

Washington Public Power Supply System

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REGION V

Docket No. 50-397

February 28, 1985

Mr. J.B. Martin
Regional Administrator
Region V
U.S. Nuclear Regulatory Commission
1450 Maria Lane, Suite 210
Walnut Creek, CA 94596

Dear Mr. Martin:

Subject: NUCLEAR PLANT NO. 2
1984 ANNUAL REPORT

Reference: 1) Title 10, Code of Federal Regulations, Part 50.59(b)
2) WNP-2 Technical Specifications, 6.9.1.4 and 6.9.1.5
3) Supply System to NRC (JB Martin) Letter of 12/20/84 G02-84-654

The Reference 1) states that

"the licensee shall maintain records of changes in the facility and of changes in procedures made pursuant to this section, to the extent that such changes constitute changes in the facility as described in the safety analysis report or constitute changes in procedures as described in the safety analysis report. The licensee shall also maintain records of tests and experiments carried out pursuant to paragraph (a) of this section. These records shall include a written safety evaluation which provides the bases for the determination that the change, test or experiment does not involve an unreviewed safety question."

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Further it states that the licensee submit

". . . annually or at such shorter intervals as may be specified in the license, a report containing a brief description of such changes, tests, and experiments, including a summary of the safety evaluation of each."

Pursuant to this reference, the Supply System has procedures in place that require a written safety evaluation be performed for all procedure changes, all changes to the Final Safety Analysis Report, and all changes in the facility. These evaluations provide the bases for the determination that the change, test or experiment does not involve an unreviewed safety question.

As a result of discussions with representatives of your staff, the Supply System has determined that only significant safety evaluations should be reported and all others be available for audit purposes as necessary. Significant safety evaluations are those in which it is not readily apparent that the change does not involve an unreviewed safety question as defined in 50.59(a)(2). In other words, further analysis and evaluation is required to arrive at a conclusion that an unreviewed safety question does not exist. The attached report submits those safety evaluations recognized by the Supply System according to the above criteria.

This information was included in a December 20, 1984 report (Ref. 3) that covered the initial year of Plant operation. The interval between December 20, 1984 and December 31, 1984 is covered by Attachment A to this report. Future annual reports will cover the yearly period ending December 31 and will include the 50.59 summary report.

Reference 2) states that

"Annual reports covering the activities of the unit as described below for the previous calendar year shall be submitted prior to March 1 of each year. The initial report shall be submitted prior to March 1 of the year following initial criticality."

Further it states that the annual report shall include

"a. A tabulation on an annual basis of the number of station, utility, and other personnel (including contractors) receiving exposures greater than 100 mrem/yr and their associated man-rem exposure according to work and job functions* (e.g., reactor operations and surveillance, inservice inspection,

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routine maintenance, special maintenance [describe maintenance], waste processing, and refueling). The dose assignments to various duty functions may be estimated based on pocket dosimeter, thermoluminescent dosimeter (TLD), or film badge measurements. Small exposures totaling less than 20% of the individual total dose need not be accounted for. In this aggregate, at least 80% of the total whole-body dose received from external sources should be assigned to specific major work functions; and

- b. Documentation of all challenges to main steam line safety/relief valves."

These are included as Attachments B and C to this report.

A narrative summary of Plant operating experience is included as Attachment D. This attachment also includes a summary of forced outages and addresses the lack of Emergency Core Cooling System outages or indications of fuel failure.

Should you have any further questions, please contact Mr. R.L. Koenigs, WNP-2 Compliance Engineer.

Very truly yours,

C.M. Powers for

J. D. Martin
Plant Manager

JDM:RLK:mn
Attachments

cc: R Auluck - NRC
WS Chin - BPA
AD Toth - NRC Site
RC DeYoung - NRC
D Sherman - ANI
Document Control Desk - NRC (18 copies)

TESTS OR EXPERIMENTS

During this period WNP-2 was involved in normal Plant commercial operations and no other tests and/or experiments were conducted during this period.

CHANGES TO PROCEDURES

Procedures described in the WNP-2 FSAR are used by the Plant Operating Staff and by various offsite support organizations. The Plant Staff made changes to procedures, during this period, in accordance with 10 CFR 50.59, and concluded that none of the changes involved unreviewed safety questions.

