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ONS-2014-103

July 23, 2014

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, Maryland 20852

Subject: Duke Energy Carolinas, LLC
Oconee Nuclear Station
Docket Numbers 50-269, 50-270, and 50-287
Technical Specification (TS) Bases Change

Please find attached a change to the Oconee Nuclear Station (ONS) TS Bases. This change was processed in accordance with the provisions of Technical Specification 5.5.15, "Technical Specifications (TS) Bases Control Program." TS Bases Change 2014-06 revises the TS Bases to include TS Bases 3.7.19, Spent Fuel Pool Cooling (SFPC) Purification System Isolation from Borated Water Storage Tank (BWST), and TS Bases 3.9.8, Reverse Osmosis (RO) System Operating Restrictions for Spent Fuel Pool (SFP).

Any questions regarding this information should be directed to Boyd Shingleton at (864) 873-4716.

Sincerely,

Scott L. Batson
Vice President
Oconee Nuclear Station

Attachment

A001
NRR

cc: Mr. Victor McCree, Regional Administrator
U.S. Nuclear Regulatory Commission, Region II
Marquis One Tower
245 Peachtree Center Ave., NE, Suite 1200
Atlanta, GA 30303-1257

Mr. James R. Hall, Senior Project Manager (ONS)
(By electronic mail only)
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Mr. Eddy Crowe
Senior Resident Inspector
Oconee Nuclear Station

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July 23 , 2014

Re: Oconee Nuclear Station
Technical Specification Bases Change

Please replace the corresponding pages in your copy of the Oconee Technical Specifications Bases Manual as follows:

REMOVE THESE PAGES	**INSERT THESE PAGES**
List of Effective Pages (LOEP) 1- 17	List of Effective Pages (LOEP) 1- 17
Table of Contents (TOC) iv	Table of Contents (TOC) iv
	TS Bases Page B 3.7.19-1 thru 6
	TS Bases Page B 3.9.8-1 thru 3

If you have any questions concerning the contents of this Technical Specification Bases update, contact Boyd Shingleton (864) 873-4716.

Chris Wasik
Regulatory Affairs Manager

Attachment

Oconee Nuclear Station

Revised Technical Specification Bases Pages

OCONEE NUCLEAR STATION
TECHNICAL SPECIFICATIONS-BASES REVISED 06/25/14
LIST OF EFFECTIVE PAGES

PAGE	AMENDMENT	BASES REVISION DATE
LOEP1	BASES REVISION	06/25/14
LOEP2	BASES REVISION	07/23/12
LOEP3	BASES REVISION	07/23/12
LOEP4	BASES REVISION	05/16/14
LOEP5	BASES REVISION	05/16/14
LOEP6	BASES REVISION	05/16/14
LOEP7	BASES REVISION	05/16/12
LOEP8	BASES REVISION	04/18/14
LOEP9	BASES REVISION	06/13/14
LOEP10	BASES REVISION	05/16/12
LOEP11	BASES REVISION	11/13/12
LOEP12	BASES REVISION	08/08/12
LOEP13	BASES REVISION	06/25/14
LOEP14	BASES REVISION	05/14/14
LOEP15	BASES REVISION	05/16/12
LOEP16	BASES REVISION	06/25/14
LOEP17	BASES REVISION	07/25/13
i	BASES REVISION	06/03/11
ii	363/365/364	10/29/08
iii	355/357/356	04/02/07
iv	351/353/352	06/15/06
B 2.1.1-1	BASES REVISION	05/31/12
B 2.1.1-2	BASES REVISION	05/31/12
B 2.1.1-3	BASES REVISION	05/31/12
B 2.1.1-4	BASES REVISION	05/31/12
B 2.1.2-1	BASES REVISION	02/06/14
B 2.1.2-2	BASES REVISION	02/06/14
B 2.1.2-3	BASES REVISION	02/06/14
B 3.0-1	356/358/357	04/02/07
B 3.0-2	BASES REVISION	10/23/03
B 3.0-3	BASES REVISION	10/23/03
B 3.0-4	BASES REVISION	10/23/03
B 3.0-5	BASES REVISION	10/23/03
B 3.0-6	BASES REVISION	10/23/03
B 3.0-7	BASES REVISION	10/23/03
B 3.0-8	BASES REVISION	10/23/03

PAGE	AMENDMENT	BASES REVISION DATE
B 3.0-9	356/358/357	04/02/07
B 3.0-10	356/358/357	04/02/07
B 3.0-11	356/358/357	04/02/07
B 3.0-12	356/358/357	04/02/07
B 3.0-13	BASES REVISION	10/20/11
B 3.0-14	BASES REVISION	10/23/03
B 3.0-15	BASES REVISION	10/23/03
B 3.1.1-1	BASES REVISION	05/16/12
B 3.1.1-2	BASES REVISION	05/16/12
B 3.1.1-3	BASES REVISION	05/16/12
B3.1.1-4	BASES REVISION	05/16/12
B 3.1.2-1	BASES REVISION	05/16/12
B 3.1.2-2	BASES REVISION	05/16/12
B 3.1.2-3	BASES REVISION	05/16/12
B 3.1.2-4	BASES REVISION	05/16/12
B 3.1.2-5	BASES REVISION	05/16/12
B 3.1.3-1	BASES REVISION	06/02/99
B 3.1.3-2	BASES REVISION	03/27/99
B 3.1.3-3	300/300/300	12/16/98
B 3.1.3-4	300/300/300	12/16/98
B 3.1.4-1	BASES REVISION	07/23/12
B 3.1.4-2	BASES REVISION	07/23/12
B 3.1.4-3	BASES REVISION	07/23/12
B 3.1.4-4	BASES REVISION	07/23/12
B 3.1.4-5	BASES REVISION	07/23/12
B 3.1.4-6	BASES REVISION	07/23/12
B 3.1.4-7	BASES REVISION	07/23/12
B 3.1.4-8	BASES REVISION	07/23/12
B 3.1.4-9	BASES REVISION	07/23/12
B 3.1.5-1	BASES REVISION	05/16/12
B 3.1.5-2	BASES REVISION	05/16/12
B 3.1.5-3	BASES REVISION	05/16/12
B 3.1.5-4	BASES REVISION	05/16/12
B 3.1.6-1	BASES REVISION	07/23/12
B 3.1.6-2	BASES REVISION	07/23/12
B 3.1.6-3	BASES REVISION	07/23/12
B 3.1.6-4	DELETE BASES REV.	07/23/12

