

ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9406020182 DOC.DATE: 94/05/26 NOTARIZED: NO DOCKET #
 FACIL: 50-305 Kewaunee Nuclear Power Plant, Wisconsin Public Service 05000305
 AUTH.NAME AUTHOR AFFILIATION
 RALEIGH, L.M. Wisconsin Public Service Corp.
 SCHROCK, C.A. Wisconsin Public Service Corp.
 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 93-003-01: on 930306, three MSSVs found inoperable due to mechanical drift. MSSVs disassembled, inspected, reassembled & tested before starting up after 1993 refueling outage. W/ 940526 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 13
 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:

	RECIPIENT		COPIES		RECIPIENT		COPIES	
	ID	CODE/NAME	LTTR	ENCL	ID	CODE/NAME	LTTR	ENCL
	PD3-3	PD	1	1	LAUFER, R		1	1
INTERNAL:	ACRS		1	1	AEOD/DOA		1	1
	AEOD/DSP/TPAB		1	1	AEOD/ROAB/DSP		2	2
	NRR/DE/EELB		1	1	NRR/DE/EMEB		1	1
	NRR/DORS/OEAB		1	1	NRR/DRCH/HHFB		1	1
	NRR/DRCH/HICB		1	1	NRR/DRCH/HOLB		1	1
	NRR/DRIL/RPEB		1	1	NRR/DRSS/PRPB		2	2
	NRR/DSSA/SPLB		1	1	NRR/DSSA/SRXB		1	1
	<u>REG FILE</u>	02	1	1	RES/DSIR/EIB		1	1
	RGN3	FILE 01	1	1				
EXTERNAL:	EG&G BRYCE, J.H		2	2	L ST LOBBY WARD		1	1
	NRC PDR		1	1	NSIC MURPHY, G.A		1	1
	NSIC POORE, W.		1	1	NUDOCS FULL TXT		1	1

NOTE TO ALL "RIDS" RECIPIENTS:

PLEASE HELP US TO REDUCE WASTE! CONTACT THE DOCUMENT CONTROL DESK, ROOM P1-37 (EXT. 20079) TO ELIMINATE YOUR NAME FROM DISTRIBUTION LISTS FOR DOCUMENTS YOU DON'T NEED!

FULL TEXT CONVERSION REQUIRED
 TOTAL NUMBER OF COPIES REQUIRED: LTTR 28 ENCL 28

R
I
D
S
/
A
D
D
S
/
A
D
D
S



WISCONSIN PUBLIC SERVICE CORPORATION

600 North Adams • P.O. Box 19002 • Green Bay, WI 54307-9002

May 26, 1994

10 CFR 50.73

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Ladies/Gentlemen:

Docket 50-305
Operating License DPR-43
Kewaunee Nuclear Power Plant
Reportable Occurrence 93-003-01

In accordance with the requirements of 10 CFR 50.73, "Licensee Event Report System," the attached Licensee Event Report for reportable occurrence 93-003-01 is being submitted.

Sincerely,

A handwritten signature in cursive script that reads "C. A. Schrock".

C. A. Schrock
Manager-Nuclear Engineering

RTS/cjt

Attach.

cc - INPO Records Center
US NRC Senior Resident Inspector
US NRC, Region III

LERICOVERLTR.WP

9406020182 940526
PDR ADDCK 05000305
S PDR

Handwritten initials in cursive script, possibly "JEP" or similar, with a vertical line below them.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) Kewaunee Nuclear Power Plant	DOCKET NUMBER (2) 05000 305	PAGE (3) 1 OF 12
----------------------------------------------------------	---------------------------------------	----------------------------

TITLE (4) Three Main Steam Safety Valves Found Inoperable Due To Mechanical Drift

EVENT DATE (5)			LER NUMBER (6)			REPORT NUMBER (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
03	06	93	93	003	01	05	26	94	N/A	05000
										05000

OPERATING MODE (9) N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)									
POWER LEVEL (10) 000	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)						
	20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)						
	20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER						
	20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	(Specify in Abstract below and in Text, NRC Form 366A)						
	20.405(a)(1)(iv)	X 50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)							
20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)								

LICENSEE CONTACT FOR THIS LER (12)

NAME Lynne M. Raleigh - Plant Nuclear Engineer	TELEPHONE NUMBER (Include Area Code) 414 388-2560
----------------------------------------------------------	-------------------------------------------------------------

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
X	SB	RV	D243	Yes					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE.)	X	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
------------------------------------------------------------	---	-----------	--------------------------------------	-------	-----	------

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On March 6, 1993, with the plant in hot shutdown for the 1993 refueling outage, Surveillance Procedure 06-077, "Main Steam Safety Valve Test" was performed. During the performance of the procedure it was discovered that the lift pressure of three of the ten main steam (MS) safety valves was out of tolerance; and hence, the three valves were declared inoperable.