Changes to procedures were generally either administrative or technical in nature. Administrative changes consisted of title, organizational and editorial changes, while technical changes were the result of system or component modifications, or improvements in procedural processes. A safety evaluation was conducted for each change, in accordance with 10 CFR 50.59, and was reviewed and approved by the appropriate personnel. The review concluded that the probability of occurrence or consequences of an accident or equipment malfunction were not increased, there was no reduction in any plant safety margins, and the possibility of an accident or malfunction not previously evaluated was not increased. All safety evaluations performed have been reviewed and accepted by the Plant Operations Committee per the WNP-2 Technical Specifications and are available for audit as necessary.

CHANGES IN THE FACILITY

Inasmuch as changes to non-safety related systems could potentially have a safety impact, all design changes regardless of safety classification are evaluated in accordance with 10 CFR 50.59 for unreviewed safety questions; this safety evaluation is documented in each case and available for audit.

As a result of the design control process utilized at WNP-2, all technical and safety questions are evaluated and resolved during the design review process: no changes were made in the plant that increased the probability of occurrence or consequences of an accident or equipment malfunction or reduced any plant safety margins, or increased the possibility of an accident or malfunction not previously evaluated.

Since the time frame for which this report is being made is short (12/13/84 through 12/31/84), very few changes were incorporated and in no cases were changes approved for which the safety evaluation was not considered straight forward. No further analysis or evaluations were required.

MUMBER OF PERSONS RECEIVING OVER 100 MREM

	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACTORS AND OTHERS	STATION EMPLOYEES	UTILITY EMPLOYEES	CONTRACTORS AND OTHERS
OPERATIONS & SURVEILLANCE						
MAINTENANCE PERSONNEL	17,731	0.000	6,772	3,758	0.000	1,120
OPERATING PERSONNEL	29,286	4,341	0.000	6,403	0.834	0.000
HEALTH PHYSICS PERSONNEL	10,624	2,238	21,711	3,519	0.335	7,297
SUPERVISORY PERSONNEL	3,968	1,082	0.000	0.899	0.351	0.000
ENGINEERING PERSONNEL	5,512	4,492	2,901	1,024	1,146	0.483
ROUTINE MAINTENANCE						
MAINTENANCE PERSONNEL	3,156	0.000	9,020	0.606	0.000	1,289
OPERATING PERSONNEL	0.068	0.000	0.044	0.025	0.000	0.040
HEALTH PHYSICS PERSONNEL	0.000	0.000	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0.053	0.400	0.000	0.025	0.090	0.000
ENGINEERING PERSONNEL	0.862	1,515	0.886	0.207	0.280	0.121
INSERVICE INSPECTION						
MAINTENANCE PERSONNEL	1,157	0.000	2,799	0.200	0.000	0.560
OPERATING PERSONNEL	0.087	0.000	0.000	0.015	0.000	0.000
HEALTH PHYSICS PERSONNEL	0.000	0.000	0.033	0.000	0.000	0.020
SUPERVISORY PERSONNEL	0.059	0.245	0.000	0.028	0.120	0.000
ENGINEERING PERSONNEL	0.875	1,299	0.204	0.195	0.505	0.055
SPECIAL MAINTENANCE						
MAINTENANCE PERSONNEL	17,052	0.000	8,224	3,937	0.000	1,477
OPERATING PERSONNEL	0.239	0.000	0.000	0.064	0.000	0.000
HEALTH PHYSICS PERSONNEL	0.135	0.000	0.359	0.030	0.000	0.190
SUPERVISORY PERSONNEL	0.061	0.273	0.000	0.010	0.075	0.000
ENGINEERING PERSONNEL	1,507	1,705	1,107	0.325	0.402	0.195
WASTE PROCESSING						
MAINTENANCE PERSONNEL	0.171	0.000	0.000	0.040	0.000	0.000
OPERATING PERSONNEL	0.000	0.000	0.983	0.000	0.000	0.885
HEALTH PHYSICS PERSONNEL	0.000	0.000	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0.000	0.000	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0.000	0.028	0.938	0.000	0.005	0.530
REFUELING						
MAINTENANCE PERSONNEL	0.000	0.000	0.000	0.000	0.000	0.000
OPERATING PERSONNEL	0.000	0.000	0.000	0.000	0.000	0.000
HEALTH PHYSICS PERSONNEL	0.000	0.000	0.000	0.000	0.000	0.000
SUPERVISORY PERSONNEL	0.000	0.000	0.000	0.000	0.000	0.000
ENGINEERING PERSONNEL	0.000	0.000	0.000	0.000	0.000	0.000
TOTAL						
MAINTENANCE PERSONNEL	30,289	0.000	26,815	8,541	0.000	4,446
OPERATING PERSONNEL	29,659	4,341	1,027	6,507	0.834	0,925
HEALTH PHYSICS PERSONNEL	10,659	2,238	22,103	3,549	0,335	7,497
SUPERVISORY PERSONNEL	4,141	2,000	0,962	0,962	0,636	0,000
ENGINEERING PERSONNEL	8,756	9,038	5,935	1,751	2,338	1,394
GRAND TOTAL	92,503	17,617	55,879	21,310	4,143	14,252

