Scott L. Batson
Vice President
Oconee Nuclear Station

Duke Energy
ON01VP | 7800 Rochester Hwy
Seneca, SC 29672

o: 864.873.3274
f: 864.873. 4208
Scott.Batson@duke-energy.com

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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

The attached change to the Oconee Nuclear Station (ONS) TS Bases was processed in accordance with the provisions of Technical Specification 5.5.15, "Technical Specifications (TS) Bases Control Program."

The Limiting Condition for Operation (LCO) Bases for TS 3.7.10, "Protected Service Water (PSW) System," is revised to indicate that an operable Keowee Hydroelectric Unit (KHU) aligned to the overhead emergency power path is required to support PSW System operability.

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

Sincerely,

Scott L. Batson
Vice President
Oconee Nuclear Station

Attachment

A001
NRR

cc: Ms. Catherine Haney
Administrator, Region II
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)
U. S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
11555 Rockville Pike
Mail Stop O-8G9A
Rockville, MD 20852

Mr. Eddy L. Crowe
Senior Resident Inspector
Oconee Nuclear Station

SECTION/PAGES	REVISION NUMBER	IMPLEMENTATION DATE
TOC	000	09/03/14
B 2.1.1	000	05/31/12
B 2.1.2	000	02/06/14
B 3.0	000	10/20/11
B 3.1.1	000	05/16/12
B 3.1.2	000	05/16/12
B 3.1.3	000	06/02/99
B 3.1.4	000	07/23/12
B 3.1.5	000	05/16/12
B 3.1.6	000	07/23/12
B 3.1.7	000	07/23/12
B 3.1.8	000	05/16/12
B 3.2.1	000	05/16/12
B 3.2.2	000	05/16/12
B 3.2.3	000	05/16/12
B 3.3.1	001	09/30/15
B 3.3.2	000	12/14/04
B 3.3.3	000	12/10/14
B 3.3.4	000	12/10/14
B 3.3.5	000	12/10/14
B 3.3.6	000	12/10/14
B 3.3.7	000	12/10/14
B 3.3.8	000	05/16/12
B 3.3.9	000	05/16/12
B 3.3.10	000	05/16/12
B 3.3.11	000	05/16/12
B 3.3.12	000	05/16/12

SECTION/PAGES	REVISION NUMBER	BASES REVISION DATE
B 3.3.13	000	05/16/12
B 3.3.14	000	05/16/12
B 3.3.15	000	05/16/12
B 3.3.16	000	05/16/12
B 3.3.17	000	05/16/12
B 3.3.18	000	05/16/12
B 3.3.19	000	05/16/12
B 3.3.20	000	05/16/12
B 3.3.21	000	05/16/12
B 3.3.22	000	05/16/12
B 3.3.23	000	05/16/12
B 3.3.24	000	09/26/01
B 3.3.25	000	11/05/03
B 3.3.26	000	11/05/03
B 3.3.27	000	12/10/14
B 3.3.28	000	05/16/12
B 3.4.1	000	05/16/12
B 3.4.2	000	12/16/98
B 3.4.3	000	03/04/15
B 3.4.4	000	05/16/12
B 3.4.5	000	05/16/12
B 3.4.6	000	05/16/12
B 3.4.7	000	05/16/12
B 3.4.8	000	05/16/12
B 3.4.9	000	05/16/12
B 3.4.10	001	09/21/15
B 3.4.11	000	10/12/12
B 3.4.12	000	06/13/14

SECTION/PAGES	REVISION NUMBER	BASES REVISION DATE
B 3.4.13	000	05/16/12
B 3.4.14	001	09/21/15
B 3.4.15	001	11/24/15
B 3.4.16	000	04/02/07
B 3.5.1	000	05/16/12
B 3.5.2	002	01/19/16
B 3.5.3	001	09/21/15
B 3.5.4	000	05/16/12
B 3.6.1	000	10/20/11
B 3.6.2	000	05/16/12
B 3.6.3	000	05/16/12
B 3.6.4	000	05/16/12
B 3.6.5	001	09/21/15
B 3.7.1	001	09/21/15
B 3.7.2	000	11/13/12
B 3.7.3	001	09/21/15
B 3.7.4	001	01/19/16
B 3.7.5	001	09/21/15
B 3.7.6	000	05/16/12
B 3.7.7	000	12/10/14
B 3.7.8	000	05/16/12
B 3.7.9	000	08/28/14
B 3.7.10	001	05/12/16
B 3.7.10a	000	09/03/14
B 3.7.11	000	05/16/12
B 3.7.12	000	05/16/12
B 3.7.13	000	08/19/10
B 3.7.14	000	05/16/12

