Prairie Island Nuclear Generating Plant

Attachment 3

to

Supplement dated February 15, 2002
to License Amendment Request dated December 11, 2000
Conversion to Improved Technical Specifications (ITS)

Revision 9 Change Pages

Improved Technical Specifications
Supplement dated 2/15/02

Revision 9 Change Page List

UPDATING INSTRUCTIONS

Remove				Insert			
Chapter/ Section	Part	Page	Revision/ Date	Chapter/ Section	Part	Page	Revision/ Date
3.4	B	3.4.1-2	12/11/00	3.4	B	3.4.1-2	1/2/02
3.4	B	3.4.5-1	9/4/01	3.4	B	3.4.5-1	1/2/02
3.4	B	3.4.5-4	12/11/00	3.4	B	3.4.5-4	1/2/02
3.4	B	3.4.6-1	12/11/00	3.4	B	3.4.6-1	1/2/02
3.4	B	3.4.6-2	12/11/00	3.4	B	3.4.6-2	1/2/02
3.4	B	3.4.6-3	12/11/00	3.4	B	3.4.6-3	1/2/02
3.4	B	3.4.7-1	12/11/00	3.4	B	3.4.7-1	1/2/02
3.4	B	3.4.7-2	12/11/00	3.4	B	3.4.7-2	1/2/02
3.4	B	3.4.7-3	12/11/00	3.4	B	3.4.7-3	1/2/02
3.4	B	---	---	3.4	B	3.4.7-4	1/2/02
3.4	B	3.4.8-1	12/11/00	3.4	B	3.4.8-1	1/2/02
3.4	B	3.4.8-2	12/11/00	3.4	B	3.4.8-2	1/2/02
3.4	B	3.4.8-3	12/11/00	3.4	B	3.4.8-3	1/2/02
3.4	B	3.4.10-2	12/11/00	3.4	B	3.4.10-2	1/2/02
3.4	B	3.4.12-1	12/11/00	3.4	B	3.4.12-1	1/2/02
3.4	B	3.4.12-2	12/11/00	3.4	B	3.4.12-2	1/2/02
3.4	B	3.4.12-3	12/11/00	3.4	B	3.4.12-3	1/2/02
3.4	B	3.4.12-4	12/11/00	3.4	B	3.4.12-4	1/2/02
3.4	B	3.4.13-1	12/11/00	3.4	B	3.4.13-1	1/2/02
3.4	B	3.4.13-2	12/11/00	3.4	B	3.4.13-2	1/2/02
3.4	B	3.4.13-3	12/11/00	3.4	B	3.4.13-3	1/2/02
3.4	B	3.4.13-4	12/11/00	3.4	B	3.4.13-4	1/2/02
3.4	B	3.4.13-5	12/11/00	3.4	B	3.4.13-5	1/2/02
3.4	B	3.4.14-3	12/11/00	3.4	B	3.4.14-3	1/2/02
3.4	B	3.4.17-1	12/11/00	3.4	B	3.4.17-1	1/2/02
3.4	B	3.4.17-2	12/11/00	3.4	B	3.4.17-2	1/2/02
3.4	B	3.4.17-3	12/11/00	3.4	B	3.4.17-3	1/2/02
3.4	B	B 3.4.1-5	12/11/00	3.4	B	B 3.4.1-5	1/2/02
3.4	B	B 3.4.3-5	12/11/00	3.4	B	B 3.4.3-5	1/2/02
3.4	B	B 3.4.5-3	9/4/01	3.4	B	B 3.4.5-3	1/2/02

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UPDATING INSTRUCTIONS

Remove				Insert			
Chapter/ Section	Part	Page	Revision/ Date	Chapter/ Section	Part	Page	Revision/ Date
3.4	B	B 3.4.5-4	12/11/00	3.4	B	B 3.4.5-4	1/2/02
3.4	B	B 3.4.5-7	12/11/00	3.4	B	B 3.4.5-7	1/2/02
3.4	B	B 3.4.5-8	12/11/00	3.4	B	B 3.4.5-8	1/2/02
3.4	B	B 3.4.6-2	12/11/00	3.4	B	B 3.4.6-2	1/2/02
3.4	B	B 3.4.6-3	12/11/00	3.4	B	B 3.4.6-3	1/2/02
3.4	B	B 3.4.6-4	12/11/00	3.4	B	B 3.4.6-4	1/2/02
3.4	B	B 3.4.6-5	12/11/00	3.4	B	B 3.4.6-5	1/2/02
3.4	B	B 3.4.6-6	12/11/00	3.4	B	B 3.4.6-6	1/2/02
3.4	B	---	---	3.4	B	B 3.4.6-7	1/2/02
3.4	B	B 3.4.7-2	12/11/00	3.4	B	B 3.4.7-2	1/2/02
3.4	B	B 3.4.7-4	12/11/00	3.4	B	B 3.4.7-4	1/2/02
3.4	B	B 3.4.7-5	12/11/00	3.4	B	B 3.4.7-5	1/2/02
3.4	B	B 3.4.7-6	12/11/00	3.4	B	B 3.4.7-6	1/2/02
3.4	B	---	---	3.4	B	B 3.4.7-7	1/2/02
3.4	B	B 3.4.8-2	12/11/00	3.4	B	B 3.4.8-2	1/2/02
3.4	B	B 3.4.8-3	12/11/00	3.4	B	B 3.4.8-3	1/2/02
3.4	B	B 3.4.8-4	12/11/00	3.4	B	B 3.4.8-4	1/2/02
3.4	B	B 3.4.12-1	12/11/00	3.4	B	B 3.4.12-1	1/2/02
3.4	B	B 3.4.12-2	12/11/00	3.4	B	B 3.4.12-2	1/2/02
3.4	B	B 3.4.12-3	12/11/00	3.4	B	B 3.4.12-3	1/2/02
3.4	B	B 3.4.12-4	12/11/00	3.4	B	B 3.4.12-4	1/2/02
3.4	B	B 3.4.12-5	12/11/00	3.4	B	B 3.4.12-5	1/2/02
3.4	B	B 3.4.12-6	12/11/00	3.4	B	B 3.4.12-6	1/2/02
3.4	B	B 3.4.12-7	12/11/00	3.4	B	B 3.4.12-7	1/2/02
3.4	B	B 3.4.12-8	12/11/00	3.4	B	B 3.4.12-8	1/2/02
3.4	B	B 3.4.12-9	12/11/00	3.4	B	B 3.4.12-9	1/2/02
3.4	B	B 3.4.12-10	12/11/00	3.4	B	B 3.4.12-10	1/2/02
3.4	B	B 3.4.12-11	12/11/00	3.4	B	B 3.4.12-11	1/2/02
3.4	B	B 3.4.13-1	12/11/00	3.4	B	B 3.4.13-1	1/2/02
3.4	B	B 3.4.13-2	12/11/00	3.4	B	B 3.4.13-2	1/2/02

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Remove				Insert			
Chapter/ Section	Part	Page	Revision/ Date	Chapter/ Section	Part	Page	Revision/ Date
3.4	B	B 3.4.13-3	12/11/00	3.4	B	B 3.4.13-3	1/2/02
3.4	B	B 3.4.13-4	12/11/00	3.4	B	B 3.4.13-4	1/2/02
3.4	B	B 3.4.13-5	12/11/00	3.4	B	B 3.4.13-5	1/2/02
3.4	B	B 3.4.13-6	12/11/00	3.4	B	B 3.4.13-6	1/2/02
3.4	B	B 3.4.13-7	12/11/00	3.4	B	B 3.4.13-7	1/2/02
3.4	B	B 3.4.13-8	12/11/00	3.4	B	B 3.4.13-8	1/2/02
3.4	B	B 3.4.13-9	12/11/00	3.4	B	B 3.4.13-9	1/2/02
3.4	B	B 3.4.13-10	12/11/00	3.4	B	B 3.4.13-10	1/2/02
3.4	B	B 3.4.13-11	12/11/00	3.4	B	B 3.4.13-11	1/2/02
3.4	B	B 3.4.13-12	12/11/00	3.4	B	B 3.4.13-12	1/2/02
3.4	B	B 3.4.13-13	12/11/00	3.4	B	B 3.4.13-13	1/2/02
3.4	B	B 3.4.14-7	12/11/00	3.4	B	B 3.4.14-7	1/2/02
3.4	B	B 3.4.17-3	12/11/00	3.4	B	B 3.4.17-3	1/2/02
3.4	B	B 3.4.17-4	12/11/00	3.4	B	B 3.4.17-4	1/2/02
3.4	B	B 3.4.17-5	12/11/00	3.4	B	B 3.4.17-5	1/2/02
3.4	C	Cover Page		3.4	C	Cover Page	
3.4	C	1 of 28	2	3.4	C	1 of 30	9
3.4	C	2 of 28	2	3.4	C	2 of 30	9
3.4	C	3 of 28		3.4	C	3 of 30	9
3.4	C	4 of 28		3.4	C	4 of 30	9
3.4	C	5 of 28		3.4	C	5 of 30	9
3.4	C	6 of 28		3.4	C	6 of 30	9
3.4	C	7 of 28		3.4	C	7 of 30	9
3.4	C	8 of 28		3.4	C	8 of 30	9
3.4	C	9 of 28		3.4	C	9 of 30	9
3.4	C	10 of 28		3.4	C	10 of 30	9
3.4	C	11 of 28		3.4	C	11 of 30	9
3.4	C	12 of 28		3.4	C	12 of 30	9
3.4	C	13 of 28		3.4	C	13 of 30	None

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Chapter/ Section	Part	Page	Revision/ Date	Chapter/ Section	Part	Page	Revision/ Date
3.4	C	14 of 28		3.4	C	14 of 30	9
3.4	C	15 of 28		3.4	C	15 of 30	None
3.4	C	16 of 28		3.4	C	16 of 30	None
3.4	C	17 of 28		3.4	C	17 of 30	None
3.4	C	18 of 28		3.4	C	18 of 30	None
3.4	C	19 of 28	2	3.4	C	19 of 30	9
3.4	C	20 of 28	2	3.4	C	20 of 30	None
3.4	C	21 of 28		3.4	C	21 of 30	9
3.4	C	22 of 28	2	3.4	C	22 of 30	2
3.4	C	23 of 28		3.4	C	23 of 30	None
3.4	C	24 of 28	2	3.4	C	24 of 30	9
3.4	C	25 of 28		3.4	C	25 of 30	9
3.4	C	26 of 28	2	3.4	C	26 of 30	9
3.4	C	27 of 28	2	3.4	C	27 of 30	9
3.4	C	28 of 28		3.4	C	28 of 30	2
3.4	C	---	---	3.4	C	29 of 30	2
3.4	C	---	---	3.4	C	30 of 30	None
3.4	D	5	12/11/00	3.4	D	5	1/2/02
3.4	D	9	12/11/00	3.4	D	9	1/2/02
3.4	D	10	12/11/00	3.4	D	10	1/2/02
3.4	D	11	12/11/00	3.4	D	11	1/2/02
3.4	D	12	12/11/00	3.4	D	12	12/11/00
3.4	D	13	12/11/00	3.4	D	13	1/2/02
3.4	D	14	12/11/00	3.4	D	14	1/2/02
3.4	D	15	12/11/00	3.4	D	15	12/11/00
3.4	D	16	12/11/00	3.4	D	16	12/11/00
3.4	D	17	12/11/00	3.4	D	17	1/2/02
3.4	D	18	12/11/00	3.4	D	18	1/2/02
3.4	D	19	12/11/00	3.4	D	19	12/11/00

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Remove				Insert			
Chapter/ Section	Part	Page	Revision/ Date	Chapter/ Section	Part	Page	Revision/ Date
3.4	D	20	12/11/00	3.4	D	20	12/11/00
3.4	D	21	12/11/00	3.4	D	21	1/2/02
3.4	D	22	12/11/00	3.4	D	22	1/2/02
3.4	D	23	12/11/00	3.4	D	23	1/2/02
3.4	D	24	12/11/00	3.4	D	24	1/2/02
3.4	D	25	12/11/00	3.4	D	25	1/2/02
3.4	D	26	2/20/01	3.4	D	26	12/11/00
3.4	D	27	12/11/00	3.4	D	27	1/2/02
3.4	D	28	12/11/00	3.4	D	28	12/11/00
3.4	D	29	12/11/00	3.4	D	29	1/2/02
3.4	D	30	12/11/00	3.4	D	30	1/2/02
3.4	D	31	12/11/00	3.4	D	31	1/2/02
3.4	D	32	12/11/00	3.4	D	32	1/2/02
3.4	D	33	12/11/00	3.4	D	33	1/2/02
3.4	D	34	12/11/00	3.4	D	34	12/11/00
3.4	D	35	12/11/00	3.4	D	35	12/11/00
3.4	D	36	12/11/00	3.4	D	36	12/11/00
3.4	D	37	12/11/00	3.4	D	37	12/11/00
3.4	D	38	12/11/00	3.4	D	38	12/11/00
3.4	D	---	---	3.4	D	39	1/2/02
3.4	D	---	---	3.4	D	40	12/11/00
3.4	D	---	---	3.4	D	41	1/2/02
3.4	D	---	---	3.4	D	42	12/11/00
3.4	D	---	---	3.4	D	43	12/11/00
3.4	D	---	---	3.4	D	44	1/2/02
3.4	D	---	---	3.4	D	45	1/2/02
3.4	D	---	---	3.4	D	46	1/2/02
3.4	D	---	---	3.4	D	47	1/2/02
3.4	D	---	---	3.4	D	48	1/2/02
3.4	D	---	---	3.4	D	49	1/2/02

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Chapter/ Section	Part	Page	Revision/ Date	Chapter/ Section	Part	Page	Revision/ Date
3.4	D	---	---	3.4	D	50	1/2/02
3.4	D	---	---	3.4	D	51	1/2/02
3.4	D	---	---	3.4	D	52	1/2/02
3.4	D	---	---	3.4	D	53	1/2/02
3.4	D	---	---	3.4	D	54	1/2/02
3.4	D	---	---	3.4	D	55	1/2/02
3.4	D	---	---	3.4	D	56	1/2/02
3.4	D	---	---	3.4	D	57	1/2/02
3.4	D	---	---	3.4	D	58	1/2/02
3.4	D	---	---	3.4	D	59	1/2/02
3.4	D	---	---	3.4	D	60	1/2/02
3.4	D	---	---	3.4	D	61	1/2/02
3.4	D	---	---	3.4	D	62	1/2/02
3.4	E	3.4.1-3	2	3.4	E	3.4.1-3	9
3.4	E	3.4.5-1	4	3.4	E	3.4.5-1	9
3.4	E	3.4.5-4	1	3.4	E	3.4.5-4	9
3.4	E	3.4.6-1		3.4	E	3.4.6-1	9
3.4	E	3.4.6-2		3.4	E	3.4.6-2	9
3.4	E	3.4.6-3		3.4	E	3.4.6-3	9
3.4	E	3.4.6-4		3.4	E	3.4.6-4	9
3.4	E	3.4.7-1		3.4	E	3.4.7-1	9
3.4	E	3.4.7-2		3.4	E	3.4.7-2	9
3.4	E	3.4.7-3		3.4	E	3.4.7-3	9
3.4	E	3.4.7-4		3.4	E	3.4.7-4	9
3.4	E	3.4.8-1		3.4	E	3.4.8-1	9
3.4	E	3.4.8-2		3.4	E	3.4.8-2	9
3.4	E	3.4.8-3		3.4	E	3.4.8-3	9
3.4	E	3.4.10-2		3.4	E	3.4.10-2	9
3.4	E	3.4.12-1		3.4	E	3.4.12-1	9

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UPDATING INSTRUCTIONS

Remove				Insert			
Chapter/ Section	Part	Page	Revision/ Date	Chapter/ Section	Part	Page	Revision/ Date
3.4	E	3.4.12-2		3.4	E	3.4.12-2	9
3.4	E	3.4.12-3		3.4	E	3.4.12-3	9
3.4	E	3.4.12-4		3.4	E	3.4.12-4	9
3.4	E	3.4.12-5		3.4	E	3.4.12-5	9
3.4	E	3.4.12-6		3.4	E	3.4.12-6	9
3.4	E	3.4.12-7	2	3.4	E	3.4.12-7	9
3.4	E	3.4.13-1		3.4	E	3.4.13-1	9
3.4	E	3.4.13-2		3.4	E	3.4.13-2	9
3.4	E	3.4.13-3		3.4	E	3.4.13-3	9
3.4	E	3.4.13-4		3.4	E	3.4.13-4	9
3.4	E	3.4.13-5		3.4	E	3.4.13-5	9
3.4	E	3.4.13-6		3.4	E	3.4.13-6	9
3.4	E	3.4.14-3		3.4	E	3.4.14-3	9
3.4	E	3.4.17-1		3.4	E	3.4.17-1	9
3.4	E	3.4.17-2		3.4	E	3.4.17-2	9
3.4	E	3.4.17-3		3.4	E	3.4.17-3	9
3.4	E	B 3.4.1-7		3.4	E	B 3.4.1-7	9
3.4	E	B 3.4.3-6		3.4	E	B 3.4.3-6	9
3.4	E	B 3.4.5-3	4	3.4	E	B 3.4.5-3	9
3.4	E	B 3.4.5-5		3.4	E	B 3.4.5-5	9
3.4	E	B 3.4.5-8		3.4	E	B 3.4.5-8	9
3.4	E	B 3.4.5-9		3.4	E	B 3.4.5-9	9
3.4	E	B 3.4.6-2		3.4	E	B 3.4.6-2	9
3.4	E	B 3.4.6-4		3.4	E	B 3.4.6-4	9
3.4	E	B 3.4.6-5		3.4	E	B 3.4.6-5	9
3.4	E	B 3.4.6-6		3.4	E	B 3.4.6-6	9
3.4	E	B 3.4.6-7		3.4	E	B 3.4.6-7	9
3.4	E	B 3.4.6-8		3.4	E	B 3.4.6-8	9
3.4	E	B 3.4.7-2		3.4	E	B 3.4.7-2	9
3.4	E	B 3.4.7-3		3.4	E	B 3.4.7-3	9

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Remove				Insert			
Chapter/ Section	Part	Page	Revision/ Date	Chapter/ Section	Part	Page	Revision/ Date
3.4	E	B 3.4.7-4		3.4	E	B 3.4.7-4	9
3.4	E	B 3.4.7-5		3.4	E	B 3.4.7-5	9
3.4	E	B 3.4.7-6		3.4	E	B 3.4.7-6	9
3.4	E	B 3.4.7-7		3.4	E	B 3.4.7-7	9
3.4	E	---	---	3.4	E	B 3.4.7-8	9
3.4	E	B 3.4.8-2		3.4	E	B 3.4.8-2	9
3.4	E	B 3.4.8-3		3.4	E	B 3.4.8-3	9
3.4	E	B 3.4.8-4		3.4	E	B 3.4.8-4	9
3.4	E	B 3.4.8-5		3.4	E	B 3.4.8-5	None
3.4	E	B 3.4.12-1		3.4	E	B 3.4.12-1	9
3.4	E	B 3.4.12-2		3.4	E	B 3.4.12-2	9
3.4	E	B 3.4.12-3		3.4	E	B 3.4.12-3	9
3.4	E	B 3.4.12-4		3.4	E	B 3.4.12-4	9
3.4	E	B 3.4.12-5		3.4	E	B 3.4.12-5	9
3.4	E	B 3.4.12-6		3.4	E	B 3.4.12-6	9
3.4	E	B 3.4.12-7		3.4	E	B 3.4.12-7	9
3.4	E	B 3.4.12-8		3.4	E	B 3.4.12-8	9
3.4	E	B 3.4.12-9		3.4	E	B 3.4.12-9	9
3.4	E	B 3.4.12-10		3.4	E	B 3.4.12-10	9
3.4	E	B 3.4.12-11		3.4	E	B 3.4.12-11	9
3.4	E	B 3.4.12-12		3.4	E	B 3.4.12-12	9
3.4	E	B 3.4.12-13		3.4	E	B 3.4.12-13	9
3.4	E	B 3.4.12-14		3.4	E	B 3.4.12-14	9
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3.4	E	B 3.4.12-20		3.4	E	B 3.4.12-20	9
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3.4	E	B 3.4.13-1		3.4	E	B 3.4.13-1	9
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3.4	F	2	12/11/00	3.4	F	2	12/11/00
3.4	F	3	5/1/01	3.4	F	3	1/2/02
3.4	F	4	12/11/00	3.4	F	4	1/2/02
3.4	F	5	9/4/01	3.4	F	5	1/2/02
3.4	F	6	12/11/00	3.4	F	6	1/2/02
3.4	F	7	12/11/00	3.4	F	7	1/2/02
3.4	F	8	12/11/00	3.4	F	8	1/2/02
3.4	F	9	12/11/00	3.4	F	9	12/11/00
3.4	F	10	12/11/00	3.4	F	10	1/2/02

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3.4	F	12	12/11/00	3.4	F	12	12/11/00
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3.4	F	14	12/11/00	3.4	F	14	12/11/00
3.4	F	15	12/11/00	3.4	F	15	12/11/00
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3.4	F	26	12/11/00	3.4	F	26	1/2/02
3.4	F	27	12/11/00	3.4	F	27	1/2/02
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3.4	F	29	12/11/00	3.4	F	29	12/11/00
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3.4	F	34	12/11/00	3.4	F	34	12/11/00
3.4	F	35	5/1/01	3.4	F	35	12/11/00
3.4	F	36	12/11/00	3.4	F	36	12/11/00
3.4	F	37	12/11/00	3.4	F	37	5/1/01
3.4	F	38	12/11/00	3.4	F	38	12/11/00
3.4	F	39	12/11/00	3.4	F	39	12/11/00
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3.4	F	41	2/20/01	3.4	F	41	12/11/00
3.4	F	42	12/11/00	3.4	F	42	12/11/00
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3.4	F	44	12/11/00	3.4	F	44	12/11/00
3.4	F	45	12/11/00	3.4	F	45	12/11/00
3.4	F	46	9/4/01	3.4	F	46	12/11/00
3.4	F	---	---	3.4	F	47	12/11/00
3.4	F	---	---	3.4	F	48	9/4/01
3.4	F	---	---	3.4	F	49	1/2/02
3.4	F	---	---	3.4	F	50	1/2/02
3.4	G	1	5/1/01	3.4	G	1	1/2/02
3.4	G	3	12/11/00	3.4	G	3	1/2/02
3.4	G	7	12/11/00	3.4	G	7	1/2/02
3.4	G	13	12/11/00	3.4	G	13	1/2/02
3.4	G	14	12/11/00	3.4	G	14	1/2/02
3.4	G	34	12/11/00	3.4	G	34	1/2/02
3.4	G	37	12/11/00	3.4	G	37	1/2/02
3.4	G	---	---	3.4	G	38	1/2/02
3.4	G	---	---	3.4	G	39	1/2/02
3.4	G	---	---	3.4	G	40	1/2/02
3.4	G	---	---	3.4	G	41	1/2/02
3.4	G	---	---	3.4	G	42	1/2/02
3.4	G	---	---	3.4	G	43	12/11/00
3.6	B	3.6.3-2	5/1/01	3.6	B	3.6.3-2	1/2/02
3.6	B	3.6.8-1	5/1/01	3.6	B	3.6.8-1	1/2/02
3.6	B	3.6.8-2	5/1/01	3.6	B	3.6.8-2	1/2/02
3.6	B	3.6.8-3	5/1/01	---	---	---	---
3.6	B	3.6.8-4	5/1/01	---	---	---	---