PAGE	AMENDMENT	BASES REVISION DATE
B 3.1.7-1	BASES REVISION	07/23/12
B 3.1.7-2	BASES REVISION	07/23/12
B 3.1.7-3	BASES REVISION	07/23/12
B 3.1.7-4	BASES REVISION	07/23/12
B 3.1.8-1	BASES REVISION	05/16/12
B 3.1.8-2	BASES REVISION	05/16/12
B 3.1.8-3	BASES REVISION	05/16/12
B 3.1.8-4	BASES REVISION	05/16/12
B 3.1.8-5	BASES REVISION	05/16/12
B 3.2.1-1	BASES REVISION	05/16/12
B 3.2.1-2	BASES REVISION	05/16/12
B 3.2.1-3	BASES REVISION	05/16/12
B 3.2.1-4	BASES REVISION	05/16/12
B 3.2.1-5	BASES REVISION	05/16/12
B 3.2.1-6	BASES REVISION	05/16/12
B 3.2.1-7	BASES REVISION	05/16/12
B 3.2.2-1	BASES REVISION	05/16/12
B 3.2.2-2	BASES REVISION	05/16/12
B 3.2.2-3	BASES REVISION	05/16/12
B 3.2.2-4	BASES REVISION	05/16/12
B 3.2.2-5	BASES REVISION	05/16/12
B 3.2.2-6	BASES REVISION	05/16/12
B 3.2.2-7	BASES REVISION	05/16/12
B 3.2.3-1	BASES REVISION	05/16/12
B 3.2.3-2	BASES REVISION	05/16/12
B 3.2.3-3	BASES REVISION	05/16/12
B 3.2.3-4	BASES REVISION	05/16/12
B 3.2.3-5	BASES REVISION	05/16/12
B 3.2.3-6	BASES REVISION	05/16/12
B 3.2.3-7	BASES REVISION	05/16/12
B 3.2.3-8	BASES REVISION	05/16/12
B 3.2.3-9	BASES REVISION	05/16/12
B 3.3.1-1	BASES REVISION	05/16/12
B 3.3.1-2	BASES REVISION	05/16/12
B 3.3.1-3	BASES REVISION	05/16/12
B 3.3.1-4	BASES REVISION	05/16/12
B 3.3.1-5	BASES REVISION	05/16/12
B 3.3.1-6	BASES REVISION	05/16/12

PAGE	AMENDMENT	BASES REVISION DATE
B 3.3.1-7	BASES REVISION	05/16/12
B 3.3.1-8	BASES REVISION	05/16/12
B 3.3.1-9	BASES REVISION	05/16/12
B 3.3.1-10	BASES REVISION	05/16/12
B 3.3.1-11	BASES REVISION	05/16/12
B 3.3.1-12	BASES REVISION	05/16/12
B 3.3.1-13	BASES REVISION	05/16/12
B 3.3.1-14	BASES REVISION	05/16/12
B 3.3.1-15	BASES REVISION	05/16/12
B 3.3.1-16	BASES REVISION	05/16/12
B 3.3.1-17	BASES REVISION	05/16/12
B 3.3.1-18	BASES REVISION	05/16/12
B 3.3.1-19	BASES REVISION	05/16/12
B 3.3.1-20	BASES REVISION	05/16/12
B 3.3.1-21	BASES REVISION	05/16/12
B 3.3.1-22	BASES REVISION	05/16/12
B 3.3.1-23	BASES REVISION	05/16/12
B 3.3.1-24	BASES REVISION	05/16/12
B 3.3.1-25	BASES REVISION	05/16/12
B.3.3.1-26	BASES REVISION	05/16/12
B.3.3.1-27	BASES REVISION	05/16/12
B.3.3.1-28	BASES REVISION	05/16/12
B.3.3.1-29	BASES REVISION	05/16/12
B.3.3.1-30	BASES REVISION	05/16/12
B 3.3.2-1	BASES REVISION	12/14/04
B 3.3.2-2	BASES REVISION	12/14/04
B 3.3.2-3	BASES REVISION	12/14/04
B 3.3.3-1	BASES REVISION	05/16/12
B 3.3.3-2	BASES REVISION	05/16/12
B 3.3.3-3	BASES REVISION	05/16/12
B 3.3.3-4	BASES REVISION	05/16/12
B.3.3.3-5	BASES REVISION	05/16/12
B.3.3.3-6	BASES REVISION	05/16/12
B 3.3.4-1	BASES REVISION	05/16/12
B 3.3.4-2	BASES REVISION	05/16/12
B 3.3.4-3	BASES REVISION	05/16/12
B 3.3.4-4	BASES REVISION	05/16/12
B 3.3.5-1	BASES REVISION	05/16/12
B 3.3.5-2	BASES REVISION	05/16/12
B 3.3.5-3	BASES REVISION	05/16/12
B 3.3.5-4	BASES REVISION	05/16/12

PAGE	AMENDMENT	BASES REVISION DATE
B 3.3.5-5	BASES REVISION	05/16/12
B 3.3.5-6	BASES REVISION	05/16/12
B 3.3.5-7	BASES REVISION	05/16/12
B 3.3.5-8	BASES REVISION	05/16/12
B 3.3.5-9	BASES REVISION	05/16/12
B 3.3.5-10	BASES REVISION	05/16/12
B 3.3.5-11	BASES REVISION	05/16/12
B 3.3.5-12	BASES REVISION	05/16/12
B 3.3.5-13	BASES REVISION	05/16/12
B 3.3.5-14	BASES REVISION	05/16/12
B 3.3.5-15	BASES REVISION	05/16/12
B 3.3.5-16	BASES REVISION	05/16/12
B 3.3.5-17	BASES REVISION	05/16/12
B 3.3.6-1	BASES REVISION	05/16/12
B 3.3.6-2	BASES REVISION	05/16/12
B 3.3.6-3	BASES REVISION	05/16/12
B 3.3.6-4	BASES REVISION	05/16/12
B 3.3.7-1	BASES REVISION	05/16/12
B 3.3.7-2	BASES REVISION	05/16/12
B 3.3.7-3	BASES REVISION	05/16/12
B 3.3.7-4	BASES REVISION	05/16/12
B 3.3.7-5	BASES REVISION	05/16/12
B 3.3.7-6	BASES REVISION	05/16/12
B 3.3.7-7	BASES REVISION	05/16/12
B 3.3.7-8	BASES REVISION	05/16/12
B 3.3.8-1	BASES REVISION	05/16/12
B 3.3.8-2	BASES REVISION	05/16/12
B 3.3.8-3	BASES REVISION	05/16/12
B 3.3.8-4	BASES REVISION	05/16/12
B 3.3.8-5	BASES REVISION	05/16/12
B 3.3.8-6	BASES REVISION	05/16/12
B 3.3.8-7	BASES REVISION	05/16/12
B 3.3.8-8	BASES REVISION	05/16/12
B 3.3.8-9	BASES REVISION	05/16/12
B 3.3.8-10	BASES REVISION	05/16/12
B 3.3.8-11	BASES REVISION	05/16/12
B 3.3.8-12	BASES REVISION	05/16/12
B 3.3.8-13	BASES REVISION	05/16/12
B 3.3.8-14	BASES REVISION	05/16/12
B 3.3.8-15	BASES REVISION	05/16/12
B 3.3.8-16	BASES REVISION	05/16/12
B 3.3.8-17	BASES REVISION	05/16/12