SECTION/PAGES	REVISION NUMBER	BASES REVISION DATE
B 3.7.15	000	10/24/07
B 3.7.16	000	05/16/12
B 3.7.17	000	04/12/06
B 3.7.18	000	06/15/06
B 3.7.19	001	03/10/16
B 3.8.1	000	05/21/15
B 3.8.2	000	04/07/11
B 3.8.3	000	04/28/15
B 3.8.4	000	12/18/07
B 3.8.5	000	05/16/12
B 3.8.6	000	05/16/12
B 3.8.7	000	05/16/12
B 3.8.8	000	05/16/12
B 3.8.9	000	05/16/12
B 3.9.1	000	05/16/12
B 3.9.2	000	05/16/12
B 3.9.3	000	05/16/12
B 3.9.4	000	05/16/12
B 3.9.5	000	05/16/12
B 3.9.6	000	05/16/12
B 3.9.7	000	05/16/12
B 3.9.8	000	06/25/14
B 3.10.1	000	11/05/14
B 3.10.2	000	11/05/14

Note: With the introduction of Fusion in June 2015, all controlled documents require a three-digit revision number. Thus, the revision numbers were set to "000" in the summer of 2015. As such, the revision dates for Revision 000 are based on the implementation dates for revisions in effect prior to this change.

B 3.7 PLANT SYSTEMS

B 3.7.10 Protected Service Water (PSW) System

BASES

BACKGROUND

The Protected Service Water (PSW) system is designed as a standby system for use under emergency conditions. The PSW system provides added "defense in-depth" protection by serving as a backup to existing safety systems and as such, the system is not required to comply with single failure criteria. The PSW system is provided as an alternate means to achieve and maintain safe shutdown conditions for one, two or three units following postulated scenarios that damage essential systems and components normally used for safe shutdown.

The PSW pumping system utilizes the inventory of lake water contained in the Unit 2 Condenser Circulating Water (CCW) piping. The PSW primary and booster pumps are located in the Auxiliary Building (AB) at elevation 771' and take suction from the Unit 2 CCW piping and discharge into the steam generators of each unit via the Emergency Feedwater (EFW) system headers. The raw water is vaporized in the steam generators (SGs), removing residual heat, and is dumped to atmosphere via the Main Steam Relief Valves (MSRVs) or Atmospheric Dump Valves (ADVs). For extended operation, the PSW portable pump with a flow path capable of taking suction from the intake canal and discharging into the Unit 2 CCW piping is designed to provide a backup supply of water to the PSW system in the event of loss of CCW and subsequent loss of CCW siphon flow. The PSW portable pump is stored onsite.

The PSW system is designed to support cool down of the Reactor Coolant System (RCS) and maintain safe shutdown conditions. The PSW system is designed to maintain SG water levels to promote natural circulation Decay Heat Removal (DHR) using the SGs for an extended period of time during which time other plant systems required to cool the RCS to MODE 5 conditions will be restored and brought into service. In addition, the PSW system, in combination with the High Pressure Injection (HPI) system, provides borated water for Reactor Coolant Pump (RCP) seal cooling, RCS makeup, and reactivity management.

The PSW system reduces fire risk by providing a diverse power supply to power safe shutdown equipment in accordance with the National Fire Protection Association (NFPA) 805 safe shutdown analyses (Ref. 4).

BASES

BACKGROUND (continued)

The PSW system consists of the following:

1. PSW building and associated support systems.
2. Conduit duct bank from the Keowee Hydroelectric Station underground cable trench to the PSW building.
3. Conduit duct bank and raceway from the PSW Building to the Unit 3 AB.
4. Electrical power distribution system from breakers at the Keowee Hydroelectric Station and from the 100 kV PSW substation (supplied from the Central Tie Switchyard) to the PSW building, and from there to the AB.
5. PSW booster pump, PSW primary pump, and mechanical piping taking suction from the Unit 2 embedded CCW System to the EFW headers supplying cooling water to the respective unit's SGs and HPI pump motor bearing coolers.
6. PSW portable pumping system.