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3.6	B	B 3.6.3-6	5/1/01	3.6	B	B 3.6.3-6	12/11/00
3.6	B	B 3.6.3-7	12/1/01	3.6	B	B 3.6.3-7	1/2/02
3.6	B	B 3.6.3-8	12/11/00	3.6	B	B 3.6.3-8	12/11/00
3.6	B	B 3.6.3-9	12/1/01	3.6	B	B 3.6.3-9	1/2/02
3.6	B	B 3.6.3-10	5/1/01	3.6	B	B 3.6.3-10	5/1/01
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3.6	B	B 3.6.8-2	12/11/00	3.6	B	B 3.6.8-2	12/11/00
3.6	B	B 3.6.8-3	5/1/01	3.6	B	B 3.6.8-3	12/11/00
3.6	B	B 3.6.8-4	5/1/01	3.6	B	B 3.6.8-4	1/2/02
3.6	B	B 3.6.8-5	5/1/01	3.6	B	B 3.6.8-5	12/11/00
3.6	B	B 3.6.8-6	5/1/01	---	---	---	---
3.6	C	5 of 24	2	3.6	C	5 of 24	9
3.6	D	32	5/1/01	3.6	D	32	5/1/01
3.6	D	33	5/1/01	3.6	D	33	1/2/02
3.6	D	34	5/1/01	3.6	D	34	1/2/02
3.6	D	35	5/1/01	---	---	---	---
3.6	D	36	5/1/01	---	---	---	---
3.6	E	3.6.3-2	2	3.6	E	3.6.3-2	9
3.6	E	3.6.8-1	2	3.6	E	3.6.8-1	9
3.6	E	3.6.8-2	2	3.6	E	3.6.8-2	9
3.6	E	3.6.8-3	2	---	---	---	---
3.6	E	3.6.8-4	2	---	---	---	---
3.6	E	B 3.6.3-3	6	3.6	E	B 3.6.3-3	9
3.6	E	B 3.6.3-8	2	3.6	E	B 3.6.3-8	9
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3.6	E	B 3.6.8-5	2	3.6	E	B 3.6.8-5	9
3.6	E	B 3.6.8-6	2	---	---	---	---
3.6	E	B 3.6.8-7	2	---	---	---	---
3.6	F	5	12/1/01	3.6	F	5	1/2/02
3.6	F	20	5/1/01	3.6	F	20	1/2/02
3.6	F	21	5/1/01	3.6	F	21	1/2/02
3.6	F	23	5/1/01	3.6	F	23	1/2/02
3.6	F	29	5/1/01	3.6	F	29	1/2/02
3.6	G	1	5/1/01	3.6	G	1	1/2/02
3.6	G	3	5/1/01	3.6	G	3	1/2/02
3.6	G	34	5/1/01	3.6	G	34	1/2/02
3.6	G	35	5/1/01	3.6	G	35	1/2/02

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 2.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.1.1	Verify pressurizer pressure is greater than or equal to the limit specified in the COLR.	12 hours
SR 3.4.1.2	Verify RCS average temperature is less than or equal to the limit specified in the COLR.	12 hours
SR 3.4.1.3	Verify RCS total flow rate is within the limit specified in the COLR.	24 months

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.5 RCS Loops - MODE 3

LCO 3.4.5 Two RCS loops shall be OPERABLE, and either:

a. Two RCS loops shall be in operation when the Rod Control System is capable of rod withdrawal; or

b. One RCS loop shall be in operation when the Rod Control System is not capable of rod withdrawal.

----------NOTE----------

Both reactor coolant pumps may be de-energized for ≤ 12 hours to perform preplanned work activities provided:

a. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1; and

b. Core outlet temperature is maintained at least 10°F below saturation temperature.

APPLICABILITY: MODE 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One RCS loop inoperable.	A.1 Restore inoperable RCS loop to OPERABLE status.	72 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.5.1	Verify required RCS loops are in operation.	12 hours
SR 3.4.5.2	Verify required steam generator capable of removing decay heat.	12 hours
SR 3.4.5.3	----------NOTE---------- Not required to be performed until 24 hours after a required pump is not in operation. ---------- Verify correct breaker alignment and indicated power are available to each required pump.	7 days

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.6 RCS Loops - MODE 4

LCO 3.4.6 Two loops consisting of any combination of RCS loops and residual heat removal (RHR) loops shall be OPERABLE, and one loop shall be in operation.

----------NOTES----------

1. All reactor coolant pumps (RCPs) and RHR pumps may be de-energized for ≤ 1 hour per 8 hour period provided:

   a. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1; and

   b. Core outlet temperature is maintained at least 10°F below saturation temperature.

2. No RCP shall be started with any RCS cold leg temperature ≤ the Over Pressure Protection System (OPPS) enable temperature specified in the PTLR unless:

   a. The secondary side water temperature of each steam generator (SG) is ≤ 50°F above each of the RCS cold leg temperatures; or

   b. There is a steam or gas bubble in the pressurizer.

APPLICABILITY: MODE 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required loop inoperable.	A.1 Initiate action to restore a second loop to OPERABLE status.	Immediately
	AND	
	A.2 ----------NOTE---------- Only required if RHR loop is OPERABLE.	
	Be in MODE 5.	24 hours
B. Both loops inoperable. OR Required loop not in operation.	B.1 Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1.	Immediately
	AND	
	B.2 Initiate action to restore one loop to OPERABLE status and operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.6.1	Verify required RHR or RCS loop is in operation.	12 hours
SR 3.4.6.2	Verify required SG capable of removing decay heat.	12 hours
SR 3.4.6.3	----------NOTE---------- Not required to be performed until 24 hours after a required pump is not in operation. ---------- Verify correct breaker alignment and indicated power are available to each required pump.	7 days

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.7 RCS Loops - MODE 5, Loops Filled

LCO 3.4.7 One residual heat removal (RHR) loop shall be OPERABLE and in operation, and either:

a. One additional RHR loop shall be OPERABLE; or

b. One steam generator (SG) shall be capable of removing decay heat.

----------NOTES----------

1. The RHR pump of the loop in operation may be de-energized for ≤ 1 hour per 8 hour period provided:

   a. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1; and

   b. Core outlet temperature is maintained at least 10°F below saturation temperature.

2. One required RHR loop may be inoperable for ≤ 2 hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.

3. No reactor coolant pump shall be started with one or more RCS cold leg temperatures ≤ the Over Pressure Protection System (OPPS) enable temperature specified in the PTLR unless:

   a. The secondary side water temperature of each SG is ≤ 50°F above each of the RCS cold leg temperatures; or

   b. There is a steam or gas bubble in the pressurizer.

4. Both RHR loops may be removed from operation during planned heatup to MODE 4 when at least one RCS loop is in operation.

APPLICABILITY: MODE 5 with RCS loops filled.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required RHR loop inoperable. AND One RHR loop OPERABLE.	A.1 Initiate action to restore a second RHR loop to OPERABLE status. OR A.2 Initiate action to restore required SG capable to remove decay heat.	Immediately Immediately
B. One or more SGs not capable of decay heat removal. AND One RHR loop OPERABLE.	B.1 Initiate action to restore a second RHR loop to OPERABLE status. OR B.2 Initiate action to restore a required SG capable to remove decay heat.	Immediately Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. No required RHR loops OPERABLE. AND Required RHR loop not in operation.	C.1 Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1. AND C.2 Initiate action to restore one RHR loop to OPERABLE status and operation.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.7.1	Verify required RHR loop is in operation.	12 hours
SR 3.4.7.2	Verify required SG capable of removing decay heat.	12 hours
SR 3.4.7.3	----------NOTE---------- Not required to be performed until 24 hours after a required pump is not in operation. ---------- Verify correct breaker alignment and indicated power are available to each required RHR pump.	7 days

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.8 RCS Loops - MODE 5, Loops Not Filled

LCO 3.4.8 Two residual heat removal (RHR) loops shall be OPERABLE and one RHR loop shall be in operation.

----------NOTES----------

1. All RHR pumps may be de-energized for ≤ 1 hour per 8 hour period provided:

   a. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1;

   b. The core outlet temperature is maintained > 10°F below saturation temperature; and

   c. No draining operations to further reduce the RCS water volume are permitted.

2. One RHR loop may be inoperable for ≤ 2 hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.

APPLICABILITY: MODE 5 with RCS loops not filled.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required RHR loop inoperable.	A.1 Initiate action to restore RHR loop to OPERABLE status.	Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. No required RHR loop OPERABLE. OR Required RHR loop not in operation.	B.1 Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1. AND ----------NOTE---------- A Safety Injection pump may be run as required to maintain adequate core cooling and RCS inventory. ---------- B.2 Initiate action to restore one RHR loop to OPERABLE status and operation.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.8.1	Verify required RHR loop is in operation.	12 hours
SR 3.4.8.2	----------NOTE---------- Not required to be performed until 24 hours after a required pump is not in operation. ---------- Verify correct breaker alignment and indicated power are available to each required RHR pump.	7 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time not met. OR Both pressurizer safety valves inoperable.	B.1 Be in MODE 3. AND B.2 Be in MODE 4 with any RCS cold leg temperature ≤ the OPPS enable temperature specified in the PTLR.	6 hours 24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.10.1	Verify each pressurizer safety valve is OPERABLE in accordance with the Inservice Testing Program. Following testing, lift settings shall be within 1% (2460 to 2510 psig).	In accordance with the Inservice Testing Program

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.12 Low Temperature Overpressure Protection (LTOP) – Reactor Coolant System Cold Leg Temperature (RCSCLT) > Safety Injection (SI) Pump Disable Temperature

LCO 3.4.12 LTOP shall be provided with:

a. a maximum of one SI pump capable of injecting into the RCS;

b. the emergency core cooling system (ECCS) accumulators isolated;

c. an OPERABLE Over Pressure Protection System (OPPS); and

d. two OPERABLE pressurizer power operated relief valves (PORVs) with lift settings within the limits specified in the PTLR.

----------NOTES----------

1. Both SI pumps may be run for ≤ 1 hour while conducting SI system testing providing there is a steam or gas bubble in the pressurizer and at least one isolation valve between the SI pump and the RCS is shut.

2. ECCS accumulator may be unisolated when accumulator pressure is less than the maximum RCS pressure for the existing RCS cold leg temperature allowed by the P/T limit curves provided in the PTLR.

APPLICABILITY: MODE 4 when any RCS cold leg temperature is ≤ the OPPS enable temperature specified in the PTLR and > the SI pump disable temperature specified in the PTLR.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Two SI pumps capable of injecting into the RCS.	A.1 Initiate action to assure a maximum of one SI pump is capable of injecting into the RCS.	Immediately
B. An ECCS accumulator not isolated when the ECCS accumulator pressure is greater than or equal to the maximum RCS pressure for existing cold leg temperature allowed in the PTLR.	B.1 Isolate affected ECCS accumulator.	1 hour
C. Required Action and associated Completion Time of Condition B not met.	C.1 Increase RCS cold leg temperature to > the OPPS enable temperature specified in the PTLR.	12 hours
	OR	
	C.2 Depressurize affected ECCS accumulator to less than the maximum RCS pressure for existing cold leg temperature allowed in the PTLR.	12 hours
D. One required PORV inoperable.	D.1 Restore required PORV to OPERABLE status.	7 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Two PORVs inoperable. OR Required Action and associated Completion Time of Condition A, C, or D not met. OR OPPS inoperable.	E.1 Be in MODE 5. AND E.2 Depressurize RCS and establish RCS vent of ≥ 3 square inches.	8 hours 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.12.1	Verify a maximum of one SI pump is capable of injecting into the RCS.	12 hours
SR 3.4.12.2	----------NOTE---------- Only required to be performed when ECCS accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed in the PTLR. ---------- Verify each ECCS accumulator is isolated.	Once within 12 hours and every 12 hours thereafter
SR 3.4.12.3	Verify PORV block valve is open for each required PORV.	72 hours
SR 3.4.12.4	----------NOTE---------- Not required to be performed until 12 hours after decreasing RCS cold leg temperature to ≤ the OPPS enable temperature specified in the PTLR. ---------- Perform a COT on OPPS.	31 days
SR 3.4.12.5	Perform CHANNEL CALIBRATION for each OPPS actuation channel.	24 months

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.13 Low Temperature Overpressure Protection (LTOP) – Reactor Coolant System Cold Leg Temperature (RCSCLT) ≤ Safety Injection (SI) Pump Disable Temperature

LCO 3.4.13 LTOP shall be provided with: 1) no SI Pumps capable of injecting into the RCS; 2) the emergency core cooling system (ECCS) accumulators isolated; and 3) one of the following pressure relief capabilities:

a. An Over Pressure Protection System (OPPS) shall be OPERABLE with two pressurizer power operated relief valves (PORVs) with lift settings within the limits specified in the PTLR; or

b. The RCS depressurized and an RCS vent of ≥ 3 square inches.

----------NOTES----------

1. Both safety injection (SI) pumps may be run for ≤ 1 hour while conducting SI system testing provided there is a steam or gas bubble in the pressurizer, the reactor vessel head is on, and at least one isolation valve between the SI pump and the RCS is shut.

2. During reduced inventory conditions an SI pump may be run as required to maintain adequate core cooling and RCS inventory.

3. ECCS accumulator may be unisolated when ECCS accumulator pressure is less than the maximum RCS pressure for the existing RCS cold leg temperature allowed by the P/T limit curves provided in the PTLR.

APPLICABILITY: MODE 4 when any RCS cold leg temperature is ≤ the SI Pump disable temperature specified in the PTLR,
MODE 5 when the steam generator (SG) primary system manway and pressurizer manway are closed and secured in position,
MODE 6 when the reactor vessel head is on and the SG primary system manway and pressurizer manways are closed and secured in position.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or both SI pump(s) capable of injecting into the RCS.	A.1 Initiate action to verify no SI pump is capable of injecting into the RCS.	Immediately
B. An ECCS accumulator not isolated when the ECCS accumulator pressure is greater than or equal to the maximum RCS pressure for existing cold leg temperature allowed in the PTLR.	B.1 Isolate affected ECCS accumulator.	1 hour
C. Required Action and associated Completion Time of Condition B not met.	C.1 Increase RCS cold leg temperature to > the OPPS enable temperature specified in the PTLR. OR C.2 Depressurize affected ECCS accumulator to less than the maximum RCS pressure for existing cold leg temperature allowed in the PTLR.	12 hours 12 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. ----------NOTE--------- Only applicable in LCO 3.4.13.a. ---------- One required PORV inoperable.	D.1 Restore required PORV to OPERABLE status.	24 hours
E. Two required PORVs inoperable for LCO 3.4.13.a. <u>OR</u> Required Action and associated Completion Time of Condition A, C, or D not met. <u>OR</u> OPPS inoperable.	E.1 Depressurize RCS and establish RCS vent of ≥ 3 square inches.	8 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.13.1	Verify no SI pumps are capable of injecting into the RCS.	12 hours
SR 3.4.13.2	----------NOTE---------- Only required to be performed when ECCS accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed in the PTLR. ---------- Verify each ECCS accumulator is isolated.	Once within 12 hours and every 12 hours thereafter
SR 3.4.13.3	----------NOTE---------- Only required to be performed when complying with LCO 3.4.13.b.Verify required RCS vent ≥ 3 square inches open. ---------- Verify required RCS vent ≥ 3 square inches open.	12 hours for unlocked open vent valve(s) AND 31 days for other vent path(s)
SR 3.4.13.4	Verify PORV block valve is open for each required PORV.	72 hours

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.13.5	----------NOTE---------- 1. Not required to be performed until 12 hours after decreasing RCS cold leg temperature to ≤ the OPPS enable temperature specified in the PTLR. 2. Only required to be performed when complying with LCO 3.4.13.a. ---------- Perform a COT on OPPS.	31 days
SR 3.4.13.6	Perform CHANNEL CALIBRATION for OPPS actuation channel.	24 months

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.14.1	----------NOTE---------- Not required to be performed until 12 hours after establishment of steady state operation. ---------- Verify RCS operational leakage within limits by performance of RCS water inventory balance.	24 hours
SR 3.4.14.2	Verify steam generator tube integrity is in accordance with the Steam Generator Program.	In accordance with the Steam Generator Program

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.17 RCS Specific Activity

LCO 3.4.17 The specific activity of the reactor coolant shall be within limits:

APPLICABILITY: MODES 1 and 2,
MODE 3 with RCS average temperature (T_{avg}) ≥ 500°F.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. DOSE EQUIVALENT I-131 > 1.0 μCi/gm.	----------Note---------- LCO 3.0.4 is not applicable. ----------	
	A.1 Verify DOSE EQUIVALENT I-131 within the acceptable region of Figure 3.4.17-1.	Once per 4 hours
	AND	
	A.2 Restore DOSE EQUIVALENT I-131 to within limit.	48 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Gross specific activity of the reactor coolant not within limit.	B.1 Be in MODE 3 with $T_{avg} < 500°F$.	6 hours
C. Required Action and associated Completion Time of Condition A not met. OR DOSE EQUIVALENT I-131 in the unacceptable region of Figure 3.4.17-1.	C.1 Be in MODE 3 with $T_{avg} < 500°F$.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.17.1	Verify reactor coolant gross specific activity $\leq 100/\bar{E}$ μCi/gm.	7 days

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.17.2	----------NOTE---------- Only required to be performed in MODE 1. ---------- Verify reactor coolant DOSE EQUIVALENT I-131 specific activity ≤ 1.0 μCi/gm.	14 days <u>AND</u> Between 2 and 6 hours after a THERMAL POWER change of ≥ 15% RTP within a 1 hour period
SR 3.4.17.3	----------NOTE---------- Not required to be performed until 31 days after a minimum of 2 effective full power days and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for ≥ 48 hours. ---------- Determine □ from a sample taken in MODE 1 after a minimum of 2 effective full power days and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for ≥ 48 hours.	184 days

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.1.2

Since Required Action A.1 allows a Completion Time of 2 hours to restore parameters that are not within limits, the 12 hour Surveillance Frequency for RCS average temperature is sufficient to ensure the temperature can be restored to a normal operation, steady state condition following load changes and other expected transient operations. The 12 hour interval has been shown by operating practice to be sufficient to regularly assess for potential degradation and to verify operation is within safety analysis assumptions.

SR 3.4.1.3

Measurement of RCS total flow rate once every 24 months allows the installed RCS flow instrumentation to be calibrated and verifies the actual RCS flow rate is greater than or equal to the minimum required RCS flow rate. This verification may be performed via a precision calorimetric heat balance or other means.

The Frequency of 24 months reflects the importance of verifying flow after a refueling outage when the core has been altered, which may have caused an alteration of flow resistance.

REFERENCES

1. USAR, Section 14.

BASES (continued)

ACTIONS

A.1 and A.2

Operation outside the P/T limits during MODE 1, 2, 3, or 4 must be corrected so that the RCPB is returned to a condition that has been verified by stress analyses.

The 30 minute Completion Time reflects the urgency of restoring the parameters to within the analyzed range. Most violations will not be severe, and the activity can be accomplished in this time in a controlled manner.

Besides restoring operation within limits, an evaluation is required to determine if RCS operation can continue. The evaluation must verify the RCPB integrity remains acceptable and must be completed before continuing operation. Several methods may be used, including an engineering evaluation to determine effects of the out-of-limit condition on the structural integrity of the RCS, a comparison with pre-analyzed transients in the stress analyses, new analyses, or inspection of the components.

ASME Code, Section XI, Appendix E, may be used to support the evaluation. However, its use is restricted to evaluation of the vessel beltline.

The 72 hour Completion Time is reasonable to accomplish the evaluation. The evaluation for a mild violation is possible within this time, but more severe violations may require special, event specific stress analyses or inspections. A favorable evaluation must be completed before continuing to operate.

Condition A is modified by a Note requiring that Required Action A.2 to be completed whenever the Condition is entered. The Note emphasizes the need to perform the evaluation of the effects of the excursion outside the allowable limits. Restoration alone per Required Action A.1 is insufficient because higher than analyzed stresses may have occurred and may have affected the RCPB integrity.

BASES

LCO (continued)

The Note permits both RCPs to be de-energized for ≤ 12 hours to perform preplanned work activities.

One purpose of the Note is to allow performance of tests that are designed to validate various accident analyses values. One of these tests is validation of the pump coastdown curve used as input to a number of accident analyses including a loss of flow accident. This test was performed during the initial startup testing program, and would normally only be performed once. If, however, changes are made to the RCS that would cause a change to the flow characteristics of the RCS, the input values of the coastdown curve must be revalidated by conducting the test again. Another test performed during the startup testing program was the validation of rod drop times, both with and without flow. Any future no flow test may be performed in MODE 3, 4, or 5 and requires that the pumps be stopped for a short period of time. The Note permits stopping the pumps in order to perform this test and validate the assumed analysis values.

Another purpose of the Note is to allow stopping of both RCP's for a sufficient time to perform station electrical lineup changes without transition to MODE 4. During these evolutions both RCP's may be inoperable. Transition to MODE 4 would put the plant through unnecessary cooldown and heatup transients. The 12 hour time period specified is adequate to perform the necessary load shedding, switching and load restoration activities and restart an RCP without requiring transition to MODE 4.

Utilization of the Note is permitted provided the following conditions are met:

BASES

LCO (continued)

a. No operations are permitted that would dilute the RCS boron concentration with coolant with boron concentration less than required to meet SDM of LCO 3.1.1, thereby maintaining the margin to criticality. Boron reduction with coolant at boron concentrations less than required to assure SDM is maintained is prohibited to preclude the need for a boration, due to the time required to achieve a uniform distribution when in natural circulation (Ref. 1); and

b. Core outlet temperature is maintained at least 10°F below saturation temperature, so that no vapor bubble may form and possibly cause a natural circulation flow obstruction.

An OPERABLE RCS loop consists of one OPERABLE RCP and one OPERABLE SG which is capable of removing decay heat as specified in SR 3.4.5.2. An RCP is OPERABLE if it is capable of being powered and is able to provide forced flow if required.

APPLICABILITY

In MODE 3, this LCO ensures forced circulation of the reactor coolant to remove decay heat from the core and to provide proper boron mixing. The most stringent condition of the LCO, that is, two RCS loops OPERABLE and two RCS loops in operation, applies to MODE 3 with the Rod Control System capable of rod withdrawal. The least stringent condition, that is, two RCS loops OPERABLE and one RCS loop in operation, applies to Mode 3 with the Rod Control System not capable of rod withdrawal.

