



Duke Energy

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W. R. McCollum, Jr.
Vice President

August 2, 2001

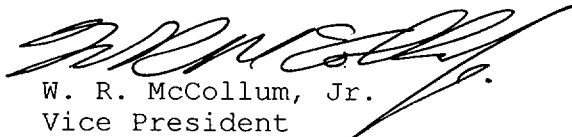
U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Subject: Oconee Nuclear Station
Docket 50-269, -270, -287
Selected Licensee Commitments Manual (SLC)

Gentlemen:

Pursuant to 10CFR 50.4 and 50.71, please find attached 7 copies of the latest revisions to the Oconee Selected Licensee Commitments Manual (SLC). The SLC Manual is Chapter 16.0 of the Oconee Updated Final Safety Analysis Report (UFSAR). This manual is intended to contain commitments and other station issues that warrant higher control, but are not appropriate for inclusion into the Technical Specifications (TS). Instead of being updated with the annual UFSAR Update, the SLC Manual will be updated as necessary throughout the year.

Very truly yours,



W. R. McCollum, Jr.
Vice President
Oconee Nuclear Station

CMB/cmb
Attachment

xc: Luis A. Reyes
Regional Administrator, Region II

D. E. LaBarge, ONRR

M. C. Shannon
Oconee Senior Resident Inspector

A001

August 2, 2001

To: Manual Holders

Subject: Oconee Selected Licensee Commitments Manual (SLC)
Revision

On June 27, 2001, Station Management approved revisions to SLC 16.9.12, Additional Low Pressure Service Water (LPSW) System and Siphon Seal Water (SSW) System Operability Requirements, which were implemented on July 31, 2001. Primary changes to SLC 16.9.12 included the incorporation of Generic Letter 96-06 waterhammer considerations and inclusion of three new surveillance requirements to ensure that adequate LPSW flow is available for vital safety equipment following a design basis accident.

Remove these pages

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Any questions concerning these revisions may be directed to Steve Newman at ext. 4388.

Regulatory Compliance
By: Conice Breazeale
Regulatory Compliance

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16.9 AUXILIARY SYSTEMS

16.9.12 Additional Low Pressure Service Water (LPSW) And Siphon Seal Water (SSW) System OPERABILITY Requirements

COMMITMENT The following Structures, Systems and Components (SSCs) shall be OPERABLE:

- a. LPSW-4 ("A" LPI COOLER SHELL OUTLET)
- b. LPSW-5 ("B" LPI COOLER SHELL OUTLET)
- c. LPSW Pump Minimum Flow Recirculation Lines
- d. LPSW-139 (LPSW SUPPLY TO TB NON-ESSENTIAL HDR)
- e. LPSW-251 ("A" LPI COOLER LPSW CONTROL)
- f. LPSW-252 ("B" LPI COOLER LPSW CONTROL)
- g. LPSW flow to any Reactor Building Cooling Unit (RBCU)
- h. 2/3LPSW-577 (RB Vent Cooling Coil A1 Inlet)
- i. 2/3LPSW-582 (RB Vent Cooling Coil A2 Inlet)
- j. LPSW alignment to the RB Auxiliary Cooler (RBAC) Cooling Coils
- k. "A" SSW Header
- l. "B" SSW Header

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LPSW flowpath through an LPI cooler isolated by a manual valve.	A.1 Declare associated LPI train inoperable.	Immediately
B. LPSW-4 inoperable and closed. <u>OR</u> LPSW-5 inoperable and closed.	B.1 Declare associated LPI train inoperable.	Immediately

Additional Low Pressure Service Water (LPSW) and Siphon Seal Water (SSW)
System OPERABILITY Requirements 16.9.12

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. LPSW flowpath through an LPI cooler not isolated by manual valve.</p> <p><u>AND</u></p> <p>LPSW-4 inoperable and not closed.</p>	<p>C.1 Verify all required LPSW Pumps are OPERABLE</p> <p><u>AND</u></p>	Immediately
	<p>C.2 Restore LPSW-4 to OPERABLE status.</p>	72 hours
<p>D. LPSW flowpath through an LPI cooler not isolated by manual valve.</p> <p><u>AND</u></p> <p>LPSW-5 inoperable and not closed.</p>	<p>D.1 Verify all required LPSW Pumps are OPERABLE.</p> <p><u>AND</u></p>	Immediately
	<p>D.2 Restore LPSW-5 to OPERABLE status.</p>	72 hours