The mechanical portion of the PSW system provides decay heat removal by feeding Lake Keowee water to the secondary side of the SGs. In addition, the PSW pumping system supplies Keowee Lake water to the HPI pump motor coolers.

The PSW pumping system consists of a booster pump, a primary pump, and a portable pump. Other than the portable pump, the pumps and required valves are periodically tested in accordance with the In-Service Testing (IST) Program.

The PSW piping system has pump minimum flow lines that discharge back into the Unit 2 CCW embedded piping.

The PSW primary and booster pumps, motor operated valves, and solenoid valves required to bring the system into service, are controlled from the main control rooms. Check valves and manual handwheel operated valves are used to prevent back-flow, accommodate testing, or are used for system isolation.

The PSW electrical system is designed to provide power to PSW mechanical and electrical components as well as other system components needed to establish and maintain a safe shutdown condition. Normal power is provided by a transformer connected to a 100 kV overhead transmission line that receives power from the Central Tie Switchyard located approximately eight (8) miles from the plant. Standby power is provided from the Keowee Hydroelectric Station via an underground path. The Keowee Hydro Unit (KHU) aligned to the overhead emergency power path can automatically provide power to Keowee Hydroelectric Station in-house loads for operation of the overhead KHU.

BASES

BACKGROUND (continued)

These external power sources provide power to transformers, switchgear, breakers, load centers, batteries, and battery chargers located in the PSW electrical equipment structure. There are two (2) batteries inside the PSW Building. Either battery is sized to supply PSW DC loads. The battery banks are located in different rooms separated by fire rated walls. A separate room within the PSW building is provided for major PSW electrical equipment.

PSW building heating, ventilation, and air conditioning (HVAC) is designed to maintain transformer and battery rooms within their design temperature range. The HVAC System consists of two (2) systems; a non QA-1/non credited system designed to maintain the PSW Transformer and Battery Rooms environmental profile and a QA-1/credited system designed to actuate whenever the non QA-1 system is not able to meet its design function.

The hydrogen removal fans are designed to maintain the hydrogen in the Battery rooms below 2% in accordance with IEEE-484 (Ref. 5). The multiple thermostats in each Battery Room ensure temperatures are maintained within acceptable limits.

APPLICABLE SAFETY ANALYSES

The function of the PSW system is to provide a diverse means to achieve and maintain safe shutdown by providing secondary side DHR, RCP seal cooling, RCS primary inventory control, and RCS boration for reactivity management following scenarios that disable the 4160 V essential electrical power distribution system.

To verify PSW system performance criteria, thermal-hydraulic (T/H) analysis was performed to demonstrate that the PSW system could achieve and maintain safe shutdown following postulated fires that disable the 4160 V essential power distribution system, without reliance on equipment located in the turbine building. The analysis evaluates RCS subcooling margin using inputs that are representative of plant conditions as defined by Oconee's NFPA 805 fire protection program. The analysis uses an initial core thermal power of 2619 MWth (102% of 2568 MWth) and accounts for 24 month fuel cycles. The consequences of the postulated loss of main and emergency feedwater and 4160 VAC power were analyzed as a RCS overheating scenario. For the examined overheating scenario, an important core input is decay heat. High decay heat conditions were modeled that were reflective of maximum, end of cycle conditions. The high decay heat assumption was confirmed to be bounding with respect to the RCS subcooling response. The results of the analysis demonstrate that the PSW system is capable of meeting the relevant NFPA 805 nuclear safety performance criteria.

BASES

APPLICABLE SAFETY ANALYSES (continued)

During periods of very low decay heat the PSW system will be used to establish conditions that support the formation of subcooled natural circulation between the core and the SGs; however, natural circulation may not occur if the amount of decay heat available is less than or equal to the amount of heat removed by ambient losses to containment and/or by other means, e.g., letdown of required minimum HPI flow through the Reactor Coolant (RC) vent valves. When these heat removal mechanisms are sufficient to remove core decay heat, they are considered adequate to meet the core cooling function and systems supporting SG decay heat removal, although available, are not necessary for core cooling.