Operation in other MODES is covered by:

LCO 3.4.4, "RCS Loops-MODES 1 and 2";
LCO 3.4.6, "RCS Loops-MODE 4";
LCO 3.4.7, "RCS Loops-MODE 5, Loops Filled";
LCO 3.4.8, "RCS Loops-MODE 5, Loops Not Filled";

BASES

ACTIONS

D.1, D.2, and D.3 (continued)

coolant could be introduced to the core; however, coolant added with boron concentration meeting the minimum SDM maintains acceptable margin to subcritical operations. The immediate Completion Time reflects the importance of maintaining operation for heat removal. The action to restore must be continued until one loop is restored to OPERABLE status and operation.

SURVEILLANCE REQUIREMENTS

SR 3.4.5.1

This SR requires verification every 12 hours that the required loops are in operation. Verification may include flow rate, temperature, or pump status monitoring, which helps ensure that forced flow is providing heat removal. The Frequency of 12 hours is sufficient considering other indications and alarms available to the operator in the control room to monitor RCS loop performance.

SR 3.4.5.2

SR 3.4.5.2 requires verification that the SG has the capability to remove decay heat. The ability to remove decay heat requires the ability to pressurize and control pressure in the RCS, sufficient secondary side water level in the SG relied on for decay heat removal, and an available supply of feedwater (Ref. 2). The ability of the SG to provide an adequate heat sink for decay heat removal further ensures that the SG tubes remain covered.

The 12 hour Frequency is considered adequate in view of the other indications available in the control room to alert the operator to a loss of the SG to remove decay heat.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.5.3

Verification that each required RCP is OPERABLE ensures that an additional RCP can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power availability to each required RCP. Alternatively, verification that a pump is in operation also verifies proper breaker alignment and power availability.

This SR is modified by a Note that states the SR is not required to be performed until 24 hours after a pump is not in operation.

REFERENCES

1. License Amendment Request Dated November 19, 1999. (Approved by License Amendment 152/143, July 14, 2000.)

2. NRC Information Notice 95-35, "Degraded Ability of Steam Generators to Remove Decay Heat by Natural Circulation."

BASES (continued)

LCO

The purpose of this LCO is to require that at least two loops be OPERABLE in MODE 4 and that one of these loops be in operation. The LCO allows the two loops that are required to be OPERABLE to consist of any combination of RCS loops and RHR loops. Any one loop in operation provides enough flow to remove the decay heat from the core with forced circulation. An additional loop is required to be OPERABLE to provide redundancy for heat removal.

Note 1 permits all RCPs or RHR pumps to be de-energized for ≤ 1 hour per 8 hour period. The purpose of the Note is to permit tests that are designed to validate various accident analyses values. One of the LCO tests performed during the startup testing program was validation of rod drop times during cold conditions, both with and without flow. If changes are made to the RCS that would cause a change in flow characteristics of the RCS, the input values must be revalidated by conducting the test again. Any future no flow test may be performed in MODE 3, 4, or 5 and requires that the pumps be stopped for a short period of time. The Note permits stopping the pumps in order to perform this test and validate the assumed analysis values. The 1 hour time period is adequate to perform the test, and operating experience has shown that boron stratification is not a problem during this short period with no forced flow.

Utilization of Note 1 is permitted provided the following conditions are met along with any other conditions imposed by startup test procedures:

a. No operations are permitted that would dilute the RCS boron concentration with coolant with boron concentration less than required to meet SDM of LCO 3.1.1, therefore maintaining the margin to criticality. Boron reduction with coolant at boron concentrations less than required to assure SDM in maintained is prohibited to preclude the need for a boration, due to the time required to achieve a uniform distribution when in natural circulation (Ref. 1); and

BASES

LCO (continued)

b. Core outlet temperature is maintained at least 10°F below saturation temperature, so that no vapor bubble may form and possibly cause a natural circulation flow obstruction.

Note 2 requires a steam or gas bubble in the pressurizer or that the secondary side water temperature of each SG be ≤ 50°F above each of the RCS cold leg temperatures before the start of an RCP with any RCS cold leg temperature ≤ the OPPS enable temperature specified in the PTLR. A steam or gas bubble ensures that the pressurizer will accommodate the swell resulting from an RCP start. Either of these restraints prevents a low temperature overpressure event due to a thermal transient when an RCP is started.

An OPERABLE RCS loop consists of an OPERABLE RCP and an OPERABLE SG which is capable of removing decay heat as specified in SR 3.4.6.2.

Similarly for the RHR System, an OPERABLE RHR loop consists of an OPERABLE RHR pump capable of providing forced flow to an OPERABLE RHR heat exchanger. RCPs and RHR pumps are OPERABLE if they are capable of being powered and are able to provide forced flow if required.

APPLICABILITY

In MODE 4, this LCO ensures forced circulation of the reactor coolant to remove decay heat from the core and to provide proper boron mixing.

Operation in other MODES is covered by:

LCO 3.4.4, "RCS Loops - MODES 1 and 2";
LCO 3.4.5, "RCS Loops - MODE 3";
LCO 3.4.7, "RCS Loops - MODE 5, Loops Filled";
LCO 3.4.8, "RCS Loops - MODE 5, Loops Not Filled";
LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation - High Water Level" (MODE 6); and
LCO 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level" (MODE 6).

BASES (continued)

ACTIONS

A.1

If one required loop is inoperable, redundancy for heat removal is lost. Action must be initiated to restore a second RCS or RHR loop to OPERABLE status. The immediate Completion Time reflects the importance of maintaining the availability of two paths for heat removal. Entry to a reduced MODE (MODE 5 or 6) requires RHR availability for long term decay heat removal. Remaining in MODE 4, with RCS loop operation, is conservative.

If restoration is not accomplished and an RHR Loop is OPERABLE, the unit must be brought to MODE 5 within 24 hours. Bringing the unit to MODE 5 is a conservative action with regard to decay heat removal. With only one RHR loop OPERABLE, redundancy for decay heat removal is lost and, in the event of a loss of the remaining RHR loop, it would be safer to initiate that loss from MODE 5 rather than MODE 4. The Completion Time of 24 hours is a reasonable time, based on operating experience, to reach MODE 5 from MODE 4 in an orderly manner and without challenging plant systems.

The Required Action is modified by a Note which indicates that the unit must be placed in MODE 5 only if a RHR loop is OPERABLE. With no RHR loop OPERABLE, the unit is in a condition with only limited cooldown capabilities. Therefore, the actions are to be concentrated on the restoration of a RHR loop, rather than a cooldown of extended duration.

BASES

ACTIONS (continued)

B.1 and B.2

If both loops are inoperable or a required loop not in operation, except during conditions permitted by Note 1 in the LCO section, all operations involving introduction of coolant into the RCS with boron concentration less than required to meet the minimum SDM of LCO 3.1.1 must be suspended and action to restore one RCS or RHR loop to OPERABLE status and operation must be initiated. The margin to criticality must not be reduced in this type of operation. Suspending the introduction of coolant into the RCS with boron concentration less than required to meet the minimum SDM of LCO 3.1.1 is required to assure continued safe operation. With coolant added without forced circulation, unmixed coolant could be introduced to the core; however, coolant added with boron concentration meeting the minimum SDM maintains acceptable margin to subcritical operations. The immediate Completion Times reflect the importance of maintaining operation for decay heat removal. The action to restore must be continued until one loop is restored to OPERABLE status and operation.

SURVEILLANCE REQUIREMENTS

SR 3.4.6.1

This SR requires verification every 12 hours that the required RCS or RHR loop is in operation. Verification may include flow rate, temperature, or pump status monitoring, which helps ensure that forced flow is providing heat removal. The Frequency of 12 hours is sufficient considering other indications and alarms available to the operator in the control room to monitor RCS and RHR loop performance.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.6.2

SR 3.4.6.2 requires verification that the required SG has the capability to remove decay heat. The ability to remove decay heat requires the ability to pressurize and control pressure in the RCS, sufficient secondary side water level in the SG relied on for decay heat removal, and an available supply of feedwater (Ref. 2). The ability of the SG to provide an adequate heat sink for decay heat removal further ensures that the SG tubes remain covered. The 12 hour Frequency is considered adequate in view of the other indications available in the control room to alert the operator to a loss of capability of the SG to remove decay heat.

SR 3.4.6.3

Verification that each required pump is OPERABLE ensures that an additional RCS or RHR pump can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power available to each required pump. Alternatively, verification that a pump is in operation also verifies proper breaker alignment and power availability. The Frequency of 7 days is considered reasonable in view of other administrative controls available and has been shown to be acceptable by operating experience.

This SR is modified by a Note that states the SR is not required to be performed until 24 hours after a pump is not in operation.

BASES (continued)

REFERENCES

1. License Amendment Request Dated November 19, 1999. (Approved by License Amendment 152/143, July 14, 2000.)

2. NRC Information Notice 95-35, "Degraded Ability of Steam Generator to Remove Decay Heat by Natural Circulation."

BASES

BACKGROUND (continued)

OPERABLE RHR loop or maintaining a SG capable of removing decay heat to provide an alternate method for decay heat removal via natural circulation.

APPLICABLE SAFETY ANALYSES

In MODE 5, RCS circulation increases the time available for mitigation of an accidental boron dilution event. The RHR loops provide this circulation.

RCS Loops - MODE 5 (Loops Filled) satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).

LCO

The purpose of this LCO is to require that at least one RHR loop be OPERABLE and in operation with an additional RHR loop OPERABLE or a SG capable of removing decay heat via natural circulation. One RHR loop provides sufficient forced circulation to perform the safety functions of the reactor coolant under these conditions. An additional RHR loop is required to be OPERABLE to provide redundancy. However, if the standby RHR loop is not OPERABLE, an acceptable alternate method is a SG. Should the operating RHR loop fail, the SG could be used to remove decay heat via natural circulation.

Note 1 permits all RHR pumps to be de-energized ≤ 1 hour per 8 hour period. The purpose of the Note is to permit tests designed to validate various accident analyses values. One of the tests performed during the startup testing program was validation of rod drop times during cold conditions, both with and without flow. If changes are made to the RCS that would cause a change in flow characteristics of the RCS, the input values must be revalidated by conducting the test again. Any future no flow test may be performed in MODE 3, 4, or 5 and requires that the pumps be stopped for a short period of time. The Note permits stopping the pumps in order to perform this test and validate the assumed analysis values. The 1 hour time period is adequate to perform the test, and operating

BASES

LCO (continued)

Note 4 provides for an orderly transition from MODE 5 to MODE 4 during a planned heatup by permitting removal of RHR loops from operation when at least one RCS loop is in operation. This Note provides for the transition to MODE 4 where an RCS loop is permitted to be in operation and replaces the RCS circulation function provided by the RHR loops.

RHR pumps are OPERABLE if they are capable of being powered and are able to provide flow if required. A SG is capable of removing decay heat via natural circulation when: 1) there is the ability to pressurize and control pressure in the RCS; 2) there is sufficient secondary side water level in the SG relied on for decay heat removal; and 3) there is an available supply of feedwater (Ref. 1). An OPERABLE SG can perform as a heat sink via natural circulation when it has the capability to remove decay heat as specified in SR 3.4.7.2.

APPLICABILITY

In MODE 5 with RCS loops filled, this LCO requires forced circulation of the reactor coolant to remove decay heat from the core and to provide proper boron mixing. One loop of RHR provides sufficient circulation for these purposes. However, one additional RHR loop is required to be OPERABLE, or a SG is capable of removing decay heat.

Operation in other MODES is covered by:

LCO 3.4.4, "RCS Loops-MODES 1 and 2";
LCO 3.4.5, "RCS Loops-MODE 3";
LCO 3.4.6, "RCS Loops-MODE 4";
LCO 3.4.8, "RCS Loops-MODE 5, Loops Not Filled";
LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation-High Water Level" (MODE 6); and
LCO 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation-Low Water Level" (MODE 6).

BASES (continued)

ACTIONS

A.1, A.2, B.1 and B.2

If one RHR loop is OPERABLE and the SGs are not capable of removing decay heat , redundancy, for heat removal is lost. Action must be initiated immediately to restore a second RHR loop to OPERABLE status or to restore the required SG capability to remove decay heat. Either Required Action will restore redundant heat removal paths. The immediate Completion Time reflects the importance of maintaining the availability of two paths for heat removal.

C.1 and C.2

If a required RHR loop is not in operation, except during conditions permitted by Note 1, or if no loop is OPERABLE, all operations involving introduction of coolant into the RCS with boron concentration less than required to meet the minimum SDM of LCO 3.1.1 must be suspended and action to restore one RHR loop to OPERABLE status and operation must be initiated. Suspending the introduction of coolant into the RCS with boron concentration less than required to meet the minimum SDM of LCO 3.1.1 is required to assure continued safe operation. With coolant added without forced circulation, unmixed coolant could be introduced to the core; however, coolant added with boron concentration meeting the minimum SDM maintains acceptable margin to subcritical operations. The immediate Completion Times reflect the importance of maintaining operation for heat removal.

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.4.7.1

This SR requires verification every 12 hours that the required loop is in operation. Verification may include flow rate, temperature, or pump status monitoring, which helps ensure that forced flow is providing heat removal. The Frequency of 12 hours is sufficient considering other indications and alarms available to the operator in the control room to monitor RHR loop performance.

SR 3.4.7.2

SR 3.4.7.2 requires verification that the required SG has the capability to remove decay heat via natural circulation. This provides an alternate decay heat removal method in the event that the second RHR loop is not OPERABLE. The ability to remove decay heat requires the ability to pressurize and control pressure in the RCS, sufficient secondary side water level in the SG relied on for decay heat removal, and an available supply of feedwater(Ref. 1). The 12 hour Frequency is considered adequate in view of other indications available in the control room to alert the operator to a loss of capability of the SG to remove decay heat.

SR 3.4.7.3

Verification that each required RHR pump is OPERABLE ensures that an additional pump can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power available to each required RHR pump. Alternatively, verification that a pump is in operation also verifies proper breaker alignment and power availability. If at least one SG is capable of decay heat removal, this Surveillance is not needed. The Frequency

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.7.3 (continued)

of 7 days is considered reasonable in view of other administrative controls available and has been shown to be acceptable by operating experience.

This SR is modified by a Note that states the SR is not required to be performed until 24 hours after a pump is not in operation.

REFERENCES

1. NRC Information Notice 95-35, "Degraded Ability of Steam Generators to Remove Decay Heat by Natural Circulation".

2. License Amendment Request Dated November 19, 1999. (Approved by License Amendment 152/143, July 14, 2000.)

BASES

LCO (continued)

Note 1 permits all RHR pumps to be de-energized ≤ 1 hour per 8 hour period. The circumstances for stopping both RHR pumps are to be limited to situations when the outage time is short and core outlet temperature is maintained > 10°F below saturation temperature. The Note prohibits boron dilution with coolant at boron concentrations less than required to assure SDM is maintained or draining operations when RHR forced flow is stopped.

Note 2 allows one RHR loop to be inoperable for a period of ≤ 2 hours, provided that the other loop is OPERABLE and in operation. This permits periodic surveillance tests to be performed on the inoperable loop during the only time when these tests are safe and possible.

An OPERABLE RHR loop is comprised of an OPERABLE RHR pump capable of providing forced flow to an OPERABLE RHR heat exchanger. RHR pumps are OPERABLE if they are capable of being powered and are able to provide flow if required.

APPLICABILITY

In MODE 5 with loops not filled, this LCO requires core heat removal and coolant circulation by the RHR System.

Operation in other MODES is covered by:

LCO 3.4.4, "RCS Loops-MODES 1 and 2";
LCO 3.4.5, "RCS Loops-MODE 3";
LCO 3.4.6, "RCS Loops-MODE 4";
LCO 3.4.7, "RCS Loops-MODE 5, Loops Filled";
LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation-High Water Level" (MODE 6); and
LCO 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation-Low Water Level" (MODE 6).

BASES (continued)

ACTIONS

A.1

If one required RHR loop is inoperable, redundancy for RHR is lost. Action must be initiated to restore a second loop to OPERABLE status. The immediate Completion Time reflects the importance of maintaining the availability of two paths for heat removal.

B.1 and B.2

If no required loop is OPERABLE or the required loop is not in operation, except during conditions permitted by Note 1, all operations involving introduction of coolant into the RCS with boron concentration less than required to meet the minimum SDM of LCO 3.1.1 must be suspended and action must be initiated immediately to restore an RHR loop to OPERABLE status and operation. The margin to criticality must not be reduced in this type of operation. Suspending the introduction of coolant into the RCS with boron concentration less than required to meet the minimum SDM of LCO 3.1.1 is required to assure continued safe operation. With coolant added without forced circulation, unmixed coolant could be introduced to the core; however, coolant added with boron concentration meeting the minimum SDM maintains acceptable margin to subcritical operations. The immediate Completion Time reflects the importance of maintaining operation for heat removal. The action to restore must continue until one loop is restored to OPERABLE status and operation.

The Note in Required Action B.2 allows the use of one safety injection pump to provide heat removal in the event of a loss of RHR system cooling during reduced RCS inventory conditions.

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.4.8.1

This SR requires verification every 12 hours that the required loop is in operation. Verification may include flow rate, temperature, or pump status monitoring, which helps ensure that forced flow is providing heat removal. The Frequency of 12 hours is sufficient considering other indications and alarms available to the operator in the control room to monitor RHR loop performance.

SR 3.4.8.2

Verification that each required pump is OPERABLE ensures that an additional pump can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power available to each required pump. Alternatively, verification that a pump is in operation also verifies proper breaker alignment and power availability. The Frequency of 7 days is considered reasonable in view of other administrative controls available and has been shown to be acceptable by operating experience.

This SR is modified by a Note that states the SR is not required to be performed until 24 hours after a pump is not in operation.

REFERENCES None.

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.12 Low Temperature Overpressure Protection (LTOP) – Reactor Coolant System Cold Leg Temperature (RCSCLT) > Safety Injection (SI) Pump Disable Temperature

BASES

BACKGROUND

The LTOP function limits RCS pressure at low temperatures so the integrity of the reactor coolant pressure boundary (RCPB) is not compromised by violating the pressure and temperature (P/T) limits of 10 CFR 50, Appendix G (Ref. 1). The reactor vessel is the limiting RCPB component for demonstrating such protection. The Over Pressure Protection System (OPPS) and the pressurizer power operated relief valves (PORVs) provide the LTOP function (Ref. 2). The PTLR provides the maximum allowable OPPS actuation setpoints for the PORVs and the maximum RCS pressure for the existing RCS cold leg temperature during cooldown, shutdown, and heatup to meet the Reference 1 requirements during the LTOP MODES. The LTOP MODES are the MODES as defined in the Applicability statement of LCO 3.4.12 and LCO 3.4.13.

The pressurizer safety valves and PORVs at their normal setpoints do not provide overpressure protection for certain low temperature operational transients. Inadvertent pressurization of the RCS at temperatures below the OPPS enable temperature specified in the PTLR could result in exceeding the ASME Appendix G (Ref. 3) brittle fracture P/T limits. Exceeding the RCS P/T limits by a significant amount could cause brittle cracking of the reactor vessel. LCO 3.4.3, "RCS Pressure and Temperature (P/T) Limits," requires administrative control of RCS pressure and temperature during heatup and cooldown to prevent exceeding the PTLR limits.

This LCO provides RCS overpressure protection by restricting coolant input capability and ensuring adequate pressure relief capacity. In MODE 4, above the safety injection (SI) pump disable temperature, limiting coolant input capability requires one (SI) pump incapable of injection into the RCS and isolating the emergency core cooling system (ECCS) accumulators. In MODE 4, above the SI

BASES

BACKGROUND (continued)

pump disable temperature, one PORV is the overpressure protection device that acts to terminate an increasing pressure event.

Limiting coolant input capability reduces the ability to provide core coolant addition. The LCO does not require the makeup control system deactivated or the SI actuation circuits blocked. Due to the lower pressures in the LTOP MODES and the expected core decay heat levels, the charging system can provide adequate flow. If conditions require the use of more than one SI pump for makeup in the event of loss of inventory, then pumps can be made available through manual actions.

In MODE 4, above the SI pump disable temperature, pressure relief consists of two PORVs with reduced lift settings. Two PORVs are required for redundancy. One PORV has adequate relieving capability to prevent overpressurization for the required coolant input capability.

As designed for the LTOP function, each PORV is signaled to open by OPPS if the RCS pressure approaches the lift setpoint provided when OPPS is enabled. The OPPS monitors both RCS temperature and RCS pressure and indicates when a condition not acceptable in the PTLR limits is approached. The wide range RCS temperature setpoints indicate conditions requiring enabling OPPS.

The PTLR presents the OPPS setpoints for LTOP.

APPLICABLE SAFETY ANALYSES

Safety analyses (Ref. 2) demonstrate that the reactor vessel is adequately protected against exceeding the Reference 1 P/T limits. In MODES 1, 2, and 3, and in MODE 4 with RCS cold leg temperature exceeding the OPPS enable temperature specified in the PTLR, the pressurizer safety valves will prevent RCS pressure from exceeding the Reference 1 limits. At about the OPPS enable temperature specified in the PTLR and below, overpressure prevention falls to two OPERABLE PORVs or to a depressurized

BASES

APPLICABLE SAFETY ANALYSES (continued)

RCS and a sufficiently sized RCS vent. Each of these means has a limited overpressure relief capability. LCO 3.4.13, "LTOP ≤ SI Pump Disable Temperature," provides the requirements for overpressure prevention at the lower temperatures.

The actual temperature at which the pressure in the P/T limit curve falls below the pressurizer safety valve setpoint increases as the reactor vessel material toughness decreases due to neutron embrittlement. Each time the PTLR curves are revised, LTOP must be re-evaluated to ensure its functional requirements can still be met using the PORV method.

The PTLR contains the acceptance limits that define the LTOP requirements. Any change to the RCS must be evaluated against the Reference 2 analyses to determine the impact of the change on the LTOP acceptance limits.

Transients that are capable of overpressurizing the RCS are categorized as either mass or heat input transients. The bounding mass input transient is inadvertent safety injection with injection from one SI pump and three charging pumps, and letdown isolated. The bounding heat input transient is reactor coolant pump (RCP) startup with temperature asymmetry within the RCS or between the RCS and steam generators.

The following limitations are required during the Applicability of this specification to ensure that mass and heat input transients in excess of analysis assumptions do not occur:

a. Rendering one SI pump incapable of injection;

b. Deactivating the ECCS accumulator discharge isolation valves in their closed positions; and

c. Disallowing start of an RCP if secondary temperature is more than 50°F above primary temperature in any one loop. LCO 3.4.6, "RCS Loops - MODE 4," provides this protection.

BASES

APPLICABLE SAFETY ANALYSES (continued)

The Reference 2 analyses demonstrate that one PORV can maintain RCS pressure below limits when only one SI pump and all charging pumps are actuated. Thus, the LCO allows only one SI pump OPERABLE during the Applicability of this specification.

Since one PORV cannot handle the pressure transient resulting from ECCS accumulator injection, when RCS temperature is low, the LCO also requires ECCS accumulator isolation when ECCS accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed in the PTLR.