Additional Low Pressure Service Water (LPSW) and Siphon Seal Water (SSW)
System OPERABILITY Requirements 16.9.12

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>E. One required LPSW pump minimum flow recirculation line inoperable.</p> <p><u>OR</u></p> <p>Two required Unit 3 LPSW Pump minimum flow recirculation lines inoperable</p> <p><u>OR</u></p> <p>Two required Unit 1&2 LPSW Pump minimum flow recirculation lines inoperable when two LPSW pumps are required to be OPERABLE by TS 3.7.7.</p>	<p>E.1 Restore required LPSW pump minimum flow recirculation line to OPERABLE status.</p>	72 hours
<p>F. Two or more Unit 1 and 2 LPSW pump minimum recirculation lines inoperable when three LPSW pumps are required to be OPERABLE by TS 3.7.7.</p>	<p>F.1 Declare affected LPSW Pumps inoperable.</p>	Immediately
<p>G. LPSW-139 inoperable and associated flow path not isolated by a manual valve.</p>	<p>G.1 Verify all required LPSW Pumps are OPERABLE.</p> <p><u>AND</u></p> <p>G.2 Restore LPSW-139 to OPERABLE status</p>	<p>Immediately</p> <p>72 hours</p>

Additional Low Pressure Service Water (LPSW) and Siphon Seal Water (SSW)
System OPERABILITY Requirements 16.9.12

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>H. 1LPSW-139 inoperable and associated flow path not isolated by a manual valve.</p> <p><u>AND</u></p> <p>2LPSW-139 inoperable and associated flow path not isolated by a manual valve.</p> <p><u>AND</u></p> <p>Total Unit 1 and 2 LPSW non-essential header flow is less than 10,000 gpm.</p>	<p>H.1 Verify all required LPSW Pumps OPERABLE.</p> <p><u>AND</u></p> <p>H.2 Restore LPSW-139 on Unit 1 and 2 to OPERABLE status.</p>	<p>Immediately</p> <p>72 hours</p>
<p>I. 1LPSW-139 inoperable and associated flow path not isolated by a manual valve.</p> <p><u>AND</u></p> <p>2LPSW-139 inoperable and associated flow path not isolated by a manual valve.</p> <p><u>AND</u></p> <p>Total Unit 1 and 2 LPSW non-essential header flow is 10,000 gpm or greater.</p>	<p>I.1 Declare all Unit 1 and 2 LPSW Pumps inoperable.</p>	<p>Immediately</p>

Additional Low Pressure Service Water (LPSW) and Siphon Seal Water (SSW)
System OPERABILITY Requirements

16.9.12

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>J. LPSW-251 inoperable and not failed open.</p> <p><u>OR</u></p> <p>LPSW-252 inoperable and not failed open.</p>	<p>J.1 Declare associated LPI train inoperable.</p>	Immediately
<p>K. LPSW flow to any RBCU is less than 420 gpm.</p>	<p>K.1 Declare Containment inoperable.</p> <p><u>AND</u></p> <p>K.2 Declare all required LPSW pumps inoperable.</p>	<p>Immediately</p> <p>Immediately</p>
<p>-----NOTE----- Only applicable to Units 2 and 3 -----</p> <p>L. LPSW-577 not open.</p> <p><u>OR</u></p> <p>LPSW-582 not open.</p>	<p>L.1 Declare Containment inoperable.</p> <p><u>AND</u></p> <p>L.2 Declare all required LPSW pumps inoperable.</p>	<p>Immediately</p> <p>Immediately</p>
<p>M. 8 or more RBAC cooling coils isolated by their individual isolation valves.</p>	<p>M.1 Declare Containment inoperable.</p> <p><u>AND</u></p> <p>M.2 Declare all required LPSW pumps inoperable.</p>	<p>Immediately</p> <p>Immediately</p>

Additional Low Pressure Service Water (LPSW) and Siphon Seal Water (SSW)
System OPERABILITY Requirements