Regarding operation in MODES 1 and 2 other than operation at nominal full power, the duration of operation in these conditions is insufficient to result in an appreciable contribution to overall plant risk. As a result, T/H analysis was performed assuming full power initial conditions, as described above and in the Oconee Fire Protection Program, Nuclear Safety Capability Assessment. The plant configuration examined in the T/H analysis is representative of risk significant operating conditions and provides reasonable assurance that a fire mitigated by PSW during these MODES will not prevent the plant from achieving and maintaining fuel in a safe and stable condition.

The PSW system is not an Engineered Safety Feature Actuation System (ESFAS) and is not credited to mitigate design basis events as contained in UFSAR Chapters 6 and 15. No credit is taken in the safety analyses for PSW system operation following design basis events. Based on its contribution to the reduction of overall plant risk, the PSW system satisfies Criterion 4 of 10 CFR 50.36 (c)(2)(ii) (Ref. 3) and is therefore included in the Technical Specifications.

LCO

The OPERABILITY of the PSW system provides a diverse means to achieve and maintain safe shutdown by providing secondary side DHR, reactor coolant pump seal cooling, primary system inventory control, and RCS boration for reactivity management during certain plant scenarios that disable the 4160 V essential electrical power distribution system.

For OPERABILITY, the following are required:

- One (1) primary pump, one (1) booster pump, and one (1) portable pump.
- A flowpath taking suction from the Unit 2 CCW piping through the PSW pumping system (including recirculation flowpath) and discharging into the secondary side of each SG and the required HPI pump motor bearing cooler.

LCO (continued)

- TS 3.8.3 required number of 125 VDC Vital I&C Battery Chargers. Note: The Standby battery chargers cannot be credited for PSW OPERABILITY because they are not supplied with PSW power.
- One (1) of two (2) PSW batteries and the associated battery charger.
- PSW building ventilation system (QA-1) consisting of ductwork, fans, heaters, fire `dampers, tornado dampers, motor-operated dampers and associated controls of the Transformer room AND in-service battery room.
- KHU aligned to the overhead emergency power path automatically capable of providing power to its auxiliary power transformer.
- A PSW electrical system power path from the overhead KHU.

For OPERABILITY, PSW supplied power is required for the following:

- Either the "A" or "B" HPI pump motor.
- PSW portable pump (unless self-powered).
- HPI valve needed to align the HPI pumps to the Borated Water Storage Tanks (HP-24).
- HPI valves that support RCP seal injection and RCS makeup (HP-26, HP-139, and HP-140).
- Pressurizer Heaters (150 kW above pressurizer ambient heat loss).
- Reactor Vessel Head Vent Valves (RC-159 and RC-160)
- One (1) RCS Loop High Point Vent Pathway (RC-155 and RC-156 or RC-157 and RC-158)
- Required 125 VDC Vital I&C Normal Battery Chargers.

For OPERABILITY, the following instrumentation and controls located in each main control room are required:

- Two (2) high flow controllers (PSW-22 and PSW-24).
- Two (2) low flow controllers (PSW-23 and PSW-25).
- Two (2) flow indicators (one per SG).
- One (1) SG header isolation valve (PSW-6).
- One (1) HPI seal injection flow indicator
- One (1) "A" HPI train flow indication (from ICCM plasma)

The LCO is modified by a Note indicating that it is not applicable to Unit(s) until startup from a refueling outage after completion of PSW modifications and after all of the PSW system equipment installed has been tested. Certain SRs require the unit to be shutdown to perform the SR.

BASES (continued)

APPLICABILITY

In MODES 1 and 2, the PSW system provides a diverse means to achieve and maintain safe shutdown by providing secondary side DHR, reactor coolant pump seal cooling, primary system inventory control, and RCS boration for reactivity management during certain plant scenarios that disable the 4160 V essential electrical power distribution system.

As a result of the system's contribution to overall plant risk in mitigating transients initiated during these operating conditions, PSW is required to be OPERABLE in MODES 1 and 2. In MODES 3 and 4, the PSW system can provide a diverse means for secondary side DHR (while the steam generators remain available), reactor coolant pump seal cooling, primary system inventory control, and RCS boration for reactivity management. Because of the relatively short periods of operation in these MODES, the contribution to the reduction of overall plant risk in mitigating transients initiated during these operating conditions is not sufficient to warrant inclusion of OPERABILITY requirements for MODES 3 and 4 in the Technical Specifications.

