

TABLE OF CONTENTS

INTRODUCTION	ii
1.0 CHALLENGES TO AND FAILURES OF PRESSURIZER SAFETY AND RELIEF VALVES	1-1
2.0 SUMMARY OF THE STEAM GENERATOR EDDY CURRENT EXAMINATION	2-1
3.0 PERSONNEL EXPOSURE AND MONITORING REPORT	3-1
TABLE 3.1	3-2
TABLE 3.2	3-3
4.0 CHANGES IN THE EMERGENCY CORE COOLING SYSTEM MODEL	4-1
5.0 FAILURES OF TURBINE STOP AND CONTROL VALVES	5-1
6.0 MAXIMUM COOLANT ACTIVITY	6-1

INTRODUCTION

This annual operating report is being submitted to fulfill several reporting requirements contained either in the Kewaunee Nuclear Power Plant (KNPP) Technical Specifications (TS) or in other commitments made by Wisconsin Public Service Corporation (WPSC) to the Nuclear Regulatory Commission (NRC).

In response to NUREG-0737, Item II.K.3.3, and in accordance with KNPP Technical Specification (TS) 6.9.a.2.C, Section 1.0 reports challenges to and failures of pressurizer safety and relief valves, if applicable.

Section 2.0 provides a summary of the steam generator eddy current examination in accordance with KNPP TS 4.2.b.7.b.

Personnel exposure and monitoring data is provided in Section 3.0 per Regulatory Guide 1.16, Section C.1.b.(3), and KNPP TS 6.9.a.2.B.

The provisions of 10 CFR 50.46 require the reporting of corrections or changes to the Emergency Core Cooling System (ECCS) evaluation models that are approved for use in performing the loss-of-coolant accident (LOCA) safety analysis. This information, if applicable, is provided in Section 4.0.

Section 5.0 reports failures of turbine stop and control valves, if applicable, in accordance with a commitment made to the NRC upon approval of KNPP TS Amendment 84.

Section 6.0, in accordance with KNPP TS 6.9.a.2.D, contains the documentation of the results of specific analysis in which the reactor coolant exceeded the limits of KNPP TS 3.1.c.1.A, if applicable.

1.0 CHALLENGES TO AND FAILURES OF PRESSURIZER SAFETY AND RELIEF VALVES

In response to NUREG-0737, item II.K.3.3, and in accordance with KNPP Technical Specification 6.9.a.2.C, WPSC is committed to reporting challenges to and failures of pressurizer safety and pressurizer power-operated relief valves. There were no challenges to or failures of pressurizer safety or pressurizer power-operated relief valves during 1998.

2.0 SUMMARY OF THE 1998 STEAM GENERATOR EDDY CURRENT EXAMINATIONS

During the Kewaunee Nuclear Power Plant's 1998 refueling outage, the following steam generator (SG) services were performed:

Eddy Current Examinations

The 1998 SG tube eddy current examination program included:

- 1) A bobbin coil examination of 100% of the non-plugged, non-repaired tubes through their entire length.
- 2) A bobbin coil examination of 100% of the non-plugged, repaired tubes through their entire non-repaired length (Kewaunee has installed sleeves in a large portion of its hot leg tubesheet. The inspection consisted of an examination from the top of the sleeve to the end of the tube on the cold leg side).
- 3) A rotating plus point examination of 100% of the Westinghouse hybrid expansion joint (HEJ) mechanical sleeves, from 2" above the top of the sleeve to 6 inches below the top of the HEJ.
- 4) A rotating plus point examination of 20% of the Westinghouse HEJ mechanical sleeves, from 6" below the top of the sleeve to the bottom of the sleeve.
- 5) A rotating plus point examination of 20% of the ABB welded sleeves, from 2" above the top of the sleeve to the bottom of the sleeve. (In SG B a 100% examination was performed).
- 6) A rotating plus point examination of 100% open row 1 and row 2 U-bends, and 20% of open row 3 U-bends.
- 7) A Motorized Rotating Pancake Coil (MRPC) examination of 100% of all non-sleeved hot leg tubes, from the tube end to 4 inches above the secondary face of the tubesheet.
- 8) An MRPC examination of 100% of all non-sleeved cold leg tubes, from the tube end to 4 inches above the secondary face of the tubesheet.
- 9) A rotating plus point examination of 100% of the Westinghouse HEJ laser weld repaired sleeves, from 2" above the top of the sleeve to 6 inches below the top of the HEJ.
- 10) A rotating plus point examination of 20% of the Westinghouse HEJ laser weld repaired sleeves, from 6" below the top of the sleeve to the bottom of the sleeve.
- 11) An ultrasonic examination of 20% 100% of the Westinghouse HEJ laser weld repaired sleeves.

12) Augmented RPC testing at TSP intersections, as required by Technical Specification 4.2.b.

As required by Technical Specification 4.2.b.7.b.1, Table 2.1 is a summary of the 1998 SG eddy current examinations, including the number and extent of tubes tested.

As required by Technical Specification 4.2.b.7.b.2, Table 2.2 contains the location and percent of wall-thickness penetration for each indication of degradation. For tube support plate indications, Kewaunee has implemented the 2 volt alternate repair criteria in accordance with Technical Specification 4.2.b.5. As a result, the current Technical Specification definition of a degraded tube (a tube containing an imperfection $\geq 20\%$ of the nominal wall thickness caused by degradation) is not applicable. Therefore, each tube support plate location left in service as a result of application of the 2 volt alternate repair limit, with the associated voltage, is reported as well.

Steam Generator Repairs

The SG repairs were performed during the 1998 refueling outage included tube plugging and tubesheet sleeving.

As required by Technical Specification 4.2.b.7.b.3 and 4.2.b.7.b.4, Table 2.3 lists the tube locations which were plugged or repaired by tubesheet sleeving.

TABLE 2.1

**SUMMARY OF THE 1998 STEAM GENERATOR
EDDY CURRENT EXAMINATIONS**

EXTENT OF INSPECTION	SGA NUMBER TESTED	SG B NUMBER TESTED
TEH to TEC	880	978
STH to TEC	1669	1625
STH + 2" to STH - 6" ⁽¹⁾	850	1329
STH - 6" to SEH ⁽¹⁾	170	266
STH + 2" to SEH ⁽²⁾	88	4
U-bend (07H to 07C)	123	91
TEH to TSH + 4"	880	978
TEC to TSC + 4"	516	526
STH + 2" to STH - 6" ⁽³⁾	381	292
STH - 6" to SEH ⁽³⁾	77	59
Laser Welds ⁽⁴⁾	77	59
01H + 1" to 01H - 1"	36	5
02H + 1" to 02H - 1"	8	11
03H + 1" to 03H - 1"	1	12
04H + 1" to 04H - 1"	5	12
05H + 1" to 05H - 1"	5	19
06H + 1" to 06H - 1"	13	9
07H + 1" to 07H - 1"	9	14
07C + 1" to 07C - 1"	44	39
06C + 1" to 06C - 1"	8	18
05C + 1" to 05C - 1"	3	2
04C + 1" to 04C - 1"	2	4
03C + 1" to 03C - 1"	1	6
02C + 1" to 02C - 1"	8	8
01C + 1" to 01C - 1"	10	7

Table 2.1
Nomenclature

TEH:	Tube end hot leg side
TEC:	Tube end cold leg side
STH:	Top of sleeve
SEH:	Hot leg sleeve end
TSH:	Top of tubesheet hot leg side
TSC:	Top of tubesheet cold leg side
01H:	First hot leg tube support plate
02H:	Second hot leg tube support plate
03H:	Third hot leg tube support plate
04H:	Fourth hot leg tube support plate
05H:	Fifth hot leg tube support plate
06H:	Sixth hot leg tube support plate
07H:	Seventh hot leg tube support plate
07C:	Seventh cold leg tube support plate
06C:	Sixth cold leg tube support plate
05C:	Fifth cold leg tube support plate
04C:	Fourth cold leg tube support plate
03C:	Third cold leg tube support plate
02C:	Second cold leg tube support plate
01C:	First cold leg tube support plate

Table 2.1
Notes

- (1): Examination extent for Westinghouse HEJ sleeves
- (2): Examination extent for ABB Combustion Engineering welded sleeves
- (3): Examination extent for Westinghouse HEJ laser weld repaired sleeves
- (4): Examination extent is the laser weld only (ultrasonic examination)