The isolated ECCS accumulators must have their discharge valves closed and the valve power supply breakers fixed in their open positions.

Fracture mechanics analyses established the temperature of LTOP Applicability at the OPPS enable temperature specified in the PTLR.

The consequences of a small break loss of coolant accident (LOCA) in LTOP MODE 4 above the SI Pump disable temperature conform to 10 CFR 50.46 and 10 CFR 50, Appendix K, requirements by having a maximum of one SI pump OPERABLE and SI actuation enabled.

The fracture mechanics analyses show that the vessel is protected when the PORVs are set to open at or below the limit shown in the PTLR. The OPPS setpoints are derived by analyses that model the performance of the system, assuming the limiting LTOP transient of one SI pump and all charging pumps injecting into the RCS. These analyses consider pressure overshoot and undershoot beyond the PORV opening and closing, resulting from signal processing and valve stroke times. The OPPS setpoints at or below the derived limit ensures the Reference 1 P/T limits will be met.

The OPPS setpoints in the PTLR will be updated when the revised P/T limits conflict with the LTOP analysis limits. The P/T limits are

BASES

APPLICABLE SAFETY ANALYSES (continued)

periodically modified as the reactor vessel material toughness decreases due to neutron embrittlement caused by neutron irradiation. Revised limits are determined using neutron fluence projections and the results of examinations of the reactor vessel material irradiation surveillance specimens. The Bases for LCO 3.4.3, "RCS Pressure and Temperature (P/T) Limits," discuss these examinations.

The LTOP function satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

This LCO requires that LTOP be provided, by limiting coolant input capability and by OPERABLE pressure relief capability. Violation of this LCO could lead to the loss of low temperature overpressure mitigation and violation of the Reference 1 limits as a result of an operational transient.

To limit the coolant input capability, the LCO requires that a maximum of one SI pump be capable of injecting into the RCS, and all ECCS accumulator discharge isolation valves be closed and deenergized (when ECCS accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed in the PTLR).

The LCO is modified by two Notes. Note 1 allows operation of both SI pumps for ≤ 1 hour for conducting SI system testing providing there is a steam or gas bubble in the pressurizer and at least one isolation valve between the SI pump and the RCS is shut. The purpose of this note is to permit the conduct of the integrated SI test and other SI system tests and operations that may be performed in MODE 4. In this case, pressurizer level is maintained at less than 50% and a positive means of isolation is provided between the SI pumps and the RCS to prevent fluid injection to the RCS. This isolation is accomplished by either a closed manual valve or motor operated valve with the power removed. This combination of conditions under strict administrative control assure that overpressurization cannot occur.

BASES

LCO (continued)

Note 2 states that ECCS accumulator isolation is only required when the ECCS accumulator pressure is more than or at the maximum RCS pressure for the existing RCS cold leg temperature allowed by the P/T limit curves provided in the PTLR (less allowance for instrument uncertainty). This Note permits the ECCS accumulator discharge isolation valve Surveillance to be performed only under these pressure and temperature conditions.

To provide low temperature overpressure mitigation through pressure relief, the LCO requires an OPERABLE OPPS with two pressurizer PORVs. A PORV is OPERABLE for LTOP when its block valve is open, its low pressure lift setpoint has been selected (OPPS enabled), and the backup air supply is charged.

APPLICABILITY

This LCO is applicable in MODE 4 when any RCS cold leg temperature is ≤ the OPPS enable temperature specified in the PTLR and > the SI Pump disable temperature specified in the PTLR. The pressurizer safety valves provide overpressure protection that meets the Reference 1 P/T limits above the OPPS enable temperature specified in the PTLR.

LCO 3.4.3 provides the operational P/T limits for all MODES. LCO 3.4.10, "Pressurizer Safety Valves," requires the OPERABILITY of the pressurizer safety valves that provide overpressure protection during MODES 1, 2, and 3, and MODE 4 above the OPPS enable temperature specified in the PTLR. LCO 3.4.13 provides the LTOP requirements in MODE 4 ≤ SI pump disable temperature and in MODES 5 and 6.

Low temperature overpressure prevention is most critical during shutdown when the RCS is water solid, and a mass or heat input transient can cause a very rapid increase in RCS pressure when little or no time allows operator action to mitigate the event.

BASES (continued)

ACTIONS

A.1

With two SI pumps capable of injecting into the RCS, RCS overpressurization is possible.

To immediately initiate action to restore restricted coolant input capability to the RCS reflects the urgency of removing the RCS from this condition.

B.1, C.1, and C.2

An unisolated ECCS accumulator requires isolation within 1 hour. This is only required when the ECCS accumulator pressure is at or more than the maximum RCS pressure for the existing temperature allowed by the P/T limit curves.

If isolation is needed and cannot be accomplished in 1 hour, Required Action C.1 and Required Action C.2 provide two options, either of which must be performed in the next 12 hours. By increasing the RCS temperature to > the OPPS enable temperature specified in the PTLR, an accumulator pressure of 800 psig cannot exceed the LTOP analysis limits if the ECCS accumulators are fully injected. Depressurizing the ECCS accumulators below the LTOP limit from the PTLR also gives this protection.

The Completion Times are based on operating experience that these activities can be accomplished in these time periods and on engineering evaluations indicating that an event requiring LTOP is not likely in the allowed times.

D.1

In MODE 4 when any RCS cold leg temperature is ≤ the OPPS enable temperature specified in the PTLR, with one required PORV

BASES

ACTIONS

D.1 (continued)

inoperable, the PORV must be restored to OPERABLE status within a Completion Time of 7 days. Two PORVs are required to provide low temperature overpressure mitigation while withstanding a single failure of an active component.

The Completion Time considers the facts that only one of the PORVs is required to mitigate an overpressure transient and that the likelihood of an active failure of the remaining valve path during this time period is very low.

E.1

MODE 5 must be entered, the RCS must be depressurized and a vent must be established within 12 hours when:

a. Both PORVs are inoperable; or

b. A Required Action and associated Completion Time of Condition A, C, or D is not met; or

c. The OPPS is inoperable.

The vent must be sized ≥ 3 square inches to ensure that the flow capacity is greater than that required for the worst case mass input transient reasonable during the applicable MODES. The vent opening is based on the cross sectional flow area of a PORV. A PORV maintained in the open position satisfies the vent requirement. This action is needed to protect the RCPB from a low temperature overpressure event and a possible brittle failure of the reactor vessel.

BASES

ACTIONS

E.1 (continued)

The Completion Time considers the time required to place the plant in this Condition and the relatively low probability of an overpressure event during this time period due to increased operator awareness of administrative control requirements.

SURVEILLANCE REQUIREMENTS

SR 3.4.12.1 and SR 3.4.12.2

To minimize the potential for a low temperature overpressure event by limiting the mass input capability, one SI pump is verified incapable of injecting into the RCS and the ECCS accumulator discharge isolation valves are verified closed and deenergized.

The SI pump is rendered incapable of injecting into the RCS by employing at least two independent means to prevent a pump start such that a single failure or single action will not result in an injection into the RCS. This may be accomplished through the pump control switch being placed in pullout with a blocking device installed over the control switch that would prevent an unplanned pump start.

The ECCS accumulator motor operated isolation valves can be verified closed and deenergized by use of control board indication. SR 3.4.12.2 is modified by a Note specifying that this verification is only required when the ECCS accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed in the PTLR. If ECCS accumulator pressure is less than this limit, no verification is required since the ECCS accumulator cannot pressurize the RCS to or above the OPPS setpoint.

The Frequency of 12 hours is sufficient, considering other indications and alarms available to the operator in the control room, to verify the required status of the equipment.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.12.3

The PORV block valve must be verified open every 72 hours to provide the flow path for each required PORV to perform its function when actuated. The valve may be remotely verified open in the main control room.

The block valve is a remotely controlled, motor operated valve. The power to the valve operator is not required to be removed, and the manual operator is not required to be locked in the inactive position. Thus, the block valve can be closed in the event the PORV develops excessive leakage or does not close (sticks open) after relieving an overpressure situation.

The 72 hour Frequency is considered adequate in view of other administrative controls available to the operator in the control room, such as valve position indication, that verify that the PORV block valve remains open.

SR 3.4.12.4

Performance of a COT is required every 31 days on OPPS to verify and, as necessary, adjust the PORV lift setpoints. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL OPERATIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. The COT will verify the setpoints are within the PTLR allowed maximum limits in the PTLR. PORV actuation during this testing could depressurize the RCS and is not required.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.12.4 (continued)

A Note has been added indicating that this SR is required to be performed 12 hours after decreasing RCS cold leg temperature to ≤ the OPPS enable temperature specified in the PTLR. The COT may not have been performed before entry into the LTOP MODES. The 12 hour initial time considers the unlikehood of a low temperature overpressure event during this time.

SR 3.4.12.5

Performance of a CHANNEL CALIBRATION on OPPS is required every 24 months to adjust the whole channel so that it responds and the valve opens within the required range and accuracy to known input.

REFERENCES

1. 10 CFR 50, Appendix G.
2. USAR, Section 4.4.
3. ASME, Boiler and Pressure Vessel Code, Section XI, Appendix G, with ASME Code Case N-514.

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.13 Low Temperature Overpressure Protection (LTOP) Reactor Coolant System Cold Leg Temperature (RCSCLT) ≤ Safety Injection (SI) Pump Disable Temperature

BASES

BACKGROUND

The LTOP function limits RCS pressure at low temperatures so the integrity of the reactor coolant pressure boundary (RCPB) is not compromised by violating the pressure and temperature (P/T) limits of 10 CFR 50, Appendix G (Ref. 1). The reactor vessel is the limiting RCPB component for demonstrating such protection. The Over Pressure Protection System (OPPS) provides the actuation setpoints for the pressurizer power operated relief valves (PORVs) for the LTOP function (Ref. 2). The PTLR provides the maximum allowable OPPS actuation setpoints and the maximum RCS pressure for the existing RCS cold leg temperature during cooldown, shutdown, and heatup to meet the Reference 1 requirements during the LTOP MODES. The LTOP MODES are the MODES as defined in the Applicability statement of LCO 3.4.12 and LCO 3.4.13.

The pressurizer safety valves and PORVs at their normal setpoints do not provide overpressure protection for certain low temperature operational transients. Inadvertent pressurization of the RCS at temperatures below the OPPS enable temperature specified in the PTLR could result in exceeding the ASME Appendix G (Ref. 3) brittle fracture P/T limits. Exceeding the RCS P/T limits by a significant amount could cause brittle cracking of the reactor vessel. LCO 3.4.3, "RCS Pressure and Temperature (P/T) Limits," requires administrative control of RCS pressure and temperature during heatup and cooldown to prevent exceeding the PTLR limits.

This LCO provides RCS overpressure protection by restricting coolant input capability and ensuring adequate pressure relief capacity. In MODE 4, at or below the safety injection (SI) pump disable temperature, limiting coolant input capability requires both SI pumps incapable of injection into the RCS and isolating the emergency core cooling system (ECCS) accumulators. The pressure

BASES

BACKGROUND (continued)

relief capacity requires either two redundant RCS relief valves or a depressurized RCS and an RCS vent of sufficient size. One PORV or the open RCS vent is the overpressure protection device that acts to terminate an increasing pressure event.

Limiting coolant input capability reduces the ability to provide core coolant addition. The LCO does not require the makeup control system deactivated or the safety injection SI actuation circuits blocked. Due to the lower pressures in the LTOP MODES and the expected core decay heat levels, the charging system can provide adequate flow. If conditions require the use of an SI pump for makeup in the event of loss of inventory, the pump can be made available through manual actions.

The LTOP pressure relief consists of two PORVs with reduced lift settings or a depressurized RCS and an RCS vent of sufficient size. Two PORVs are required for redundancy. One PORV has adequate relieving capability to prevent overpressurization for the required coolant input capability.

OPPS and PORV Requirements

As designed for the LTOP function, each PORV is signaled to open by OPPS if the RCS pressure approaches the lift setpoint provided when OPPS is enabled. The OPPS monitors both RCS temperature and RCS pressure and indicates when a condition not acceptable in the PTLR limits is approached. The wide range RCS temperature setpoints indicate conditions requiring enabling OPPS. The PTLR presents the OPPS setpoints for LTOP.

RCS Vent Requirements

Once the RCS is depressurized, a vent exposed to the containment atmosphere will maintain the RCS at containment ambient pressure

BASES

BACKGROUND

RCS Vent Requirements (continued)

in an RCS overpressure transient, if the relieving requirements of the transient do not exceed the capabilities of the vent. Thus, the vent path must be capable of relieving the flow resulting from the limiting LTOP mass or heat input transient, and maintaining pressure below the P/T limits. The required vent capacity may be provided by one or more vent paths.

APPLICABLE SAFETY ANALYSES

Safety analyses (Ref. 2) demonstrate that the reactor vessel is adequately protected against exceeding the Reference 1 P/T limits. In MODES 1, 2, and 3, and in MODE 4 with RCS cold leg temperature exceeding the OPPS enable temperature specified in the PTLR, the pressurizer safety valves will prevent RCS pressure from exceeding the Reference 1 limits. At about the OPPS enable temperature specified in the PTLR and below, overpressure prevention falls to two OPERABLE PORVs or to a depressurized RCS and a sufficiently sized RCS vent. Each of these means has a limited overpressure relief capability. LCO 3.4.12, "LTOP > SI Pump Disable Temperature," provides the requirements for overpressure prevention at temperatures above the SIP disable temperature.

The actual temperature at which the pressure in the P/T limit curve falls below the pressurizer safety valve setpoint increases as the reactor vessel material toughness decreases due to neutron embrittlement. Each time the PTLR curves are revised, LTOP must be re-evaluated to ensure its functional requirements can still be met using the PORV method or the depressurized and vented RCS condition.

The PTLR contains the acceptance limits that define the LTOP requirements. Any change to the RCS must be evaluated against the Reference 2 analyses to determine the impact of the change on the LTOP acceptance limits.

BASES

APPLICABLE SAFETY ANALYSES (continued)

Transients that are capable of overpressurizing the RCS are categorized as either mass or heat input transients. The bounding mass input transient is inadvertent safety injection with injection from one SI pump and three charging pumps, and letdown isolated. The bounding heat input transient is reactor coolant pump (RCP) startup with temperature asymmetry within the RCS or between the RCS and steam generators.

The following limitations are required during the Applicability of this specification to ensure that mass and heat input transients in excess of analysis assumptions do not occur:

a. Rendering both SI pumps incapable of injection;

b. Deactivating the ECCS accumulator discharge isolation valves in their closed positions; and

c. Disallowing start of an RCP if secondary temperature is more than 50°F above primary temperature in any one loop. LCO 3.4.6, "RCS Loops - MODE 4," provides this protection.

The Reference 2 analyses demonstrate that either one PORV or the depressurized RCS and RCS vent can maintain RCS pressure below limits when all charging pumps are actuated. Neither one PORV nor the RCS vent can handle the pressure transient resulting from inadvertent SI pump or ECCS accumulator injection when the RCS is below the SI Pump disable temperature. Thus, the LCO requires both SI pumps to be disabled below the temperature specified in the PTLR.

The LCO also requires ECCS accumulator isolation when ECCS accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed in the PTLR. The isolated ECCS accumulators must have their discharge valves closed and the valve power supply breakers fixed in their open positions.

BASES

APPLICABLE SAFETY ANALYSES (continued)

Fracture mechanics analyses established the temperature of LTOP Applicability at the OPPS enable temperature specified in the PTLR. The fracture mechanics analyses show that the vessel is protected when the PORVs are set to open at or below the limit shown in the PTLR. The OPPS setpoints are derived by analyses that model the performance of the system, assuming the limiting LTOP transient of all charging pumps injecting into the RCS. These analyses consider pressure overshoot and undershoot beyond the PORV opening and closing, resulting from signal processing and valve stroke times. The OPPS setpoints at or below the derived limit ensures the Reference 1 P/T limits will be met.

The OPPS setpoints in the PTLR will be updated when the revised P/T limits conflict with the LTOP analysis limits. The P/T limits are periodically modified as the reactor vessel material toughness decreases due to neutron embrittlement caused by neutron irradiation. Revised limits are determined using neutron fluence projections and the results of examinations of the reactor vessel material irradiation surveillance specimens. The Bases for LCO 3.4.3, "RCS Pressure and Temperature (P/T) Limits," discuss these examinations.

With the RCS depressurized, analyses show a vent size equivalent to the cross sectional flow area of a PORV is capable of mitigating the allowed LTOP overpressure transient. The capacity of a vent this size is greater than the flow of the limiting transient for the LTOP configuration, both SI pumps disabled and all charging pumps OPERABLE when the RCS is below the SI Pump disable temperature, maintaining RCS pressure less than the maximum pressure on the P/T limit curve.

The RCS vent is passive and is not subject to active failure.

The LTOP function satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

BASES (continued)

LCO

This LCO requires that LTOP be provided, by limiting coolant input capability and by OPERABLE pressure relief capability. Violation of this LCO could lead to the loss of low temperature overpressure mitigation and violation of the Reference 1 limits as a result of an operational transient.

To limit the coolant input capability, the LCO requires both SI pumps be incapable of injecting into the RCS, and all ECCS accumulator discharge isolation valves be closed and deenergized (when ECCS accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed in the PTLR).

The LCO is modified by three Notes. Note 1 allows operation of both SI pumps for ≤ 1 hour for conducting SI system testing providing there is a steam or gas bubble in the pressurizer and at least one isolation valve between the SI pump and the RCS is shut. The purpose of this note is to permit the conduct of the integrated SI test and other SI system tests and operations that may be performed in MODES 4, 5 or 6. In this case, pressurizer level is maintained at less than 50% and a positive means of isolation is provided between the SI pumps and the RCS to prevent fluid injection to the RCS. This isolation is accomplished by either a closed manual valve or motor operated valve with the power removed. This combination of conditions under strict administrative control assure that overpressurization cannot occur.

Note 2 allows operation of an SI pump during reduced inventory conditions as required to maintain adequate core cooling and RCS inventory. The purpose of this note is to allow use of an SI pump in the event of a loss of other injection capability (e.g., loss of Residual Heat Removal System cooling while in reduced inventory conditions). The operation of an SI pump under such conditions would be controlled by an approved emergency operating procedure.

BASES

LCO (continued)

Note 3 states that ECCS accumulator isolation is only required when ECCS accumulator pressure is more than or at the maximum RCS pressure for the existing RCS cold leg temperature allowed by the P/T limit curves provided in the PTLR (less allowance for instrument uncertainty). This Note permits the ECCS accumulator discharge isolation valve Surveillance to be performed only under these pressure and temperature conditions.

The elements of the LCO that provide low temperature overpressure mitigation through pressure relief are:

a. An OPERABLE OPPS with two PORVs; or

   A PORV is OPERABLE for LTOP when its block valve is open, its low pressure lift setpoint has been selected (OPPS enabled), and the backup air supply is charged.

b. A depressurized RCS and an RCS vent.

   An RCS vent is OPERABLE when open with an area of ≥ 3.0 square inches. Because the RCS vent opening specification is based on the flow capacity of a PORV, a PORV maintained in the open position may be utilized to meet the RCS vent requirement.

Each of these methods of overpressure prevention is capable of mitigating the limiting LTOP transient.

APPLICABILITY

This LCO is applicable in MODE 4 when any RCS cold leg temperature is ≤ the SI Pump disable temperature specified in the PTLR, in MODE 5, and in MODE 6 when the reactor vessel head is on and the SG primary system manways and pressurizer manway are closed and secured. The pressurizer safety valves provide overpressure protection that meets the Reference 1 P/T limits above the OPPS enable temperature specified in the PTLR. When the reactor vessel head is off, overpressurization cannot occur.

BASES

APPLICABILITY (continued)

LCO 3.4.3 provides the operational P/T limits for all MODES. LCO 3.4.10, "Pressurizer Safety Valves," requires the OPERABILITY of the pressurizer safety valves that provide overpressure protection during MODES 1, 2, and 3, and MODE 4 above the OPPS enable temperature specified in the PTLR. LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) ≤ Safety Injection Pump (SI) Pump Disable Temperature," provides the requirements for MODE 4 below the OPPS enable temperature and above the SI Pump disable temperature.

Low temperature overpressure prevention is most critical during shutdown when the RCS is water solid, and a mass or heat input transient can cause a very rapid increase in RCS pressure when little or no time allows operator action to mitigate the event.

ACTIONS

A.1

With one or more SI pumps capable of injecting into the RCS, RCS overpressurization is possible.

To immediately initiate action to restore restricted coolant input capability to the RCS reflects the urgency of removing the RCS from this condition.

B.1, C.1, and C.2

An unisolated ECCS accumulator requires isolation within 1 hour. This is only required when the ECCS accumulator pressure is at or more than the maximum RCS pressure for the existing temperature allowed by the P/T limit curves.

If isolation is needed and cannot be accomplished in 1 hour, Required Action C.1 and Required Action C.2 provide two options, either of which must be performed in the next 12 hours. By

BASES

ACTIONS

B.1, C.1, and C.2 (continued)

increasing the RCS temperature to > the OPPS enable temperature specified in the PTLR, an ECCS accumulator pressure of 800 psig cannot exceed the LTOP analysis limits if the ECCS accumulators are fully injected. Depressurizing the ECCS accumulators below the LTOP limit from the PTLR also gives this protection.

The Completion Times are based on operating experience that these activities can be accomplished in these time periods and on engineering evaluations indicating that an event requiring LTOP is not likely in the allowed times.

D.1

The consequences of operational events that will overpressurize the RCS are more severe at lower temperature. Thus, with one PORV inoperable in MODE 4 when any RCS cold leg temperature is ≤ the SI Pump disable temperature specified in the PTLR, MODE 5 or in MODE 6 with the head on, the Completion Time to restore two valves to OPERABLE status is 24 hours. A Note clarifies that Condition D is only applicable when the OPPS and PORVs are being used to satisfy the pressure relief requirements of LCO 3.4.13.a.

The Completion Time represents a reasonable time to investigate and repair several types of relief valve failures without exposure to a lengthy period with only one OPERABLE PORV to protect against overpressure events.

E.1

The RCS must be depressurized and a vent must be established within 8 hours when:

BASES

ACTIONS

E.1 (continued)

a. Both required PORVs are inoperable; or

b. A Required Action and associated Completion Time of Condition A, C, or D is not met; or

c. The OPPS is inoperable.

The vent must be sized ≥ 3 square inches to ensure that the flow capacity is greater than that required for the worst case mass input transient reasonable during the applicable MODES. The vent opening is based on the cross sectional flow area of a PORV. A PORV maintained in the open position satisfies the vent requirement. This action is needed to protect the RCPB from a low temperature overpressure event and a possible brittle failure of the reactor vessel.

The Completion Time considers the time required to place the plant in this Condition and the relatively low probability of an overpressure event during this time period due to increased operator awareness of administrative control requirements.

SURVEILLANCE REQUIREMENTS

SR 3.4.13.1 and SR 3.4.13.2

To minimize the potential for a low temperature overpressure event by limiting the mass input capability, both SI pumps are verified incapable of injecting into the RCS and the ECCS accumulator discharge isolation valves are verified closed and deenergized.