MAIN STEAM LINE SAFETY/RELIEF VALVE CHALLENGES

During this period WNP-2 was involved in Plant Startup, the Power Ascension Test Program (PATP) and Commercial Operation. The following documents all challenges to WNP-2 main steam line safety/relief valves during the period.

Detailed Information:

S/R Valve Serial Number	63790-00-0048	63790-00-0054	63790-00-0055	63790-00-0059	63790-00-0045
Component ID (Location)	MS-RV-1A	MS-RV-2A	MS-RV-3A	MS-RV-4A	MS-RV-1B
Date of Actuation (Mo/Da/Yr)	8/6/84	8/6/84	8/6/84	8/6/84	8/6/84
Time of Day (24 Hour Clock)	1606:19	1901:20	1712:18	1423:45	1831:43
Type of Actuation (Code)	B	B	B	B	B
Cause/Reason for Actuation (Code)	C	C	C	C	C
Rx Operating Condition Prior to Lift (Code)	B	B	B	B	B
Rx Power Level Prior to Lift (% Rated Thermal)	48.6	48.03	48.33	49.0	48.14
Tailpipe Temperature Prior to Lift (°F)	Ambient	Ambient	Ambient	Ambient	Ambient
Other Instrumentation - Type (Code)	A	A	A	A	A
Other Instrumentation - Number, Reading and Units					
Rx Pressure Prior to Actuation (PSIG)	919	918	919	920	918
Reseat Pressure at Valve Closure (PSIG)	917	915	915	917	915
Duration of This Actuation (Minutes:Seconds)	2 min 30 sec	1 min 24 sec	1 min 26 sec	1 min 23 sec	1 min 35 sec
Failures, Reports (Code)	--	--	--	--	--

S/R Valve Serial Number	63790-00-0049	63790-00-0053	63790-00-0057	63790-00-0046	63790-00-0047
Component ID (Location)	MS-RV-2B	MS-RV-3B	MS-RV-4B	MS-RV-1C	MS-RV-2C
Date of Actuation (Mo/Da/Yr)	8/6/84	8/6/84	8/6/84	8/6/84	8/6/84
Time of Day (24 Hour Clock)	1642:05	1319:07	1704:02	1632:37	1843:57
Type of Actuation (Code)	B	B	B	B	B
Cause/Reason for Actuation (Code)	C	C	C	C	C
Rx Operating Condition Prior to Lift (Code)	B	B	B	B	B
Rx Power Level Prior to Lift (% Rated Thermal)	48.66	49.34	48.29	48.42	48.1
Tailpipe Temperature Prior to Lift (°F)	Ambient	Ambient	Ambient	Ambient	Ambient
Other Instrumentation - Type (Code)	A	A	A	A	A
Other Instrumentation - Number, Reading and Units					
Rx Pressure Prior to Actuation (PSIG)	919	919	918	918	913
Reseat Pressure at Valve Closure (PSIG)	916	917	915	916	914
Duration of This Actuation (Minutes:Seconds)	1 min 49 sec	4 min 18 sec	1 min 23 sec	1 min 36 sec	1 min 48 sec
Failures, Reports (Code)	--	--	--	--	--