Table 2.2
Location Nomenclature

TEH:	Tube end hot leg side
TSH:	Top of tubesheet hot leg side
TSC:	Top of tubesheet cold leg side
CLW:	Centerline of laser or TIG weld
HRLT:	Westinghouse inechanical sleeve HEJ hardroll lower transition
BUE:	Westinghouse mechanical sleeve HEJ bottom of upper expansion
01H:	First hot leg tube support plate
02H:	Second hot leg tube support plate
03H:	Third hot leg tube support plate
04H:	Fourth hot leg tube support plate
05H:	Fifth hot leg tube support plate
06H:	Sixth hot leg tube support plate
07H:	Seventh hot leg tube support plate
AV1:	Antivibration bar number 1
AV2:	Antivibration bar number 2
AV3:	Antivibration bar number 3
AV4:	Antivibration bar number 4
07C:	Seventh cold leg tube support plate
06C:	Sixth cold leg tube support plate
05C:	Fifth cold leg tube support plate
04C:	Fourth cold leg tube support plate
03C:	Third cold leg tube support plate
02C:	Second cold leg tube support plate
01C:	First cold leg tube support plate

Table 2.2
Indication Nomenclature

DSI:	Distorted tube support plate signal
MAI:	Multiple axial indication
PTI:	Parent tube indication within sleeve pressure boundary
PWI:	Possible weld indication in laser weld
OBS:	Obstructed tube
SAI:	Single axial indication
SCI:	Single Circumferential Indication
SLI:	Sleeve indication
SVI:	Single volumetric indication
VOL:	Volumetric indication
WSI:	Weld surface indication in ABB TIG welded sleeve
WZI:	Weld sub-surface indication in ABB TIG welded sleeve

Table 2.3
Location Nomenclature

TEH:	Tube end hot leg side
TSH:	Top of tubesheet hot leg side
TSC:	Top of tubesheet cold leg side
CLW:	Centerline of laser or TIG weld
HRLT:	Westinghouse mechanical sleeve HEJ hardroll lower transition
BUE:	Westinghouse mechanical sleeve HEJ bottom of upper expansion
07H:	Seventh hot leg tube support plate

Table 2.3
Indication Nomenclature

DSI:	Distorted tube support plate signal
MAI:	Multiple axial indication
PTI:	Parent tube indication within sleeve pressure boundary
PWI:	Possible weld indication in laser weld
OBS:	Obstructed tube
SAI:	Single axial indication
SCI:	Single Circumferential Indication
SLI:	Sleeve indication
SVI:	Single volumetric indication
VOL:	Volumetric indication
WSI:	Weld surface indication in ABB TIG welded sleeve
WZI:	Weld sub-surface indication in ABB TIG welded sleeve

TABLE 2.2

LOCATION AND PERCENT WALL THICKNESS PENETRATION FOR EACH INDICATION OF DEGRADATION

STEAM GENERATOR B

ROW	COL	PCT/VOLTS/IND	LOCATION
2	1	0.30	04H
10	2	0.41	01C
6	3	SAI	TEH+13.33
15	3	0.89	02C
7	4	0.85	05H
11	4	0.42	02C
12	4	0.53	02C
14	4	0.22	05H
15	4	0.60	02C
16	4	0.83	02C
		0.76	03C
17	4	<20%	AV3
		0.17	02C
		0.34	03H
		0.53	07C
8	5	0.40	05H
13	5	<20%	AV1
14	5	0.24	02C
		0.25	02C
		0.46	02H
		0.36	02H
		0.40	04H
		0.36	04H
		0.40	05H
		0.37	05H
15	5	<20%	AV3
		<20%	AV2
16	5	0.49	02C
17	5	<20%	AV2
19	5	0.63	02C
		0.25	05H
8	6 *	SAI	TEH+7.19
		WSI	CLW-0.19
10	6 *	MAI	TEH+4.99 to 15.33
		SAI	TEH+8.63
		WZI	CLW-0.20
15	6	0.40	06H
16	6	<20%	AV3
		<20%	AV2
17	6	<20%	AV3
		<20%	AV2
		0.32	04H
		0.50	06C
		0.24	07H
18	6	0.25	04H
19	6	<20%	AV3
		<20%	AV2
20	6	0.55	04H
21	6	0.46	02C
11	7 *	SAI	TEH+13.59

TABLE 2.2

LOCATION AND PERCENT WALL THICKNESS PENETRATION FOR EACH INDICATION OF DEGRADATION

STEAM GENERATOR B

ROW	COL	PCT/VOLTS/IND	LOCATION
12	7	0.15	04H
14	7	0.37	04H
15	7	<20%	AV4
16	7	0.22	06C
17	7	0.34	02C
20	7	21%	AV3
		22%	AV1
		0.75	02C
3	8 *	0.74	01C
		SAI	TEH+4.85
10	8	SAI	TEH+13.09
14	8	<20%	AV1
15	8	<20%	AV1
		<20%	AV3
		<20%	AV2
16	8	<20%	AV3
		21%	AV2
17	8	<20%	AV1
		<20%	AV3
		<20%	AV2
		0.21	07C
18	8	<20%	AV1
		<20%	AV3
		<20%	AV2
19	8	<20%	AV1
		<20%	AV3
		<20%	AV2
		0.24	07C
20	8	<20%	AV1
		<20%	AV2
		0.26	06H
21	8	0.45	01H
		0.56	06C
22	8	<20%	AV3
		<20%	AV1
		<20%	AV2
24	8	0.67	02C
1	9	0.45	01C
5	9	SAI	TEH+12.99
		WSI	CLW-0.05
7	9	SAI	TEH+11.17
15	9	<20%	AV2
16	9	<20%	AV2
17	9	<20%	AV2
18	9	<20%	AV2
19	9 *	0.71	01C
		SAI	TEH+6.85
		SAI	TEH+7.46
		SAI	TEH+9.78
		SAI	TEH+11.08

TABLE 2.2

LOCATION AND PERCENT WALL THICKNESS PENETRATION FOR EACH INDICATION OF DEGRADATION

STEAM GENERATOR B

ROW	COL	PCT/VOLTS/IND	LOCATION
19	9 *	SAI SAI SAI	TEH+12.48 TEH+15.30 TEH+16.19
20	9	<20% <20%	AV1 AV2
21	9	<20%	AV2
3	10	SAI WZI	TSH+0.06 CLW-0.17
13	10	<20% <20% 0.44 0.42 0.43	AV4 AV1 02C 03C 04C
14	10	<20%	AV1
15	10	<20% <20%	AV1 AV2
17	10	<20% <20% <20%	AV1 AV2 AV3
18	10	<20%	AV3
19	10	<20% <20% <20%	AV1 AV2 AV3
21	10	<20% <20%	AV1 AV3
25	10	0.18 0.68 0.69	03H 04C 07C
5	11	0.43	01C
8	11 *	SAI SAI	TEH+10.51 TEH+11.88
9	11 *	MAI SAI SAI	TEH+4.12 TEH+3.59 TEH+10.20
15	11	<20% <20% <20%	AV4 AV1 AV3
17	11 *	SAI WZI	TEH+5.50 CLW-0.07
19	11	0.55	02C
21	11 *	SAI SAI WZI	TEH+11.04 TEH+12.48 CLW-0.08
23	11 *	SAI SAI WSI	TEH+10.88 TEH+15.22 CLW-0.06
3	12	SAI	TSH+0.09
5	12	0.87	01C
11	12 *	SAI SAI	TEH+3.71 TEH+5.08

TABLE 2.2

LOCATION AND PERCENT WALL THICKNESS PENETRATION FOR EACH INDICATION OF DEGRADATION

STEAM GENERATOR B

ROW	COL	PCT/VOLTS/IND	LOCATION
11	12 *	SAI	TEH+5.90
15	12	<20%	AV2
17	12	<20%	AV2
18	12	<20%	AV1
		<20%	AV2
19	12	20%	AV2
		23%	AV1
21	12	<20%	AV1
		<20%	AV2
27	12	<20%	AV2
		<20%	AV1
2	13	0.55	06C
3	13	0.26	01C
15	13	<20%	AV4
		0.29	02H
16	13	0.36	02C
17	13	<20%	AV3
		0.42	05C
		0.36	06C
18	13	0.50	02C
21	13	0.32	04C
24	13	0.86	04C
		0.77	05C
25	13	0.36	05C
9	14	0.43	04C
14	14	0.47	02C
16	14	0.46	03C
30	14	<20%	AV2
2	15	SAI	TSH+0.14
8	15	0.37	01C
11	15	0.23	04C
17	15	SAI	TEH+4.57
19	15	<20%	AV2
		1.01	02C
		0.25	04C
		0.48	07H
21	15	<20%	AV2
25	15	0.74	02C
		SAI	TEH+4.29
		WZI	CLW+0.02
30	15	0.60	05C
		0.50	05H
18	16	0.39	02C
19	16	0.82	02C
21	16 *	0.39	02C
		SAI	TEH+8.96
		SAI	TEH+10.22
22	16	<20%	AV2
		<20%	AV3
24	16 *	SAI	TEH+3.70