In MODES 5 and 6, the steam generators are not available for secondary side DHR. As such, the PSW feed to the SGs is not required. Protected Service Water system backup power to some of the HPI components may be relied upon for shutdown risk defense-in-depth associated with primary system makeup. There are multiple means to achieve primary system makeup during these conditions. As a result, the contribution to the reduction of overall plant risk during these operating conditions is not sufficient to warrant inclusion of OPERABILITY requirements for MODES 5 and 6 in the Technical Specifications.

ACTIONS

The exception for LCO 3.0.4 provided in the NOTE of the Actions, permits entry into MODES 1 or 2 with the PSW system not OPERABLE. This is acceptable because the PSW is not required to support normal operation of the facility or to mitigate a design basis event.

A.1

With the PSW system inoperable, action must be taken to restore the system to OPERABLE status within 14 days. The 14-day Completion Time (CT) is reasonable based on the Standby Shutdown Facility (SSF) Auxiliary Service Water (ASW) and reactor coolant makeup (RCMU) systems being OPERABLE and a low probability of scenarios occurring that would require the PSW system during the 14 day period.

B.1

With both the PSW and SSF systems inoperable, action must be taken to restore the PSW system to OPERABLE status within 7 days. The 7 day

BASES

ACTIONS

B.1 (continued)

CT is based on the diverse heat removal capabilities afforded by other systems, reasonable times for repairs, and the low probability of scenarios occurring that would require the PSW system during this period.

C.1

If the Required Action and associated CT of Condition A or B is not met, action must be taken to restore the PSW system to OPERABLE status within 30 days. Operation for up to 30 days is permitted if risk-reducing contingency measures are taken. The 30 days is from the time of discovery of initial inoperability.

The condition is modified by a note indicating that contingency measures are required to be in place prior to entry. The contingency measures provide additional assurance that key equipment is available. For example, the Keowee Hydroelectric Units (KHUs), Emergency Feedwater (EFW) pumps, High Pressure Injection (HPI) pumps, Elevated Water Storage Tank (EWST), and 230 kV switchyard, are key equipment which impact overall risk during the extended outage period. Unavailability of the specific equipment does not preclude entry into the condition nor does it require any action by this TS. Rather the appropriate actions for the specific equipment are specified in the applicable TS or Selected Licensee Commitments (SLC). For example, if the 1A HPI pump becomes inoperable before entry or becomes inoperable after entry, only TS LCO 3.5.2 (HPI), Condition A shall be entered for Unit 1 and the appropriate actions taken until the pump is restored. This does not preclude entry into LCO 3.7.10 Condition C.

The strategy for the contingency measures is to defer non-essential surveillances or other maintenance activities where human error could increase the likelihood of a loss of offsite power (LOOP) or remove key equipment that is important to overall plant risk. This does not preclude surveillances required by technical specifications or corrective maintenance to equipment that is important to overall plant risk. Technical specification required surveillances and corrective maintenance are examples of essential activities.

The following contingency measures are applied to available key equipment to reduce plant risk:

- No non-essential surveillances or other maintenance activities, or testing, will be conducted in the 230 kV switchyard.
- No non-essential surveillances or other maintenance activities, or testing will be conducted on the Keowee Hydro Units' emergency power system and associated power paths.

BASES

ACTIONS

C.1 (continued)

- No non-essential surveillances or other maintenance activities, or testing, will be conducted on each unit's EFW motor-driven and turbine-driven pumps and associated equipment including the EFW cross connects.
- No non-essential surveillances or other maintenance activities, or testing, will be conducted on the unit's HPI pumps and associated equipment.
- No non-essential surveillances or other maintenance activities, or testing, will be conducted on the EWST.

D.1

If the Required Action and associated CTs of Condition A, B, or C are not met, the unit(s) must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to MODE 3 within 12 hours. The allowed CT is appropriate to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems, considering a three unit shutdown may be required.

SURVEILLANCE REQUIREMENTS

SR 3.7.10.1

Verifying battery terminal voltage while on float charge for the batteries helps to ensure the effectiveness of the charging system and the ability of the batteries to perform their intended function. Float charge is the condition in which the charger is supplying the continuous charge required to overcome the internal losses of a battery (or battery cell) and maintain the battery (or a battery cell) in a fully charged state. The voltage requirements are based on the nominal design voltage of the battery and are consistent with the initial voltage assumed in the battery sizing calculations. The surveillance frequency is in accordance with the Surveillance Frequency Control Program.