The SI pumps are rendered incapable of injecting into the RCS by employing at least two independent means to prevent a pump start such that a single failure or single action will not result in an injection into the RCS. This may be accomplished through the

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.13.1 and SR 3.4.13.2 (continued)

pump control switch being placed in pullout with a blocking device installed over the control switch that would prevent an unplanned pump start.

The ECCS accumulator motor operated isolation valves can be verified closed and deenergized by use of control board indication. SR 3.4.13.2 is modified by a Note specifying that this verification is only required when the ECCS accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed in the PTLR. If ECCS accumulator pressure is less than this limit, no verification is required since the ECCS accumulator cannot pressurize the RCS to or above the OPPS setpoint.

The Frequency of 12 hours is sufficient, considering other indications and alarms available to the operator in the control room, to verify the required status of the equipment.

SR 3.4.13.3

The RCS vent of ≥ 3 square inches is proven OPERABLE by verifying its open condition either:

a. Once every 12 hours for a valve that is not locked, sealed, or secured in the open position.

b. Once every 31 days for other vent path(s) (e.g., a vent valve that is locked, sealed, or secured in position). A removed pressurizer safety valve or open manway also fits this category.

The passive vent path arrangement must only be open when required to be OPERABLE. This Surveillance is required if the vent is being used to satisfy the pressure relief requirements of LCO 3.4.13b.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.13.4

The PORV block valve must be verified open every 72 hours to provide the flow path for each required PORV to perform its function when actuated. The valve may be remotely verified open in the main control room. This Surveillance is performed if the PORV satisfies the LCO.

The block valve is a remotely controlled, motor operated valve. The power to the valve operator is not required to be removed, and the manual operator is not required to be locked in the inactive position. Thus, the block valve can be closed in the event the PORV develops excessive leakage or does not close (sticks open) after relieving an overpressure situation.

The 72 hour Frequency is considered adequate in view of other administrative controls available to the operator in the control room, such as valve position indication, that verify that the PORV block valve remains open.

SR 3.4.13.5

Performance of a COT is required every 31 days on OPPS to verify and, as necessary, adjust the PORV lift setpoints. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL OPERATIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. The COT will verify the setpoints are within the PTLR allowed maximum limits in the PTLR. PORV actuation during this testing could depressurize the RCS and is not required.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.13.5 (continued)

Note 1 has been added indicating that this SR is not required to be performed until 12 hours after decreasing RCS cold leg temperature to ≤ the OPPS enable temperature specified in the PTLR. The COT may not have been performed before entry into the LTOP MODES. The 12 hour initial time considers the unlikehood of a low temperature overpressure event during this time.

Note 2 has been added to specify that this SR is only required to be performed when OPPS and PORVs are providing the LTOP function per LCO 3.4.13.a.

SR 3.4.13.6

Performance of a CHANNEL CALIBRATION on OPPS is required every 24 months to adjust the whole channel so that it responds and the valve opens within the required range and accuracy to known input.

REFERENCES

1. 10 CFR 50, Appendix G.
2. USAR, Section 4.4.
3. ASME, Boiler and Pressure Vessel Code, Section XI, Appendix G, with ASME Code Case N-514.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.14.1 (continued)

The RCS water inventory balance must be met with the reactor at steady state operating condition (stable temperature, power level, equilibrium xenon, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows). Therefore, a Note is added allowing that this SR is not required to be performed until 12 hours after establishing steady state operation. The 12 hour allowance provides sufficient time to collect and process all necessary data after stable plant conditions are established.

Steady state operation is required to perform a proper inventory balance since calculations during maneuvering are not useful. For RCS operational LEAKAGE determination by water inventory balance, steady state is defined as stable RCS pressure, temperature, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows.

An early warning of pressure boundary LEAKAGE or unidentified LEAKAGE is provided by monitoring containment atmosphere radioactivity. It should be noted that LEAKAGE past seals and gaskets is not pressure boundary LEAKAGE. These leakage detection systems are specified in LCO 3.4.16, "RCS Leakage Detection Instrumentation."

The 24 hour Frequency is a reasonable interval to trend LEAKAGE and recognizes the importance of early leakage detection in the prevention of accidents.

SR 3.4.14.2

This SR provides the means necessary to determine SG OPERABILITY in an operational MODE. The requirement to demonstrate SG tube integrity in accordance with the Steam

BASES

APPLICABILITY (continued)

For operation in MODE 3 with RCS average temperature < 500°F, and in MODES 4 and 5, the release of radioactivity in the event of a SGTR is unlikely since the saturation pressure of the reactor coolant is below the lift pressure settings of the main steam safety valves.

ACTIONS

A.1 and A.2

With the DOSE EQUIVALENT I-131 greater than the LCO limit, samples at intervals of 4 hours must be taken to demonstrate that the limits of Figure 3.4.17-1 are not exceeded. The Completion Time of 4 hours is required to obtain and analyze a sample. Sampling is done to continue to provide a trend.

The DOSE EQUIVALENT I-131 must be restored to within limits within 48 hours. The Completion Time of 48 hours is required, if the limit violation resulted from normal iodine spiking.

Permitting POWER OPERATION to continue for limited time periods with the primary coolant's specific activity greater than 1.0 μCi/gm DOSE EQUIVALENT I-131, but within the allowable limit shown on Figure 3.4.17-1, accommodates the possible iodine spiking phenomenon which may occur following changes in THERMAL POWER. Operation with specific activity levels exceeding 1.0 μCi/gm DOSE EQUIVALENT I-131 but within the limits shown on Figure 3.4.17-1 should be minimized since the activity levels allowed by the figure increase the dose at the site boundary following a postulated steam generator tube rupture.

A Note to the ACTIONS excludes the MODE change restriction of LCO 3.0.4. This exception allows entry into the applicable MODE(S) while relying on the ACTIONS even though the ACTIONS may eventually require plant shutdown. This exception is acceptable due to the significant conservatism incorporated into the specific activity limit, the low probability of an event which is

BASES

ACTIONS

A.1 and A.2 (continued)

limiting due to exceeding this limit, and the ability to restore transient specific activity excursions while the plant remains at, or proceeds to power operation.

B.1

With the gross specific activity in excess of the allowed limit, the reactor must be placed in a MODE in which the requirement does not apply. The change within 6 hours to MODE 3 and RCS average temperature < 500°F lowers the saturation pressure of the reactor coolant below the setpoints of the main steam safety valves and prevents venting the SG to the environment in a SGTR event. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 below 500°F from full power conditions in an orderly manner without challenging plant systems.

C.1

If a Required Action and the associated Completion Time of Condition A is not met or if the DOSE EQUIVALENT I-131 is in the unacceptable region of Figure 3.4.17-1, the reactor must be brought to MODE 3 with RCS average temperature < 500°F within 6 hours. The Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 below 500°F from full power conditions in an orderly manner without challenging plant systems.

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.4.17.1

SR 3.4.17.1 requires performing a gamma isotopic analysis as a measure of the gross specific activity of the reactor coolant at least once every 7 days. While basically a quantitative measure of radionuclides with half lives longer than 15 minutes, excluding iodines, this measurement is the sum of the degassed gamma activities and the gaseous gamma activities in the sample taken. This Surveillance provides an indication of any increase in gross specific activity.

Trending the results of this Surveillance allows proper remedial action to be taken before reaching the LCO limit under normal operating conditions. The Surveillance is applicable in MODES 1 and 2, and in MODE 3 with T_{avg} at least 500°F. The 7 day Frequency considers the unlikelihood of a gross fuel failure during the time.

SR 3.4.17.2

This Surveillance is performed in MODE 1 only to ensure iodine remains within limit during normal operation and following fast power changes when fuel failure is more apt to occur. The 14 day Frequency is adequate to trend changes in the iodine activity level, considering gross activity is monitored every 7 days. The Frequency, between 2 and 6 hours after a power change ≥ 15% RTP within a 1 hour period, is established because the iodine levels peak during this time following fuel failure; samples at other times would provide inaccurate results.

PACKAGE 3.4

REACTOR COOLANT SYSTEM (RCS)

PART C

MARKUP OF PRAIRIE ISLAND CURRENT TECHNICAL SPECIFICATIONS

List of Pages

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17	TS.3.1-8 Overflow		

PRAIRIE ISLAND NUCLEAR GENERATING PLANT UNITS 1 AND 2

Improved Technical Specifications
Conversion Submittal

3.10.I. Monitor Inoperability Requirements

1. If the rod bank insertion limit monitor is inoperable, or if the rod position deviation monitor is inoperable, individual rod positions shall be logged once per shift, after a load change greater than 10 percent of RATED THERMAL POWER, and after 30 inches or more of rod motion.

2. If both the rod position deviation monitor and one or both of the quadrant power tilt monitors are inoperable for 2 hours or more, the nuclear overpower trip shall be reset to 93% of RATED THERMAL POWER in addition to the increased surveillance requirements.

3. If one or both of the quadrant power tilt monitors is inoperable, individual upper and lower excore detector calibrated outputs and the calculated power tilt shall be logged every two hours after a load change greater than 10% of RATED THERMAL POWER.

~~J.~~ RCS Pressure, Temperature and Flow ~~-~~ DNB Limits ~~Parameters~~

LCO3.4.1

R-9

The following DNB related parameters limits shall be maintained during POWER OPERATION:

LR3.4-01

a. Reactor Coolant System Tavg ≤ limit specified in the COLR ~~564°F~~
b. Pressurizer Pressure ≥ limit specified in the COLR ~~2220 psia~~*
c. Reactor Coolant Flow ≥ the value specified in the CORE OPERATING LIMITS REPORT

LCO3.4.1

With any of the above parameters exceeding its limit, restore the parameter to within its limit within 2 hours

LCO3.4.1

or reduce THERMAL POWER to MODE 2 ~~less than 5% of RATED THERMAL POWER~~ within the next ~~6~~4 hours.

A3.4-08

L3.4-05

SR3.4.1.1
SR3.4.1.2
SR3.4.1.3

Compliance with a. and b. is demonstrated by verifying that each of the parameters is within its limits at least once each 12 hours. Compliance with c. ~~is demonstrated by~~ verify~~ing~~ RCS total flow rate ~~that the parameter~~ is within ~~its~~ limit specified in the COLR after each refueling cycle.

A3.4-100

R-9

LCO3.4.1

L3.4-02

*Limit not applicable during either a THERMAL POWER ramp ~~increase~~ in excess of (5%) RATED THERMAL POWER per minute or a THERMAL POWER step ~~increase~~ in excess of (10%) RATED THERMAL POWER

3.4~~1~~ REACTOR COOLANT SYSTEM A3.4-00

R-2

~~Applicability~~

~~Applies to the operating status of the reactor coolant system when irradiated fuel is in the containment.~~ A3.4-03

~~Objective~~

~~To specify those limiting conditions for operation of the reactor coolant system which must be met to assure safe reactor operation.~~

Specification

A. Operational Components

1. Reactor Coolant Loops and Coolant Circulation

a. Reactor Critical

LCO3.4.4 (1) A reactor shall not be in MODE 2~~made or maintained critical~~ unless both reactor coolant loops (with their associated steam generator and reactor coolant pump) are in operation~~, except 1)~~ M3.4-04

LCO3.4.18 with thermal power <P-7 (if power >P-7, open Reactor Trip Breaker) M3.4-06

during low power PHYSICS TESTS

R-9

SR3.4.18.1
SR3.4.18.2 New SR, Verify power <P-7 and perform COT on P-7, power(low setpoint) and intermediate range neutron flux channels. M3.4-07

or 2) as specified in 3.1.A.1.a.(2) below.

A3.4-08

LCO3.4.4 (2) With less than the above required reactor coolant loops in operation, be in at least MODE 3~~HOT SHUTDOWN~~ within 6 hours.

SR3.4.4.1 New SR, Verify each RCS loop in operation M3.4-11

b. Reactor Coolant System MODE 3~~Average Temperature Above 350°F~~ M3.4-12

LCO3.4.5 (1) Reactor coolant system ~~average temperature~~ shall not be in MODE 3~~exceed 350°F~~ unless both reactor coolant loops (with their associated steam generator and reactor coolant pump) are OPERABLE and both RCS loops shall be in operation when the Rod Control System is capable of rod withdrawal; or A3.4-08 M3.4-13

~~with~~ at least one reactor coolant loop in operation when the Rod Control System is not capable of rod withdrawal. M3.4-13

(except as specified in 3.1.A.1.b(2) and 3.1.A.1.b.(3) below).

(2) A reactor coolant loop may be inoperable for 72 hours ~~provided STARTUP OPERATION is discontinued until OPERABILITY is restored.~~ If OPERABILITY is not restored within the time specified, be in MODE 4~~reduce reactor coolant system average temperature below 350°F~~ within the next 12 ~~6~~ hours. A3.4-14 A3.4-08 L3.4-16

LCO3.4.5 Cond A
Cond B

(3) With both reactor coolant pumps inoperable or not in operation immediately: L3.4-118

LCO3.4.5 Cond D

(a) ~~De-energize all~~ Place the control rod drive system in a condition incapable of rod withdrawal ~~mechanisms~~,

(b) Suspend all operations involving a reduction of RCS boron concentration, R-9

LCO3.4.5 LCO Note

(c) Establish and maintain the core outlet temperature at least 10 °F below saturation temperature, and

LCO3.4.5 Cond D

(c) Initiate action to restore one reactor coolant pump to OPERABLE status and operation.*

~~If at least one reactor coolant pump is not restored to OPERABILITY and operation within 72 hours, reduce reactor coolant system average temperature to below 350°F within the next 12 hours. While applicable, this specification supercedes 3.1.A.1.b(2).~~ A3.4-18

* If the RCP shutdown or inoperability was due to preplanned work activities such as testing, switching, or maintenance, immediate restoration action is not required, but if at least one reactor coolant pump is not restored to operability and operation within 12 hours,

LCO3.4.5 NOTE

~~reduce reactor coolant system average temperature to~~ R-9

LCO3.4.5 Cond C

If one RCS loop is not in operation with Rod Control System capable of rod withdrawal, within one hour restore the loop to operation, or render the Rod Control System inoperable. L3.4-23 M3.4-17

SR3.4.5.1
SR3.4.5.2
SR3.4.5.3

New SRs, Verify RCS loops operating, verify SG capable of removing decay heat, verify breaker alignment for non- M3.4-21 R-9

A3.4-08

~~3.1.A.1.c.~~ Reactor Coolant System Mode 4, loops filled~~Average Temperature Below 350°F (and Reactor Coolant Level Above the Reactor Vessel Flange)~~ A3.4-102

LCO3.4.6 ~~(1) Whenever the reactor coolant system average temperature is below 350°F, except during REFUELING, at least~~Mode 4, two loops consisting of any combination of ~~methods for removing decay heat~~ shall be OPERABLE with one in operation* ~~(except as specified in 3.1.A.1.c.(2) below).~~ A3.4-107

~~(2) Acceptable methods for removing decay heat are at least one reactor~~ LR3.4-24
coolant system loop ~~pump and its~~
(3) ~~associated steam generator; or~~ and residual heat removal loop ~~including a pump and its associated heat exchanger~~.

A3.4-103

~~3.1.A.1.c.~~ Reactor Coolant System Mode 5, loops filled~~Average Temperature Below 350°F (and Reactor Coolant Level Above the Reactor Vessel Flange)~~

A3.4-102 A3.4-08

LCO3.4.7 ~~Whenever the reactor coolant system average temperature is below 350°F, except during REFUELING, at least two methods for removing decay heat~~Mode 5 with loops filled, one RHR loop shall be OPERABLE ~~with one~~and in operation* ~~(except as specified in 3.1.A.1.c.(2) below). Acceptable methods for removing decay heat are~~and at least one ~~reactor coolant pump and its associated~~ steam generator capable of decay heat removal; or a residual heat removal loop ~~including a pump and its associated heat exchanger OPERABLE~~.

M3.4-26 LR3.4-24

L3.4-126 A3.4-104 A3.4-105

LCO3.4.6 Cond A (2) ~~With only~~ one required loop inoperable ~~OPERABLE method of removing decay heat~~, immediately initiate ~~prompt~~ action to restore a second loop to ~~two~~ OPERABLE ~~methods of removing decay heat~~. A3.4-104 LR3.4-24

LCO3.4.7 Cond A (2) ~~With only~~ one required RHR loop inoperable and one RHR loop OPERABLE ~~method of removing decay heat~~, immediately initiate ~~prompt~~ action to restore a second RHR loop to ~~two~~ OPERABLE or initiate action to restore required SG capable to ~~of removeing~~ decay heat. LR3.4-24

A3.4-120

LCO3.4.7 Cond B (2) ~~With only~~ one or more SGs not capable ~~OPERABLE method~~ of removing decay heat and one RHR loop OPERABLE, immediately initiate ~~prompt~~ action to restore a second RHR loop to ~~two~~ OPERABLE or initiate action or restore required SGs capable to remove ~~methods of removing~~ decay heat. LR3.4-24

A3.4-121

LCO3.4.6 Cond A Note Only required If the remaining RHR loop is operable ~~method is an RHR loop~~, be in MODE 5~~COLD SHUTDOWN~~ within 24 hours. A3.4-08

R-9

A3.4-08

LCO3.4.6 Cond B

(3) ~~With no OPERABLE methods of removing decay heat~~ Both loops inoperable or required loop not in operation, suspend ~~all~~ operations that would cause introduction into RCS coolant with ~~involving a reduction in~~ boron concentration less than required to meet SDM of LCO 3.1.1 ~~of the reactor coolant system~~ and immediately initiate ~~prompt~~ action to restore one loop OPERABLE and in operation ~~method of removing decay heat~~.

A3.4-106

LCO3.4.7 Cond C

(3) With no ~~OPERABLE methods of removing decay heat~~ required RHR loops OPERABLE or required RHR loop not in operation, suspend ~~all~~ operations that would cause introduction into RCS coolant with ~~involving a reduction in~~ boron concentration less than required to meet SDM of LCO 3.1.1 ~~of the reactor coolant system~~ and immediately initiate ~~prompt~~ action to restore one loop OPERABLE and in operation ~~method of removing decay heat~~.

A3.4-122

R-9

LCO3.4.6 NOTE 2
LCO3.4.7 NOTE 3

(4) A reactor coolant pump may be started at RCS temperature less than the Over Pressure Protection System Enable Temperature specified in the PTLR, only if either of the following conditions is met:

There is a steam or gas bubble in the pressurizer, or

The (steam generator minus RCS) temperature difference for the steam generator in that loop is less than 50°F.

LCO3.4.7 NOTE 4

Both RHR loops may be removed from operation for planned heatup to MODE 4 when at least one RCS loop is in operation.

A3.4-28

SR3.4.6.1
SR3.4.6.2
SR3.4.6.3

New SRs, Verify one RHR or RCS loop in operation, verify SG capable of removing decay heat, verify pump breaker alignment

M3.4-31

SR3.4.7.1
SR3.4.7.2
SR3.4.7.3

New SRs, Verify one RHR loop in operation, verify SG capable of removing decay heat, verify pump breaker alignment

M3.4-32

R-9

~~d.~~Reactor Coolant System, Mode 5, loops not filled~~Level Below or at the Reactor Vessel Flange~~ A3.4-08

LR3.4-24

LCO3.4.8

(1) Both residual heat removal loops, ~~each consisting of a pump and its associated heat exchanger,~~ shall be OPERABLE with one in operation* (except as specified in 3.1.A.1.d.(2) below).

LCO3.4.8 Cond A

(2) With one required ~~or both~~ residual heat removal loop(s) inoperable, ~~prompt~~immediately action shall be taken to restore the inoperable residual heat removal loop~~(s)~~ to an OPERABLE status~~.~~

LCO3.4.8 Cond B

and, if no RHR loops operable, or required RHR Loop not in operation, immediately suspend all operations involving reduction in RCS boron concentration and initiate action to restore one RHR Loop to OPERABLE status and in operation. M3.4-33

R-9

LCO3.4.8 LCO3.4.13 Notes

During reduced inventory conditions, a safety injection pump may be run as required to maintain adequate core cooling and RCS inventory in the event of a loss of Residual Heat Removal System cooling.

M3.4-38

LCO3.4.6 LCO3.4.7 NOTE 1

*All pumps may be shutdown for up to one hour per 8 hour period provided the reactor is subcritical, no operations are permitted that would cause dilution of the reactor coolant boron concentration and core outlet temperature is maintained at least 10°F below saturation temperature.

O3.4.8 TE 1

*All pumps may be shutdown for up to one hour per 8 hour period provided the reactor is subcritical, no operations are permitted that would cause dilution of the reactor coolant boron concentration and core outlet temperature is maintained at least 10°F below saturation temperature and no RCS draining operations are permitted. M3.4-34

R-9

LCO3.4.7 LCO3.4.8 NOTE 2

One required RHR loop may be inoperable for ≤ 2 hours for surveillance provided that the other RHR loop is OPERABLE and in operation. L3.4-36

.4.8.1 .4.8.2

New SRs, Verify required RHR loop in operation, verify breaker alignment for RHR pump not operating M3.4-37 R-9

~~3.1.A.2 Reactor Coolant System Pressure Control~~

a. Pressurizer

A3.4-08

LCO3.4.9

(1) When A reactor is in MODE 1, 2, and 3, the pressurizer shall be OPERABLE with~~shall not be made or maintained critical nor shall reactor coolant system average temperature exceed 350°F unless~~

pressurizer level ≤ 90% ~~there is a steam bubble in the~~ M3.4-41

~~pressurizer~~ and two heater groups ~~A and B~~ are operable and capable of being powered from an emergency power supply. LR3.4-24

(except as specified in 3.1.A.2.a.2 and 3.1.A.2.a.3 below).