TABLE 2.2

LOCATION AND PERCENT WALL THICKNESS PENETRATION FOR EACH INDICATION OF DEGRADATION

STEAM GENERATOR B

ROW	COL	PCT/VOLTS/IND	LOCATION
24	16 *	SAI WZI	TEH+12.80 CLW-0.06
25	16	0.51 0.31 0.23	05C 06C 07C
2	17	0.27	06C
12	17	0.25 0.56	04C 06C
13	17	0.73	02C
13	17	0.24 0.43 0.43	04C 05C 06C
18	17	<20% <20% 0.58	AV2 AV3 02C
19	17	<20% SAI SAI	AV3 TEH+7.40 TEH+8.83
21	17	<20%	AV2
29	17	0.59 0.73	04C 05C
32	17	0.83 MAI	05H TEH+1.27
34	17	<20%	AV3
15	18	<20%	AV2
16	18	0.41	02C
20	18	0.32	01C
25	18 *	1.00 1.10 0.61 0.91 SAI SAI SAI	02C 03C 04C 06C TEH+3.53 TEH+3.76 TEH+4.78
27	18	0.65 0.29 0.57	05C 06C 07C
28	18	SAI	TEH+12.39
30	18	0.56	04C
9	19	<20%	AV4
10	19	0.30	01C
14	19	0.33	01C
16	19	<20%	AV3
20	19	<20%	AV3
31	19	0.34	04H
35	19	<20%	AV2
37	19	<20%	AV2
14	20	0.40 0.31	02C 03C
16	20	0.43	01C

TABLE 2.2

LOCATION AND PERCENT WALL THICKNESS PENETRATION FOR EACH INDICATION OF DEGRADATION

STEAM GENERATOR B

ROW	COL	PCT/VOLTS/IND	LOCATION
17	20	<20%	AV2
27	20 *	0.38	07C
		SAI	TEH+10.60
		SAI	TEH+11.31
		SAI	TEH+14.26
		SAI	TEH+15.28
28	20	0.51	04C
		0.30	07C
30	20 *	0.35	02C
		0.26	05C
		SAI	TEH+11.61
		SAI	TEH+11.88
		SAI	TEH+13.01
		SAI	TEH+14.45
		SAI	TEH+15.01
		SAI	TEH+15.49
35	20	<20%	AV2
		<20%	AV3
37	20	<20%	AV2
12	21	0.54	01C
13	21	0.71	02C
33	21 *	SAI	TEH+7.67
		SAI	TEH+9.08
		SAI	TEH+10.25
		SAI	TEH+12.28
4	22	0.46	01C
12	22	0.61	01C
		0.47	02C
14	22	0.31	04C
16	22	0.63	02C
		0.11	04C
19	22	<20%	AV2
21	22	<20%	AV2
37	22	<20%	AV1
39	22	<20%	AV3
6	23	0.56	01C
12	23	0.40	04C
24	23	0.53	02C
		0.66	04C
		0.59	07C
27	23	0.39	02C
30	23 *	SAI	TEH+3.63
		SAI	TEH+4.47
		SAI	TEH+5.03
		SAI	TEH+9.98
		SAI	TEH+11.32
31	23 *	SAI	TEH+3.32
		SAI	TEH+12.42
		SAI	TEH+13.83
		SAI	TEH+14.72

TABLE 2.2

LOCATION AND PERCENT WALL THICKNESS PENETRATION FOR EACH INDICATION OF DEGRADATION

STEAM GENERATOR B

ROW	COL	PCT/VOLTS/IND	LOCATION
39	23	<20%	AV2
12	24	0.65	02C
14	24	0.76	02C
20	24	<20%	AV2
21	24	<20%	AV2
28	24	<20%	AV2
29	24	SAI	TEH+3.53
30	24	0.88	04C
32	24	<20%	AV2
		SAI	TEH+14.46
34	24	<20%	AV2
36	24	<20%	AV2
		<20%	AV3
38	24	<20%	AV2
39	24	<20%	AV3
		<20%	AV2
40	24	<20%	AV1
		<20%	AV3
		<20%	AV2
		0.72	06C
		0.47	07C
12	25	0.88	01C
16	25	1.54	02C
		0.48	03C
21	25	0.33	01C
24	25	0.33	07C
29	25 *	SAI	TEH+3.81
		SAI	TEH+8.49
30	25 *	SAI	TEH+3.46
		SAI	TEH+4.35
		SAI	TEH+11.63
		SAI	TSH+0.00
32	25	0.53	03C
		0.36	04C
		0.73	07C
35	25	<20%	AV1
36	25	<20%	AV3
37	25	<20%	AV2
		<20%	AV3
39	25	<20%	AV2
		0.36	06H
40	25	<20%	AV2
11	26	1.10	01C
14	26	0.43	01C
30	26 *	SAI	TEH+9.37
		SAI	TEH+10.89
		SAI	TEH+14.08
36	26	0.84	06C
		0.27	06H
		1.17	07C

TABLE 2.2

LOCATION AND PERCENT WALL THICKNESS PENETRATION FOR EACH INDICATION OF DEGRADATION

STEAM GENERATOR B

ROW	COL	PCT/VOLTS/IND	LOCATION
41	26	<20%	AV2
		1.47	01C
12	27	0.29	01C
15	27	0.32	02C
17	27	<20%	AV3
27	27	OBS	
33	27	<20%	AV3
35	27	<20%	AV2
		<20%	AV3
41	27	0.28	07H
16	28	0.49	01C
		0.31	03C
		0.47	04C
24	28	0.59	07H
34	28	0.54	07C
35	28	<20%	AV3
36	28	0.22	06H
40	28	<20%	AV2
41	28	<20%	AV2
42	28	<20%	AV2
17	29	0.34	02C
20	29	0.78	01C
39	29	<20%	AV2
40	29	0.47	07H
42	29	<20%	AV2
2	30	DSI/SAI	07H
12	30	0.56	01C
13	30	0.35	02C
		0.26	03C
		0.56	04C
16	30	1.28	02C
		0.50	03C
21	30	0.57	04H
24	30	PTI	HRLT
36	30	0.26	03H
41	30	0.31	06C
2	31	0.47	03C
13	31	0.46	01C
16	31	0.34	01C
		0.73	02C
25	31	0.33	01C
37	31	<20%	AV2
14	32	0.19	03C
15	32	0.47	02C
23	32	0.56	06C
27	32	0.63	06C
35	32	0.47	04H
40	32	<20%	AV2
		<20%	AV3
42	32	<20%	AV2

TABLE 2.2

LOCATION AND PERCENT WALL THICKNESS PENETRATION FOR EACH INDICATION OF DEGRADATION

STEAM GENERATOR B

ROW	COL	PCT/VOLTS/IND	LOCATION
43	32	<20%	AV3
13	33	0.77	01C
16	33	0.56	06C
35	33	0.40	02C
		0.70	03C
		0.82	04C
		0.72	05C
		0.74	06C
39	33	0.29	07H
41	33	<20%	AV2
12	34	0.57	01C
14	34	0.41	01C
		0.49	01C
16	34	0.31	02C
17	34	0.76	02C
26	34	0.55	01C
36	34	0.26	07H
39	34	0.33	06H
40	34	0.60	06C
44	34	0.33	01C
		0.13	05H
		0.90	06C
13	35	0.54	01C
14	35	0.58	01C
16	35	1.30	02C
		0.60	03C
35	35	<20%	AV3
38	35 *	0.48	02C
		0.73	03C
		0.68	04C
		0.53	04H
		1.09	05C
		1.04	05H
		1.44	07H
		MAI	TEH+7.34
		MAI	TEH+8.95
		MAI	TEH+9.97
41	35	0.36	03H
		0.39	07H
43	35	0.43	03H
		0.55	04H
		0.54	05H
		0.57	06H
		0.81	07H
16	36	0.63	06C
17	36	0.73	01C
		0.56	03C
22	36	0.50	01C
38	36	0.88	02C
		1.01	02C