SR 3.7.10.2

SR verifies availability of the Keowee Hydroelectric Station power path to the PSW electrical system. Power path verification is included to demonstrate breaker OPERABILITY from the Keowee Hydroelectric Station to the PSW electrical system. To verify KHU-1 can supply the PSW electrical system, Breaker KPF-9 is closed. To verify KHU-2 can supply the PSW electrical system, Breaker KPF-10 is closed. Breakers KPF-9 and KPF-10 are electrically interlocked such that breakers cannot be closed simultaneously.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.10.2 (continued)

Electrical interlocks prevent compromise of existing redundant emergency power paths. To verify either KHU can supply the PSW electrical system, the PSW Feeder Breaker [B6T-A] or [B7T-C and the PSW switchgear tie breaker] is closed. The Surveillance Frequency is in accordance with the Surveillance Frequency Control Program.

SR 3.7.10.3

This SR requires the PSW primary and booster pumps be tested in accordance with the Inservice Test (IST) Program. The IST program verifies the developed head of PSW primary and booster pumps at flow test point is greater than or equal to the required developed head. The specified Frequency is in accordance with IST Program requirements.

SR 3.7.10.4

A battery service test is a special test of the battery capability, as found, to satisfy the design requirements (battery duty cycle) of the DC electrical power system. The discharge rate and test length correspond to the design duty cycle requirements.

The surveillance frequency is in accordance with the Surveillance Frequency Control Program.

SR 3.7.10.5

This SR verifies the design capacity of the battery charger. According to Regulatory Guide 1.32 (Ref. 2), the battery charger supply is recommended to be based on the largest combined demands of the various steady state loads and the charging capacity to restore the battery from the design minimum charge state to the fully charged state, irrespective of the status of the unit during these demand occurrences. The minimum required amperes and duration ensure that these requirements can be satisfied.

This SR provides two options. One option requires that each battery charger be capable of supplying ≥300 amps for greater than 8 hours at the minimum established float voltage. The current requirements are based on the output rating of the charger. The voltage requirements are based on the charger voltage level after a response to a loss of AC power. The time period is sufficient for the charger temperature to stabilize and to have been maintained for at least 2 hours.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.10.5 (continued)

The other option requires that the battery charger be capable of recharging the battery after a service test coincident with supplying the largest coincident demands of the various continuous steady state loads (irrespective of the status of the plant during which these demands occur). This level of loading may not normally be available following the battery service test and will need to be supplemented with additional loads. The duration for this test may be longer than the charger sizing criteria since the battery recharge is affected by float voltage, temperature, and the exponential decay in charging current.

The battery is recharged when the measured charging current is $\leq$ 2 amps. The surveillance frequency is in accordance with the Surveillance Frequency Control Program.

SR 3.7.10.6

This SR verifies that the PSW switchgear can be aligned and power both the "A" and "B" HPI pump motors (not simultaneously). Although both pump motors are tested, only one (1) is required to support PSW system OPERABILITY. The surveillance frequency is in accordance with the Surveillance Frequency Control Program. Refer to the SR 3.7.10.7 table below for testing of the HPI power and transfer switches.

SR 3.7.10.7

This SR verifies that power transfer switches (shown in table below) for pressurizer heaters, PSW control, electrical panels, and valves, are functional for the required equipment.

Component
1HPI-SX-ALGN001 (PSW HPI alignment switch)
2HPI-SX-ALGN001 (PSW HPI alignment switch)
3HPI-SX-ALGN001 (PSW HPI alignment switch)
1HPI-SX-TRN001 (1A HPI pump transfer switch)
1HPI-SX-TRN002 (1B HPI pump transfer switch)
2HPI-SX-TRN001 (2A HPI pump transfer switch)
2HPI-SX-TRN002 (2B HPI pump transfer switch)
3HPI-SX-TRN001 (3A HPI pump transfer switch)
3HPI-SX-TRN002 (3B HPI pump transfer switch)
1HPI-SX-TRN003 (1HP-24 PSW transfer switch)
1HPI-SX-TRN004 (1HP-26 PSW transfer switch)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.10.7 (continued)