S/R Valve Serial Number	63790-00-0051	63790-00-0058	63790-00-0050	63790-00-0052	63790-00-0056
Component ID (Location)	MS-RV-3C	MS-RV-4C	MS-RV-1D	MS-RV-2D	MS-RV-3D
Date of Actuation (Mo/Da/Yr)	8/6/84	8/6/84	8/6/84	8/6/84	8/6/84
Time of Day (24 Hour Clock)	1539:13	1726:56	1738:35	1311:23	1650:25
Type of Actuation (Code)	B	B	B	B	B
Cause/Reason for Actuation (Code)	C	C	C	C	C
Rx Operating Condition Prior to Lift (Code)	B	B	B	B	B
Rx Power Level Prior to Lift (% Rated Thermal)	48.8	48.27	48.31	48.06	48.2
Tailpipe Temperature Prior to Lift (°F)	Ambient	Ambient	Ambient	Ambient	Ambient
Other Instrumentation - Type (Code)	A	A	A	A	A
Other Instrumentation - Number, Reading and Units					
Rx Pressure Prior to Actuation (PSIG)	919	918	919	918	920
Reseat Pressure at Valve Closure (PSIG)	917	915	915	915	915
Duration of This Actuation (Minutes:Seconds)	2 min 8 sec	1 min 38 sec	1 min 53 sec	2 min 2 sec	1 min 39 sec
Failures, Reports (Code)	--	--	--	--	--

S/R Valve Serial Number	63790-00-0060	63790-00-0061	63790-00-0062
Component ID (Location)	MS-RV-4D	MS-RV-5B	MS-RV-5C
Date of Actuation (Mo/Da/Yr)	8/6/84	8/6/84	8/6/84
Time of Day (24 Hour Clock)	1403:32	1754:14	1415:14
Type of Actuation (Code)	B	B	B
Cause/Reason for Actuation (Code)	C	C	C
Rx Operating Condition Prior to Lift (Code)	B	B	B
Rx Power Level Prior to Lift (% Rated Thermal)	49.16	48.3	49.08
Tailpipe Temperature Prior to Lift (°F)	Ambient	Ambient	Ambient
Other Instrumentation - Type (Code)	A	A	A
Other Instrumentation - Number, Reading and Units			
Rx Pressure Prior to Actuation (PSIG)	919	918	920
Reseat Pressure at Valve Closure (PSIG)	917	915	917
Duration of This Actuation (Minutes:Seconds)	3 min 11 sec	1 min 36 sec	2 min 24 sec
Failures, Reports (Code)	--	--	--

S/R Valve Serial Number	63790-00-0049	63790-00-0058
Component ID (Location)	MS-RV-4A	MS-RV-4C
Date of Actuation (Mo/Da/Yr)	10/28/84	10/28/84
Time of Day (24 Hour Clock)	0426	0551
Type of Actuation (Code)	B	B
Cause/Reason for Actuation (Code)	E	E
Rx Operating Condition Prior to Lift (Code)	G	G
Rx Power Level Prior to Lift (% Rated Thermal)	0	0
Tailpipe Temperature Prior to Lift (°F)		
Other Instrumentation - Type (Code)	A	A
Other Instrumentation - Number, Reading and Units	100% open	100% open
Rx Pressure Prior to Actuation (PSIG)	1000	980
Reseat Pressure at Valve Closure (PSIG)	949 (Tm 0434)	817 (Tm 0553)
Duration of This Actuation (Minutes:Seconds)	8	3 min
Failures, Reports (Code)	--	C C