TABLE 2.2

LOCATION AND PERCENT WALL THICKNESS PENETRATION FOR EACH INDICATION OF DEGRADATION

STEAM GENERATOR B

ROW	COL	PCT/VOLTS/IND	LOCATION
38	36	0.97	03C
		1.22	03C
		1.16	04C
		1.26	04C
		1.40	04H
		1.48	04H
		0.59	05C
		0.54	05C
		1.07	06C
		0.89	06C
		1.05	07H
21	37	<20%	AV2
		0.58	01C
30	37	1.46	03H
41	37	1.01	05C
		1.14	06C
		0.47	07H
44	37	0.70	03C
8	38 *	PTI	HRLT
9	38 *	1.03	01C
11	38 *	0.54	01C
20	38	0.71	02C
22	38	<20%	AV3
23	38	0.26	03C
36	38	0.14	06C
38	38 *	0.77	02C
		0.54	03C
		0.77	04C
		0.39	05C
		0.71	06C
		0.57	07H
		SAI	TEH+12.30
40	38 *	0.48	03C
		0.27	03H
		0.88	04H
		0.34	05C
		0.19	05H
		0.79	06C
		0.47	06H
		SAI	TEH+9.11
		SAI	TEH+10.79
SAI	TEH+14.42		
45	38	0.33	07C
22	39	0.36	02C
38	39 *	0.32	03C
		0.62	06C
		SAI	TEH+7.84
		SAI	TEH+9.28
		WSI	CLW-0.09

TABLE 2.2

LOCATION AND PERCENT WALL THICKNESS PENETRATION FOR EACH INDICATION OF DEGRADATION

STEAM GENERATOR B

ROW	COL	PCT/VOLTS/IND	LOCATION
39	39	0.26	03H
		0.89	04H
		0.29	06H
41	39	0.48	05H
		0.44	06C
		0.76	07C
44	39	0.53	02C
45	39	0.30	04H
11	40	0.96	01C
15	40	0.70	01C
		0.45	02C
		1.09	05C
17	40	0.51	02C
		0.41	06C
		<20%	AV3
20	40	0.79	02C
		<20%	AV3
36	40	<20%	AV2
		<20%	AV1
38	40	0.61	02C
		0.27	03C
		0.54	04C
		1.64	05C
		1.44	06C
		1.06	07H
		SAI	TEH+6.34
		SAI	TEH+7.81
		SAI	TEH+9.19 TO 11.74
39	40	<20%	AV2
40	40	<20%	AV2
41	40	0.31	05H
		1.04	06C
		0.80	06H
		0.70	07C
		<20%	AV2
		<20%	AV2
14	41	0.49	01C
16	41	0.53	01C
		0.58	02C
17	41	0.73	02C
30	41	0.92	01H
38	41	1.17	04C
		1.02	06C
40	41	0.59	01H
		0.14	07H
41	41	<20%	AV2
		1.01	06C
		0.19	07C
46	41	0.41	07H
		<20%	AV2

TABLE 2.2

LOCATION AND PERCENT WALL THICKNESS PENETRATION FOR EACH INDICATION OF DEGRADATION

STEAM GENERATOR B

ROW	COL	PCT/VOLTS/IND	LOCATION
46	41	0.34	03H
		0.42	04H
15	42	1.22	01C
		1.21	02C
		0.72	03C
19	42	<20%	AV1
21	42	<20%	AV3
		<20%	AV1
22	42	0.68	07C
		<20%	AV3
38	42 *	0.33	01C
		0.44	02C
38	42 *	0.43	03C
		1.11	04C
		0.85	05C
		0.87	06C
		0.68	07C
		MAI	TEH+4.84
		44	42
44	42	0.57	05H
		0.19	07C
37	43	0.82	06C
		0.32	07H
38	43	0.35	02C
		1.01	03C
		1.34	06C
		0.69	07C
41	43	0.58	03C
		0.76	04C
		0.76	06C
44	43	0.69	06C
		0.73	07H
13	44	1.01	01C
		0.34	02C
14	44	0.48	01C
16	44	0.91	01C
		0.39	02C
17	44	0.70	01C
		0.99	02C
20	44	0.77	01C
21	44	0.39	07C
22	44	0.28	06C
37	44	0.50	02H
38	44	0.29	04C
39	44	0.26	05C
		0.74	06C
40	44	0.54	06C
41	44	<20%	AV2
44	44	0.43	04C
		0.34	05H

TABLE 2.2

LOCATION AND PERCENT WALL THICKNESS PENETRATION FOR EACH INDICATION OF DEGRADATION

STEAM GENERATOR B

ROW	COL	PCT/VOLTS/IND	LOCATION
44	44	1.22	06C
45	44	<20%	AV1
13	45	0.46	02C
16	45	<20%	AV1
17	45	OBS	
20	45	0.67	01C
		0.68	02C
37	45	1.10	06C
		0.70	07C
38	45	0.37	03C
		0.58	04C
		0.56	05C
		0.40	06C
		0.89	07C
40	45	<20%	AV3
41	45	0.40	04H
		0.42	05C
42	45	0.90	07C
44	45	0.46	01C
6	46	0.25	01C
13	46	1.43	01C
		0.94	02C
		0.33	06C
25	46 *	PTI	HRLT
36	46	1.25	07C
37	46	0.53	07C
43	46	0.33	06H
		0.14	07C
44	46	0.39	03C
45	46	0.55	06C
3	47	OBS	
4	47 *	0.33	01C
		0.33	01C
6	47	0.75	02H
		0.36	04C
		0.52	05C
		1.00	06C
13	47	0.67	01C
14	47	0.72	01C
22	47	0.78	02C
		0.45	05C
		0.24	06C
36	47	0.21	04H
		1.13	06C
38	47 *	0.50	03C
		0.99	04C
		0.68	05C
		1.42	06C
		0.60	06H
		0.53	06H

TABLE 2.2

LOCATION AND PERCENT WALL THICKNESS PENETRATION FOR EACH INDICATION OF DEGRADATION

STEAM GENERATOR B

ROW	COL	PCT/VOLTS/IND	LOCATION
38	47 *	1.70	07C
		1.77	07C
		MAI	TEH+14.82
		SAI	TEH+11.97
		SAI	TEH+13.45
		SAI	TEH+15.92
39	47	0.29	06C
41	47	0.31	02C
		0.53	04H
		0.69	05C
43	47	0.13	04H
		1.12	06C
45	47	<20%	AV2
		0.25	05H
13	48	0.20	01C
15	48	0.17	01C
		0.52	03C
17	48	0.54	06C
		0.42	07C
19	48	0.46	01C
36	48	0.77	06C
39	48	0.40	04H
		0.42	07C
43	48	0.94	03C
		0.66	04C
		0.96	05C
		0.66	06C
		0.55	06H
		0.42	07C
19	49	0.56	05C
20	49	0.69	01C
21	49	1.22	01C
23	49	0.39	06C
31	49	0.57	06C
34	49	1.31	06C
		1.54	07C
39	49	0.53	03C
		0.28	06C
43	49	0.59	04C
		1.65	06C
12	50	0.76	05C
14	50	0.31	06C
17	50	0.62	01C
18	50	0.43	02C
20	50	0.56	02C
30	50	0.52	07C
41	50	0.38	03C
42	50	0.61	07H
43	50	1.15	01H
		0.60	02C

TABLE 2.2

LOCATION AND PERCENT WALL THICKNESS PENETRATION FOR EACH INDICATION OF DEGRADATION

STEAM GENERATOR B

ROW	COL	PCT/VOLTS/IND	LOCATION
43	50	0.83	05C
		0.81	06C
		0.91	07C
45	50	0.85	06C
8	51 *	SLI	TEH+0.89
11	51 *	0.52	07C
12	51	0.52	02C
20	51	0.33	02C
21	51	<20%	AV3
		<20%	AV2
30	51	1.02	02H
32	51	0.45	06C
36	51	<20%	AV2
		0.41	02C
37	51	<20%	AV2
		<20%	AV3
		0.44	06C
		0.17	07C
39	51	<20%	AV3
		<20%	AV2
40	51	<20%	AV3
		<20%	AV2
		0.43	07C
41	51	<20%	AV2
		0.72	07C
43	51	0.76	04C
		0.75	06C
44	51	<20%	AV2
45	51	0.29	04H
6	52 *	SLI	TEH+0.60
22	52	<20%	AV2
24	52	0.40	03C
		0.39	05C
		1.05	06C
40	52	<20%	AV3
		<20%	AV2
41	52	0.75	06C
42	52	<20%	AV2
43	52	0.36	02H
		0.73	04C
		0.37	04H
		0.91	06C
		0.34	07C
		0.73	07H
44	52	<20%	AV2
2	53	0.41	07C
7	53	0.42	07H
17	53	0.96	02C
19	53	0.67	06C
21	53	<20%	AV3