16.9.12

CONDITION	REQUIRED ACTION	COMPLETION TIME
N. One SSW header inoperable.	N.1 Restore required SSW header to OPERABLE status.	72 hours
O. Required ACTION and associated Completion Time not met for Condition C, D, E, G, H, or N	O.1 Be in MODE 3.	12 hours
	<u>AND</u> O.2 Be in MODE 5.	60 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 16.9.12.1	Test LPSW-4, LPSW-5, LPSW-139, and check valves in the SSW headers in accordance with the Inservice testing Program.	In accordance with the Inservice Testing Program
SR 16.9.12.2	Verify that the LPSW pump minimum flow recirculation lines can pass required flow.	18 months
SR 16.9.12.3	Verify LPSW flow to each RBCU is 420 gpm or greater.	Every 12 hours.
SR 16.9.12.4	<p>-----NOTE----- Only applicable to Units 2 and 3 -----</p> <p>Verify LPSW-577 and LPSW-582 are open.</p>	Prior to entering MODE 4 from MODE 5.
SR 16.9.12.5	Verify that 8 or less RBAC cooling coils are isolated by their individual isolation valves.	Prior to entering MODE 4 from MODE 5.

BASES

BACKGROUND The Low Pressure Service Water (LPSW) System provides cooling water for normal and emergency services throughout the station. Safety related functions served by this system include the Reactor Building cooling units (RBCUs), Low Pressure Injection (LPI) coolers, and coolers for the High Pressure Injection (HPI) and Emergency Feedwater (EFW) motors.

The Siphon Seal Water (SSW) System consists of two full capacity headers. The "A" SSW header is supplied by the Unit 1 and 2 LPSW system. The Unit 3 LPSW System supplies the "B" SSW header. Each SSW header is capable of providing sealing flow to Unit 1, 2 and 3's ESV pumps. Both headers are normally in service and aligned to the ESV pumps.

**APPLICABLE
SAFETY
ANALYSES**

Sufficient LPSW System flow is required to meet the acceptance criteria of containment heat removal safety analyses. In addition, LPSW piping inside containment forms a closed loop. The pressure boundary of this closed loop inside containment must be maintained to ensure containment integrity following an accident or transient.

The analysis to support Generic Letter 96-06 determined the magnitude of the waterhammer pressure pulses in the LPSW System resulting from column closure and condensation induced waterhammers during Loss of Coolant Accident (LOCA) and Main Steam Line Break (MSLB) events (Refs. 15 and 16). The calculation determined that severe waterhammers could occur during a LOCA/LOOP or MSLB/LOOP scenario if LPSW flow is isolated to a RBCU. Large waterhammers, not bounded by existing analysis, could occur in isolated RBCU piping if left exposed to a LOCA or MSLB event. Per the analysis, a minimum of 30% of normal flow, i.e., 420 gpm is required to prevent waterhammer concerns (Refs. 15 and 16).

The "B" RBCU flow is determined using LPSW flow instrumentation shared between the "B" RBCU and RBACs. Hydraulic losses are less in an RBCU when compared to the RBACs. If the "B" RBCU and RBACs are simultaneously in-service, the required flow is 840 gpm (2x420 gpm).

The RBACs contain a total of 16 cooling coils with individual isolation valves. Valves 2/3LPSW-577 and 2/3LPSW-582 are located in horizontal sections of piping near the RBACs. Column closure waterhammer magnitudes are larger for steam voids that close on hard end points such as valves or dead-ended piping. Large waterhammers, not bounded by existing analysis, could occur during a LOCA/LOOP or MSLB/LOOP if these valves are in the closed position. Thus, valves 2/3LPSW-577 and 2/3LPSW-582 must be open (Refs. 15, 16, and 17).