S/R Valve Serial Number	63790-00-0061	63790-00-0056	63790-00-0062	63790-00-0060	63790-00-0057
Component ID (Location)	MS-RV-5B	MS-RV-3D	MS-RV-5C	MS-RV-4D	MS-RV-4B
Date of Actuation (Mo/Da/Yr)	10/28/84	10/28/84	10/28/84	10/28/84	10/28/84
Time of Day (24 Hour Clock)	0405	0408	0411	1415	0420
Type of Actuation (Code)	B	B	B	B	B
Cause/Reason for Actuation (Code)	E	E	E	E	E
Rx Operating Condition Prior to Lift (Code)	G	G	G	G	G
Rx Power Level Prior to Lift (% Rated Thermal)	0	0	0	0	0
Tailpipe Temperature Prior to Lift (°F)					
Other Instrumentation - Type (Code)	A	A	A	A	A
Other Instrumentation - Number, Reading and Units	100% open	100% open	100% open	100% open	100% open
Rx Pressure Prior to Actuation (PSIG)	1000	1000	1000	1000	1000
Reseat Pressure at Valve Closure (PSIG)	930	920	910	900	910
Duration of This Actuation (Minutes:Seconds)	Not Required	Not Required	Not Required	Not Required	Not Required
Failures, Reports (Code)	C	C	C	C	C

S/R Valve Serial Number	63790-00-0062
Component ID (Location)	MS-RV-5C
Date of Actuation (Mo/Da/Yr)	11/10/84
Time of Day (24 Hour Clock)	1154:30
Type of Actuation (Code)	B
Cause/Reason for Actuation (Code)	E
Rx Operating Condition Prior to Lift (Code)	G
Rx Power Level Prior to Lift (% Rated Thermal)	-
Tailpipe Temperature Prior to Lift (°F)	211°F
Other Instrumentation - Type (Code)	A
Other Instrumentation - Number, Reading and Units	Acoustical 100%
Rx Pressure Prior to Actuation (PSIG)	880
Reseat Pressure at Valve Closure (PSIG)	640
Duration of This Actuation (Minutes:Seconds)	5 min.
Failures, Reports (Code)	C

	63790-00-0053	63790-00-0059	63790-00-0050	63790-00-0061	63790-00-0056
S/R Valve Serial Number	63790-00-0053	63790-00-0059	63790-00-0050	63790-00-0061	63790-00-0056
Component ID (Location)	MS-RV-3B	MS-RV-4A	MS-RV-4D	MS-RV-5B	MS-RV-3D
Date of Actuation (Mo/Da/Yr)	11/10/84	11/10/84	11/10/84	11/10/84	11/10/84
Time of Day (24 Hour Clock)	1135	1135	1135	1140	1149
Type of Actuation (Code)	A	A	A	A	A
Cause/Reason for Actuation (Code)	A,C	A,C	A,C	E	E
Rx Operating Condition Prior to Lift (Code)	E	E	E	G	G
Rx Power Level Prior to Lift (% Rated Thermal)	91%	97%	97%	97%	--
Tailpipe Temperature Prior to Lift (°F)	212°F	129°F	211°F	210°F	155°F
Other Instrumentation - Type (Code)	A	A	A	A	A
Other Instrumentation - Number, Reading and Units	Acoustical 100%	Acoustical 100%	Acoustical 100%	Acoustical 100%	Acoustical 100%
Rx Pressure Prior to Actuation (PSIG)	1080	1080	1080	1040	985
Reseat Pressure at Valve Closure (PSIG)	1000	1000	1000	875	855
Duration of This Actuation (Minutes:Seconds)	20 sec	20 sec	20 sec	3 min	3 min
Failures, Reports (Code)	C	C	C	C	C

Codes:

Type of Actuation

- A. Automatic
- B. Remote Manual
- C. Spring

Cause/Reason for Actuation

- A. Overpressure
- B. ADS or Other Safety
- C. Test
- D. Inadvertent (Accidental, Spurious)
- E. Manual Relief

Reactor Operating Condition Prior to Lift (LER Codes)

- A. Construction
- B. Preoperational Startup or Power Ascension Tests in Progress
- C. Routine Startup
- D. Routine Shutdown
- E. Steady State Operation
- F. Load Changes During Routine Operation
- G. Shutdown (Hot or Cold) Except Refueling
- H. Refueling