A3.4-08

(2) During Modes 1, 2, and 3~~STARTUP OPERATION or POWER OPERATION,~~

LCO3.4.9 Cond B,C

~~Group A or B~~ one pressurizer heater group may be inoperable for 72 hours

A3.4-14

~~provided STARTUP OPERATION is discontinued until OPERABILITY is restored.~~

If OPERABILITY is not restored within the time specified, be in at least MODE 3~~HOT SHUTDOWN~~ within the next 6 hours and MODE 4~~reduce reactor coolant system average temperature below 350°F~~ within 12~~the following 6~~ hours. A3.4-08 A3.4-39

(3) With the pressurizer otherwise inoperable, ~~within one hour~~ initiate the action necessary to place the unit in M3.4-42

LCO3.4.9 Cond A

~~HOT SHUTDOWN, and be in~~ ~~at least~~ MODE 3~~HOT SHUTDOWN within the next 6 hours,~~ A3.4-08

AND fully insert all rods AND render Control Rod system incapable of rod withdrawal in 6 hours, M3.4-43 R-9

and be in MODE 4~~reduce reactor coolant average~~ A3.4-08

~~temperature below 350°F~~ within 12~~the following 6~~ hours. A3.4-39

SR3.4.9.1 New SR, Verify water level is ≤ 90% in pressurizer. M3.4-44

R-9

b. Pressurizer Safety Valves

LCO3.4.10 (1) Reactor Coolant System Modes 1, 2, 3, and 4 with all cold leg ~~average~~temperatures greater than OPPS enable temperature specified in the PTLR~~or equal to 350°F~~ A3.4-08 M3.4-45

When A reactor is in MODE 1, 2, 3, and 4 with all ~~shall not be made or maintained critical nor shall~~ reactor coolant system cold leg ~~average~~ temperatures ~~exceed~~ OPPS enable temperature specified in the PTLR, ~~350°F unless~~ two pressurizer safety valves shall be~~are~~ OPERABLE, with lift settings of 2485 psig ±3 ~~1%~~. A3.4-08 M3.4-45 A3.4-46

LCO3.4.10

LCO3.4.10 Cond A

If these conditions cannot be satisfied, ~~discontinue STARTUP OPERATION and~~ within 15 minutes restore valve to OPERABLE status~~initiate the action necessary to place the unit in HOT SHUTDOWN~~, and A3.4-14

LCO3.4.10 Cond B

be in at least MODE 3~~HOT SHUTDOWN~~ within the next 6 hours and ~~reduce~~ be in MODE 4 with any reactor coolant system cold leg ~~average~~ temperature below the OPPS enable temperature specified in the PTLR ~~350°F~~ within 24~~the following 6~~ hours. A3.4-08 M3.4-45 L3.4-109 R-9

LCO3.4.10 NOTE

NOTE: The lift settings are not required to be within the LCO limits during MODE 3 for the purpose of setting the pressurizer safety valves under ambient (hot) conditions. This exception is allowed for 36 hours following entry into MODE 3 provided a preliminary cold setting was made prior to heatup. L3.4-48

L3.4-47

~~2) Reactor Coolant System Average Temperature below 350°F~~

~~At least one pressurizer safety valve shall be OPERABLE, with a lift setting of 2485 psig ±1%, whenever the head is on the reactor vessel, except during hydrostatic tests. With no pressurizer safety valve OPERABLE, promptly place an OPERABLE residual heat removal loop into operation.~~

~~3.1.A.2.c~~ Pressurizer Power Operated Relief Valves

A3.4-08

LCO3.4.11

(1) Modes 1, 2, and 3 (Reactor Coolant System average temperature greater than or equal to 350°F)

(a) In MODES 1, 2, and 3~~Reactor coolant system average temperature shall not exceed~~ 350° ~~F*unless~~ two power operated relief valves (PORVs) and their associated block valves are OPERABLE (except as specified in 3.1.A.2.c(1)(b) below). A3.4-08

LCO3.4.11

(b) ~~During STARTUP OPERATION or POWER OPERATION, any one of the following conditions of inoperability may exist for each unit.~~ If OPERABILITY is not restored within the time specified or the required action cannot be completed, be in ~~at least~~ MODE 3~~HOT SHUTDOWN~~ within the next 6 hours and MODE 4~~reduce reactor coolant system average temperature below 350°F*~~ within 12~~the following 6~~ hours. A3.4-14 A3.4-08 A3.4-08 A3.4-39

LCO3.4.11 Cond D,G

1. With one or both PORVs inoperable because of excessive seat leakage, within one hour ~~either restore the PORV(s) to OPERABLE status or~~ close the associated block valve(s) with power maintained to the block valve(s). A3.4-49

LCO3.4.11 Cond A

2. With one PORV inoperable due to causes other than excessive seat leakage, within one hour ~~either restore the PORV to OPERABLE status or~~ close and remove power from the associated block valve. Restore the PORV to OPERABLE status within the following 72 hours. A3.4-49

LCO3.4.11 Cond B

3. With both PORVs inoperable due to causes other than excessive seat leakage, within one hour ~~either restore at least one PORV to OPERABLE status or~~ close and remove power from the associated block valves and be in ~~at least~~ MODE 3~~HOT SHUTDOWN~~ within the next 6 hours and MODE 4 ~~reduce reactor coolant system average temperature below 350°F*~~ within 12~~the following 6~~ hours. A3.4-49 A3.4-08 A3.4-39

LCO3.4.11 Cond E

4. ~~With one block valve inoperable~~, within one hour ~~either restore the block valve to OPERABLE status or~~ place its associated PORV in manual control. Restore the block valve to OPERABLE status within the following 72 hours. A3.4-49

LCO3.4.11 Cond C

Required Actions C.1 and C.2 do not apply when block valve is inoperable solely as a result of complying with Required Actions B.2 and E.2.

LCO3.4.11 Cond C Note

A3.4-110

R-9

LCO3.4.11 Cond F

5. With both block valves inoperable, within two hours~~one hour either restore the block valves to OPERABLE status or place the PORVs in manual control.~~ Restore ~~at least~~ one block valve to OPERABLE status ~~within the next hour~~.

A3.4-49

M3.4-123

LCO3.4.11 Cond F Note

Required Action F.1 does not apply when block valve is inoperable solely as a result of complying with Required Actions B.2 and E.2.

A3.4-111

R-9

(2) Reactor Coolant System average temperature greater than or equal to the temperature specified in the PTLR for disabling both safety injection pumps and below the Over Pressure Protection System Enable Temperature specified in the PTLR

LCO3.4.12

With Reactor Coolant System temperature greater than or equal to the temperature specified in the PTLR for disabling both safety injection pumps and less than the Over Pressure Protection System Enable Temperature specified in the PTLR; with a maximum of one SI pump capable of injecting into the RCS and the ECCS accumulators** isolated, both pressurizer power operated relief valves (PORVs) shall be OPERABLE (except as specified in 3.1.A.2.c.(2).(a) and 3.1.A.2.c.(2).(b) below) with the Over Pressure Protection System enabled, ~~the associated block valve open, and the associated backup air supply charged~~.

LCO3.4.12 M3.4-51 M3.4-52 LR3.4-53

LCO3.4.12 Cond A

If both SI pumps are capable of injecting into the RCS, prompt action shall be taken to make one incapable of injecting into the RCS.

M3.4-51

LCO3.4.12 Cond B,C

If an ECCS accumulator is not isolated as required, isolate the affected accumulator within 1 hour, or increase the RCS cold leg temperature > LTOP enable temperature specified in the PTLR within 12 hours or depressurize the accumulator to less than the maximum RCS pressure for the existing cold leg temperature allowed in the PTLR within 12 hours.

M3.4-52 R-9

LCO3.4.12 NOTE 2

**Accumulator isolation is only required when accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed by the P/T limit curves in the PTLR.

M3.4-52

M3.4-52 M3.4-54

SR3.4.12.1 SR3.4.12.2 SR3.4.12.3

New SRs, Verify no more than one SI pump capable of injecting into RCS every 12 hours, verify accumulator isolation valve isolated once within 12 hours and every 12 hours thereafter, verify PORV block valve open every 72 hours.

R-9

~~3.1.A.2.c.(2)~~.

LCO3.4.12 Cond D

(a) One PORV may be inoperable for 7 days. L3.4-50

LCO3.4.12 Cond E

If these conditions cannot be met, be in MODE 5 within 8 hours and depressurize and vent the reactor coolant system through at least a 3 square inch vent within ~~the next~~ 12~~8~~ hours. L3.4-50

LCO3.4.12 Cond E

(b) With both PORVs inoperable, be in MODE 5 within 8 hours and complete depressurization and venting of the RCS through at least a 3 square inch vent within 12~~8~~ hours.

(3) Reactor Coolant System average temperature below the temperature specified in the PTLR for disabling both safety injection pumps

LCO3.4.13

LCO3.4.13

With Reactor Coolant System temperature less than the temperature specified in the PTLR for disabling both safety injection pumps, when the head is on the reactor vessel and the reactor coolant system is not vented through a 3 square inch or larger vent; with both SI pumps incapable of injecting into the RCS and the ECCS accumulators** isolated, both Pressurizer power operated relief valves (PORVs) shall be OPERABLE (except as specified in 3.1.A.2.c.(3).(a) and 3.1.A.2.c.(3).(b) below) with the Over Pressure Protection System enabled, ~~the associated block valve open, and the associated backup air supply charged~~. M3.4-51 M3.4-52 LR3.4-53

LCO3.4.13 Cond D

(a) One PORV may be inoperable for 24 hours.

LCO3.4.13 Cond E

If these conditions cannot be met, depressurize and vent the reactor coolant system through at least a 3 square inch vent within 8 hours.

LCO3.4.13 Cond E

(b) With both PORVs inoperable, complete depressurization and venting of the RCS through at least a 3 square inch vent within 8 hours.

LCO3.4.13 Cond A

If one or both SI pumps are capable of injecting into the RCS, prompt action shall be taken to make both incapable of injecting into the RCS. M3.4-51

LCO3.4.13 Cond B

If an ECCS accumulator is not isolated as required, isolate the affected accumulator within 1 hour, or increase the RCS cold leg temperature > LTOP enable temperature specified in the PTLR within 12 hours or depressurize the accumulator to less than the maximum RCS pressure for the existing cold leg temperature allowed in the PTLR within 12 hours. M3.4-52

SR3.4.13.1
SR3.4.13.2
SR3.4.13.3
SR3.4.13.4

New SRs, Verify no SI capable of injecting into RCS every 12 hours, verify accumulator isolation valve isolated once within 12 hours and every 12 hours thereafter, verify RCS vent ≥ 3 square inches 12 hours for unlocked open vent valve(s) and 31 days for other vent path(s), verify PORV block valve open every 72 hours.

M3.4-52 M3.4-54 R-9

~~3.1.A.3 Reactor Coolant Vent System~~

~~a. A reactor shall not be made or maintained critical nor shall reactor coolant system average temperature exceed 200°F unless Reactor Coolant Vent System paths from both the reactor vessel head and pressurizer steam space are OPERABLE and closed (except as specified in 3.1.A.3.b and 3.1.A.3.c below).~~ R3.4-56

~~b. During STARTUP OPERATION and POWER OPERATION, any one of the following conditions of inoperability may exist for each unit provided STARTUP OPERATION is discontinued until OPERABILITY is restored. If any one of these conditions is not restored to an OPERABLE status within 30 days, be in at least HOT SHUTDOWN within the next 6 hours and in COLD SHUTDOWN within the following 30 hours:~~

~~(1) Both of the parallel vent valves in the reactor vessel head vent path inoperable, or~~

~~(2) Both of the parallel vent valves in the pressurizer vent path inoperable, or~~

~~(3) The vent valve to the pressurizer relief tank discharge line inoperable, or~~

~~(4) The vent valve to the containment atmospheric discharge line inoperable.~~

~~c. With no Reactor Coolant Vent System path OPERABLE, restore at least one vent path to OPERABLE status within 72 hours or be in at least HOT SHUTDOWN within the next 6 hours and COLD SHUTDOWN within the following 30 hours.~~

LCO3.4.2
SR3.4.2.1

New Specification 3.4.2, RCS Minimum Temperature for Criticality

M3.4-57

3.1.B. Pressure/Temperature Limits

1. Reactor Coolant System

LCO3.4.3

a. The Unit 1 and Unit 2 Reactor Coolant Systems (except the pressurizer) temperature, pressure heatup rates, and cooldown rates shall be maintained within the limits specified in the Pressure and Temperature Limits report (PTLR).

A3.4-61

LCO3.4.3

b. If these conditions cannot be satisfied in Modes 1, 2, 3, and 4, restore the temperature and/or pressure to within the limits within 30 minutes; ~~perform an engineering evaluation to determine the effects of the out of limit condition on the structural integrity of the Reactor Coolant System~~; within 72 hours determine that the Reactor Coolant System remains acceptable for continued operation or be in at least MODE 3~~HOT SHUTDOWN~~ within the next 6 hours and MODE 5~~reduce the reactor coolant system average temperature and pressure to less than 200°F~~ and 500 psig, respectively, within 36~~the following 30~~ hours.

LR3.4-101

LCO3.4.3 Cond A

M3.4-62

R-9

A3.4-08

A3.4-39

LCO3.4.3 Cond C

If these conditions cannot be satisfied in other than Mode 1, 2, 3, or 4, promptly initiate action to restore parameters to within limits and determine if the RCS is acceptable for continued operation prior to entering MODE 4.

M3.4-63

SR3.4.3.1

New SR, Verify pressure, temperature, heatup, cooldown rates within PTLR limits

M3.4-64

~~2. Pressurizer~~

~~a. The pressurizer temperature shall be limited to:~~

~~1. A maximum heatup of 100°F in any 1-hour period.~~

~~2. A maximum cooldown of 200°F in any 1-hour period.~~

~~b. The pressurizer spray shall not be used if the temperature difference between the pressurizer and the spray fluid is greater than 320°F.~~

~~c. If these conditions cannot be satisfied, restore the temperature to within the limits within 30 minutes; perform an engineering evaluation to determine the effects of the out-of-limit condition on the structural integrity of the pressurizer; determine that the pressurizer remains acceptable for continued operation or be in at least HOT SHUTDOWN within the next 6 hours and reduce the pressurizer pressure to less than 500 psig within the following 30 hours.~~

R3.4-66

~~3.1.B.3.Steam Generators~~

~~a. The secondary side of the steam generator must not be pressurized above 200 psig if the temperature of the steam generator is below 70°F.~~ R3.4-67

~~b. If these conditions cannot be satisfied, reduce the steam generator pressure to less than or equal to 200 psig within 30 minutes; perform an engineering evaluation to determine the effects of the overpressurization on the structural integrity of the steam generator; determine that the steam generator remains acceptable for continued operation prior to increasing its temperature above 200°F.~~

3.1.C. REACTOR COOLANT SYSTEM LEAKAGE

1. Leakage Detection

A3.4-71

LCO 3.0.4 does not apply.

A3.4-08

LCO3.4.16

In Modes 1, 2, 3 and 4~~The reactor coolant system average temperature shall not exceed 200°F unless~~ at least two means of reactor coolant system leakage detection shall be OPERABLE, one of which must depend on the detection of radionuclides in the containment. The other means is the containment sump A pump run time instrumentation. One means of leakage detection may be inoperable for 30 days provided daily RCS water balance inventories are performed and, if radionuclide detection is inoperable, daily compensatory sampling shall be performed. If these conditions cannot be met, be in MODE 3 in 6 hours and MODE 5 in 36 hours.

LCO3.4.16 Cond A
Cond B
Cond C

L3.4-68

LCO3.4.16 Cond D

If these conditions cannot be satisfied (all required monitors inoperable), immediately enter LCO 3.0.3 ~~within one hour initiate the action necessary to place the affected unit in HOT SHUTDOWN, and be in at least HOT SHUTDOWN within the next 6 hours and in COLD SHUTDOWN within the following 30 hours~~. A3.4-71

SR3.4.16.1
SR3.4.16.2
SR3.4.16.3
SR3.4.16.4

New SRs, Channel Check, COT and Calibration of containment radionuclide instrumentation and Calibration of sump pump run time instrumentation. M3.4-72

2. Leakage Limitations

LCO3.4.14

The following leakage limitations are applicable whenever in Modes 1, 2, 3 and 4~~the reactor coolant system average temperature exceeds 200°F~~. A3.4-08

A3.4-73

LCO3.4.14 Cond A

a. If the LEAKAGE~~leakage rate, from other than controlled leakage sources, such as the reactor coolant pump controlled leakage seals,~~ exceeds 1 gpm and the source of the leakage is not identified within 4 hours of leak detection, be in at least MODE 3~~HOT SHUTDOWN~~ within the next 6 hours.

LCO3.4.14 Cond B

If the source of leakage is not identified within 54~~an additional 48~~ hours, be in MODE 5~~COLD SHUTDOWN~~ within 84~~the following 30~~ hours. A3.4-08 A3.4-39

LCO3.4.14

b. If the sources of leakage are identified ~~and the results of the evaluations are that continued operation is safe~~, operation of the reactor with a total leakage, other than leakage from controlled sources, not exceeding 10 gpm shall be permitted (except as specified in 3.1.C.2.c below). LR3.4-74

LCO3.4.14 Cond D

c. If it is determined that leakage exists through a fault which has developed in a Reactor Coolant System component body, pipe wall, vessel wall, or pipe weld, and that the fault cannot be isolated, ~~within one hour initiate action to place the unit in HOT SHUTDOWN and~~ be in at least MODE 3 ~~HOT SHUTDOWN~~ within the next 6 hours and be in MODE 5 ~~COLD SHUTDOWN~~ within 36~~the next 30~~ hours and take corrective action prior to resumption of unit operation. M3.4-42 A3.4-08 A3.4-39

LCO3.4.14
Cond C

d. If the total LEAKAGE~~leakage, other than leakage from controlled sources,~~ exceeds 10 gpm, ~~within one hour initiate action to place the unit in HOT SHUTDOWN and~~ be in at least MODE 3 ~~HOT SHUTDOWN~~ within the next 6 hours. If the condition is not corrected within 14~~an additional 8~~ hours, be in MODE 5~~COLD SHUTDOWN~~ within 44~~the following 30~~ hours

~~and remain in COLD SHUTDOWN until the condition is corrected~~.

A3.4-73
M3.4-42
A3.4-08
A3.4-39
A3.4-77

e. If the total reactor coolant system to secondary coolant system leakage through any one steam generator of a unit exceeds 150 gallons per day (GPD), ~~within one hour initiate action to place the unit in HOT SHUTDOWN and~~ be in at least MODE 3 ~~HOT SHUTDOWN~~ within the next 6 hours and be in MODE 5 ~~COLD SHUTDOWN~~ M3.4-42 A3.4-08

LCO3.4.14 Cond D

within 36~~the following 30~~ hours A3.4-39

SR3.4.14.2

and perform an inservice steam generator tube inspection in accordance with Steam Generator Program ~~Technical Specification 4.12~~. A3.4-78

3. Pressure Isolation Valve Leakage

LCO3.4.15

Leakage through the pressure isolation valves shall not exceed the maximum allowable leakage specified in Specification 4.3 when in MODES 1, 2, 3, and 4 ~~reactor coolant system average temperature exceeds 200°F~~. A3.4-08

LCO3.4.15 Cond A

If the maximum allowable leakage is exceeded, isolate the high pressure portion of the system in 4 hours and restore the PIV to within limits in 72 hours. Valves used to isolate the PIV flow path must meet SR 3.4.15.1 leakage limits. ~~within one hour initiate the action necessary to place the unit in HOT SHUTDOWN, and~~ If these requirements can not be met, be in at least MODE 3 ~~HOT SHUTDOWN~~ within the next 6 hours and in MODE 5 ~~COLD SHUTDOWN~~ L3.4-79 A3.4-08

LCO3.4.15 Cond B

within 36~~the following 30~~ hours. A3.4-39

~~3.1.D.~~RCS Specific ~~MAXIMUM~~ ~~COOLANT~~ ACTIVITY

LCO3.4.17

1. The specific activity of the primary coolant ~~(except as specified in 3.1.D.2 and 3 below)~~ shall be limited ~~to~~:

SR3.4.17.2

a. Less than or equal to 1.0 microcuries per gram DOSE EQUIVALENT I-131, and

SR3.4.17.1

b. Less than or equal to 100/Ē microcuries per gram of gross radioactivity.

A3.4-08

R-9

2. If a reactor is in Modes 1 and 2 or ~~critical or the~~ in Modes 3 with reactor coolant system average temperature ~~is~~ greater than or equal to 500°F:

LCO3.4.17 Cond A

a. With the specific activity of the primary coolant greater than 1.0 microcurie per gram DOSE EQUIVALENT I-131, verify once per 4 hours to be within the acceptable region of Figure TS.3.1-3, for more than 48 hours during one continuous time interval or exceeding the limit line shown on Figure TS.3.1-3,

M3.4-81

LCO3.4.17 Cond C

the reactor shall be in MODE 3 with ~~shutdown and~~ reactor coolant system average temperature cooled to below 500°F within 6 hours.

A3.4-08

LCO3.4.17 Cond B

b. With the gross specific activity of the primary coolant greater than 100/Ē microcurie per gram, the reactor shall be in MODE 3 with ~~shutdown and~~ reactor coolant system average temperature cooled to below 500°F within 6 hours.

A3.4-08

~~3. If a reactor is at or above COLD SHUTDOWN, with the specific activity of the primary coolant greater than 1.0 microcurie per gram DOSE EQUIVALENT I-131 or greater than 100/Ē microcuries per gram, perform the sampling and analysis requirements of item 4a of Table 4.1-2B until the specific activity of the primary coolant is restored to within its limits.~~

L3.4-82

~~Next pages are Figure TS.3.1-3 and TS.3.1-12.~~

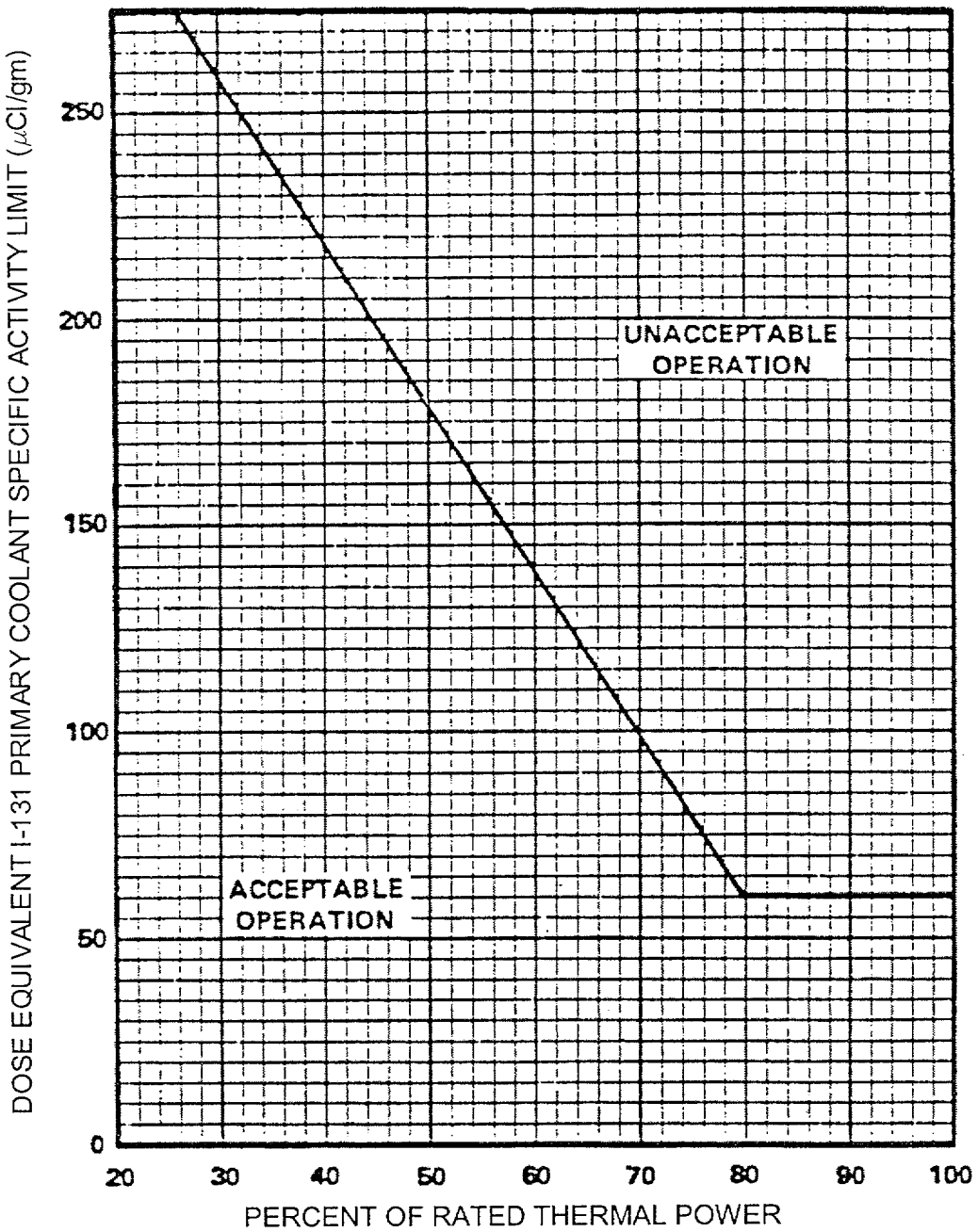

Figure ~~TS.3.1-3~~ 3.4.17-1 (Page 1 of 1)

Reactor Coolant DOSE EQUIVALENT I-131 ~~Primary Coolant~~ Specific Activity Limit Versus Percent of RATED THERMAL POWER ~~with the Primary Coolant Specific Activity > 1.0 μCi/gram Dose Equivalent I-131~~

3.3.A.2.g. The valve position monitor lights or alarms for motor-operated valves specified in 3.3.A.1.g above may be inoperable for 72 hours provided the valve position is verified once each shift.