PAGE	AMENDMENT	BASES REVISION DATE
B 3.3.8-18	BASES REVISION	05/16/12
B 3.3.8-19	BASES REVISION	05/16/12
B 3.3.8-20	Deleted 350/352/351	06/01/06
B 3.3.9-1	BASES REVISION	05/16/12
B 3.3.9-2	BASES REVISION	05/16/12
B 3.3.9-3	BASES REVISION	05/16/12
B 3.3.9-4	BASES REVISION	05/16/12
B 3.3.10-1	BASES REVISION	05/16/12
B 3.3.10-2	BASES REVISION	05/16/12
B 3.3.10-3	BASES REVISION	05/16/12
B 3.3.10-4	BASES REVISION	05/16/12
B 3.3.11-1	BASES REVISION	05/16/12
B 3.3.11-2	BASES REVISION	05/16/12
B 3.3.11-3	BASES REVISION	05/16/12
B 3.3.11-4	BASES REVISION	05/16/12
B 3.3.11-5	BASES REVISION	05/16/12
B 3.3.11-6	DELETE BASES REV	4/17/02
B 3.3.12-1	BASES REVISION	05/16/12
B 3.3.12-2	BASES REVISION	05/16/12
B 3.3.12-3	DELETE 320/320/320	9/26/01
B 3.3.13-1	BASES REVISION	05/16/12
B 3.3.13-2	BASES REVISION	05/16/12
B 3.3.13-3	BASES REVISION	05/16/12
B 3.3.13-4	BASES REVISION	05/16/12
B 3.3.14-1	BASES REVISION	05/16/12
B 3.3.14-2	BASES REVISION	05/16/12
B 3.3.14-3	BASES REVISION	05/16/12
B 3.3.14-4	BASES REVISION	05/16/12
B 3.3.15-1	BASES REVISION	05/16/12
B 3.3.15-2	BASES REVISION	05/16/12
B 3.3.15-3	BASES REVISION	05/16/12
B 3.3.16-1	BASES REVISION	05/16/12
B 3.3.16-2	BASES REVISION	05/16/12
B 3.3.16-3	BASES REVISION	05/16/12
B 3.3.16-4	BASES REVISION	05/16/12
B 3.3.17-1	BASES REVISION	05/16/12
B 3.3.17-2	BASES REVISION	05/16/12
B 3.3.17-3	BASES REVISION	05/16/12
B 3.3.18-1	BASES REVISION	05/16/12
B 3.3.18-2	BASES REVISION	05/16/12
B 3.3.18-3	BASES REVISION	05/16/12
B 3.3.18-4	BASES REVISION	05/16/12

PAGE	AMENDMENT	BASES REVISION DATE
B 3.3.19-1	BASES REVISION	05/16/12
B 3.3.19-2	BASES REVISION	05/16/12
B 3.3.19-3	BASES REVISION	05/16/12
B 3.3.19-4	BASES REVISION	05/16/12
B 3.3.20-1	BASES REVISION	05/16/12
B 3.3.20-2	BASES REVISION	05/16/12
B 3.3.20-3	BASES REVISION	05/16/12
B 3.3.20-4	BASES REVISION	05/16/12
B 3.3.21-1	BASES REVISION	05/16/12
B 3.3.21-2	BASES REVISION	05/16/12
B 3.3.21-3	BASES REVISION	05/16/12
B 3.3.22-1	BASES REVISION	05/16/12
B 3.3.22-2	BASES REVISION	05/16/12
B 3.3.23-1	BASES REVISION	05/16/12
B 3.3.23-2	BASES REVISION	05/16/12
B 3.3.23-3	BASES REVISION	05/16/12
B 3.3.23-4	BASES REVISION	05/16/12
B 3.3.24-1	320/320/320	9/26/01
B 3.3.25-1	336/336/337	11/5/03
B 3.3.25-2	Delete,336/336/337	11/5/03
B 3.3.25-3	Delete,336/336/337	11/5/03
B 3.3.25-4	Delete,336/336/337	11/5/03
B 3.3.25-5	Delete,336/336/337	11/5/03
B 3.3.25-6	Delete,336/336/337	11/5/03
B 3.3.26-1	336/336/337	11/5/03
B 3.3.26-2	Delete,336/336/337	11/5/03
B 3.3.26-3	Delete,336/336/337	11/5/03
B 3.3.27-1	BASES REVISION	05/16/12
B 3.3.27-2	BASES REVISION	05/16/12
B 3.3.27-3	BASES REVISION	05/16/12
B 3.3.27-4	BASES REVISION	05/16/12
B 3.3.27-5	BASES REVISION	05/16/12
B 3.3.27-6	BASES REVISION	05/16/12
B 3.3.28-1	BASES REVISION	05/16/12
B 3.3.28-2	BASES REVISION	05/16/12
B 3.3.28-3	BASES REVISION	05/16/12
B 3.3.28-4	BASES REVISION	05/16/12
B 3.4.1-1	BASES REVISION	05/16/12
B 3.4.1-2	BASES REVISION	05/16/12
B 3.4.1-3	BASES REVISION	05/16/12
B 3.4.1-4	BASES REVISION	05/16/12
B 3.4.1-5	BASES REVISION	05/16/12
B 3.4.2-1	300/300/300	12/16/98

PAGE	AMENDMENT	BASES REVISION DATE
B 3.4.2-2	300/300/300	12/16/98
B 3.4.3-1	BASES REVISION	04/18/14
B 3.4.3-2	BASES REVISION	04/18/14
B 3.4.3-3	BASES REVISION	04/18/14
B 3.4.3-4	BASES REVISION	04/18/14
B 3.4.3-5	BASES REVISION	04/18/14
B 3.4.3-6	BASES REVISION	04/18/14
B 3.4.3-7	BASES REVISION	04/18/14
B 3.4.3-8	BASES REVISION	04/18/14
B 3.4.4-1	BASES REVISION	05/16/12
B 3.4.4-2	BASES REVISION	05/16/12
B 3.4.4-3	BASES REVISION	05/16/12
B 3.4.4-4	BASES REVISION	05/16/12
B 3.4.5-1	BASES REVISION	05/16/12
B 3.4.5-2	BASES REVISION	05/16/12
B 3.4.5-3	BASES REVISION	05/16/12
B 3.4.5-4	BASES REVISION	05/16/12
B 3.4.6-1	BASES REVISION	05/16/12
B3.4.6-2	BASES REVISION	05/16/12
B 3.4.6-3	BASES REVISION	05/16/12
B 3.4.6-4	BASES REVISION	05/16/12
B 3.4.7-1	BASES REVISION	05/16/12
B 3.4.7-2	BASES REVISION	05/16/12
B 3.4.7-3	BASES REVISION	05/16/12
B 3.4.7-4	BASES REVISION	05/16/12
B 3.4.7-5	BASES REVISION	05/16/12
B 3.4.8-1	BASES REVISION	05/16/12
B 3.4.8-2	BASES REVISION	05/16/12
B 3.4.8-3	BASES REVISION	05/16/12
B 3.4.8-4	BASES REVISION	05/16/12
B 3.4.9-1	BASES REVISION	05/16/12
B 3.4.9-2	BASES REVISION	05/16/12
B 3.4.9-3	BASES REVISION	05/16/12
B 3.4.9-4	BASES REVISION	05/16/12
B 3.4.9-5	BASES REVISION	05/16/12
B 3.4.9-6	BASES REVISION	05/16/12
B 3.4.10-1	309/309/309	1/18/00
B 3.4.10-2	309/309/309	1/18/00
B 3.4.10-3	309/309/309	1/18/00
B 3.4.10-4	309/309/309	1/18/00
B 3.4.11-1	BASES REVISION	10/12/12
B 3.4.11-2	BASES REVISION	10/12/12