The three inoperable MS safety valves were disassembled, inspected, reassembled and tested before exceeding hot shutdown after the 1993 refueling outage. The cause of the safety valve failure was not conclusively determined from these rebuilds.

The two valves that failed with the largest deviation from the setpoint were tested again during the 1994 refueling outage. One of these valves failed slightly higher than its acceptance criterion on the third test. The valve's first two tests were within the acceptance criterion. Although the valve was disassembled and inspected, a root cause could not be conclusively determined. Past assembly techniques may have contributed to the 1994 failure.

In both cases sufficient pressure relieving capability existed to ensure the health and safety of the public at all times. This ability existed through a combination of the relieving capability of the MS safety valves and the non-safety related steam relief capabilities of the system.

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Kewaunee Nuclear Power Plant	05000305	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 12
		93	- 003 -	01	

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

Description of Event

On March 6, 1993, with the plant in hot shutdown for the 1993 refueling outage, Surveillance Procedure (SP) 06-077, "Main Steam Safety Valve Test," was performed. During the performance of SP 06-077 the lift pressure of three of the ten main steam (MS) safety valves was found to be out of tolerance; hence, the valves were declared inoperable.

In accordance with the In-service Testing program, two of the ten MS safety valves are selected each year to be tested. MS safety valves SD1A3 and SD1A4 were scheduled to be tested during the 1993 refueling outage. SP 06-077 requires that the as-found lift pressure be recorded and meet two criteria, the test acceptance criterion and the set pressure acceptance criterion.

The test acceptance criterion is a wide band of -3 percent and approximately +2 percent of the valve's nominal setpoint. Valves with lift pressures within this range are considered operable since they demonstrated acceptable performance within the analyzed range. If the as-found lift pressure is outside of the test acceptance criterion, the valve is considered inoperable.

The set pressure acceptance criterion is a more narrow band of ± 1 percent of the nominal set point for all valves except the lowest-set valve on each train. The lowest-set valves have an acceptance criterion of -1, +0 percent of the nominal set point. If the lift pressure is within this band on two consecutive tests the valve may be returned to service. If a valve's as-found lift pressure is outside of the set pressure acceptance criterion, but within the test acceptance criterion the valve is considered operable but must be adjusted and tested prior to returning it to service.

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 90.0 HRS FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Kewaunee Nuclear Power Plant	05000305	93	- 003	- 01	3 OF 12

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

There are five MS safety valves for each steam generator (SG), SD1A1 through SD1A5 and SD1B1 through SD1B5. These valves are used to protect the 1A and 1B SGs from overpressurizing following upset conditions. They are located outside of containment on the respective 30 inch MS headers (reference figure 1). The five safety valves for each SG are set to relieve at 1074, 1090, 1105, 1120 and 1127 psig, respectively. The total combined relieving capacity of all 10 safety valves is 7.71E+6 lb/hr at 1160 psig. The maximum full power steam flow at 1721 MWTH (104 percent of licensed power) is 7.45E+6 lb/hr; therefore, the main steam safety valves can relieve the total maximum steam flow if necessary.

When the MS safety valves are tested, steam line pressure is between 900 and 1000 psig. A hydroset is used to increase pressure to the lift setpoint of the valve being tested. The pressures from the hydroset and the steam line are then added to determine the lift setpoint of the valve. If a valve's lift set point does not meet the test acceptance criterion, the following steps are required:

1. The group supervisor and shift supervisor shall be notified immediately.
2. A Surveillance Procedure Exception Report, an Incident Report, and a work request shall be initiated.
3. The valve shall be repaired or replaced.
4. Two additional valves must also be tested and if the set pressure of either of the two additional valves falls outside of the test acceptance criterion, all remaining MS safety valves shall be tested.

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Kewaunee Nuclear Power Plant	05000305	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	4 OF 12
		93	- 003 -	01	

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

During the 1993 refueling outage, MS safety valves SD1A3 and SD1A4 were selected to be tested in accordance with SP-06-077. The valves were also scheduled to be disassembled, inspected, and reassembled in accordance with the general maintenance procedure (GMP) 101-21, "Relief Valve Consolidated (Dresser) Type 3787AX Main Steam Safeties." When the valves were tested, SD1A4 was found to be within the set pressure criterion, and SD1A3 was found to be outside of the test acceptance criterion (refer to Table 2). Because SD1A3 was found to be outside of the acceptance criterion, two additional valves were required to be tested. Valves SD1A5 and SD1A2 were chosen for testing.