LCO3.4.12

3. A maximum of one safety injection pump shall be capable of injecting into the RCS whenever in MODE 4 with RCS temperature is less than the Over Pressure Protection System Enable Temperature specified in the PTLR

A3.4-83

LCO3.4.12
LCO3.4.13
NOTE 1

except that both SI pumps may be run for up to one hour while conducting the integrated SI test** when either of the following conditions is met:

(a) There is a steam or gas bubble in the pressurizer and an isolation valve between the SI pump and the RCS is shut, or

~~(b) The reactor vessel head is removed.~~

A3.4-127

R-9

LCO3.4.13

4. No safety injection pumps*** shall be capable of injecting into the RCS whenever in MODE 4 with RCS temperature is less than the temperature specified in the PTLR for disabling both safety injection pumps, MODE 5 when the SG primary system manways and pressurizer manway are closed and secured in position, MODE 6 when the reactor vessel head is on and the SG primary system manways and pressurizer manway are closed and secured in position. (except one or both pumps may be run as specified in 3.3.A.3 and 3.1.A.1.d.(2)).

A3.4-83

R-9

LCO3.4.12
LCO3.4.13

5. Both reactor coolant system accumulators shall be isolated* whenever RCS temperature is less than the Over Pressure Protection System Enable Temperature specified in the PTLR.

LCO3.4.12
NOTE 2
LCO3.4.13
NOTE 3

*This specification does not apply whenever the reactor coolant system accumulators are depressurized or the reactor vessel head is removed.

LCO3.4.12
LCO3.4.13
NOTE 1

**Other SI system tests and operations may also be conducted under these conditions.

LCO3.4.13

***This specification does not apply whenever the reactor vessel head is removed.

A3.4-00

Addressed Elsewhere

R-2

TABLE TS.4.1-1C (Page 3 of 4)

MISCELLANEOUS INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHECK	CALIBRATE	FUNCTIONAL TEST	RESPONSE TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
23. Deleted					
24. Steam Exclusion Actuation	W	Y	M	N.A.	1, 2, 3
25. Overpressure Mitigation	N.A.	R	M ~~R~~	N.A.	4[38], 5
26. Auxiliary Feedwater Pump Suction Pressure	N.A.	R	R	N.A.	1, 2, 3
27. Auxiliary Feedwater Pump Discharge Pressure	N.A.	R	R	N.A.	1, 2, 3
28. NaOH Caustic Stand Pipe Level	W	R	M	N.A.	1, 2, 3, 4
29. Hydrogen Monitors	S	Q	M	N.A.	1, 2
30. Containment Temperature Monitors	M	R	N.A.	N.A.	1, 2, 3, 4
31. Turbine Overspeed Protection Trip Channel	N.A.	R	M	N.A.	1

SR3.4.12.4
SR3.4.12.5
SR3.4.13.5
SR3.4.13.6

M3.4-84

Addressed Elsewhere

~~Table TS.4.1-1C (Page 3 of 4)~~
~~REV 121 11/9/95~~

TABLE TS.4.1-1C (Page 4 of 4)

TABLE NOTATIONS

FREQUENCY NOTATION

NOTATION	FREQUENCY
S	Shift
D	Daily
W	Weekly
M	Monthly
Q	Quarterly
S/U	Prior to each startup
Y	Yearly
R	Each refueling shutdown
N.A.	Not applicable

TABLE NOTATION

Addressed Elsewhere

(30) Prior to each startup following shutdown in excess of two days if not done in previous 30 days.

(31) When the reactor trip system breakers are closed and the control rod drive system is capable of rod withdrawal.

(32) Following rod motion in excess of six inches when the computer is out of service.

(33) Transfer logic to Refueling Water Storage Tank.

(34) When either main steam isolation valve is open.

(35) Includes those instruments named in the emergency procedure.

(36) Except for containment hydrogen monitors and refueling water storage tank level which are separately specified in this table.

(37) When RHR is in operation.

(38) Within 12 hours of When the reactor coolant system average temperature is less than the Over Pressure Protection System Enable Temperature specified in the PTLR.

SR3.4.12.4
SR3.4.13.5

M3.4-85

(39) Whenever CONTAINMENT INTEGRITY is required.

~~Table TS.4.1-1C (Page 4 of 4) REV 135 5/4/98~~

A3.4-00

R-2

Addressed Elsewhere

~~Table TS.4.1-2A (Page 1 of 2)~~

MINIMUM FREQUENCIES FOR EQUIPMENT TESTS

Equipment	Test	Frequency	FSAR Sect. Reference
1. Control Rod Assemblies	Rod Drop Times of full length rods	All rods during each refueling shutdown or following each removal of the reactor vessel head; affected rods following maintenance on or modification to the control rod drive system which could affect performance of those specified rods	7
2. Control Rod Assemblies	Partial movement of all rods	Every Quarter	7
3. Pressurizer Safety Valves (SR3.4.10.1)	Verify OPERABLE in accordance with the Inservice Testing Program (± 3%). Following testing, lift settings shall be within ±1%	Per ASME Code, Section XI Inservice Testing Program	-
4. Main Steam Safety Valves	Verify each required lift setpoint in accordance with the Inservice Testing Program (± 3%). Following testing, lift settings shall be within ±1%	Per ASME Code, Section XI Inservice Testing Program	-
5. Reactor Cavity	Water Level	Prior to moving fuel assemblies or control rods and at least once every day while the cavity is flooded.	
6. Pressurizer PORV Block Valves (SR3.4.11.1)	Functional	Quarterly, unless the block valve has been closed per Specification 3.1.A.2.c.(1).(b).2 or 3.1.A.2.c.(1).(b).3.	
Pressurizer PORVs (SR3.4.11.2)	Functional	Every ~~18~~ 24 months	

Addressed Elsewhere

~~Table TS.4.1-2A (Page 1 of 2) REV 123 5/21/96~~

L3.4-86

Note - Only required to be performed in Modes 1 and 2.

A3.4-114 A3.4-113

R-9

SR3.4.11.1 and 3.4.11.2

~~Table TS.4.1-2A (Page 2 of 2)~~

MINIMUM FREQUENCIES FOR EQUIPMENT TESTS

Equipment	Test	Frequency	FSAR Sect. Reference
8. Deleted			
SR3.4.14.1 9. Primary System Leakage	Evaluate	Daily	A3.4-112 4
Note - Not required to be performed until 12 hours after establishment of steady state operation.			
10. Deleted			R-9
11. Turbine stop valves, governor valves, and intercept valves. (Part of turbine overspeed protection)	Functional	Turbine stop valves, governor valves and intercept valves are to be tested at a frequency consistent with the methodology presented in WCAP-11525 "Probabilistic Evaluation of Reduction in Turbine Valve test Frequency", and in accordance with the established NRC acceptance criteria for the probability of a turbine missle ejection incident of 1.0×10^{-5} per year. In no case shall the turbine valve test interval exceed one year.	10 Addressed Elsewhere

~~Table TS.4.1-2A (Page 2 of 2) REV 123 5/21/96~~

A3.4-00

~~Table TS.4.1-2B (Page 1 of 2) REV 147 12/7/98~~

TABLE TS.4.1-2B R-2

MINIMUM FREQUENCIES FOR SAMPLING TESTS

	TEST	FREQUENCY
SR3.4.17.1	1. RCS Gross Activity Determination	1 ~~5~~/week (A3.4-125)
SR3.4.17.2 and Note	2. RCS Isotopic Analysis for DOSE EQUIVALENT I-131 Concentration	1/14 days ~~(when at power)~~ only required to be performed in Mode 1
SR3.4.17.3	3. RCS Radiochemistry E determination ~~(when at power)~~ from a sample taken in MODE 1 after a minimum of 2 EFPD and 20 days of Mode 1 operation have elapsed since the reactor was last subcritical for ≥ 48 hours.	~~1/6 months~~ 184 days(1) (A3.4-124) R-9
LCO3.4.17	4. RCS Isotopic Analysis for Iodine Including I-131, I-133, and I-135	a) Once per 4 hours, whenever the specific activity exceeds 1.0 uCi/gram DOSE EQUIVALENT I-131 ~~or 100/E uCi/gram~~ (L3.4-91) (at or above 500 °F (L3.4-82) ~~cold shutdown~~), and
SR3.4.17.2		b) One sample between 2 and 6 hours following THERMAL POWER change exceeding 15 percent of the RATED THERMAL POWER within a one hour period (above hot shutdown)
	~~5. RCS Radiochemistry (2)~~	~~Monthly~~ (LR3.4-94)
	~~6. RCS Tritium Activity~~	~~Weekly~~ (LR3.4-94)
	~~7. Deleted~~	
	~~8. RCS Boron Concentration*(3)~~	~~2/Week (4)~~ (LR3.4-96)
	9. RWST Boron Concentration	Weekly
	10. Boric Acid Tanks Boron Concentration	2/Week
	11. Caustic Standpipe NaOH Concentration	Monthly
	12. Accumulator Boron Concentration	Monthly
	13. Spent Fuel Pit Boron Concentration	Weekly(7)(8)

Addressed Elsewhere

~~* Required at all times.~~

Addressed Elsewhere

~~TABLE TS.4.1-2B~~

MINIMUM FREQUENCIES FOR SAMPLING TESTS

TEST	FREQUENCY
14. Secondary Coolant Gross Beta-Gamma activity	Weekly
15. Secondary Coolant Isotopic Analysis for DOSE EQUIVALENT I-131 concentration	1/6 months (5)
16. Secondary Coolant Chemistry	
pH	5/week (6)
pH Control Additive	5/week (6)
Sodium	5/week (6)

Notes:

SR3.4.17.3 Note

1. ~~Sample to be taken~~ Not required to be performed until 31 days after a minimum of 2 EFPD and 20 days of ~~POWER OPERATION~~Mode 1 have elapsed since reactor was last subcritical for 48 hours or longer. M3.4-117

R-9

2. ~~To determine activity of corrosion products having a half-life greater than 30 minutes.~~ LR3.4-94

3. During REFUELING, the boron concentration shall be verified by chemical analysis daily.

4. ~~The maximum interval between analyses shall not exceed 5 days.~~ LR3.4-96

5. If activity of the samples is greater than 10% of the limit in Specification 3.4.D, the frequency shall be once per month.

6. The maximum interval between analyses shall not exceed 3 days.

Addressed

~~4.3~~PRIMARY COOLANT SYSTEM PRESSURE ISOLATION VALVES

~~Applicability~~

~~Applies to the surveillance performed on the primary coolant system pressure isolation valves to verify operability.~~

A3.4-03

~~Objective~~

~~To increase the reliability of primary coolant system pressure isolation valves thereby reducing the potential of an intersystem loss of coolant accident.~~

Specification

SR3.4.15.1 Periodic leakage testing of each of the following valves shall be individually accomplished every 24 months, prior to resuming power operation after ~~each time the plant is placed in the cold shutdown condition for refueling~~, each time the plant is placed in MODE 5 ~~a cold shutdown condition~~ for 7 days or more if testing has not been accomplished in the preceding 9 months, and prior to returning the valve to service after maintenance, repair, or replacement work is performed:

A3.4-99

A3.4-08

~~Allowable~~ ~~System~~	~~Valve Number~~ ~~Unit No. 1~~	~~Unit No. 2~~	~~Maximum~~ ~~Leakage (*)(**)~~
~~Low Pressure SI to~~	~~SI-9-6~~	~~2SI-9-6~~	~~≤ 5 gpm~~
~~Upper Plenum~~	~~SI-9-4~~	~~2SI-9-4~~	~~≤ 5 gpm~~
	~~SI-9-5~~	~~2SI-9-5~~	~~≤ 5 gpm~~
	~~SI-9-3~~	~~2SI-9-3~~	~~≤ 5 gpm~~
~~RHR to Loop B~~			
~~Accumulator Inj Line~~	~~SI-6-2~~	~~2SI-6-2~~	~~≤ 5 gpm~~

LR3.4-97

~~To satisfy ALARA requirements, leakage may be measured indirectly (as from the performance of pressure indicators) if accomplished in accordance with approved procedures and supported by computations showing that the method is capable of demonstrating valve compliance with the leakage criteria.~~

NOTES:

* 1. Leakage rates less than or equal to 0.5 ~~one~~ gpm per nominal inch of valve size are acceptable at an RCS pressure of ≥ 2215 psig and ≤ 2255 psig.

L3.4-87

SR3.4.15.1

2. ~~Leakage rates greater than one, but less than or equal to five gpm are considered acceptable if the latest measured rate has not exceeded the previous measured rate by an amount which reduces the margin to five gpm by 50% or more. Otherwise the leakage rate is considered unacceptable.~~

~~3.~~ Leakage rates greater than five gpm are considered unacceptable.

~~** Minimum differential test pressure shall not be less than 150 psid.~~ LR3.4-97

4.6.

B. Station Batteries

1. Each battery shall be tested each month. Tests shall include measuring voltage of each cell to the nearest hundredth volt, and measuring the temperature and density of a pilot cell in each battery.

2. The following additional measurements shall be made every three months: the density and height of electrolyte in every cell, the amount of water added to each cell, and the temperature of each fifth cell.

3. All measurements shall be recorded and compared with previous data to detect signs of deterioration or need of equalization charge according to the manufacturer's recommendation.

4. The batteries shall be subjected to a performance test discharge during the first refueling and once every five years thereafter. Battery voltage shall be monitored as a function of time to establish that the battery performs as expected during heavy discharge and that all electrical connections are tight.

5. Integrity of Station Battery fuses shall be checked once each day when the ~~battery charger is running~~.

C. Pressurizer Heater Emergency Power Supply

SR3.4.9.2 The emergency pressurizer heater supply shall be demonstrated OPERABLE at least once every 24~~18~~ months L3.4-86

~~by transferring Backup Heater Group "B" from its normal bus to its safeguards bus and energizing the heaters~~. LR3.4-98

~~4.18 REACTOR COOLANT VENT SYSTEM PATHS~~

R3.4-56

~~Applicability~~

~~Applies to the surveillance performed on the Reactor Coolant Vent System paths to verify OPERABILITY.~~

~~Objective~~

~~To assure that the capability exists to vent noncondensible gases from the Reactor Coolant System that could inhibit natural circulation core cooling.~~

~~Specification~~

~~A. Vent Path Operability~~

~~Each Reactor Coolant Vent System path shall be demonstrated OPERABLE prior to commencing STARTUP OPERATION after each refueling by:~~

~~1. Verifying all manual isolation valves in each vent path are blocked and tagged in the open position.~~

~~2. Cycling each solenoid operated valve in the vent paths through at least one complete cycle of full travel from the control room.~~

~~B. System Flow Testing~~

~~Flow shall be verified through each Reactor Coolant Vent System path following each refueling.~~

NSHD Category	Change Number 3.4-	Discussion of Change
A	08	CTS 3.1.A.1.a(2), 3.1.A.1.b(1), 3.1.A.1.b (2), 3.1.A.1.c, 3.1.A.1.d, 3.1.A.2.a(1), 3.1.A.2.a(2), 3.1.A.2.a(3), 3.1.A.2.b(1), 3.1.A.2.c(1), 3.1.A.2.c(1)(a), 3.1.A.2.c(1)(b), 3.1.A.2.c(1)(b)3, 3.1.B.1.b, 3.1.C.1, 3.1.C.2, 3.1.C.3, 3.1.D.2, 3.1.D.2.a, 3.1.D.2.b, 3.10.J and 4.3. The CTS contain prose descriptions of the modes of applicability and conditions in which the plant must be placed or remain when equipment is inoperable. These descriptions have been replaced with the equivalent MODES of applicability for the ITS. Since the modes of applicability and plant conditions in which the plant is placed or remains have not changed this is an administrative change.
	9	Not used.
	10	Not used.
M	11	A new SR, 3.4.4.1, is included in conformance with ISTS which requires verification of each RCS loop in operation while at power. This is more restrictive since PI CTS do not require this surveillance. This more restrictive change is included to make the PI ITS complete.

NSHD Category	Change Number 3.4-	Discussion of Change
M	21	Three new SRs, 3.4.5.1, 3.4.5.2 and 3.4.5.3, have been added in conformance with the guidance of NUREG-1431. These SRs will require verification that the required RCS loop is in operation, verify the SG is capable of decay heat removal, and verify power is available to the RCP that is not operating. The SR requirement for verifying the SG is capable of decay heat removal is consistent with WOG-155, Information Notice 95-35, TSTF 114, and the intent of the CTS. This is more restrictive since PI CTS does not specifically require these surveillances. These more restrictive changes are included to make the PI ITS complete and do not introduce any unsafe plant conditions.
A	22	CTS 3.1.A.1.b(3). CTS requires the plant to shut down to MODE 4 if the Action Statement requirements are not met. These requirements are not included in the ITS, since once the Action Statement requirements are not met, the plant will enter LCO 3.0.3 which essentially requires the same actions as CTS.

NSHD Category	Change Number 3.4-	Discussion of Change
	23	Not used.
LR	24	CTS 3.1.A.1.c(1), 3.1.A.1.c(2), 3.1.A.1.d(1) and 3.1.A.2.a(1). The CTS description of equipment required for system operability has been relocated to the Bases which is consistent with the format and guidance of NUREG-1431. As an example, the CTS refers to a reactor coolant pump (RCP) and associated steam generator (SG) as needing to be OPERABLE during specific plant conditions. The ITS Bases defines that a RCS loop consists of the RCP and associated SG. Therefore, the CTS has been revised to state RCS loop instead of listing specific components that make up the system. The individual components making up the system are considered to be details placed in the Bases Section. This change is acceptable since the system is required to be operable in accordance with the definition of OPERABILITY and details of the specific equipment are unnecessary in the specification. Since the Bases are under licensee control, this is a less restrictive change.

NSHD Category	Change Number 3.4-	Discussion of Change
	25	Not used.
M	26	CTS 3.1.A.1.c. CTS has been revised to require that the SG is capable of decay heat removal. This change is a more restrictive change since it is a new requirement by providing specific operability requirements on the SG that were not in the CTS. This change is acceptable since it specifically requires the SG to maintain sufficient secondary water inventory to provide a heat sink for decay heat removal in the event the RHR loop is inoperable and not in operation. This change is consistent with NUREG-1431.
	27	Not used.

NSHD Category	Change Number 3.4-	Discussion of Change
A	28	CTS 3.1.A.1.c. CTS has a single specification which requires two methods of cooling the RCS to be operable with one in operation when in MODE 4 and MODE 5, loops filled. This can be any combination of RCS loops or RHR trains. During plant heatup from MODE 5 to MODE 4, one RCS loop may be in operation with one or both RHR loops operable but not operating. NUREG-1431 splits MODE 4 and MODE 5, loops filled into two specifications, LCO 3.4.6 and LCO 3.4.7. Because these MODES or other specified conditions of applicability have been split into two Specifications, LCO Note 4 in 3.4.7 is required to allow one RCS loop in operation with one or both RHR loops operable but not operating. This configuration is required to allow a smooth transition to MODE 4. Since the configuration allowed by Note 4 currently is allowed by CTS, explicit statement of this Note is an administrative change. This change is consistent with the ISTS.
	29	Not used.
	30	Not used.

NSHD Category	Change Number 3.4-	Discussion of Change
M	31	Three new SRs, 3.4.6.1, 3.4.6.2, 3.4.6.3, have been added in conformance with NUREG-1431. These SRs will require verification that the required RHR or RCS loop is in operation, verify the SG is capable of decay heat removal, and verify power is available to the required RHR or RCP that is not operating. The SR requirements for verifying that the SG is capable of decay heat removal is consistent with WOG-155, Information Notice 95-35, TSTF-114, and the intent of the CTS. This is more restrictive since PI CTS does not specifically require these surveillances. These more restrictive changes are included to make the PI ITS complete and do not introduce any unsafe plant operations.
M	32	Three new SRs, 3.4.7.1, 3.4.7.2, 3.4.7.3, have been added in conformance with NUREG-1431. These SRs will require verification that one RHR loop is in operation, verify the SG is capable of decay heat removal, and verify power is available to the RHR pump that is not operating. The SR requirements for verifying that the SG is capable of decay heat removal is consistent with WOG-155, Information Notice 95-35, TSTF-114, and the intent of the CTS. This is more restrictive since PI CTS does not specifically require these surveillances. These more restrictive changes are included to make the PI ITS complete and they do not introduce any unsafe plant operations.

NSHD Category	Change Number 3.4-	Discussion of Change
M	33	CTS 3.1.A.1.d. An additional required action has been included in the action statement when both RHR loops are inoperable to suspend operations involving reduction in RCS boron concentration. This change is included to make the ITS complete and may improve plant safety. Since this change places additional restrictions on plant operations it is more restrictive. This change is also consistent with the guidance of NUREG-1431.
M	34	CTS 3.1.A.1.d. CTS allows the pumps to be shutdown for 1 hour. To be consistent with NUREG-1431, this is further restricted to 1 hour in an 8 hour period. In addition, the CTS Note is modified by addition of a restriction that, in MODE 5 with the loops not filled, no RCS draining operations are permitted when all pumps are shutdown. Restrictions on boron concentration changes have also been included. These changes were made for consistency with the guidance of NUREG-1431 as modified by approved TSTF-286, Revision 2. These changes are more restrictive since they impose requirements on plant operations that are not in the CTS. These changes are acceptable since they may improve plant safety.
	35	Not used.

