21/HV-2153-1	Normal use	Air line to diaphragm for operator on HV-2153-1 damaged.	Corrective	Repaired line.	2 Hours	None
79-12-308 12-14-79	25/HV-2524	Normal use	Valve leaks through.	Corrective	Adjusted stem length. Calibrated XEP.	4 Hours	None
79-12-317 12-17-79	91/HV-2250	Normal use	"B" valve on 5-valve manifoled of HV-2250 leaks.	Corrective	Installed new "O" ring.	2 Hours	None
79-12-389 12-18-79	23/HV-2301	Normal use	HV-2301 inoperable.	Corrective	Shortened actuator drive shaft.	1 Day	None
79-12-402 12-19-79	93/CT-2B2	Normal use	Low voltage in 506 P1 Y.	Corrective	Replaced Z-43.	1 Hour	None
79-12-421 12-21-79	21/PDIS-21173	Normal use	Switch does not operate.	Corrective	Replaced stripped out locking device. Recalibrated switch.	1 Hour	None
79-12-435 12-26-79	21/HV-21252-2	Normal use	Broken conduit to HV-21252-2.	Corrective	Repaired conduit.	4 Hours	None
79-12-462 12-24-79	21/V-21543	Normal use	Emergency feedwater relief valve leaking through.	Corrective	Repaired valve.	2 1/2 Days	None
79-12-463 12-24-79	21/V-21523	Normal use	Emergency feedwater relief valve leaking through.	Corrective	Repaired valve.	2 1/2 Days	None
79-12-464 12-21-79	21/V-21522	Normal use	Relief valve leaks through.	Corrective	Replaced disc and disc holder. Remachined nozzle.	1 1/2 Days	None
79-12-465 12-21-79	21/V-21542	Normal use	Relief valve leaking through.	Corrective	Machined nozzle and disc.	1 1/2 Days	None

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WA 674-93 4-16-79	93/Steam Rupture Detection Circuitry	Mismarked documentation.	Erroneous documentation and field cable routing.	Corrective	Junction boxes labled and cables rerouted as required.	1 Day	None

NUMBER	PROXIMATE CAUSE	SYSTEM	MAJOR COMPONENT	RELATED REPORTABLE OCCURRENCE	CORRECTIVE ACTION TAKEN TO REDUCE THE PROBABILITY OF RECURRENCE	OPERATING TIME LOST	MAJOR SAFETY RELATED CORRECTIVE MAINTENANCE PERFORMED DURING THE OUTAGE	RADIATION RELEASE ASSOCIATED WITH OUTAGE WHICH ACCOUNTS FOR MORE THAN 10% OF ALLOWABLE ANNUAL VALUE
79-01	Circulator trip during routine surveillance, resulting in reduction of reactor power and generator load.	Helium Circulators	"D" Helium Circulator	None	None	None	None	None
79-02	Faulty steam generator valve required repair.	Steam Generators	Feedwater Valve	None	Valve was repaired.	70.8 Hours	None	None
79-03	Voltage transient.	Electrical	"B" Instrument Bus	None	None	14.8 Hours	None	None
79-04	Two inoperable boiler feedpumps.	Feedwater	"B" Boiler Feedpump	50-267/79-03/03-L	Feedpumps repaired.	4134.4 Hours	Refueling and turbine generator overhaul.	None
79-05	Field ground relay problems.	Electrical	Relay	None	Replaced relay.	47.5 Hours	None	None
79-06	Turbine overspeed test.	Main Generator	Main Turbine	None	None	1.9 Hours	None	None
79-07	High vibration caused turbine trip.	Main Turbine	Bearing	None	None	53.0 Hours	None	None
79-08	Drop in throttle pressure and load decrease; turbine trip.	Main Turbine	Throttle Pressure	None	None	76.8 Hours	None	None
79-09	Hot reheat reactor scram and turbine trip.	Not Applicable	Not Applicable	None	None	24.1 Hours	None	None

NUMBER	PROXIMATE CAUSE	SYSTEM	MAJOR COMPONENT	RELATED REPORTABLE OCCURRENCE	CORRECTIVE ACTION TAKEN TO REDUCE THE PROBABILITY OF RECURRENCE	OPERATING TIME LOST	MAJOR SAFETY RELATED CORRECTIVE MAINTENANCE PERFORMED DURING THE OUTAGE	RADIATION RELEASE ASSOCIATED WITH OUTAGE WHICH ACCOUNTS FOR MORE THAN 10% OF ALLOWABLE ANNUAL VALUE
79-10	Instrument panel shorted to ground and tripped.	Electrical	Instrument Panel	50-267/79-28/01-T	Evaluation in progress.	68.4 Hours	None	None
79-11	Reduce power due to high primary coolant moisture.	Primary Coolant	Not Applicable	None	None	45.9 Hours	None	None
79-12	Piping hanger inconsistencies.	Not Applicable	Not Applicable	50-267/79-35/01-T	Hanger audit in progress.	743.4 Hours	None	None
79-13	Turbine trip on low steam temperature.	Main Turbine	Not Applicable	None	None	231.0 Hours	None	None
79-14	Scheduled plant shutdown.	Not Applicable	Not Applicable	None	None	1600.5 Hours	Installation of region constraint devices and retubing of main condenser.	None

3.0 RADIATION EXPOSURES

During the report period, two personnel received exposures in excess of 100 mrem. Below is a tabulation of the information required by Technical Specification AC 7.5.1(b)3.

Number of Personnel	Total Exposure	Man-Rem Exposure	Duty Function	Dose Assignment
1	190 mrem	.19	Results Testing	100%
1	170 mrem	.17	Contractor Testing Support	100%

No other personnel received exposures greater than 100 mrem/year for the report period.

4.0 FUEL EXAMINATIONS

No examination of irradiated fuel was completed during the report period.