APPLICABLE SAFETY ANALYSES (continued)	<p>The SSW System is a support system to the ECCW System. Maintaining the ECCW siphon headers OPERABLE during accident and transient events is an assumption in the accident and transient analysis. The SSW System is required to ensure ECCW siphon header piping remains sufficiently primed to supply siphon flow to the LPSW suction piping.</p> <p>SSW header OPERABILITY requires that it be supplied from LPSW. OPERABILITY of an ESV pump requires that it be aligned to both SSW headers. Each SSW header has a non-safety related HPSW backup. Since the HPSW supply is not safety related, HPSW is not credited to supply the SSW system during a design basis accident. OPERABILITY of both SSW headers is required to mitigate a LOOP and a postulated single failure of a LPSW pump to restart when power is restored. This scenario can result in no LPSW pumps operating on the Unit 3 LPSW System or an inadequate number of operating LPSW pumps on the Unit 1 and 2 LPSW system. In this scenario, SSW flow is unavailable on the affected SSW header. If an ESV pump is operated without seal water, degradation can occur within minutes. Since the standby LPSW pump does not automatically start following a LOOP, Operator action is credited to start the standby LPSW pump in this scenario.</p>
COMMITMENT	<ul style="list-style-type: none">• LPSW-4 and LPSW-5 are considered OPERABLE when the valves are capable of being throttled from the Control Room.• LPSW-139 is considered OPERABLE if capable of being closed from the Control Room unless previously closed or isolated.• LPSW-251 and LPSW-252 are considered OPERABLE when they maintain the capability to fail open either as directed from the Control Room or on a loss of Instrument Air.• LPSW flow through each RBCU is 420 gpm or greater to support both Containment and LPSW pump operability.• 2/3LPSW-577 and 2/3LPSW-582 are required to be open to support both Containment and LPSW pump operability.• 8 or less RBAC cooling coils are isolated by their individual isolation valves to support both Containment and LPSW pump operability.• A SSW header is considered OPERABLE when it is supplied from the LPSW system.
APPLICABILITY	<p>This SLC applies in MODES 1, 2, 3, and 4. This applicability is consistent with the LPSW System OPERABILITY requirements in Technical Specification 3.7.7 and ECCW OPERABILITY requirements in TS 3.7.8. In MODES 5 and 6 the OPERABILITY requirements of the LPSW System are determined by the system it supports.</p>

ACTIONS

A.1

If the LPSW flowpath through an LPI cooler is isolated due to a closed manual valve, although LPSW pump NPSH and LPSW flow to other safety related loads would be adequate, LPSW flow to the affected LPI cooler would not be sufficient. The affected LPI train shall be declared inoperable immediately.

B.1

During normal operation, LPSW flow is isolated to the LPI coolers with block valves LPSW-4 and LPSW-5 in the closed position. If a LOCA occurs, LPSW-4 and LPSW-5 are required to be opened after Reactor Building Emergency Sump (RBES) recirculation is established. If LPSW-4 or LPSW-5 is closed and not capable of throttling LPSW flow, then LPSW pump NPSH and LPSW flow to the other safety related loads would be adequate. However, the LPSW flow to the affected LPI cooler would not be adequate. Thus, if LPSW-4 or LPSW-5 is closed and do not have throttle capability, then the affected LPI train shall be declared inoperable immediately.

C.1, C.2, D.1, D.2

If LPSW-4 or LPSW-5 are not closed and do not have throttle capability, OPERABILITY of all required LPSW pumps shall be verified immediately to ensure adequate LPSW pump NPSH and flow to safety related loads. In addition, LPSW-4 and/or LPSW-5 must be restored to OPERABLE status within 72 hours. The 72 hour completion time is consistent with TS 3.7.7. For Units 1 & 2, both units would be affected if a valve on either unit is inoperable. In Condition C or D, LPSW pump NPSH and LPSW flow to the safety-related loads may be inadequate. If a single failure of an LPSW pump is not assumed, then sufficient LPSW flow to, and NPSH for, the safety related loads would exist.

ACTIONS
(continued)

E.1

LPSW-4 and LPSW-5 are not actuated by an ES signal. By maintaining isolation of LPSW flow to the LPI Coolers during the initial phase of a LOCA, the potential exists for the LPSW pumps to be operated below the manufacturer's recommended minimum continuous flow rate. If all LPSW pumps successfully start and operate during the event, the potential exists for a stronger pump to deadhead a weaker pump during low flow conditions. To avoid damaging a pump due to minimum flow concerns, minimum flow recirculation piping exists for each LPSW pump. The minimum flow recirculation lines ensure the OPERABILITY of a deadheaded pump until LPSW-4 or LPSW-5 are open on the LOCA unit after RBES recirculation is established. If an LPSW pump's minimum flow recirculation line is inoperable, the LPSW system cannot withstand a single failure and still be capable of fulfilling its safety function. Thus ACTION must be taken to restore the recirculation line to OPERABLE status within 72 hours which is consistent with TS 3.7.7.