TABLE 2.2

LOCATION AND PERCENT WALL THICKNESS PENETRATION FOR EACH INDICATION OF DEGRADATION

STEAM GENERATOR B

ROW	COL	PCT/VOLTS/IND	LOCATION
38	53	0.66	02C
		0.68	03C
		1.19	04C
		1.25	05C
		0.70	06C
		0.56	07C
40	53	<20%	AV2
41	53	1.22	01H
		1.32	05C
		0.36	05H
		0.79	07H
42	53	0.62	05H
43	53	0.66	02C
		0.61	04C
		0.46	04H
		0.87	05C
		0.65	05H
		0.74	06C
		1.40	07C
		0.57	07H
7	54	0.16	05H
17	54	1.02	02C
20	54	0.49	01C
22	54	0.82	01C
39	54	<20%	AV1
41	54	0.82	06C
42	54	<20%	AV2
		0.54	07C
43	54	<20%	AV1
46	54	0.34	03C
8	55	0.64	07C
		0.39	07H
12	55	0.98	02C
		0.29	03C
		0.43	05C
		0.97	07C
17	55	0.45	02C
19	55	0.77	01C
22	55	0.56	07C
31	55	PTI	HRLT
39	55	<20%	AV2
		0.56	06H
45	55	0.41	01C
		0.68	02H
		0.54	03H
		0.42	07H
15	56	0.35	07H
20	56	0.44	01C
30	56	0.42	07C
33	56	1.28	01H

TABLE 2.2

LOCATION AND PERCENT WALL THICKNESS PENETRATION FOR EACH INDICATION OF DEGRADATION

STEAM GENERATOR B

ROW	COL	PCT/VOLTS/IND	LOCATION
33	56	0.72	02C
		0.38	03C
		0.86	03H
		0.49	05H
		1.41	06C
		0.97	07H
36	56	0.83	06C
37	56	SAI	TEH+7.75
41	56	0.57	04C
		1.13	06C
42	56	0.78	05H
		0.38	06C
44	56	<20%	AV2
2	57	0.37	07C
30	57	0.42	07C
34	57	1.02	07C
36	57	1.10	01H
		0.44	06C
42	57	0.38	03H
45	57	<20%	AV3
14	58	0.52	01C
17	58	0.62	02C
		0.95	07C
19	58	0.34	02C
33	58	OBS	
38	58	<20%	AV2
40	58	<20%	AV3
		<20%	AV2
		<20%	AV1
42	58	0.52	05H
43	58	<20%	AV1
		<20%	AV3
		<20%	AV2
5	59	SLI	TEH+0.38
15	59 *	0.59	03C
28	59	<20%	AV3
32	59	0.45	03H
37	59	0.53	06C
40	59	<20%	AV3
		0.40	06C
		MAI	TEH+1.33
41	59	<20%	AV3
43	59	0.59	01C
32	60	1.10	07H
36	60	<20%	AV3
42	60	<20%	AV3
43	60	<20%	AV3
		<20%	AV2
4	61 *	0.71	04C
5	61 *	SLI	TEH+0.63

TABLE 2.2

LOCATION AND PERCENT WALL THICKNESS PENETRATION FOR EACH INDICATION OF DEGRADATION

STEAM GENERATOR B

ROW	COL	PCT/VOLTS/IND	LOCATION
15	61	0.79	02C
25	61	0.78	02C
39	61	<20%	AV2
40	61	<20%	AV2
41	61	<20%	AV2
43	61	<20%	AV2
44	61	0.89	01H
29	62	0.34	01H
35	62	0.63	02C
		0.48	07C
36	62	<20%	AV2
		0.64	07C
37	62	<20%	AV2
		0.59	06C
39	62	0.40	02C
		0.61	03C
		1.07	04C
		0.56	05C
		1.20	07C
43	62	DSS/VOL	01C
		0.75	01H
7	63	0.30	02H
12	63	0.44	02C
15	63	0.36	02C
		0.44	05C
		0.30	05H
		0.76	06C
20	63	0.50	02C
21	63	0.43	07C
22	63	0.60	04C
		0.31	05C
36	63 *	0.36	05C
		0.37	05C
		SAI	TEH+16.30
38	63	0.42	06C
		0.34	07C
41	63	<20%	AV2
		0.38	06C
		0.47	07C
43	63	1.76	01C
3	64 *	PTI	HRLT
9	64	0.38	02C
12	64	0.67	02C
14	64	0.39	03C
26	64	0.64	02C
27	64	0.33	01H
33	64	0.42	06C
35	64	0.39	02H
36	64	1.54	07C
38	64	0.22	07C

TABLE 2.2

LOCATION AND PERCENT WALL THICKNESS PENETRATION FOR EACH INDICATION OF DEGRADATION

STEAM GENERATOR B

ROW	COL	PCT/VOLTS/IND	LOCATION
24	65	0.27	07C
32	65 *	SAI	TEH+7.62
		SAI	TEH+9.26
		SAI	TEH+10.86
		SAI	TEH+11.96
		WSI	CLW-0.05
40	65	0.31	07C
41	65	<20%	AV1
42	65	<20%	AV1
20	66	0.60	06C
35	66	0.98	06C
37	66	0.50	06C
39	66	0.40	06C
		1.13	07C
		SAI	TEH+15.76
41	66	0.26	04H
6	67	0.51	01C
14	67	1.06	02C
		0.45	03C
		0.73	05C
16	67	<20%	AV2
17	67	0.22	02C
		0.22	06C
20	67	<20%	AV2
26	67	0.49	02C
		0.39	05C
32	67	0.56	07C
34	67	<20%	AV2
37	67	0.66	07C
38	67	0.45	06C
39	67	<20%	AV2
		0.75	02C
		0.24	06C
		1.07	07C
40	67	<20%	AV2
		0.33	06C
42	67	<20%	AV1
		<20%	AV2
10	68	0.29	03H
		0.58	06C
13	68	0.50	06C
		0.31	06H
14	68	0.53	01C
		0.56	02C
		0.39	05C
		0.29	06C
		0.56	06H
17	68	0.78	02C
23	68	0.43	02C
29	68	0.24	06C

TABLE 2.2

LOCATION AND PERCENT WALL THICKNESS PENETRATION FOR EACH INDICATION OF DEGRADATION

STEAM GENERATOR B

ROW	COL	PCT/VOLTS/IND	LOCATION
30	68	PTI	HRLT
31	68 *	SAI	TEH+9.97
		SAI	TEH+10.73
36	68	<20%	AV2
		0.61	04C
		0.60	05C
		0.54	07H
38	68	0.62	05C
39	68	<20%	AV2
40	68	<20%	AV2
41	68	<20%	AV2
8	69	0.43	01C
14	69	0.52	01C
		PTI	HRLT
16	69	<20%	AV2
17	69	0.70	02C
28	69	0.16	06H
30	69	1.36	01H
35	69	1.00	06C
		0.37	06H
36	69	<20%	AV2
		0.60	06C
		0.99	07C
37	69	<20%	AV2
38	69	<20%	AV2
41	69	0.69	05H
2	70	1.20	02C
		0.38	03C
14	70	0.47	01C
		0.43	02C
16	70	<20%	AV2
		<20%	AV3
		<20%	AV4
17	70	0.24	02C
		0.24	02C
20	70	<20%	AV2
21	70	<20%	AV2
26	70	<20%	AV2
		0.72	07C
27	70	<20%	AV2
29	70 *	SAI	TEH+6.03
		WSI	CLW-0.02
31	70	0.38	03H
33	70	<20%	AV2
34	70	<20%	AV2
35	70	<20%	AV2
		0.72	02C
36	70	1.19	06C
		<20%	AV2
		0.25	03C

TABLE 2.2

LOCATION AND PERCENT WALL THICKNESS PENETRATION FOR EACH INDICATION OF DEGRADATION

STEAM GENERATOR B

ROW	COL	PCT/VOLTS/IND	LOCATION
36	70	0.66	04C
38	70	0.77	06C
		0.40	07C
39	70	<20%	AV2
		0.28	05H
		0.26	07H
40	70	<20%	AV2
6	71	0.40	02C
7	71	0.64	01C
12	71	0.34	02C
17	71	0.20	06C
20	71	0.21	04H
		0.29	06H
40	71	<20%	AV2
6	72	0.28	02H
13	72	0.79	02C
15	72	0.40	04H
17	72	PTI	HRLT
21	72	<20%	AV2
		<20%	AV3
27	72 *	0.39	02C
		SAI	TEH+7.80
		SAI	TEH+10.77
		SAI	TEH+11.13
		SAI	TEH+12.18
		SAI	TEH+14.11
		SAI	TEH+15.55
		SAI	TEH+16.48
28	72	0.85	01H
30	72 *	SAI	TEH+6.85
		SAI	TEH+9.73
31	72	<20%	AV3
		0.31	07C
		SAI	TEH+7.59
		WSI	CLW-0.11
32	72	MAI	TEH+2.44
		WSI	CLW-0.05
33	72	1.55	01H
		0.54	03H
		0.39	04C
		0.74	04H
		0.38	05C
		1.34	06C
		1.73	07C
		0.85	07H
34	72	<20%	AV1
		<20%	AV3
		<20%	AV2
36	72	<20%	AV1
		<20%	AV3