PAGE	AMENDMENT	BASES REVISION DATE
B 3.4.11-3	BASES REVISION	10/12/12
B 3.4.11-4	BASES REVISION	10/12/12
B 3.4.11-5	DELETE BASES REV	10/12/12
B 3.4.12-1	BASES REVISION	06/13/14
B 3.4.12-2	BASES REVISION	06/13/14
B 3.4.12-3	BASES REVISION	06/13/14
B 3.4.12-4	BASES REVISION	06/13/14
B 3.4.12-5	BASES REVISION	06/13/14
B 3.4.12-6	BASES REVISION	06/13/14
B 3.4.12-7	BASES REVISION	06/13/14
B 3.4.12-8	BASES REVISION	06/13/14
B 3.4.12-9	BASES REVISION	06/13/14
B 3.4.12-10	BASES REVISION	06/13/14
B 3.4.12-11	BASES REVISION	06/13/14
B 3.4.12-12	BASES REVISION	06/13/14
B 3.4.13-1	BASES REVISION	05/16/12
B 3.4.13-2	BASES REVISION	05/16/12
B 3.4.13-3	BASES REVISION	05/16/12
B 3.4.13-4	BASES REVISION	05/16/12
B 3.4.13-5	BASES REVISION	05/16/12
B 3.4.13-6	BASES REVISION	05/16/12
B 3.4.14-1	BASES REVISION	05/16/12
B 3.4.14-2	BASES REVISION	05/16/12
B 3.4.14-3	BASES REVISION	05/16/12
B 3.4.14-4	BASES REVISION	05/16/12
B 3.4.14-5	BASES REVISION	05/16/12
B 3.4.14-6	BASES REVISION	05/16/12
B 3.4.15-1	BASES REVISION	05/16/12
B 3.4.15-2	BASES REVISION	05/16/12
B 3.4.15-3	BASES REVISION	05/16/12
B 3.4.15-4	BASES REVISION	05/16/12
B 3.4.15-5	BASES REVISION	05/16/12
B 3.4.16-1	355/357/356	4/2/07
B 3.4.16-2	355/357/356	4/2/07
B 3.4.16-3	355/357/356	4/2/07
B 3.4.16-4	355/357/356	4/2/07
B 3.4.16-5	355/357/356	4/2/07
B 3.4.16-6	355/357/356	4/2/07
B 3.4.16-7	355/357/356	4/2/07
B 3.5.1-1	BASES REVISION	05/16/12
B 3.5.1-2	BASES REVISION	05/16/12
B 3.5.1-3	BASES REVISION	05/16/12
B 3.5.1-4	BASES REVISION	05/16/12
B 3.5.1-5	BASES REVISION	05/16/12

PAGE	AMENDMENT	BASES REVISION DATE
B 3.5.1-6	BASES REVISION	05/16/12
B 3.5.1-7	BASES REVISION	05/16/12
B 3.5.1-8	BASES REVISION	05/16/12
B 3.5.2-1	BASES REVISION	05/16/12
B 3.5.2-2	BASES REVISION	05/16/12
B 3.5.2-3	BASES REVISION	05/16/12
B 3.5.2-4	BASES REVISION	05/16/12
B 3.5.2-5	BASES REVISION	05/16/12
B 3.5.2-6	BASES REVISION	05/16/12
B 3.5.2-7	BASES REVISION	05/16/12
B 3.5.2-8	BASES REVISION	05/16/12
B 3.5.2-9	BASES REVISION	05/16/12
B 3.5.2-10	BASES REVISION	05/16/12
B 3.5.2-11	BASES REVISION	05/16/12
B 3.5.2-12	BASES REVISION	05/16/12
B 3.5.2-13	BASES REVISION	05/16/12
B 3.5.2-14	BASES REVISION	05/16/12
B 3.5.3-1	BASES REVISION	05/16/12
B 3.5.3-2	BASES REVISION	05/16/12
B 3.5.3-3	BASES REVISION	05/16/12
B 3.5.3-4	BASES REVISION	05/16/12
B 3.5.3-5	BASES REVISION	05/16/12
B 3.5.3-6	BASES REVISION	05/16/12
B 3.5.3-7	BASES REVISION	05/16/12
B 3.5.3-8	BASES REVISION	05/16/12
B 3.5.3-9	BASES REVISION	05/16/12
B 3.5.3-10	Delete	09/02/04
B 3.5.4-1	BASES REVISION	05/16/12
B 3.5.4-2	BASES REVISION	05/16/12
B 3.5.4-3	BASES REVISION	05/16/12
B 3.5.4-4	BASES REVISION	05/16/12
B 3.5.4-5	BASES REVISION	05/16/12
B 3.5.4-6	BASES REVISION	05/16/12
B 3.6.1-1	BASES REVISION	10/20/11
B 3.6.1-2	BASES REVISION	10/20/11
B 3.6.1-3	BASES REVISION	10/20/11
B 3.6.1-4	BASES REVISION	10/20/11
B 3.6.1-5	Delete	12/16/98
B 3.6.2-1	BASES REVISION	05/16/12
B 3.6.2-2	BASES REVISION	05/16/12
B 3.6.2-3	BASES REVISION	05/16/12
B 3.6.2-4	BASES REVISION	05/16/12
B 3.6.2-5	BASES REVISION	05/16/12

PAGE	AMENDMENT	BASES REVISION DATE
B 3.6.2-6	BASES REVISION	05/16/12
B 3.6.2-7	BASES REVISION	05/16/12
B 3.6.3-1	BASES REVISION	05/16/12
B 3.6.3-2	BASES REVISION	05/16/12
B 3.6.3-3	BASES REVISION	05/16/12
B 3.6.3-4	BASES REVISION	05/16/12
B 3.6.3-5	BASES REVISION	05/16/12
B 3.6.3-6	BASES REVISION	05/16/12
B 3.6.3-7	BASES REVISION	05/16/12
B 3.6.3-8	BASES REVISION	05/16/12
B 3.6.3-9	BASES REVISION	05/16/12
B.3.6.3-10	BASES REVISION	05/16/12
B 3.6.4-1	BASES REVISION	05/16/12
B 3.6.4-2	BASES REVISION	05/16/12
B 3.6.4-3	BASES REVISION	05/16/12
B 3.6.5-1	BASES REVISION	05/16/12
B 3.6.5-2	BASES REVISION	05/16/12
B 3.6.5-3	BASES REVISION	05/16/12
B 3.6.5-4	BASES REVISION	05/16/12
B 3.6.5-5	BASES REVISION	05/16/12
B 3.6.5-6	BASES REVISION	05/16/12
B 3.6.5-7	BASES REVISION	05/16/12
B 3.6.5-8	BASES REVISION	05/16/12
B 3.6.5-9	BASES REVISION	05/16/12
B 3.6.5-10	BASES REVISION	05/16/12
B 3.6.5-11	BASES REVISION	05/16/12
B 3.7.1-1	BASES REVISION	08/08/12
B 3.7.1-2	BASES REVISION	08/08/12
B 3.7.1-3	BASES REVISION	08/08/12
B 3.7.1-4	BASES REVISION	08/08/12
B 3.7.2-1	BASES REVISION	11/13/12
B 3.7.2-2	BASES REVISION	11/13/12
B 3.7.2-3	BASES REVISION	11/13/12
B 3.7.2-4	BASES REVISION	11/13/12
B 3.7.2-5	BASES REVISION	11/13/12
B 3.7.3-1	BASES REVISION	1/17/06
B 3.7.3-2	BASES REVISION	1/17/06
B 3.7.3-3	BASES REVISION	1/17/06
B 3.7.3-4	BASES REVISION	1/17/06
B 3.7.4-1	BASES REVISION	05/16/12
B3.7.4-2	BASES REVISION	05/16/12