Other Instrument-Type

- A. Acoustic Monitor
- B. Pressure Sensor
- C. Other _____

Failures-Reports

- A. Failure of Electrical or Other Components Not Considered Part of Valve Assembly - No SRVS Failure Report is Required
- B. Failure of Any Part of Valve Assembly - SRVS Failure Report Will be Filed
- C. No Failures Occurred - No SRVS Report Required
- D. LER Submitted - Give LER Number in Item 316
- E. NPRDS Will be Submitted

WNP-2 OPERATING SUMMARY

WNP-2 was conducting initial fuel loading activities as 1984 began. At the completion of fuel loading, the Plant obtained its first criticality on January 19, 1984 and conducted Low Power Physics Testing until the Power Ascension Test Program (PATP) began on April 10, 1984. PATP testing continued through December 12, 1984 and the Plant was declared in Commercial Operation on December 13, 1984.

WNP-2 first synchronized with the Bonneville Power Administration (BPA) electrical system and produced electrical power on May 27, 1984. WNP-2 gross electrical energy production for 1984 was 1,804,110 MWH.

Plant operation in 1984 produced no evidence of any fuel failures. No indication of fuel failure was obtained from either offgas normal operating levels or samples. Also, no indications of fuel failure were obtained through normal Plant chemical or radiological analysis.

WNP-2 committed to reporting Emergency Core Cooling System outages for a five year period to provide data for availability analysis. Since this reporting period covers only commercial operation and is very short (12/13/84 through 12/31/84), no data is included in this report. The 1984 data will be submitted with the 1985 ECCS outage data as part of the 1985 annual report.

Following is a summary of Plant outages and forced power reductions.

<u>DATE</u>	<u>TYPE</u>	<u>OUTAGE (Hrs)</u>	<u>REASON</u>	<u>SHUTDOWN</u>	<u>*CAUSE & CORRECTIVE ACTION TO PREVENT RECURRENCE</u>
05/27/84	Forced	0.1	Equipment Failure	Auto Scram	Upon initially loading the generator, a turbine trip occurred due to antimotoring. The problem was determined to be in the DEH control system. Note that the reactor did not scram.
05/28/84	Forced	13.2	Equipment Failure	Auto Scram	Auto scram on low RPV level due to loss of condensate booster pump and feed pump while placing the condensate demins in service. See LER 84-051
05/29/84	Scheduled	14.0	Testing	Manual	The generator was unloaded for turbine valve testing. As a result of that testing, a reactor scram was initiated due to rapid closure of the bypass valve and the subsequent high pressure spikes.
05/30/84	Scheduled	2.0	Testing	Manual	The generator was unloaded from the grid to perform turbine overspeed testing.
05/30/84	Forced	10.5	Maintenance	Manual	The generator was removed from service and reactor power was reduced in order to install fuses in the RCIC and condensate systems. See LER 84-048, 6/25/84.
06/01/84	Forced	27.3	Equipment Failure	Auto Scram	Automatic scram occurred on high reactor pressure as a result of the closure of all four main turbine bypass valves due to a DEH malfunction. A replacement logic card was installed in the DEH System. See LER 84-056, 6/28/84.
06/03/84	Forced	234.7	Equipment Failure	Manual	A plant shutdown was completed on 06/03/84 as a result of increasing conductivity on the primary system caused by leaking main condenser tubes. Repairs were made to the condenser to correct problem.

*NOTE: No releases or radiation exposure occurred which were associated with these outages and which accounted for more than 10 percent of the allowable annual values.