TABLE 2.2

LOCATION AND PERCENT WALL THICKNESS PENETRATION FOR EACH INDICATION OF DEGRADATION

STEAM GENERATOR B

ROW	COL	PCT/VOLTS/IND	LOCATION
36	72	<20%	AV2
		0.44	03C
		0.77	06C
		1.15	07C
		0.53	07H
37	72	<20%	AV3
		<20%	AV1
		20%	AV2
39	72	<20%	AV3
		<20%	AV2
3	73 *	SLI	TEH+0.57
14	73	0.61	03C
19	73	1.00	02C
20	73	<20%	AV1
		0.83	02C
		PTI	HRLT
21	73	<20%	AV1
		1.50	02C
22	73	0.22	02C
26	73	SAI	TEH+8.95
		WZI	CLW-0.06
27	73	0.47	01H
		0.48	03C
		0.97	03H
		0.31	07H
29	73 *	SAI	TEH+7.69
		SAI	TEH+9.20
		WSI	CLW+0.02
31	73	<20%	AV2
		0.92	01H
		0.78	02H
		1.05	03C
		1.23	03H
		0.86	04C
		0.46	04H
		0.41	05C
		1.62	07C
0.36	07H		
32	73	0.24	06C
34	73	<20%	AV3
		<20%	AV2
36	73	0.25	05H
37	73	<20%	AV2
		<20%	AV3
38	73	0.94	01H
39	73	<20%	AV3
4	74	0.84	01C
26	74	1.13	06C
33	74	<20%	AV2
35	74	<20%	AV2

TABLE 2.2

LOCATION AND PERCENT WALL THICKNESS PENETRATION FOR EACH INDICATION OF DEGRADATION

STEAM GENERATOR B			
ROW	COL	PCT/VOLTS/IND	LOCATION
36	74	<20%	AV2
37	74	<20%	AV2
		0.95	05C
		0.57	06C
		0.74	07C
38	74	<20%	AV2
1	75	SAI	07H+3.84
20	75	0.50	05H
23	75	0.90	06C
27	75	0.41	02C
30	75	0.35	02H
		0.75	04C
		0.72	04H
		0.57	06C
33	75	SAI	TEH+11.23
34	75	<20%	AV2
		0.50	03H
		0.37	06C
35	75	0.60	02H
		0.25	03H
		0.25	05H
36	75	<20%	AV2
		1.00	06C
14	76	0.42	05C
25	76	0.31	07H
26	76	0.15	07H
28	76	0.30	02H
		0.23	07H
30	76 *	0.18	04C
		SAI	TEH+10.83
		SAI	TEH+12.24
		SAI	TEH+13.76
		SAI	TEH+14.42
		WSI	CLW-0.02
32	76	0.40	02H
		0.26	04H
35	76	<20%	AV1
		<20%	AV3
		<20%	AV2
		0.25	07C
36	76	<20%	AV2
		<20%	AV3
		0.69	04H
		0.42	02C
		0.31	04H
		0.42	06C
37	76	<20%	AV2
		<20%	AV3
1	77	0.55	01C
18	77	0.60	06C

TABLE 2.2

LOCATION AND PERCENT WALL THICKNESS PENETRATION FOR EACH INDICATION OF DEGRADATION

STEAM GENERATOR B

ROW	COL	PCT/VOLTS/IND	LOCATION
24	77	SAI	TEH+6.62
25	77 *	SAI	TEH+7.73
		SAI	TEH+15.71
		SAI	TEH+15.78
		SAI	TEH+16.08
		WZI	CLW-0.05
26	77	0.77	06C
27	77	0.24	06H
28	77	0.33	03H
31	77	0.42	03H
35	77	0.26	01H
		1.12	06H
5	78 *	SAI	TSH+0.07
		WSI	CLW-0.00
7	78	0.16	03H
19	78	0.40	02C
24	78	0.92	07C
25	78 *	SAI	TEH+15.51
26	78	0.92	03H
		0.26	04C
		0.34	06H
		0.35	07C
		0.27	07H
27	78 *	0.42	07H
		SAI	TEH+7.12
		SAI	TEH+11.84
28	78	0.38	06C
30	78 *	SAI	TEH+6.52
		SAI	TEH+13.35
		SAI	TEH+14.58
		SAI	TEH+15.49
35	78	<20%	AV2
27	79 *	0.47	02H
		1.26	03H
		0.39	04H
		SAI	TEH+5.21
		SAI	TEH+5.60
		SAI	TEH+7.20
28	79	0.59	02H
		0.36	03H
		0.40	04H
31	79	0.34	02H
		0.56	03H
		0.42	04H
34	79	0.25	05H
		0.46	06H
18	80	<20%	AV2
19	80	<20%	AV2
20	80	<20%	AV2

TABLE 2.2

LOCATION AND PERCENT WALL THICKNESS PENETRATION FOR EACH INDICATION OF DEGRADATION

STEAM GENERATOR B

ROW	COL	PCT/VOLTS/IND	LOCATION
24	80	<20%	AV2
27	80 *	0.73	02C
		0.30	02H
		0.25	03H
		0.44	04H
		0.28	07C
		MAI	TEH+13.87
		SAI	TEH+6.61
		SAI	TEH+8.05
		SAI	TEH+9.80
		SAI	TEH+10.84
		SAI	TEH+11.21
		SAI	TEH+12.66
		SAI	TEH+14.76
		SAI	TEH+15.90
29	80	<20%	AV2
31	80	<20%	AV2
		0.43	06C
		0.39	07C
9	81	OBS	
25	81	0.28	03H
27	81 *	0.35	02H
		SAI	TEH+11.11
		SAI	TEH+12.46
		SAI	TEH+13.59
29	81	0.94	01H
		0.55	03H
30	81	0.25	07C
9	82	0.31	03H
18	82	0.26	02C
20	82	0.49	02C
28	82	0.47	02H
		0.29	04H
30	82	<20%	AV3
		0.56	01H
		0.80	02H
		0.53	04H
		0.29	05H
14	83	0.53	02C
24	83	0.55	02C
		0.47	05C
2	84 *	SAI	TEH+5.09
		SAI	TEH+6.37
		SAI	TEH+8.87
		SAI	TEH+9.82
		SAI	TEH+11.17
		SAI	TEH+11.97
		SAI	TEH+12.73
		SAI	TEH+14.27
3	84	SAI	TEH+11.26

TABLE 2.2

LOCATION AND PERCENT WALL THICKNESS PENETRATION FOR EACH INDICATION OF DEGRADATION

STEAM GENERATOR B

ROW	COL	PCT/VOLTS/IND	LOCATION
9	84 *	SAI	TEH+7.70
		SAI	TEH+10.82
14	84	0.55	06C
16	84 *	SAI	TEH+15.34
18	84	<20%	AV3
20	84	<20%	AV3
		<20%	AV4
		0.36	01H
21	84	<20%	AV3
22	84	<20%	AV3
14	85	0.24	06C
15	85	0.25	02C
		0.21	04C
18	85	SAI	TEH+7.83
25	85	0.51	06C
4	86	0.49	03H
7	86	0.29	02C
		0.60	06C
17	86	0.27	07C
19	86	0.69	06C
23	86	0.18	06C
24	86	0.23	06C
25	86	0.49	05C
6	87	0.23	06C
7	87	0.23	03H
14	87	0.97	06C
19	87	0.45	06C
		0.24	07C
20	87	<20%	AV2
		<20%	AV3
21	87	<20%	AV2
		0.37	07C
22	87	23%	AV2
5	88 *	SAI	TEH+6.21
		SAI	TEH+11.23
		SAI	TEH+12.61
8	88	0.79	06C
9	88	SAI	TEH+11.28
11	88	<20%	AV4
		0.28	02H
13	88	21%	AV4
14	88	<20%	AV1
		<20%	AV4
19	88	<20%	AV3
		0.25	03C
20	88	<20%	AV3
		0.89	03H
		0.75	06C
21	88	0.95	02C
8	89	SAI	TEH+11.57