PAGE	AMENDMENT	BASES REVISION DATE
B3.7.4-3	BASES REVISION	05/16/12
B3.7.4-4	BASES REVISION	05/16/12
B 3.7.5-1	BASES REVISION	05/16/12
B 3.7.5-2	BASES REVISION	05/16/12
B 3.7.5-3	BASES REVISION	05/16/12
B 3.7.5-4	BASES REVISION	05/16/12
B 3.7.5-5	BASES REVISION	05/16/12
B 3.7.5-6	BASES REVISION	05/16/12
B 3.7.5-7	BASES REVISION	05/16/12
B 3.7.5-8	BASES REVISION	05/16/12
B 3.7.6-1	BASES REVISION	05/16/12
B 3.7.6-2	BASES REVISION	05/16/12
B 3.7.6-3	BASES REVISION	05/16/12
B 3.7.7-1	BASES REVISION	05/16/12
B 3.7.7-2	BASES REVISION	05/16/12
B 3.7.7-3	BASES REVISION	05/16/12
B 3.7.7-4	BASES REVISION	05/16/12
B 3.7.7-5	BASES REVISION	05/16/12
B 3.7.7-6	BASES REVISION	05/16/12
B 3.7.8-1	BASES REVISION	05/16/12
B 3.7.8-2	BASES REVISION	05/16/12
B 3.7.8-3	BASES REVISION	05/16/12
B 3.7.8-4	BASES REVISION	05/16/12
B 3.7.8-5	BASES REVISION	05/16/12
B 3.7.8-6	BASES REVISION	05/16/12
B 3.7.8-7	BASES REVISION	05/16/12
B 3.7.9-1	BASES REVISION	05/16/12
B 3.7.9-2	BASES REVISION	05/16/12
B 3.7.9-3	BASES REVISION	05/16/12
B 3.7.9-4	BASES REVISION	05/16/12
B 3.7.9-5	BASES REVISION	05/16/12
B 3.7.10-1	338/339/339	06/01/04
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B 3.7.10-3	Deleted 338/339/339	06/01/04
B 3.7.10-4	Deleted 338/339/339	06/01/04
B 3.7.11-1	BASES REVISION	05/16/12
B 3.7.11-2	BASES REVISION	05/16/12
B 3.7.11-3	BASES REVISION	05/16/12
B 3.7.12-1	BASES REVISION	05/16/12
B 3.7.12-2	BASES REVISION	05/16/12

PAGE	AMENDMENT	BASES REVISION DATE
3.7.12-3	BASES REVISION	05/16/12
3.7.12-4	BASES REVISION	05/16/12
3.7.12-5	Deleted 351/353/352	06/15/06
B 3.7.13-1	BASES REVISION	08/19/10
B 3.7.13-2	BASES REVISION	08/19/10
B 3.7.13-3	BASES REVISION	08/19/10
B 3.7.13-4	BASES REVISION	08/19/10
B 3.7.13-5	BASES REVISION	08/19/10
B 3.7.14-1	BASES REVISION	05/16/12
B 3.7.14-2	BASES REVISION	05/16/12
B 3.7.14-3	BASES REVISION	05/16/12
B 3.7.15-1	BASES REVISION	10/24/07
B 3.7.15-2	BASES REVISION	10/24/07
B 3.7.15-3	BASES REVISION	10/24/07
B 3.7.16-1	BASES REVISION	05/16/12
B 3.7.16-2	BASES REVISION	05/16/12
B 3.7.16-3	BASES REVISION	05/16/12
B 3.7.16-4	BASES REVISION	05/16/12
B 3.7.16-5	BASES REVISION	05/16/12
B 3.7.16-6	BASES REVISION	05/16/12
B 3.7.16-7	BASES REVISION	05/16/12
B 3.7.17-1	BASES REVISION	04/12/06
B 3.7.17-2	BASES REVISION	04/12/06
B 3.7.17-3	BASES REVISION	04/12/06
B 3.7.18-1	351/353/352	06/15/06
B 3.7.18-2	351/353/352	06/15/06
B 3.7.18-3	351/353/352	06/15/06
B 3.7.18-4	351/353/352	06/15/06
B 3.7.19-1	BASES REVISION	06/25/14
B 3.7.19-2	BASES REVISION	06/25/14
B 3.7.19-3	BASES REVISION	06/25/14
B 3.7.19-4	BASES REVISION	06/25/14
B 3.7.19-5	BASES REVISION	06/25/14
B 3.7.19-6	BASES REVISION	06/25/14
B 3.8.1-1	BASES REVISION	05/14/14
B 3.8.1-2	BASES REVISION	05/14/14
B 3.8.1-3	BASES REVISION	05/14/14
B 3.8.1-4	BASES REVISION	05/14/14
B 3.8.1-5	BASES REVISION	05/14/14
B 3.8.1-6	BASES REVISION	05/14/14
B 3.8.1-7	BASES REVISION	05/14/14
B 3.8.1-8	BASES REVISION	05/14/14
B 3.8.1-9	BASES REVISION	05/14/14
B 3.8.1-10	BASES REVISION	05/14/14