If both Unit 3 LPSW pump minimum flow recirculation lines are inoperable, the 72 hour Completion Time is still appropriate because the stronger LPSW pump will always have sufficient flow and will maintain operability. Likewise, if the Unit 1&2 LPSW system is in a condition that only requires two OPERABLE LPSW pumps per TS 3.7.7, the minimum flow recirculation lines associated with both OPERABLE pumps may be simultaneously inoperable for a duration of 72 hours. LPSW pump minimum flow recirculation lines are not required to be OPERABLE if the associated pumps are inoperable.

F.1, F.2

If Unit 1 and 2 are in a MODE that requires three OPERABLE LPSW pumps (per TS 3.7.7) and two or more minimum flow recirculation lines are out-of-service, the affected LPSW Pumps shall be declared inoperable immediately

ACTIONS
(continued)

G.1, G2

In the event of a LOCA, LPSW-139 is credited to close after RBES Recirculation is established, but prior to opening valves LPSW-4 and LPSW-5. Since the Unit 1 & 2 LPSW system is shared, both 1LPSW-139 and 2LPSW-139 shall be closed if the non-LOCA unit has tripped due to a concurrent Loss-Of-Offsite-Power (LOOP). Closing LPSW-139 maintains sufficient LPSW pump NPSH and adequate LPSW flow to the safety related loads.

If LPSW-139 is not capable of closing and a single failure of an LPSW pump occurs, LPSW pump flow to, and NPSH for, the safety related loads might be insufficient. In this Condition, all required LPSW pumps shall be verified OPERABLE immediately and LPSW-139 shall be restored to OPERABLE status within 72 hours. Since the Unit 1 & 2 LPSW system is shared and 1LPSW-139 and 2LPSW-139 are normally open, the 72 hour Completion Time applies to both Units 1 and 2 if either 1LPSW-139 or 2LPSW-139 is inoperable.

If all required LPSW pumps are available, LPSW pump NPSH and LPSW flow to the safety-related loads will be sufficient. If 1LPSW-139 or 2LPSW-139 is closed or isolated by system block valves, e.g. for maintenance during a unit outage, remote closure capability of the valve is not required.

H.1, H.2

If both 1LPSW-139 and 2LPSW-139 are inoperable and not isolated by a manual valve, and total Unit 1 & 2 LPSW non-essential header flow is less than 10,000 gpm, OPERABILITY of all required LPSW pumps shall be verified immediately to ensure that there will be sufficient LPSW pump flow to, and NPSH for safety related loads. Additionally, 1LPSW-139 and 2LPSW-139 must be restored to OPERABLE status within the stated 72 hour Completion Time.

I.1

If 1LPSW-139 and 2LPSW-139 are inoperable and not isolated by a manual valve, and total Unit 1 & 2 LPSW non-essential header flow is greater than 10,000 gpm, sufficient LPSW pump flow to, and NPSH for the safety related loads would not be available, even with all three LPSW pumps available. Consequently, all of the Unit 1 and 2 LPSW pumps shall be declared inoperable immediately.

ACTIONS
(continued)

J.1

Air operated valves LPSW-251 and LPSW-252 are the normal LPI cooler flow control valves. The control valves fail open on a loss of Instrument Air (IA). If a LOCA occurs, IA and Auxiliary Instrument Air (AIA) are assumed unavailable since they are not safety related. With LPSW-251 and LPSW-252 failed open, LPSW-4 and LPSW-5 are credited for throttling LPI cooler shell side flow to maintain sufficient LPSW pump Net Positive Suction Head (NPSH) and adequate LPSW flow to the safety related loads. LPSW-251 and LPSW-252 may also be failed open by placing the Fail Switch in the FAIL OPEN position or by isolating instrument air to the valve actuator and bleeding air pressure from the actuator. Should either LPSW-251 or LPSW-252 become inoperable and not fail open, the associated LPI train shall be declared inoperable immediately.

K.1, K.2, L.1, L.2, M.1, M.2

If a LOCA/LOOP or MSLB/LOOP were to occur while in Condition K, L, or M, the integrity of the LPSW flowpath, as well as containment, can not be assured. Consequently, all required LPSW pumps and containment shall be declared inoperable immediately. When in these conditions, TS 3.7.7 (TS 3.0.3) and 3.6.1 allow for a 1-hour restoration period prior to initiating a plant shutdown.