TABLE 2.2

LOCATION AND PERCENT WALL THICKNESS PENETRATION FOR EACH INDICATION OF DEGRADATION

STEAM GENERATOR B

ROW	COL	PCT/VOLTS/IND	LOCATION
12	89	21%	AV4
15	89	<20%	AV4
		<20%	AV3
		0.79	06C
17	89	0.60	07C
18	89	0.51	01C
19	89	1.11	01C
		0.48	03H
		0.57	04H
		0.80	06C
21	89	0.81	01C
12	90	0.69	01C
15	90	0.57	01C
		0.61	06C
17	90	<20%	AV3
19	90	1.39	04C
19	90	0.96	04H
		1.15	06C
		0.36	06H
		1.24	07C
		0.55	07H
6	91	0.44	01C
		0.31	04H
13	91	0.30	01C
15	91	0.39	02C
8	92	0.56	04H
13	92	0.30	02C
		1.12	06C
15	92	0.20	02C
2	93	0.15	02H
4	93	0.22	03H
10	93	0.91	01C
1	94	0.16	02H
		SAI	TEH+11.17
2	94	0.24	02H

* INDICATES A RECOVERY TUBE LOCATION

TABLE 2.3

TUBE LOCATIONS PLUGGED OR SLEEVED

STEAM GENERATOR B

ROW	COL	PCT/VOLTS/IND	LOCATION	PLUGGED OR SLEEVED
6	3	SAI	TEH+13.33	PLUGGED
8	6 *	WSI	CLW-0.19	SLEEVED
		SAI	TEH+7.19	
10	6 *	WZI	CLW-0.20	PLUGGED
		MAI	TEH+4.99 to 15.33	
		SAI	TEH+8.63	
11	7 *	SAI	TEH+13.59	SLEEVED
3	8 *	SAI	TEH+4.85	SLEEVED
10	8	SAI	TEH+13.09	SLEEVED
5	9	WSI	CLW-0.05	PLUGGED
		SAI	TEH+12.99	
7	9	SAI	TEH+11.17	SLEEVED
19	9 *	SAI	TEH+11.08	SLEEVED
		SAI	TEH+12.48	
		SAI	TEH+15.30	
		SAI	TEH+16.19	
		SAI	TEH+6.85	
		SAI	TEH+7.46	
		SAI	TEH+9.78	
3	10	WZI	CLW-0.17	PLUGGED
		SAI	TSH+0.06	
8	11 *	SAI	TEH+10.51	SLEEVED
		SAI	TEH+11.88	
9	11 *	SAI	TEH+10.20	SLEEVED
		SAI	TEH+3.59	
		MAI	TEH+4.12	
17	11 *	WZI	CLW-0.07	PLUGGED
		SAI	TEH+5.50	
21	11 *	WZI	CLW-0.08	PLUGGED
		SAI	TEH+11.04	
		SAI	TEH+12.48	
23	11 *	WSI	CLW-0.06	SLEEVED
		SAI	TEH+10.88	
		SAI	TEH+15.22	
3	12	SAI	TSH+0.09	SLEEVED
11	12 *	SAI	TEH+3.71	SLEEVED
		SAI	TEH+5.08	
		SAI	TEH+5.90	
2	15	SAI	TSH+0.14	SLEEVED
17	15	SAI	TEH+4.57	SLEEVED
25	15	WZI	CLW+0.02	SLEEVED
		SAI	TEH+4.29	
21	16 *	SAI	TEH+10.22	PLUGGED
		SAI	TEH+8.96	
24	16 *	WZI	CLW-0.06	PLUGGED
		SAI	TEH+12.80	
		SAI	TEH+3.70	
19	17	SAI	TEH+7.40	SLEEVED
		SAI	TEH+8.83	
32	17	MAI	TEH+1.27	PLUGGED
25	18 *	SAI	TEH+3.53	SLEEVED

TABLE 2.3

TUBE LOCATIONS PLUGGED OR SLEEVED

STEAM GENERATOR B

ROW	COL	PCT/VOLTS/IND	LOCATION	PLUGGED OR SLEEVED
25	18 *	SAI SAI	TEH+3.76 TEH+4.78	
28	18	SAI	TEH+12.39	SLEEVED
27	20 *	SAI SAI SAI	TEH+10.60 TEH+11.31 TEH+14.26 TEH+15.28	SLEEVED
30	20 *	SAI SAI SAI SAI SAI SAI	TEH+11.61 TEH+11.88 TEH+13.01 TEH+14.45 TEH+15.01 TEH+15.49	SLEEVED
33	21 *	SAI SAI SAI SAI	TEH+10.25 TEH+12.28 TEH+7.67 TEH+9.08	SLEEVED
30	23 *	SAI SAI SAI SAI SAI	TEH+11.32 TEH+3.63 TEH+4.47 TEH+5.03 TEH+9.98	SLEEVED
31	23 *	SAI SAI SAI SAI	TEH+12.42 TEH+13.83 TEH+14.72 TEH+3.32	SLEEVED
29	24	SAI	TEH+3.53	SLEEVED
32	24	SAI	TEH+14.46	SLEEVED
29	25 *	SAI SAI	TEH+3.81 TEH+8.49	SLEEVED
30	25 *	SAI SAI SAI SAI	TEH+11.63 TEH+3.46 TEH+4.35 TSH+0.00	SLEEVED
30	26 *	SAI SAI SAI	TEH+10.89 TEH+14.08 TEH+9.37	SLEEVED
27	27	OBS		PLUGGED
2	30	DSI/SAI	07H	PLUGGED
24	30	PTI	HRLT	PLUGGED
38	35 *	MAI MAI MAI	TEH+7.34 TEH+8.95 TEH+9.97	SLEEVED
8	38 *	PTI	HRLT	PLUGGED
38	38 *	SAI	TEH+12.30	SLEEVED
40	38 *	SAI SAI SAI	TEH+10.79 TEH+14.42 TEH+9.11	SLEEVED
38	39 *	WSI SAI SAI	CLW-0.09 TEH+7.84 TEH+9.28	SLEEVED

TABLE 2.3

TUBE LOCATIONS PLUGGED OR SLEEVED

STEAM GENERATOR B

ROW	COL	PCT/VOLTS/IND	LOCATION	PLUGGED OR SLEEVED
38	40	SAI SAI SAI	TEH+6.34 TEH+7.81 TEH+9.19 to 11.74	SLEEVED
38	42 *	MAI	TEH+4.84	SLEEVED
17	45	OBS		PLUGGED
25	46 *	PTI	HRLT	PLUGGED
3	47	OBS		PLUGGED
38	47 *	SAI SAI MAI SAI	TEH+11.97 TEH+13.45 TEH+14.82 TEH+15.92	SLEEVED
8	51 *	SLI	TEH+0.89	PLUGGED
6	52 *	SLI	TEH+0.60	PLUGGED
31	55 *	PTI	HRLT	PLUGGED
37	56	SAI	TEH+7.75	SLEEVED
33	58	OBS		PLUGGED
5	59 *	SLI	TEH+0.38	PLUGGED
40	59	MAI	TEH+1.33	SLEEVED
5	61 *	SLI	TEH+0.63	PLUGGED
43	62	DSS/VOL	01C	PLUGGED
36	63 *	SAI	TEH+16.30	SLEEVED
3	64 *	PTI	HRLT	SLEEVED
32	65 *	WSI SAI SAI SAI SAI	CLW-0.05 TEH+10.86 TEH+11.96 TEH+7.62 TEH+9.26	PLUGGED
39	66	SAI	TEH+15.76	SLEEVED
30	68	PTI	HRLT	SLEEVED
31	68 *	SAI SAI	TEH+10.73 TEH+9.97	PLUGGED
14	69	PTI	HRLT	PLUGGED
29	70 *	WSI SAI	CLW-0.02 TEH+6.03	SLEEVED
17	72	PTI	HRLT	PLUGGED
27	72 *	SAI SAI SAI SAI SAI SAI SAI	TEH+10.77 TEH+11.13 TEH+12.18 TEH+14.11 TEH+15.55 TEH+16.48 TEH+7.80	SLEEVED
30	72 *	SAI SAI	TEH+6.85 TEH+9.73	SLEEVED
31	72	WSI SAI	CLW-0.11 TEH+7.59	SLEEVED
32	72	WSI MAI	CLW-0.05 TEH+2.44	SLEEVED
3	73 *	SLI	TEH+0.57	PLUGGED
20	73	PTI	HRLT	PLUGGED
26	73	WZI	CLW-0.06	PLUGGED