B 3.8.1-11	BASES REVISION	05/14/14
B 3.8.1-12	BASES REVISION	05/14/14
B 3.8.1-13	BASES REVISION	05/14/14
B 3.8.1-14	BASES REVISION	05/14/14
B 3.8.1-15	BASES REVISION	05/14/14
B 3.8.1-16	BASES REVISION	05/14/14
B 3.8.1-17	BASES REVISION	05/14/14
B 3.8.1-18	BASES REVISION	05/14/14
B 3.8.1-19	BASES REVISION	05/14/14
B 3.8.1-20	BASES REVISION	05/14/14
B 3.8.1-21	BASES REVISION	05/14/14
B 3.8.1-22	BASES REVISION	05/14/14
B 3.8.1-23	BASES REVISION	05/14/14
B 3.8.1-24	BASES REVISION	05/14/14
B 3.8.1-25	BASES REVISION	05/14/14
B 3.8.1-26	BASES REVISION	05/14/14
B 3.8.2-1	BASES REVISION	04/07/11
B 3.8.2-2	BASES REVISION	04/07/11
B 3.8.2-3	BASES REVISION	04/07/11
B 3.8.2-4	BASES REVISION	04/07/11
B 3.8.2-5	BASES REVISION	04/07/11
B 3.8.2-6	BASES REVISION	04/07/11
B 3.8.2-7	BASES REVISION	04/07/11
B 3.8.3-1	BASES REVISION	05/16/12
B 3.8.3-2	BASES REVISION	05/16/12
B 3.8.3-3	BASES REVISION	05/16/12
B 3.8.3-4	BASES REVISION	05/16/12
B 3.8.3-5	BASES REVISION	05/16/12
B 3.8.3-6	BASES REVISION	05/16/12
B 3.8.3-7	BASES REVISION	05/16/12
B 3.8.3-8	BASES REVISION	05/16/12
B 3.8.3-9	BASES REVISION	05/16/12
B 3.8.3-10	BASES REVISION	05/16/12
B 3.8.4-1	338/339/339	12/18/07
B 3.8.4-2	338/339/339	12/18/07
B 3.8.4-3	338/339/339	12/18/07
B 3.8.4-4	300/300/300	12/18/07

PAGE	AMENDMENT	BASES REVISION DATE
B 3.8.5-1	BASES REVISION	05/16/12
B 3.8.5-2	BASES REVISION	05/16/12
B 3.8.5-3	BASES REVISION	05/16/12
B 3.8.5-4	BASES REVISION	05/16/12
B 3.8.5-5	BASES REVISION	05/16/12
B 3.8.5-6	BASES REVISION	05/16/12
B 3.8.6-1	BASES REVISION	05/16/12
B 3.8.6-2	BASES REVISION	05/16/12
B 3.8.6-3	BASES REVISION	05/16/12
B 3.8.6-4	BASES REVISION	05/16/12
B 3.8.7-1	BASES REVISION	05/16/12
B 3.8.7-2	BASES REVISION	05/16/12
B 3.8.7-3	BASES REVISION	05/16/12
B 3.8.8-1	BASES REVISION	05/16/12
B 3.8.8-2	BASES REVISION	05/16/12
B 3.8.8-3	BASES REVISION	05/16/12
B 3.8.8-4	BASES REVISION	05/16/12
B 3.8.8-5	BASES REVISION	05/16/12
B 3.8.8-6	BASES REVISION	05/16/12
B 3.8.8-7	BASES REVISION	05/16/12
B 3.8.8-8	BASES REVISION	05/16/12
B 3.8.8-9	BASES REVISION	05/16/12
B 3.8.9-1	BASES REVISION	05/16/12
B 3.8.9-2	BASES REVISION	05/16/12
B 3.8.9-3	BASES REVISION	05/16/12
B 3.8.9-4	BASES REVISION	05/16/12
B 3.9.1-1	BASES REVISION	05/16/12
B 3.9.1-2	BASES REVISION	05/16/12
B 3.9.1-3	BASES REVISION	05/16/12

PAGE	AMENDMENT	BASES REVISION DATE
B 3.9.2-1	BASES REVISION	05/16/12
B 3.9.2-2	BASES REVISION	05/16/12
B 3.9.2-3	BASES REVISION	05/16/12
B 3.9.2-4	BASES REVISION	05/16/12
B 3.9.3-1	BASES REVISION	05/16/12
B 3.9.3-2	BASES REVISION	05/16/12
B 3.9.3-3	BASES REVISION	05/16/12
B 3.9.3-4	BASES REVISION	05/16/12
B 3.9.3-5	BASES REVISION	05/16/12
B 3.9.4-1	BASES REVISION	05/16/12
B 3.9.4-2	BASES REVISION	05/16/12
B 3.9.4-3	BASES REVISION	05/16/12
B 3.9.4-4	BASES REVISION	05/16/12
B 3.9.5-1	BASES REVISION	05/16/12
B 3.9.5-2	BASES REVISION	05/16/12
B 3.9.5-3	BASES REVISON	05/16/12
B 3.9.5-4	BASES REVISION	05/16/12
B 3.9.6-1	BASES REVISION	05/16/12
B 3.9.6-2	BASES REVISION	05/16/12
B 3.9.6-3	BASES REVISION	05/16/12
B 3.9.7-1	BASES REVISION	05/16/12
B 3.9.7-2	BASES REVISION	05/16/12
B 3.9.7-3	BASES REVISION	05/16/12
B 3.9.8-1	BASES REVISION	06/25/14
B 3.9.8-2	BASES REVISION	06/25/14
B 3.9.8-3	BASES REVISION	06/25/14
B 3.10.1-1	BASES REVISION	07/25/13
B 3.10.1-2	BASES REVISION	07/25/13
B 3.10.1-3	BASES REVISION	07/25/13
B 3.10.1-4	BASES REVISION	07/25/13
B 3.10.1-5	BASES REVISION	07/25/13
B 3.10.1-6	BASES REVISION	07/25/13
B 3.10.1-7	BASES REVISION	07/25/13
B 3.10.1-8	BASES REVISION	07/25/13
B 3.10.1-9	BASES REVISION	07/25/13
B 3.10.1-10	BASES REVISION	07/25/13
B 3.10.1-11	BASES REVISION	07/25/13
B 3.10.1-12	BASES REVISION	07/25/13
B 3.10.1-13	BASES REVISION	07/25/13
B 3.10.1-14	BASES REVISION	07/25/13
B 3.10.1-15	BASES REVISION	07/25/13
B 3.10.1-16	BASES REVISION	07/25/13
B 3.10.1-17	BASES REVISION	07/25/13

PAGE	AMENDMENT	BASES REVISION DATE
B 3.10.1-18	BASES REVISION	07/25/13
B 3.10.1-19	BASES REVISION	07/25/13
B 3.10.2-1	BASES REVISION	07/01/13
B 3.10.2-2	BASES REVISION	07/01/13
B 3.10.2-3	BASES REVISION	07/01/13
B 3.10.2-4	BASES REVISION	07/01/13
B 3.10.2-5	BASES REVISION	07/01/13
B 3.10.2-6	BASES REVISION	07/01/13

B 3.7 Plant Systems

B 3.7.19 Spent Fuel Pool Cooling (SFPC) Purification System Isolation from Borated Water Storage Tank (BWST)

BASES

BACKGROUND

A SFPC purification loop is provided to maintain the purity of the water in the spent fuel pool. This loop is also utilized to purify the water in the BWST following refueling, and to maintain clarity in the fuel transfer canal during refueling. Water from the BWST or fuel transfer canal can be purified by using the borated water recirculation pump.

The BWST recirculation pump removes water from the BWST for demineralization and filtering. The pump may also be used for recirculating the BWST prior to sampling and while demineralizing and filtering the water in the fuel transfer canal during a transfer of fuel. It may also be used for emptying the fuel transfer canal if spent fuel coolant pumps are unavailable for use. There is one pump for Units 1 and 2, and one for Unit 3. (Reference 1)

The Reverse Osmosis (RO) System removes silica from the Spent Fuel Pools (SFPs) and BWSTs by using a reverse osmosis filtering process.