<u>DATE</u>	<u>TYPE</u>	<u>OUTAGE (Hrs)</u>	<u>REASON</u>	<u>SHUTDOWN</u>	<u>*CAUSE & CORRECTIVE ACTION TO PREVENT RECURRENCE</u>
06/13/84	Forced	0.5	Equipment Failure	Auto Trip	The Generator tripped on high reactor level while transferring feedwater control. The turbine was relatched and changes to the feedwater control logic were subsequently made.
06/13/84	Forced	16.3	Equipment Failure	Auto Scram	Auto scram occurred on low level due to a loss of feedwater following condensate booster and feedwater pumps tripping on low suction pressure. The low suction pressure was due to the condensate cleanup flow control valve failing to open with only two condensate filter demins. in service. The cause for valve failure was determined and the valve was replaced. See LER 84-060
06/19/84	Scheduled	0.4	Testing	Manual Trip	The Generator was tripped as a part of the Power Ascension Test Program. Following the test, the Generator was placed back on line.
06/19/84	Forced	302	Equipment Failure	Manual	Plant shutdown to repair a turbine bypass valve which stuck open following a planned trip of the Generator. The valve was repaired, however the outage was extended due to repairs on RHR Pump "B".
07/10/84	Forced	553.5	Equipment Failure	Manual	During monthly surveillance testing of Standby Diesel Generator 1B (DG1B) and slip ring end bearing turned on the shaft insulation, thus destroying the insulation and allowing the shaft to drop slightly and rub on bearing housing. Modifications, to improve reliability, were made by mounting the bearings directly to shaft and insulating the bearing housing. See LER 84-075.
08/03/84	Forced	15.1	Equipment Failure	Manual	Plant was shutdown to repair a severe steam leak from a handhole on the Moisture Separator Heater Drain tank. The leak was repaired by seal welding the handhole to prevent recurrence.

<u>DATE</u>	<u>TYPE</u>	<u>OUTAGE (Hrs)</u>	<u>REASON</u>	<u>SHUTDOWN</u>	<u>*CAUSE & CORRECTIVE ACTION TO PREVENT RECURRENCE</u>
08/07/84	Scheduled	80.9	Testing	Auto Scram	Loss of Power test conducted as part of the Power Ascension Test Program.
08/12/84	Forced	66.3	Equipment Failure	Manual	Plant was shutdown due to high conductivity caused by a condenser tube leak. One failed condenser tube was found in the center of a tube bundle. The tube was plugged and a chemistry guidance letter issued to aid in early conductivity excursion assessment. See LER 84-083.
08/16/84	Forced	30.1	Testing	Auto Scram	MSL - Hi RAD DIV II surveillance caused 1/2 scram SCRAM and C.R. Block flow comparator surveillance caused second 1/2 SCRAM for DIV I resulting in a Reactor trip. See LER 84-089
*08/17/84	Forced	5.3	Equipment Failure	Manual	Could not attain sufficient vacuum after startup due to 6A and B High Pressure FW Heater ruptured discs, downstream of RV's, being ruptured from previous SCRAM. The cause was determined and the ruptured discs replaced.
08/18/84	Forced	265.8	Equipment Failure	Manual	Plant was shutdown due to high conductivity caused by condenser tube leaks. It was determined there were nine (9) relatively minor tube leaks and one (1) major leak. The cause of leakage was determined, the leaking tubes were plugged and the condenser returned to service.

<u>DATE</u>	<u>TYPE</u>	<u>OUTAGE (Hrs)</u>	<u>REASON</u>	<u>SHUTDOWN</u>	<u>*CAUSE & CORRECTIVE ACTION TO PREVENT RECURRENCE</u>
09/10/84	Forced	180.8	Testing	Auto Scram	A test switch which was intended for a test trip on both RRC pumps was inadvertently connected to the RPS logic. When closed in, it resulted in the failure of power fuses to all four RPS channels and a resultant Scram. The cause of the problem was determined while the plant was proceeding to cold shutdown. An inspection and analysis of the incident revealed no harmful effects. The fuses were replaced and the procedure subsequently performed. Since the procedure was a one time test on further corrective action is required. See LER 84-095
09/27/84	Forced	18.1	Equipment Failure	Manual	Plant was shutdown due to failure of the Linear Variable Differential Transformer (LVDT) for RRC-V-60B. This failure was a result of the differential transformer core becoming detached from the actuating rod. The LVDT was replaced with another of improved design.
10/01/84	Scheduled	132.5	Testing	Manual	Test trip of turbine-generator at 75% power as part of Power Ascension Test Program. The turbine bypass valves fast opening response time did not meet test criteria. Testing and trouble shooting to correct problems.
10/07/84	Scheduled	0.4	Testing	Manual	Tripped turbine-generator at 24% power for bypass valve (BPV) response time testing. Test did not meet criteria. Continued testing and troubleshooting.
10/08/84	Scheduled	0.4	Testing	Manual	Tripped turbine-generator again at 24% power for BPV response time testing. Test did not meet criteria. Continued testing and troubleshooting.