Component
2HPI-SX-TRN003 (2HP-24 PSW transfer switch)
2HPI-SX-TRN004 (2HP-26 PSW transfer switch)
3HPI-SX-TRN003 (3HP-24 PSW transfer switch)
3HPI-SX-TRN004 (3HP-26 PSW transfer switch)
1PSW-SX-TRN001 (1CA CHARGER auto transfer switch)
1PSW-SX-TRN002 (1CB CHARGER auto transfer switch)
2PSW-SX-TRN001 (2CA CHARGER auto transfer switch)
2PSW-SX-TRN002 (2CB CHARGER auto transfer switch)
3PSW-SX-TRN001 (3CA CHARGER auto transfer switch)
3PSW-SX-TRN002 (3CB CHARGER auto transfer switch)
1PSW-SX-TRN004 (manual transfer switch for 1XJ)
1PSW-SX-TRN005 (manual transfer switch for 1XK)
2PSW-SX-TRN003 (manual transfer switch for 2XJ)
2PSW-SX-TRN004 (manual transfer switch for 2XI)
2PSW-SX-TRN005 (manual transfer switch for 2XK)
3PSW-SX-TRN003 (manual transfer switch for 3XJ)
3PSW-SX-TRN004 (manual transfer switch for 3XI)
3PSW-SX-TRN005 (manual transfer switch for 3XK)
1RC-155/1RC-156 power transfer
1RC-157/1RC-158 power transfer
1RC-159/1RC-160 power transfer
2RC-155/2RC-156 power transfer
2RC-157/2RC-158 power transfer
2RC-159/2RC-160 power transfer
3RC-155/3RC-156 power transfer
3RC-157/3RC-158 power transfer
3RC-159/3RC-160 power transfer

The surveillance frequency is in accordance with the Surveillance Frequency Control Program.

SR 3.7.10.8

SR verifies PSW booster pump and check valves can supply water to the "A" and "B" HPI pump motor coolers in accordance with the IST program.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.10.9

This SR requires that the PSW portable pump be tested to verify that the developed head of PSW portable pump at the flow test point is greater than or equal to the required developed head. The surveillance frequency is in accordance with the Surveillance Frequency Control Program.

SR 3.7.10.10

This SR requires the required PSW valves be tested in accordance with the IST Program. The specified Frequency is in accordance with IST Program requirements.

SR 3.7.10.11

Performance of the CHANNEL CHECK for each required instrumentation channel ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel with a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the two instrument channels could be an indication of excessive instrument drift in one of the channels or of something even more serious. A CHANNEL CHECK will detect gross channel failure; therefore, it is key in verifying that the instrumentation continues to operate properly between each CHANNEL CALIBRATION. The instrument string to the control room is checked and calibrated periodically per the Surveillance Frequency Control Program.

Agreement criteria are determined based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit. If the channels are within the criteria, it is an indication that the channels are OPERABLE. If the channels are normally off scale during times when surveillance is required, the CHANNEL CHECK will only verify that they are off scale in the same direction. Off scale low current loop channels are verified to be reading at the bottom of the range and not failed downscale.

The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled in accordance with the Surveillance Frequency Control Program.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.10.12

CHANNEL CALIBRATION is a complete check of the instrument channel, including the sensor. The test verifies that the channel responds to a measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drift to ensure that the instrument channel remains operational between successive tests. CHANNEL CALIBRATION shall find that measurement errors and bistable setpoint errors are within the assumptions of the setpoint analysis. CHANNEL CALIBRATIONS must be performed consistent with the assumptions of the setpoint analysis. The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled in accordance with the Surveillance Frequency Control Program.

SR 3.7.10.13

Visual inspection of the battery cells, cell plates, and battery racks provides an indication of physical damage or abnormal deterioration that could potentially degrade battery performance.

The presence of physical damage or deterioration does not necessarily represent a failure of this SR, provided an evaluation determines that the physical damage or deterioration does not affect the OPERABILITY of the battery (its ability to perform its design function).

The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled in accordance with the Surveillance Frequency Control Program.

REFERENCES

1. IEEE-450-1995.
2. Regulatory Guide 1.32, February 1977.
3. 10 CFR 50.36 (last amended September 24, 2008).
4. NFPA 805 Safety Evaluation Report, dated December 29, 2010.
5. IEEE-484-2002.