The RO System consists of an RO unit and supply and return piping from the BWSTs and SFPs. The RO unit is located in the Unit 2 Pipe Trench Area Room (Room 349) directly below the Unit 2 West Penetration Room (WPR). A single RO unit is shared by all three Oconee Nuclear Station (ONS) units. The RO unit is capable of being aligned to the Unit 1 & 2 SFP, the Unit 3 SFP, the Unit 1 BWST, the Unit 2 BWST, or the Unit 3 BWST. RO System piping and existing Spent Fuel (SF) Purification Loop piping are used for these alignments.

To establish a path from the Unit 1 and Unit 2 BWSTs, RO System piping is connected to the Unit 1 & 2 Spent Fuel (SF) Purification Loop downstream of two redundant automatic isolation valves. To establish a path from the Unit 3 BWST, RO System piping is connected to the Unit 3 SF Purification Loop downstream of two redundant automatic isolation valves.

BASES

BACKGROUND (continued)

The return piping from the RO unit is routed back to the purification portion of the two SFPC Purification Systems (Units 1 & 2 and Unit 3). The RO System return piping is non-seismic up to the point where connections are made to the SF purification piping. A check valve is installed in each of the return lines to the SF purification piping. The check valve and the downstream piping are seismically qualified. The location where the discharge piping connects to the purification loop is such that the return flow can be aligned to the same source supplying the RO unit.

The BWST water is routed to the RO System from the SF purification loop. The two redundant automatic isolation valves are credited to isolate the RO system and the SFPC purification system to prevent unanalyzed radiological releases from either system. The valves are automatically isolated upon receipt of a low BWST level actuation signal prior to the actual TS limit, which is before swapover to the sump as an ECCS suction source occurs.

APPLICABLE SAFETY ANALYSES

The large break LOCA assumes back-leakage from the sump to the borated water storage tank (BWST). RO system operation or BWST recirculation using the BWST recirculation pump requires a flow path to be open from the BWST. Two redundant safety related automatic isolation valves are used to isolate each SFPC Purification System (Unit 1 and 2, and Unit 3) prior to ECCS Suction swapover from the BWST to the reactor building sump to prevent unanalyzed radiological releases. With the automatic isolation of this pathway, the use of the SFPC purification system for RO operation or BWST recirculation does not impact the assumptions in the design basis LOCA dose analysis. These automatic valve isolations are part of the primary success pathway which functions to mitigate the LOCA and meet 10 CFR 50.36, Criterion 3 (Reference 2). The isolation of the SFPC purification system credits two safety related automatic isolation valves and several manual valves upstream of the automatic isolation valves to ensure the plant stays within the bounds of the design basis LOCA analysis.

LCO

This LCO requires that the two automatic isolation valves used to isolate the SFPC purification system (one set for Unit 1 & 2 and one set for Unit 3) from the BWST to be OPERABLE. The automatic isolation valves are required to close on an automatic isolation signal. The LCO requires that the SFPC Purification System branch line manual valves located upstream of the automatic valves to be and closed and meet Inservice Testing Program leakage requirements.

BASES (continued)

APPLICABILITY

The SFPC purification system automatic isolation valves are required to be OPERABLE and the branch line manual isolation valves are required to be closed and meet IST Program leakage requirements in MODES 1, 2, 3, and 4 when the SFPC Purification System is not isolated from the BWST, consistent with emergency core cooling system (ECCS) OPERABILITY requirements. These requirements ensure the plant stays within the bounds of the design basis LOCA analysis.

ACTIONS

The ACTIONS are modified by two Notes. Note 1 allows the SFPC purification system flow path from the BWST to be unisolated intermittently under administrative controls. The opening of a closed valve in the flow path on an intermittent basis under administrative control includes the following: (1) stationing an operator, who is in constant communication with control room, at the valve controls, (2) instructing this operator to close these valves in an accident situation, and (3) assuring that environmental conditions will not preclude access to close the valves and that this action will prevent the release of radioactivity outside the SFPC purification system. In this way, the flow path can be rapidly isolated when a need for isolation is indicated. The maximum continuous RO system operating period is 7 days. Procedures controlling RO System operation limit operation to a specified time period to prevent the boron concentration and water level going below the TS limit of the BWST.

A second Note has been added to provide clarification that, for this LCO, separate Condition entry is allowed for each branch line manual valve. This is acceptable, since the Required Actions for each applicable Condition provide appropriate compensatory actions for each inoperable manual valve. Complying with the Required Actions may allow for continued operation, and subsequent inoperable manual valves are governed by subsequent Condition entry and application of associated Required Actions.

A.1 and A.2

In the event one SFPC purification system BWST automatic isolation valve is inoperable, the SFPC Purification System flow path must be isolated within 4 hours. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic isolation valve, a closed and de-activated non-automatic power operated valve, a closed manual valve, or a blind flange. For the SFPC Purification System flow path isolated in accordance with Required Action A.1, the device used to isolate the flow path should be the closest available to the inoperable SFPC Purification System BWST

BASES

ACTIONS

A.1 and A.2 (continued)

automatic isolation valve. The 4-hour Completion Time is considered reasonable, considering the time required to isolate the flow path and the low probability of an accident occurring during this time period requiring isolation of the SFPC Purification System from the BWST.

For an automatic isolation valve that cannot be restored to OPERABLE status within the 4 hour Completion Time and that has been isolated in accordance with Required Action A.1, the flow path must be verified to be isolated on a periodic basis. This periodic verification is necessary to ensure that the flow path is isolated should an event occur requiring it to be isolated. This Required Action does not require any testing or device manipulation. Rather, it involves verification, through a system walkdown, that an isolation device capable of being mispositioned is in the correct position. The Completion Time of "once per 31 days" is appropriate considering the fact that the device is operated under administrative controls and the probability of its misalignment is low.

B.1

In the event two SFPC purification system BWST automatic isolation valves are inoperable, the flow path must be isolated within 1 hour. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic isolation valve, a closed and de-activated non-automatic power operated valve, a closed manual valve, or a blind flange. For the SFPC purification system BWST flow path isolated in accordance with Required Action B.1, the device used to isolate the flow path should be the closest available to the SFPC purification system BWST automatic isolation valves. The 1-hour Completion Time is considered reasonable, considering the time required to isolate the flow path and the low probability of an accident occurring during this time period requiring isolation of the SFPC purification system from the BWST.

In the event the affected SFPC purification system BWST flow path is isolated in accordance with Required Action B.1, the flow path must be verified to be isolated on a periodic basis per Required Action A.2, which remains in effect. This periodic verification is necessary to ensure that the flow path is isolated should an event occur requiring it to be isolated. The Completion Time of once per 31 days for verifying the flow path is isolated is appropriate considering the fact that the device is operated under administrative controls and the probability of its misalignment is low.