Since SD1A5 was found to be outside of the test acceptance criterion, all the remaining valves required testing. During the testing of SD1A2 a zero shift was noted on the pressure gauge used to measure the hydroset pressure. Due to the zero shift, a calibration check was performed on the gauge and it was found to be reading 50 psig low. Because the gauge was reading 50 psig low there were concerns of the gauge's accuracy during the previous tests. It should be noted that this gauge was calibrated prior to performance of SP-06-077, in accordance with standard Kewaunee Nuclear Power Plant (KNPP) practices.

When the pressure gauge was replaced, valve SD1A1 was tested and the actuation pressure was within the set pressure acceptance criterion, reference table 2. Safety valves SD1B1 through SD1B5 were tested next.

When safety valves SD1B1 through SD1B5 were tested, SD1B4 was found to be within the set pressure acceptance criterion. Valves SD1B3 and SD1B5 were operable but needed setpoint adjustment. Valves SD1B1 and SD1B2 were found to be outside of the test acceptance criterion and were declared inoperable.

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Kewaunee Nuclear Power Plant	05000305	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	5 OF 12
		93	- 003 -	01	

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

Because the data obtained from testing SD1A2, SD1A3, SD1A4 and SD1A5 was considered to be in question, due to an inaccurate pressure gauge, it was decided to retest these valves. When valves SD1A2, SD1A3, SD1A4 and SD1A5 were retested, SD1A2 and SD1A4 met the set pressure acceptance criterion. Valve SD1A3 was operable but needed a setpoint adjustment. Valve SD1A5 was found to be outside of the test acceptance criterion, reference table 2.

The valves which met the set pressure acceptance criteria, SD1A1, SD1A2 and SD1B4, did not require repair or further testing. The valves which were found to be outside of the set pressure acceptance criterion but inside the test acceptance criterion, SD1B3 and SD1B5, were adjusted to be within the set pressure acceptance criteria before exceeding hot shutdown from the 1993 refueling outage. The valves which failed, SD1A5, SD1B1 and SD1B2, were disassembled, rebuilt and tested to ensure they were within the set pressure criterion prior to exceeding hot shutdown after the 1993 refueling outage. Because SD1A3 and SD1A4 were scheduled to be tested during the 1993 refueling outage they were rebuilt and verified to be within the set pressure acceptance criterion prior to exceeding hot shutdown.

In 1993 the three failures resulted in the testing of all ten main steam safety valves. Since ASME code requires that 100 percent of the safeties be tested in a five year period, KNPP was not required to test any safety valves during the 1994 outage. However, KNPP chose to test the two valves (SD1B1 and SD1B2) which failed by approximately 8% over the high test acceptance criterion in 1993.

On April 2, 1994, with the plant at hot shutdown, SD1B1 and SD1B2 were tested in accordance with SP 06-077. During the performance of the SP, safety valve SD1B2 was tested three times. During the first two tests, the valve lifted within the test acceptance criterion but outside the set pressure acceptance criterion. The valve lifted 0.2% (2 psig) outside its test acceptance criterion during the third lift. Since SD1B2 failed, two additional valves were tested. Valves SD1B3 and SD1B4 were selected, tested, and found to lift within the test acceptance criterion (refer to Table 3 for complete 1994 test results).

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)		DOCKET NUMBER (2)		LER NUMBER (6)			PAGE (3)
Kewaunee Nuclear Power Plant		05000305		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	6 OF 12
				93	- 003	- 01	

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

Cause of Event

The root cause of valves SD1A5, SD1B1 and SD1B2 failing the surveillance test in 1993 could not be conclusively determined. The valves were disassembled, inspected, reassembled, and tested at the end of the 1993 refueling outage. During the disassembly of valves SD1B1 and SD1B2, no evidence of malfunctions was found. However, a slight steam track could be seen across one area of the disc on SD1A5. This was most likely caused by minor steam leakage.

In 1994, SD1B2 lifted within its acceptance criterion on the first two lifts but fell outside the criterion on the third lift. Therefore, the valve was disassembled and inspected during the 1994 refueling outage but no definitive cause of failure could be determined. When SD1B2 was disassembled, some small surface scratches were noticed on the valve spindle in the area of the yoke. The scratches may have been caused by the spindle not being properly centered in the yoke bushing. Improper centering could have occurred during reassembly the previous year. The scratches were not considered significant by the Dresser Technical Representative, but could have a minor effect on the lift pressure. The scratches were removed with a mildly abrasive cloth. Upon reassembly, proper centering of the spindle in the yoke bushing was verified. The spring on SD1B2 was also sent to Dresser, the valve manufacturer, for testing during the 1994 outage. Dresser reported the spring to be in tolerance and acceptable for use.