<u>DATE</u>	<u>TYPE</u>	<u>OUTAGE (Hrs)</u>	<u>REASON</u>	<u>SHUTDOWN</u>	<u>*CAUSE & CORRECTIVE ACTION TO PREVENT RECURRENCE</u>
10/08/84	Forced	53.3	Maintenance	Manual	Plant shutdown due to failure to meet test criteria. Continued testing and troubleshooting to correct problems.
10/11/84	Scheduled	0.2	Testing	Manual	Tripped turbine-generator at 24% power for another test of BPV response time. Test failed to meet test criteria. Resumed testing and troubleshooting.
10/11/84	Scheduled	0.3	Testing	Manual	Tripped turbine-generator at 24% power for another BPV response time test. Response time was satisfactory and turbine-generator was returned to service.
10/13/84	Forced	20.3	Equipment Failure	Manual Scram	<p>Plant shutdown due to cycling of turbine governor & bypass valves. It was determined after shutdown that cycling was caused by radio frequency interference due to keying of hand held radio transmitters in the vicinity of electrosyn pressure transmitters.</p> <p>All susceptible instrument locations were identified and warning signs were placed in the area of DEH pressure transmitters. Action is also being taken to evaluate the possibility of modifying electrosyn transmitters to reduce sensitivity to radio frequency interference. See LER 84-109</p>
10/20/84	Forced	95.2	Equipment Failure	Auto Scram	Reactor scrammed on low steam pressure due to an erroneous setpoint being initiated while making a pressure change. A plant modification (PMR) has been initiated to improve visibility of setpoints displays. See LER 84-112

<u>DATE</u>	<u>TYPE</u>	<u>OUTAGE (Hrs)</u>	<u>REASON</u>	<u>SHUTDOWN</u>	<u>*CAUSE & CORRECTIVE ACTION TO PREVENT RECURRENCE</u>
10/28/84	Forced	32.5	Equipment Failure	Auto Scram	Reactor scrammed from 92% power on low level due to loss of condensate booster pumps from low suction pressure. Low suction pressure was caused by the steam seal condenser bypass valve failing closed while troubleshooting valve problems. The valve was repaired and plant returned to service. See LER 84-114
11/10/84	Scheduled	249.7	Testing	Auto Scram	Plant was shutdown by Reactor SCRAM, initiated by main steam isolation valve closure test, as part of the test and ascension program. The test was successful and the plant remained down for a scheduled maintenance outage.
11/21/84	Scheduled	0.5	Testing	Manual	Tripped turbine generator at 24% power to test bypass valves capacity as part of the power ascension test program. Test was satisfactory and turbine generator was returned to service.
11/27/84	Forced	70.1	Equipment Failure	Auto Scram	Reactor SCRAM at 40% power level due to low condenser vacuum caused by a FW heater tube leak and leaking FW heater shell side relief valve. The tube leak was repaired and modifications were made to relief valve and plant was returned to service. See LER 84-125
12/02/84	Scheduled	25.5	Testing	Auto Scram	Initiated a generator load reject trip at 100% power as part of the Test and Ascension Program.
12/03/84	Forced	12.0	Operator Error	Auto Scram	Reactor scram at 25% power on low water level caused by loss of feedwater flow while transferring feedwater control from flow control valve to speed control. See LER 84-124

<u>DATE</u>	<u>TYPE</u>	<u>OUTAGE (Hrs)</u>	<u>REASON</u>	<u>SHUTDOWN</u>	<u>*CAUSE & CORRECTIVE ACTION TO PREVENT RECURRENCE</u>
12/28/84	Forced	41.7	Equipment Failure	Auto Scram	A reactor SCRAM occurred from 100% power due to a turbine trip, caused by actuation of a generator protection relay from a drop in the auto stop oil header pressure. The fluctuation in pressure occurred when the air side seal oil pump was removed from service. Investigation revealed the setpoint of auto-stop pressure switch was high and the auto stop oil pressure was abnormally low. The switch setpoint was calibrated to its proper value and the auto stop oil orifices and relief valves were cleaned to restore normal oil header pressure. See LER 84-129