BASES

ACTIONS (continued)

C.1 and C.2

If a required manual valve(s) is discovered or not closed or not meeting IST Program leakage requirements, the flow path must be isolated within 1 hour. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic isolation valve, a closed and de-activated non-automatic power operated valve, a closed manual valve, or a blind flange. The 1-hour Completion Time is considered reasonable, considering the time required to isolate the flow path and the low probability of an accident occurring during the time period requiring this action. This is necessary to ensure that the flow path to the top of the BWST is isolated.

In the event a SFPC purification system branch line flow path is isolated in accordance with Required Action C.1, the flow path must be verified to be isolated on a periodic basis per Required Action C.2. This periodic verification is necessary to ensure that the flow path is isolated should an event occur requiring it to be isolated. The Completion Time of once per 31 days for verifying the flow path is isolated is appropriate considering the fact that the device is operated under administrative controls and the probability of its misalignment is low.

D.1 and D.2

If the Required Actions and associated Completion Times of Condition A, B, or C are not met, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 12 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.19.1

This SR requires verification that the SFPC Purification system branch line manual valves SF-51, 53, 54, and DW-112 for Unit 1 and 2 or 3SF- 51, 53, 54, and 3DW-112 for Unit 3 that are not locked, sealed, or otherwise secured in the closed position, are closed. The SR helps to ensure that post accident leakage of radioactive fluids does not impact the offsite dose analysis. This SR does not require any testing or valve manipulation. Rather, it involves verification, through a system walkdown,

BASES (continued)

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.19.1 (continued)

that each manual isolation valve is closed. The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program. This SR does not apply if a valve is locked, sealed, or otherwise secured, since it was verified to be in the correct position upon locking, sealing, or securing.

SR 3.7.19.2

This SR verifies that the SFPC Purification system branch line manual valves SF-51, 53, 54, and DW-112 for Unit 1 and 2 or 3SF-51, 53, 54, and 3DW-112 for Unit 3 meet IST Program leakage requirements. The specified Frequency is in accordance with the Inservice Testing Program requirements.

SR 3.7.19.3

This SR verifies that the SFPC Purification System BWST automatic isolation valves are OPERABLE in accordance with the Inservice Testing Program. As part of this SR, the IST Program leakage requirements are verified met. The specified Frequency is in accordance with the Inservice Testing Program requirements.

SR 3.7.19.4

This SR requires verification that each SFPC Purification System automatic isolation valve (SF-166 and SF-167 for Unit 1 & 2 and 3SF-166 and 3SF-167 for Unit 3) actuates to the isolation position on an actual or simulated isolation signal. This SR is not required for valves that are locked, sealed, or otherwise secured in position under administrative controls. The SR helps to ensure that post accident leakage of radioactive fluids do not impact the offsite dose analysis. The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.

REFERENCES

1. UFSAR, Section 9.1.3.

2. 10 CFR 50.36.

B 3.9 REFUELING OPERATIONS

B 3.9.8 Reverse Osmosis (RO) System Operating Restrictions for Spent Fuel Pool (SFP)

BASES

BACKGROUND

The RO System removes silica from the SFPs and Borated Water Storage Tanks (BWSTs) by using a reverse osmosis filtering process.

The RO System, which consists of an RO unit and supply and return piping from the BWSTs and SFPs, is located in the Unit 2 Pipe Trench Area Room (Room 349) directly below the Unit 2 West Penetration Room (WPR). A single RO unit is shared by all three ONS units. The RO unit is capable of being aligned to the Unit 1&2 SFP, the Unit 3 SFP, the Unit 1 BWST, the Unit 2 BWST, or the Unit 3 BWST. New RO System piping and existing Spent Fuel (SF) Purification Loop piping are used for these alignments. (Reference 1)

New RO System supply piping is routed from the Unit 1 & 2 SFP to the RO unit. The return piping from the RO unit is routed back to the purification portion of the SF Cooling Systems (Units 1&2 and Unit 3). The RO System return piping is non-seismic up to the point where connections are made to the SF purification piping. An isolation valve, check valve, and isolation valve are installed in series in each of the return lines to the SF purification piping. The check valve, its downstream isolation valve, and its piping are seismically qualified. The location where the discharge piping connects to the purification loop is such that the return flow can be aligned to the same source supplying the RO unit.

The suction piping from each SFP is designed as a "candy cane" that is inserted into the water from above the pool. Although the "candy cane" piping is non-seismic, it is seismically supported so that it will not fall into the SFP. Vacuum priming of the "candy cane" is required to start the flow from the SFP to the RO unit. The piping for the SFP suction inlet does not extend below the required minimum SFP water level specified in TS Limiting Condition for Operation (LCO) 3.7.11 to ensure the TS level is not reached due to the use of the RO System. Part of the Unit 3 SFP suction piping is Class D where the pipe is routed through the Unit 3 Purge Fan Room and the Unit 3 West Penetration Room.

During fuel or cask handling activities in the SFP, the RO System must be isolated from the SFP by breaking the siphon from the SFP.

BASES (continued)

APPLICABLE SAFETY ANALYSES

The possibility of an unanalyzed radioactive release pathway during movement of irradiated fuel assemblies in the SFP or movement of cask over the SFP is precluded by adherence to this LCO, which requires that the RO system be isolated from the SFP. Breaking the siphon from the SFP during movement of irradiated fuel assemblies in the SFP or movement of cask over the SFP prevents the flow of SFP water to the RO System. These operating restrictions eliminate the potential unanalyzed release pathway and ensure the plant stays within the bounds of the fuel handling accident (FHA).

The RO System operating restrictions satisfy Criterion 2 of 10 CFR 50.36 (Reference 2).

LCO

This LCO requires that the flow path to the RO System from the affected SFP be isolated by breaking the siphon from the SFP during movement of irradiated fuel assemblies in the SFP or movement of cask over the SFP to prevent an unanalyzed release of radioactivity should a fuel handling accident occur concurrent with an RO System pipe break.

APPLICABILITY

This LCO applies during movement of irradiated fuel assemblies in the SFP or movement of cask over the SFP since the potential for an unanalyzed release pathway exists.

ACTIONS

Required Actions A.1 and A.2 are modified by a Note indicating that LCO 3.0.3 does not apply.

If moving irradiated fuel assemblies or a cask while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies or a cask while in MODES 1, 2, 3, and 4, the fuel or cask movement is independent of reactor operations. Therefore, in either case, inability to suspend movement of irradiated fuel assemblies or a cask is not sufficient reason to require a reactor shutdown.

A.1 and A.2

When the initial conditions for an accident cannot be met, immediate action must be taken to preclude occurrence of an accident. With the RO not isolated for the SFP, movement of irradiated fuel assemblies in the SFP and movement of cask over the SFP are immediately suspended.

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.9.8.1

This SR requires verification that the RO System is isolated by breaking the siphon from the SFP prior to movement of irradiated fuel assemblies in the SFP or movement of cask over the SFP. This eliminates a potential unanalyzed radiological release pathway to the environment. The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.

REFERENCES

1. UFSAR, Section 9.1.3.

2. 10 CFR 50.36.