After the failures in 1993, the test methodology was evaluated for potential enhancements. In addition to the Heise gauge, the 1994 test used pressure transducers along with a computerized data acquisition system to take pressure data from the hydroset and the steam line. The Heise gauge data is dependent on the personnel determining when the valve lifts while the pressure transducers and acquisition system collect data throughout the test period. The transducers and data acquisition system were determined to be advantageous since they provided better repeatability as well as the ability to continuously monitor the test.

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)		DOCKET NUMBER (2)		LER NUMBER (6)			PAGE (3)
Kewaunee Nuclear Power Plant		05000305		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	7 OF 12
				93	- 003 -	01	

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

Analysis of Event

This event is reportable in accordance with 50.73(a)(2)(ii)(B) as a condition that was outside the design basis of the plant. This event was also reported in accordance with 10CFR50.72(b)(2)(i) at 1239 on March 6, 1993.

A review of the KNPP Updated Safety Analysis Report (USAR) indicates that the MS safety valves are needed to mitigate the following accidents: RCP Locked Rotor, Loss of Load, Loss of Feedwater, Uncontrolled Rod Withdrawal, SG Tube Rupture and the Anticipated Transient Without Scram. The review concluded that the main steam isolation valves are not required to isolate for the accidents mentioned above. Because the MS isolation valves do not actuate there is a high level of confidence that the steam dump system would be able to perform its function and relieve SG pressure (reference figure 1).

The steam dump system is designed for the turbine generator to accept a load rejection from 100 percent power to approximately 5 percent power without a reactor trip. The design capacity of the SD system is 85 percent of the plant design steam flow at 100 percent power. There are six condenser steam dump valves, three for each SG, with a relieving capacity of 3.00E6 lb/hr, or 40 percent of maximum calculated steam flow. There are also six atmospheric steam dump valves, three for each SG, with a relieving capacity of 3.37E6 lb/hr, or a total capacity of 45 percent of maximum calculated steam flow at 735 psig SG pressure.

The total relieving capacity of the steam dump system is 6.37E6 lb/hr at 735 psig. With three SG safety valves inoperable, SD1B1, SD1B2 and SD1A5, which have a combined capability of relieving 2.30E6 lb/hr, the steam dump system would have been able to relieve the SG pressure and allow operators to bring the plant to a safe shutdown condition without any threat to the health and safety of the public.

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)		DOCKET NUMBER (2)		LER NUMBER (6)			PAGE (3)
Kewaunee Nuclear Power Plant		05000305		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	8 OF 12
				93	- 003	- 01	

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

There are also two power operated relief valves, one on each MS header, upstream of the MS isolation valves (reference figure 1). These valves are used to minimize safety valve operation during small pressure excursions. Each valve has a relieving capacity of 3.72E5 lb/hr at 1050 psig. These valves are automatically set to relieve at 1050 psig, which is below the lowest setpoint of the SG safety valves. These valves would be relieving pressure before the SG safety valves would open, thus further enhancing the pressure relieving capabilities.

A hydrostatic test was performed on the secondary side of the SGs during construction. The test was performed at 1360 psig. The three valves which were inoperable would have actuated well before the pressure would have increased to 1360 psig. The ten SG safety valves were available to maintain SG pressure below the test pressure, therefore the SG would not have overpressurized beyond an already tested pressure.

Corrective Actions

Safety valves SD1A5, SD1B1 and SD1B2 were disassembled, inspected, reassembled, and tested before starting up after the 1993 refueling outage. Upon completion of the reassembly and the retests, no failures were found.

Safety valve SD1B2 was out of tolerance again in 1994, but only by 0.2% (2 psig high). The valve failed on the third lift and was immediately declared inoperable. Subsequent analysis demonstrated that the 0.2% drift did not affect the operability of the valve.

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST 50.0 HRS FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Kewaunee Nuclear Power Plant	05000305	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	9 OF 12
		93	- 003 -	01	

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

After the failure in 1994, the valve was again disassembled and inspected. No cause of failure could be conclusively determined. Reassembly techniques during the 1993 refueling may have been a contributing cause to the small scratches found on the valve spindle in 1994. Uneven compression of the spring during reassembly could have introduced a minor tilt to the spring assembly which resulted in a slight misalignment of the valve spindle and bushing. As recommended by Dresser, KNPP maintenance fabricated a tool that will compress the spring evenly and will help maintain the proper spindle and bushing alignment. The tool was used for reassembly in 1994 and will be used for both disassembly and reassembly in the future.