NSHD Category	Change Number 3.4-	Discussion of Change
L	36	CTS 3.1.A.1.d. One RHR loop may be made inoperable for surveillance testing while the other RHR loop is OPERABLE and in operation. This change is made for consistency with NUREG-1431. This is acceptable since the operating RHR loop provides sufficient heat removal capability and the loss of the operating RHR loop in the two hours allowed for testing is unlikely. This is less restrictive since this provision is not contained in the CTS.
M	37	Two new SRs, 3.4.8.1 and 3.4.8.2, have been added in conformance with NUREG-1431. These SRs will require verification that one RHR loop is in operation and verify power is available to the RHR pump that is not operating. This is more restrictive since PI CTS do not require these surveillances. These more restrictive changes are included to make the PI ITS complete. These changes do not place the plant in any unsafe operating conditions.
M	38	CTS 3.1.A.1.d. CTS allows the pumps to be shutdown for 1 hour. To be consistent with NUREG-1431, this is further restricted to 1 hour in an 8 hour period. Since this imposes additional restrictions on plant operations, this is a more restrictive change. This change is acceptable because this change may limit the time that all pumps are not operating and improve plant safety.

NSHD Category	Change Number 3.4-	Discussion of Change
A	39	CTS 3.1.A.2.a, 3.1.A.2.c.(1), 3.1.B.1.b and 3.1.C.2. The format for CTS and ITS fundamentally differ in the presentation of shutdown tracks but the Completion Time requirements are the same. The CTS format has been changed to the ITS format. Since there is no net change in plant operations, this is an administrative change.
	40	Not used.
M	41	CTS 3.1.A.2.a(1). CTS for pressurizer OPERABILITY require a steam bubble in the pressurizer and group A and B heaters operable. The ITS will require pressurizer level less than or equal to the pressurizer high water level Allowable Value and two heater groups capable of being powered from an emergency power supply. Since the pressurizer high water level Allowable Value is significantly below the level required to assure that there is a steam bubble in the pressurizer, this is a more restrictive change. This change has been made to be consistent with NUREG-1431 and current NRC guidance. This change is acceptable since it will not introduce any unsafe plant operating or test conditions.

NSHD Category	Change Number 3.4-	Discussion of Change
M	42	CTS 3.1.A.2.a(3), 3.1.C.2.c, 3.1.C.2.d and 3.1.C.2.e. For consistency with NUREG-1431, the one hour to initiate actions necessary for shutdown has been deleted. This is more restrictive since the plant has one less hour prior to placing the plant in MODE 3. The time provided in the ITS is adequate to plan for and implement an orderly shutdown if required; thus this change is acceptable. This change does not place the plant in any unsafe operating conditions.
M	43	CTS 3.1.A.2.a(3). New Required Actions have been provided for the possibility that the pressurizer is inoperable. These actions incorporate proposed TSTF-87, Rev. 1. This is more restrictive since PI CTS do not require these actions. This more restrictive change is included to make the PI ITS complete.
M	44	A new SR, 3.4.9.1, has been added in conformance with the guidance of NUREG-1431. This SR will require periodic verification that the pressurizer water level is $\leq$ 90%. This is more restrictive since PI CTS do not require this surveillance. This more restrictive change is included to make the PI ITS complete.

NSHD Category	Change Number 3.4-	Discussion of Change
M	45	CTS 3.1.A.2.b(1). CTS 3.1.A.2.b(1) requires two RCS pressurizer safety valves (PSVs) to be operable when the RCS temperature is > 350°F. This change will require two RCS PSVs to be operable whenever both RCS cold leg temperatures are greater than the OPPS enable temperature specified in the PTLR. This change is consistent with the guidance of NUREG-1431 and will provide additional overpressure protection when the RCS is between 350°F and the OPPS enable temperature. Since this change will require more components to be operable for more plant conditions, this is a more restrictive change. This change is acceptable because it does not cause any unsafe plant operating or testing conditions.
A	46	CTS 3.1.A.2.b(1). PI CTS License Amendment 123 allows pressurizer safety valves to be 2485 psig ±3% when tested for operability. However, because of the particular wording in Specification 3.1.A.2.b(1), it was not revised. The intent of Amendment 123 was that if the operators were aware the setting was outside 2485 psig ±1% then they would not continue with their startup. CTS Table 4.1-2A, Item 3 requires verification that the settings are within ±3. Thus, the change in LCO 3.4.10 is not a technical change since CTS already allow ±3% tolerance on the valve settings and this is simply an administrative change.

NSHD Category	Change Number 3.4-	Discussion of Change
L	47	CTS 3.1.A.2.b(2). In conformance with NUREG-1431 guidance, this specification which requires one pressurizer safety valve operable when the head is on the reactor vessel has been not been retained. Since the pressurizer safety valves do not provide overpressurization protection when the RCS temperature is below the LTOP enable temperature, this specification serves no purpose. NUREG-1431 requires PSVs to be operable when the RCS temperature exceeds the LTOP enable temperature. Below the LTOP enable temperature, NUREG-1431 requires redundant PORVs to be OPERABLE at the LTOP lift settings or the RCS to be vented. Thus, this specification has not been retained. This change results in less restrictions on plant operation.

NSHD Category	Change Number 3.4-	Discussion of Change
L	48	CTS 3.1.A.2.b(1). CTS requires the pressurizer safety valves (PSVs) to be operable in MODES 1, 2, and 3. A new Applicability Note has been included to be consistent with the guidance of NUREG-1431. This Note does not require the PSVs to meet the LCO lift setting limits in MODE 3, when the plant is started up, to allow adjusting the settings under hot conditions. Because this Note allows the PSVs to be potentially inoperable in MODE 3 until the PSVs can be tested and set, this change is less restrictive. This change is acceptable since the Note also requires preliminary lift settings under cold conditions prior to heatup which is consistent with current plant practices and the time during which the valves are potentially inoperable for valve setting adjustments is limited to 36 hours by the Note. The Note may improve plant safety by allowing more accurate settings under hot conditions.
A	49	CTS 3.1.A.2.c(1)(b). CTS required action explicitly requires the operators to "either restore the PORV to OPERABLE status or" take other appropriate actions. The option to restore equipment to operable status is always an available means of exiting the ITS Required Actions and, under the Writers Guide, this option should not be stated unless there are no other actions which should be taken. Thus this statement and similar statements within this CTS paragraph are not included in the ITS. Since it is understood that these are viable operator actions, this is an administrative change.

NSHD Category	Change Number 3.4-	Discussion of Change
L	50	CTS 3.1.A.2.c.(2). When the RCS temperature is greater than the SI pump disable temperature and less than the OPPS enable temperature, CTS requires the plant to be in MODE 5 with the RCS depressurized and vented through at least a 3 square inch vent within 8 hours when a PORV is not restored within the allowed outage time or both PORVs are inoperable. This change will allow 12 hours to place the plant in MODE 5, depressurize and vent the RCS under these conditions. This change is acceptable because 8 hours is considered by the industry to be insufficient time to perform an orderly shutdown. In addition, the requirement to place the unit in MODE 5 is consistent with the intent of the CTS. The additional time will maintain plant safety by allowing the operators to plan the shutdown and prevent challenges to plant systems which may initiate an overpressure event which the shutdown intends to prevent. This change is consistent with the guidance of NUREG-1431 as modified by approved TSTF-352, Revision 1. Since this change allows more time to fully implement remedial action, this is a less restrictive change.

NSHD Category	Change Number 3.4-	Discussion of Change
M	51	CTS 3.1.A.2.c(2) and 3.1.A.2.c(3). Restrictions on SI pump operability isolation have been included for clarity. These requirements are specified in CTS LCO 3.3. New Action Statements are included for the possibility one (Specification 3.4.13) or two (Specification 3.4.12) SI pumps are capable of injecting into the RCS. CTS does not contain these action statement requirements; thus in this event CTS LCO 3.0.C (equivalent to PI ITS 3.0.3) would be entered which would allow 1 hour for action to be taken. Under these circumstances, 1 hour would be an inappropriate response time. The new Action Statements require immediate action which is more restrictive than CTS. This more restrictive change is included to make the PI ITS complete.
M	52	CTS 3.1.A.2.c(2) and 3.1.A.2.c(3). Restrictions on ECCS accumulator isolation have been included for clarity. These requirements are specified in CTS LCO 3.3. Associated action statements, clarifying notes for exceptions and applicability, and surveillance requirements, SRs 3.4.12.2 and 3.4.13.2, have been added. Adding LCO 3.4.12 and 3.4.13, Required Action C also added a 12 hour Completion Time that was not previously in the CTS. The 12 hour Completion Time is acceptable to PI since it is based on operating experience that the associated activities of Condition C can be accomplished in this time period and the low probability of an event requiring LTOP during the allowed times. Since these are added requirements they are more restrictive on plant operations. These requirements have been included to make the PI ITS complete and consistent with the guidance of NUREG-1431.

NSHD Category	Change Number 3.4-	Discussion of Change
LR	53	CTS 3.1.A.2.c(2) and 3.1.A.2.c(3). The specific status of associated equipment has been relocated to the Bases for consistency with NUREG-1431. These provisions are assumed to be part of the OPERABILITY requirement for the PORVs. Since ITS Bases (under the Bases Control Program in Section 5.5 of the ITS) is licensee controlled, relocation of CTS requirements to the Bases is a less restrictive change.
M	54	New SRs, 3.4.12.1, 3.4.12.2, 3.4.12.3, 3.4.13.1, 3.4.13.2, 3.4.13.3, and 3.4.13.4, have been added in conformance with NUREG-1431. These SRs require verification that only one (or no) SI pump capable of injecting, RCS is vented and PORV block valves are open as applicable for the MODES of operation and the method of providing overpressurization protection. Adding these SRs also added new Frequencies that are not in the CTS. Evaluating these new Frequencies, PI believes them to be applicable to our plant. The new Frequencies provide adequate times considering administrative controls available to the operator, using other indications and alarms available to the operator in the control room to verify required status of the equipment, and the unlikelyhood of a low temperature overpressure event occurring during this time. These SRs are more restrictive on plant operations since CTS do not require these surveillances. This is consistent with the guidance of NUREG-1431. These more restrictive changes are included to make the PI ITS complete.
	55	Not used.

NSHD Category	Change Number 3.4-	Discussion of Change
R	56	CTS 3.1.A.3 and 4.18. The reactor vessel head vent system specifications, CTS 3.1.A.3 and associated surveillance requirements in TS 4.18, are not included in the PI ITS since this system does not meet the 10CFR50.36 Technical Specification Selection Criteria. These vents are designed to exhaust noncondensable gases and steam from the RCS which could inhibit natural circulation following an accident with an extended loss of offsite power. Credit for this vent system is not assumed in the safety analyses nor in the PI IPE. Therefore, the reactor vessel head vent does not meet the TSSC and these requirements have been relocated to the TRM which is maintained under the regulatory controls of 10CFR50.59. This is consistent with the guidance of NUREG-1431 which does not include specifications for the reactor vessel head vent system. Criterion 1: Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary. The reactor coolant head vents are not installed instrumentation, nor are they used for, nor capable of, detecting a significant abnormal degradation of the reactor coolant pressure boundary prior to a Design Basis Accident (DBA). Therefore, the reactor coolant head vents do not meet criterion 1. Criterion 2: A process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. The reactor head vents are not process variables, design features, or operating restrictions that are initial conditions of a DBA or transient analysis that either assumes the failure of or presents a

NSHD Category	Change Number 3.4-	Discussion of Change
R	56	(continued) challenge to the integrity of a fission product barrier. PI does not take any credit for the reactor head vents in any accident analysis. Therefore, the reactor head vents do not meet the criterion 2. Criterion 3: A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. The reactor head vents are not structures, systems or components that are part of the primary success path which functions or actuates to mitigate a DBA or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, the reactor head vents do not meet criterion 3. Criterion 4: A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety. The reactor head vents are not considered in the plant IPE and is not a system which operating experience or probabilistic risk assessment has shown to be significant to public health and safety. Therefore, the reactor head vents do not meet criterion 4. Therefore, since the screening criteria have not been satisfied, the reactor head vent LCO and Surveillances may be relocated to other plant controlled documents outside the Technical Specifications. The reactor head vents will be relocated to the TRM which is controlled by the provisions of 10CFR50.59.

NSHD Category	Change Number 3.4-	Discussion of Change
M	57	New Specification. In conformance with the guidance of NUREG-1431, a new specification, RCS Minimum Temperature for Criticality, is included in the PI ITS. CTS Figure 3.1-1 does include a line labeled "Criticality Limit"; however there are no action statements or applicability associated with this line on the curve. The Bases for this new specification provide four considerations which the minimum temperature for criticality should satisfy. Based on PI calculations and consistency with the Low-Low T_{ave} setpoint, this LCO will specify 540°F as the minimum allowable temperature. Compliance with this specification will assure that plant conditions are conservative with respect to the initial conditions assumed in the safety analyses. Since this is a new specification, it does place additional restrictions on plant operations and is thus categorized as more restrictive. This more restrictive change is included to make the PI ITS complete.
	58	Not used.
	59	Not used.
	60	Not used.

NSHD Category	Change Number 3.4-	Discussion of Change
A	61	CTS 3.1.B.1.b. The requirements for maintaining RCS pressure and temperature limits has been broken into two sets of action statements, for conditions above 200°F and for conditions below 200°F. This is a logical split since the CTS action is to reduce the temperature below 200°F which would be meaningless if the pressure and temperature limits were violated and the temperature were already below 200°F. Since the new action statement is addressed below, this change is considered administrative. This change also includes changing to the NUREG-1431 use of MODES to define plant conditions rather than use of prose descriptions. Since use of MODES does not change any plant operations, this is also an administrative change.
M	62	CTS 3.1.B.1.b. CTS do not specify a time frame for evaluating the integrity of the RCS following an out-of-limit condition. For consistency with NUREG-1431, a limit of 72 hours is included. The 72 hour Completion Time is reasonable to accomplish the evaluation. The evaluation for a mild violation is possible within this time, but more severe violations may require special, event specific stress analyses or inspections. The evaluation will determine whether the RCS structural integrity remains acceptable for continued operation. Since this is a new limit it is more restrictive on plant operation. This more restrictive change is included to make the PI ITS complete.

NSHD Category	Change Number 3.4-	Discussion of Change
M	63	CTS 3.1.B.1.b. For consistency with NUREG-1431, new action statements have been included for out-of-limit conditions when the RCS is below 200°F. PI CTS do not address this condition. Since these are new requirements they are considered more restrictive on plant operations. This more restrictive change is included to make the PI ITS complete.
M	64	A new surveillance requirement, SR 3.4.3.1, has been included for consistency with NUREG-1431 which requires verification that RCS pressure, temperature and heatup and cooldown rates are within the specified limits. Plant operators currently monitor these variables for compliance with Specification 3.1.B.1.b although it is not explicitly written as a TS SR. Since these are new TS requirements they are considered more restrictive on plant operations. This more restrictive change is included to make the PI ITS complete.
	65	Not used.

NSHD Category	Change Number 3.4-	Discussion of Change
R	66	CTS 3.1.B.2. In conformance with the guidance of NUREG-1431, the pressurizer heatup and cooldown specifications have been relocated from the TS to the PTLR. This change is acceptable since the Bases for Specification 3.4.3 state that the reactor pressure vessel is the most limiting component for brittle fracture; thus the requirements for the pressurizer have not been included in the ITS. The shutdown requirements associated with pressurizer heatup and cooldown limitations have been relocated to the TRM. Criterion 1: Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary. The Pressurizer Pressure/Temperature Limits are not installed instrumentation, nor are they used for, nor capable of, detecting a significant abnormal degradation of the reactor coolant pressure boundary prior to a Design Basis Accident (DBA). Therefore, the Pressurizer Pressure/Temperature Limits do not meet criterion 1. Criterion 2: A process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

NSHD Category	Change Number 3.4-	Discussion of Change
R	66	(continued) The Pressurizer Pressure/Temperature Limits are not process variables, design features, or operating restrictions that are initial conditions of a DBA or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. PI does not take any credit for the Pressurizer Pressure/Temperature Limits in any accident analysis. Therefore, the Pressurizer Pressure/Temperature Limits do not meet the criterion 2. Criterion 3: A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. The Pressurizer Pressure/Temperature Limits are not structures, systems or components that are part of the primary success path which functions or actuates to mitigate a DBA or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, the Pressurizer Pressure/Temperature Limits do not meet criterion 3. Criterion 4: A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety. The Pressurizer Pressure/Temperature Limits are a structure, system or component. Therefore, the Pressurizer Pressure/Temperature Limits do not meet criterion 4.

NSHD Category	Change Number 3.4-	Discussion of Change
R	66	(continued) Therefore, since the screening criteria have not been satisfied, the Pressurizer Pressure/Temperature Limit LCO and Surveillances may be relocated to other plant controlled documents outside the Technical Specifications. The Pressurizer Pressure/Temperature Limits are being relocated to the PTLR and the associated shutdown requirements are being relocated to the TRM.
R	67	CTS 3.1.B.3. In conformance with the guidance of NUREG-1431, the Steam Generator pressure/temperature limits have been relocated to the PTLR. This operating restriction does not present a challenge to the integrity of a fission product barrier and this limit is not required for safe operation. These specifications do not meet the Technical Specification Selection Criteria defined in 10CFR50.36. The shutdown requirements associated with this pressure/temperature limit have been relocated to the TRM. Criterion 1: Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary. The Steam Generator Pressure/Temperature Limits are not installed instrumentation, nor are they used for, nor capable of, detecting a significant abnormal degradation of the reactor coolant pressure boundary prior to a Design Basis Accident (DBA). Therefore, the Steam Generator Pressure/Temperature Limits do not meet criterion 1.

NSHD Category	Change Number 3.4-	Discussion of Change
R	67	(continued) Criterion 2: A process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. The Steam Generator Pressure/Temperature Limits are not process variables, design features, or operating restrictions that are initial conditions of a DBA or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. PI does not take any credit for the Steam Generator Pressure/Temperature Limits in any accident analysis. Therefore, the Steam Generator Pressure/Temperature Limits do not meet the criterion 2. Criterion 3: A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. The Steam Generator Pressure/Temperature Limits are not structures, systems or components that are part of the primary success path which functions or actuates to mitigate a DBA or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, the Steam Generator Pressure/Temperature Limits do not meet criterion 3.

NSHD Category	Change Number 3.4-	Discussion of Change
R	67	(continued) Criterion 4: A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety. The Steam Generator Pressure/Temperature Limits are not a structure, system or component. Therefore, the Steam Generator Pressure/Temperature Limits do not meet criterion 4. Therefore, since the screening criteria have not been satisfied, the Steam Generator Pressure/Temperature Limit LCO and Surveillances may be relocated to other plant controlled documents outside the Technical Specifications. The Steam Generator Pressure/Temperature Limits are being relocated to the PTLR and the associated shutdown requirements are being relocated to the TRM.

NSHD Category	Change Number 3.4-	Discussion of Change
L	68	CTS 3.1.C.1. CTS requires two means of leakage detection. One of those means is specified as the radionuclide detection instrumentation, the other means is not specified. For consistency with the guidance of NUREG-1431, a second means of detecting RCS leakage, containment sump A pump run time, has been specified. This is a more restrictive change which is acceptable since it is consistent with CTS Bases and USAR. Also in conformance with the guidance of NUREG-1431, action statements and remedial actions, in the event one or both means of leakage detection are inoperable, have been provided. The CTS are unnecessarily restrictive in that inoperability of one means of leakage detection requires shutdown of the plant. There are remedial measures which can be implemented to compensate for an inoperable leakage detection channel as allowed by NUREG-1431. The PI ITS includes provisions for compensatory sampling and surveillance testing if leakage detection channels are inoperable. Implementation of this change will provide increased plant operational flexibility and thus this is a less restrictive change.
	69	Not used.
	70	Not used.

NSHD Category	Change Number 3.4-	Discussion of Change
A	71	CTS 3.1.C.1. The CTS requirements described here are the same as ITS LCO 3.0.3 (CTS LCO 3.0.c) which is the appropriate action if no leakage detection instrumentation is operable. Thus this is rewritten to require immediate entry into LCO 3.0.3. The change of applicability of this requirement is addressed in L3.4-68. The time and the implications of the use of the time are the same; therefore this is an administrative change.
M	72	Four new SRs, 3.4.16.1, 3.4.16.2, 3.4.16.3 and 3.4.16.4, have been included to perform Channel Checks, COTs and Calibrations of containment radiation monitors and Calibration of sump pump run time instrumentation. Since these requirements are new to the PI TS they are considered more restrictive to plant operation. These SRs have been included for consistency with NUREG-1431. These more restrictive changes are included to make the PI ITS complete.
A	73	CTS 3.1.C.2.a. The CTS specifics of where leakage is not originating from have not been included in ITS LCO 3.4.14. The ITS definition of LEAKAGE includes the required details of what is considered leakage; thus these details are not necessary in the specification. Since this change does not change any plant operations, this is an administrative change.

NSHD Category	Change Number 3.4-	Discussion of Change
LR	74	CTS 3.1.C.2.b. The requirement to evaluate the leakage for continued safe operation is a level of detail beyond that contained within NUREG-1431. Therefore this requirement has been relocated to the Bases. Since ITS Bases (under the Bases Control Program in Section 5.5 of the ITS) is licensee controlled, this change is less restrictive.
	75	Not used.
	76	Not used.
A	77	CTS 3.1.C.2.d. The CTS requirement to remain in COLD SHUTDOWN until the condition is corrected is not included in ITS specification 3.4.14. The rules of ITS use in LCO 3.0.4 require ITS LCOs to be met prior to resumption of power operation. Thus, it is unnecessary to include these requirements in ITS LCO 3.4.14. Since the change does not involve any changes to plant operations, this is an administrative change.

NSHD Category	Change Number 3.4-	Discussion of Change
A	78	CTS 3.1.C.2.e. CTS requires inservice steam generator tube inspection in accordance with TS 4.12. Since this TS has been relocated to the Steam Generator Program in ITS Section 5.5, no technical changes are associated with this change; therefore, this is an administrative change.
L	79	CTS 3.1.C.3. A new action statement is included in the ITS which allows 4 hours to isolate the flow path of a PIV with leakage outside the allowed limits and 72 hours to restore the PIV to within limits. CTS allows one hour to initiate shutdown. These changes are consistent with the guidance of NUREG-1431. These changes are acceptable since the safety function of the PIV is met once the PIV flow path is isolated. Furthermore, the isolation valve is also required to meet the same leakage limits as the PIV, in accordance with the additional new requirement for isolation valve leakage limits. An additional three hours to take action is acceptable since these leakage limits are very conservative and it is very unlikely that these valves will suffer complete failure during this limited time. When the PIV flow path is isolated, this may cause some other system, such as RHR, to be inoperable and require entry into an Action Statement for another Specification which would require completion of required actions within 72 hours. Thus this change is consistent with other allowed outage times for significant safety features. Since this change allows additional plant operational flexibility, this is a less restrictive change.