TABLE 2.3

TUBE LOCATIONS PLUGGED OR SLEEVED

STEAM GENERATOR B

ROW	COL	PCT/VOLTS/IND	LOCATION	PLUGGED OR SLEEVED
26	73	SAI	TEH+8.95	
29	73 *	WSI	CLW+0.02	PLUGGED
		SAI	TEH+7.69	
		SAI	TEH+9.20	
33	75	SAI	TEH+11.23	SLEEVED
30	76 *	WSI	CLW-0.02	SLEEVED
		SAI	TEH+10.83	
		SAI	TEH+12.24	
		SAI	TEH+13.76	
		SAI	TEH+14.42	
24	77	SAI	TEH+6.62	SLEEVED
25	77 *	WZI	CLW-0.05	PLUGGED
		SAI	TEH+15.71	
		SAI	TEH+15.78	
		SAI	TEH+16.08	
		SAI	TEH+7.73	
5	78 *	WSI	CLW-0.00	SLEEVED
		SAI	TSH+0.07	
25	78 *	SAI	TEH+15.51	PLUGGED
27	78 *	SAI	TEH+11.84	PLUGGED
		SAI	TEH+7.12	
30	78 *	SAI	TEH+13.35	SLEEVED
		SAI	TEH+14.58	
		SAI	TEH+15.49	
		SAI	TEH+6.52	
27	79 *	SAI	TEH+10.35	SLEEVED
		SAI	TEH+5.21	
		SAI	TEH+5.60	
		SAI	TEH+7.20	
27	80 *	SAI	TEH+10.84	SLEEVED
		SAI	TEH+11.21	
		SAI	TEH+12.66	
		MAI	TEH+13.87	
		SAI	TEH+14.76	
		SAI	TEH+15.90	
		SAI	TEH+6.61	
		SAI	TEH+8.05	
		SAI	TEH+9.80	
9	81	OBS		PLUGGED
27	81 *	SAI	TEH+11.11	SLEEVED
		SAI	TEH+12.46	
		SAI	TEH+13.59	
2	84 *	SAI	TEH+11.17	SLEEVED
		SAI	TEH+11.97	
		SAI	TEH+12.73	
		SAI	TEH+14.27	
		SAI	TEH+5.09	
		SAI	TEH+6.37	
		SAI	TEH+8.87	
		SAI	TEH+9.82	
3	84	SAI	TEH+11.26	SLEEVED

TABLE 2.3

TUBE LOCATIONS PLUGGED OR SLEEVED

STEAM GENERATOR B

ROW	COL	PCT/VOLTS/IND	LOCATION	PLUGGED OR SLEEVED
9	84 *	SAI SAI	TEH+10.82 TEH+7.70	SLEEVED
16	84 *	SAI	TEH+15.34	SLEEVED
18	85	SAI	TEH+7.83	SLEEVED
5	88 *	SAI SAI SAI	TEH+11.23 TEH+12.61 TEH+6.21	SLEEVED
9	88	SAI	TEH+11.28	SLEEVED
8	89	SAI	TEH+11.57	SLEEVED
1	94	SAI	TEH+11.17	PLUGGED

* INDICATES A RECOVERY TUBE LOCATION

3.0 PERSONNEL EXPOSURE AND MONITORING REPORT

Table 3.1 presents a tabulation of the total number of individuals for whom monitoring was provided, along with information on total station dose for the year.

Table 3.2 presents a tabulation of the number of station, utility, and other personnel (including contractors) receiving exposures greater than 100 mrem/yr (1.0 mSv/yr) and their associated person-rem exposure according to work and job functions. This table is provided per Regulatory Guide 1.16, Section C.1.b.(3), and Kewaunee Technical Specification 6.9.a.2.B.

TABLE 3.1
January 1, 1998 - December 31, 1998
TOTAL STATISTICS

RANGE (mR)	NUMBER OF INDIVIDUALS IN RANGE
No Measure	314
Less Than 100	169
100 - 249	82
250 - 499	86
500 - 749	26
750 - 999	9
1000 - 1999	12
Greater Than 2000	0
TOTAL BADGED	698

The total actual dose at the Kewaunee Nuclear Power Plant for 1998 was 88.239 Person Rem (TEDE).

TABLE 3.2
U.S.N.R. REGULATORY GUIDE 1.16 REPORT
KEWAUNEE NUCLEAR POWER PLANT
FROM 1/1/98 TO 12/31/98

		NUMBER > 100 mREM			TOTAL PERSON-REM		
		Station	Utility	Contract	Station	Utility	Contract
Reactor Operations and Surveillance	1						
Maintenance		0	0	0	0.020	0.000	0.000
Operations		10	0	0	2.164	0.000	0.001
Health Physics		0	0	0	0.000	0.000	0.000
Supervisor		0	0	1	0.087	0.000	0.109
Engineering		0	0	0	0.014	0.000	0.000
Routine Maintenance	2						
Maintenance		8	2	0	2.847	0.743	0.343
Operations		7	0	0	2.274	0.000	0.004
Health Physics		15	0	30	6.949	0.000	8.856
Supervisor		0	0	1	0.055	0.000	0.470
Engineering		1	0	0	0.326	0.000	0.000
Inservice Inspection	3						
Maintenance		0	3	19	0.071	0.007	7.344
Operations		2	0	1	0.547	0.000	0.225
Health Physics		0	0	0	0.000	0.000	0.000
Supervisor		0	0	1	0.000	0.000	0.277
Engineering		2	0	6	0.406	0.000	1.569
Special Maintenance	4						
Maintenance		11	0	65	4.262	0.860	28.698
Operations		0	0	0	0.284	0.000	0.000
Health Physics		1	0	1	0.416	0.000	0.222
Supervisor		3	0	0	0.598	0.000	0.000
Engineering		6	0	2	2.017	0.000	0.447
Waste Processing	5						
Maintenance		1	0	0	0.357	0.000	0.000
Operations		1	0	0	0.588	0.000	0.000
Health Physics		0	0	0	0.061	0.000	0.087
Supervisor		0	0	0	0.000	0.000	0.000
Engineering		0	0	0	0.000	0.000	0.000
Refueling	6						
Maintenance		8	4	0	3.076	1.443	0.093
Operations		6	0	1	1.545	0.000	0.707
Health Physics		0	0	0	0.000	0.000	0.000
Supervisor		0	0	0	0.102	0.000	0.000
Engineering		1	0	0	0.236	0.000	0.000
TOTALS							
Maintenance		28	9	79	10.633	3.053	36.478
Operations		26	0	2	7.402	0.000	0.937
Health Physics		16	0	31	7.426	0.000	9.165
Supervisor		3	0	3	0.842	0.000	0.856
Engineering		10	0	8	2.999	0.000	2.016
GRAND TOTALS		83	9	123	29.302	3.053	49.452

4.0 CHANGES IN THE EMERGENCY CORE COOLING SYSTEM MODEL

The provisions of 10 CFR 50.46 require the reporting of corrections or changes to the emergency core cooling system (ECCS) models that are approved for use in performing the loss of coolant accident (LOCA) safety analysis.

Large Break LOCA

In reference 1 WPSC notified the NRC of changes in the Westinghouse Electric Corporations analysis of a large break loss of coolant accident at the Kewaunee plant. The NRC was also notified of these changes by Westinghouse Electric by letter NSD-NRC-98-5575. The following summarizes the changes:

<u>Description of Change</u>	<u>Change in PCT</u>
Assuming a locked reactor coolant pump rotor at the start of reflood	+ 29°F
Correcting the model to eliminate a double counting of the contribution of the vapor phase to the transition boiling heat flux has on PCT	- 76°F
Corrected the model cell height (i.e., DX) in determining gap flow wall friction and interfacial drag coefficients	+ 108°F
Revised the model to ensure data input and data transfer methods were consistent for all SECY UPI Appendix K analyses	+ 42°F

Total Change	+ 103°F
Final PCT	2112°F

Other Changes

Subsequent to being notified of the corrections described above, the large break LOCA was re-analyzed and sensitivity analyses were performed on the small break LOCAs. The re-analyses were performed to address improvements in fuel design. As a result of this re-analysis, WPSC proposed changes to Kewaunee's Technical Specifications (refer to reference 2). The NRC reviewed the proposed changes (refer to reference 3). The Limiting PCT temperatures are as follows:

The Limiting PCT for a Large Break LOCA: 1872°F

The Limiting PCT for a Small Break LOCA: 1041°F⁽¹⁾

Notes:

1. The current analysis calculated a PCT of 1041°F. Once the remaining standard fuel has been in the core for two operating cycles, the PCT will be reduced by 109°F to 932°F.

References

1. Letter from ML Marchi (WPSC) to Document Control Desk (NRC) date March 30, 1998
2. Letter form CR Steinhardt (WPSC) to Document Control Desk (NRC) dated April 15, 1998
3. Letter from WO Long (NRC) to ML Marchi (WPSC) dated December 2, 1998

5.0 FAILURES OF TURBINE STOP AND CONTROL VALVES

There were no failures of the turbine stop and control valves during 1998.

6.0 MAXIMUM COOLANT ACTIVITY

KNPP TS 6.9.a.2.D requires the documentation of the results of specific activity analysis in which the reactor coolant exceeded the limits of TS 3.1.c.1.A during the past year.

The reactor coolant did not exceed the limits of TS 3.1.c.1.A during 1998.