During the 1994 testing, the KNPP improved the test methodology by using pressure transducers and a data acquisition system. Prior to the 1995 testing, KNPP will again review the test methodology to see if additional improvements can be made.

Additional Information

Equipment Failure: Dresser Industrial Valve and Equipment, Model number 6-3787A-X1-RT-21-XLP1 Safety valve.

Similar Events: None.

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST 50.0 HRS FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)		DOCKET NUMBER (2)		LER NUMBER (6)			PAGE (3)
Kewaunee Nuclear Power Plant		05000305		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	10 OF 12
				93	- 003	- 01	

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

TABLE 1

1993 TEST DATA BEFORE REPLACING FAULTY PRESSURE GAUGE

VALVE	TEST #	SETPOINT	SET PRESSURE ACCEPTANCE CRITERIA ($\pm 1\%$)	TEST ACCEPTANCE CRITERIA (-3%, +2%)	ACTUATION PRESSURE	STATUS
SD1A4	1	1105	1094-1116	1072-1127	1121	OPERABLE
	2				1095	
	3				1104	
SD1A3	1	1074	1053-1074	1042-1095	1099	INOPERABLE
	2				1068	
SD1A5	1	1127	1116-1138	1093-1145 ⁽¹⁾	1148	INOPERABLE
	2				1118	
SD1A2	1	1090	1079-1101	1057-1112	1077	INOPERABLE
	2				1058	
	3				1053	

⁽¹⁾THESE VALVES LIMITED TO +1.6% BASED ON SG DESIGN PRESSURE

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)		DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Kewaunee Nuclear Power Plant		05000305	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	110F12
			93	003	01	

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

TABLE 2

1993 TEST DATA AFTER REPLACING FAULTY PRESSURE GAUGE

VALVE	TEST #	SETPOINT	SET PRESSURE ACCEPTANCE CRITERIA ($\pm 1\%$)	TEST ACCEPTANCE CRITERIA (-3%, +2%)	ACTUATION PRESSURE	FINAL STATUS
SD1A1	1 2	1120	1109-1131	1086-1143	1130 1127	OPERABLE
SD1B1	1	1127	1116-1138	1093-1145 ⁽¹⁾	1217	INOPERABLE
SD1B2	1 2	1105	1094-1116	1072-1127	1187 1125	INOPERABLE
SD1B3	1 2	1074	1053-1074	1042-1095	1080 1080	OPERABLE ADJUSTED
SD1B4	1 2 3	1090	1079-1101	1057-1112	1107 1086 1090	OPERABLE
SD1B5	1 2 3	1120	1109-1131	1086-1143	1143 1109 1099	OPERABLE ADJUSTED
SD1A5	1 2 3	1127	1116-1138	1093-1145 ⁽¹⁾	1134 1139 1147	INOPERABLE
SD1A4	1 2 3	1105	1094-1116	1072-1127	1123 1115 1113	OPERABLE
SD1A3	1 2 3	1074	1053-1074	1042-1095	1089 1086 1089	OPERABLE ADJUSTED
SD1A2	1 2 3	1090	1179-1101	1057-1112	1104 1087 1096	OPERABLE

⁽¹⁾ THESE VALVES LIMITED TO +1.6% BASED ON SG DESIGN PRESSURE

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)		DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Kewaunee Nuclear Power Plant		05000305	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	12 of 12
			93	- 003 -	01	

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

**TABLE 3
1994 TEST DATA**

VALVE	SET POINT (PSIG)	SET PRESSURE ACCEPTANCE CRITERIA (±1)	TEST ACCEPTANCE CRITERIA (-3%, +2%)	ACTUATION PRESSURE (PSIG)	
				1994 TRANSDUCER	1994 HEISE GAUGE
SD-1B1	1127	1116-1138	1093-1145 ⁽¹⁾	1134 1127 1136 1135	1141 1133 1143 1144
SD-1B2	1105	1094-1116	1072-1127	1127 1121 1129	1135 1127 1137
SD-1B3	1074	1053-1074	1042-1095	1075 1057 1064	1081 1062 1070
SD-1B4	1090	1079-1101	1057-1112	1083 1070 1080 1088	1089 1075 1087 1094

⁽¹⁾These valves limited to +1.6% based on SG design pressure