N.1

Operator action is not credited prior to Essential Siphon Vacuum (ESV) system pump degradation. Thus, both SSW headers are required to be OPERABLE and aligned to the ESV pumps to prevent interrupting SSW flow. If a SSW header is inoperable, the ESV system is not single failure proof. ACTION must be taken to restore the inoperable SSW header to OPERABLE status within 72 hours. The 72-hour completion time is consistent with TS 3.7.8. OPERABILITY of the SSW headers requires OPERABILITY of the LPSW System. If an LPSW pump is out of service on the Unit 1 and 2 and/or Unit 3 LPSW System, the SSW supply to the ESV pumps remains single failure proof since both SSW headers are normally in service and aligned to each ESV pump.

O.1 and O.2

If the Required ACTION and associated Completion Times of Conditions C, D, E, G, H or N are not met, the unit must be placed in a MODE in which the SLC does not apply, i.e., in at least MODE 3 within 12 hours and MODE 5 within 60 hours. These Completion Times are consistent with TS 3.7.7 and 3.7.8.

SURVEILLANCE SR 16.9.12.1
REQUIREMENTS

This SR requires that LPSW-4, LPSW-5, LPSW-139, and check valves in the SSW headers be tested per Oconee's ASME Section XI IST Program. Testing under this program is adequate to assure OPERABILITY.

SR 16.9.12.2

This SR requires that the LPSW pump minimum flow recirculation lines be tested every 18 months. An 18-month frequency is adequate to ensure significant degradation has not occurred due to service water related fouling.

SR 16.9.12.3

This SR requires that LPSW flow to each RBCU be verified once per shift. This frequency is adequate to ensure minimum flow is maintained. If the instrumentation used to monitor LPSW inlet and outlet flow to the RBCU is unavailable, this surveillance can be met by verifying the motor operated LPSW valves in the applicable RBCU train are full open. These MOVs include LPSW-16, -18, -19, -21, -22, -24, and -566.

SR 16.9.12.4

This SR requires that LPSW-577 and LPSW-582 (Units 2 & 3 only) are verified open prior to entering MODE 4 from MODE 5.

SR 16.9.12.5

This SR requires that no more than 8 RBAC cooling coils are isolated by their individual isolation valves prior to entering MODE 4 from MODE 5.

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- REFERENCES
1. OSS-0254.00-00-1039, Design Basis Specification for the Low Pressure Service Water System, rev. 11.
 2. OSC-2280, LPSW Pump NPSH and Minimum Required Lake Level, rev. 11.
 3. OSC-4672, Unit 1&2 LPSW System Response to a Large Break LOCA Using a Benchmarked Computer Hydraulic Model, rev. 7.
 4. OSC-4489, Predicted Unit 3 LPSW System Response to a Large Break LOCA Using a Benchmarked Computer Hydraulic Model, rev. 5.
 5. PT/1/A/0251/023, LPSW System Flow Test, performed on 11/16/97.
 6. PT/2/A/0251/023, LPSW System Flow Test, performed on 4/20/96.
 7. PT/3/A/0251/023, LPSW System Flow Test, performed on 1/19/97.
 8. PT/1,3/A/0251/01, LPSW Pump Test.
 9. TS 3.5.3, 3.7.7 and 3.7.8.

REFERENCES
(continued)

10. Oconee UFSAR Section 9.2.2, 12/31/97 update.
 11. Letter from J. W. Hampton, (DPC), to USNRC, dated June 6, 1996, Proposed Technical Specification amendment for LPSW-4, -5.
 12. NRC Safety Evaluation Report, dated August 19, 1996, Technical Specification Amendment 217/217/214.
 13. PIP 0-O98-5871, LOOP With Single Failure Degrades ESV System.
 14. Operability Evaluation of PIP 98-3629, RBCU Minimum Flow Rate Requirements.
 15. OSC-7445.05, Waterhammer Analysis of Reactor Building Cooling Units, rev. 0.
 16. OSC-7445.06, Waterhammer Analysis of Reactor Building Cooling Units, rev. 0.
 17. Letter from Altran Corporation to Timothy Brown dated 12/30/98, "Letter Report: Response to Additional Items for Waterhammer."
 18. OSC-5409 rev. 7, Single Failure Analysis of the ECCW System Supply to the LPSW System.
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