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February 20, 2012

U. S. Nuclear Regulatory Commission
Washington, DC 20555

Attention: Document Control Desk

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

Pursuant to Technical Specification 5.5.15, Technical Specifications (TS) Bases Control Program, please find attached the latest changes to the Oconee Technical Specification Bases.

On January 20, 2012, Station Management approved a revision to TSB 3.3.6, Engineered Safeguards Protective System (ESPS) Manual Initiation and TSB 3.3.7, ESPS Automatic Actuation Output Logic Channels to identify that Engineered Safeguards (ES) testing of the Purge Valves is not required since the valves are not allowed to be taken out of their ES position during the modes of applicability.

Attachment 1 contains the new TSB pages, Attachment 2 contains the marked up version of the TSB pages.

If any additional information is needed, please contact Kent Alter at 864-873-3255.

Sincerely,

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Attachment 1

TSB revision

B 3.3 INSTRUMENTATION

B 3.3.6 Engineered Safeguards Protective System (ESPS) Manual Initiation

BASES

BACKGROUND

Note: *To clearly differentiate text applicable only to Unit(s) with the RPS digital upgrade complete, the text applicable only to that design is led with a qualifier and italicized.* **Likewise, the text applicable only to Unit(s) that have not been upgraded is led with a qualifier and bolded.** Otherwise, the text applies to both designs.

The ESPS manual initiation capability allows the operator to actuate ESPS Functions from the main control room in the absence of any other initiation condition. This ESPS manual initiation capability is provided in the event the operator determines that an ESPS Function is needed and has not been automatically actuated. Furthermore, the ESPS manual initiation capability allows operators to rapidly initiate Engineered Safeguards (ES) Functions.

LCO 3.3.6 covers only the system level manual initiation of these Functions. LCO 3.3.5, "Engineered Safeguards Protective System (ESPS) Input Instrumentation," and LCO 3.3.7, "Engineered Safeguards Protective System (ESPS) Automatic Actuation Output Logic Channels," provide requirements on the portions of the ESPS that automatically initiate the Functions described earlier.

The ESPS manual initiation Function relies on the OPERABILITY of the automatic actuation output logic channels (LCO 3.3.7) to perform the actuation of the systems. A manual trip push button is provided on the control room console for each of the automatic actuation output logic channels. Operation of the push button energizes relays whose contacts perform a logical "OR" function with the automatic actuation.

For Unit(s) with the ESPS digital upgrade not complete, the ESPS manual initiation channel is defined as the instrumentation between the console switch and the automatic actuation output logic channel, which actuates the end devices. *For Unit(s) with the ESPS digital upgrade complete, the ESPS manual initiation portion of the ESPS system is defined as the instrumentation between the control console Trip/Reset switches and the relay output (RO) relays which actuate the end devices.* Other means of manual initiation, such as controls for individual ES devices, may be available in the control room and other unit locations. These alternative means are not required by this LCO, nor may they be credited to fulfill the requirements of this LCO.

BASES

BACKGROUND (continued)

For Unit(s) with the ESPS digital upgrade complete, a manual actuation of the ESPS actuation functions shall be capable of being initiated from the main control board Trip/Reset pushbutton switches. Individual pushbuttons are provided for High Pressure Injection and Reactor Building (RB) Non-Essential Isolation (Channels 1 and 2), Low Pressure Injection and Low Pressure Service Water Actuation (Channels 3 and 4), RB Cooling and RB Essential Isolation (Channels 5 and 6), and RB Spray (Channels 7 and 8). The manual actuation is independent of the ESPS automatic actuation signal and is capable of actuating all channel related actuation field components regardless of any failures of the automatic signal. Initiation of the manual actuation portion of ESPS will also input an actuation signal to the automatic system to provide input to the automatic system indicating that a manual actuation has occurred.

APPLICABLE SAFETY ANALYSES

The ESPS, in conjunction with the actuated equipment, provides protective functions necessary to mitigate accidents, specifically, the loss of coolant accident and steam line break events.

The ESPS manual initiation ensures that the control room operator can rapidly initiate ES Functions. The manual initiation trip Function is required as a backup to automatic trip functions and allows operators to initiate ESPS whenever any parameter is rapidly trending toward its trip setpoint.

The ESPS manual initiation functions satisfy Criterion 3 of 10 CFR 50.36 (Ref. 1).

LCO

Two ESPS manual initiation channels of each ESPS Function shall be OPERABLE whenever conditions exist that could require ES protection of the reactor or RB. Two OPERABLE channels ensure that no single random failure will prevent system level manual initiation of any ESPS Function. The ESPS manual initiation Function allows the operator to initiate protective action prior to automatic initiation or in the event the automatic initiation does not occur.

BASES

LCO (continued)

The required Function is provided by two associated channels as indicated in the following table:

Function	Associated Channels
HPI and RB Non-Essential Isolation, Keowee Emergency Start, Load Shed and Standby Breaker Input, and Keowee Standby Bus Feeder Breaker Input	1 & 2
LPI	3 & 4
RB Cooling and RB Essential isolation	5 & 6
RB Spray	7 & 8

APPLICABILITY

The ESPS manual initiation Functions shall be OPERABLE in MODES 1 and 2, and in MODES 3 and 4 when the associated engineered safeguard equipment is required to be OPERABLE. The manual initiation channels are required because ES Functions are designed to provide protection in these MODES. ESPS initiates systems that are either reconfigured for decay heat removal operation or disabled while in MODES 5 and 6. Accidents in these MODES are slow to develop and would be mitigated by manual operation of individual components. Adequate time is available to evaluate unit conditions and to respond by manually operating the ES components, if required.

ACTIONS

A Note has been added to the ACTIONS indicating separate Condition entry is allowed for each ESPS manual initiation Function.

A.1

Condition A applies when one manual initiation channel of one or more ESPS Functions becomes inoperable. Required Action A.1 must be taken to restore the channel to OPERABLE status within the next 72 hours. The Completion Time of 72 hours is based on operating experience and administrative controls, which provide alternative means of ESPS Function initiation via individual component controls. The 72 hour Completion Time is generally consistent with the allowed outage time for the safety systems actuated by ESPS.

BASES

ACTIONS

B.1 and B.2 (continued)

With the Required Action and associated Completion Time 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 MODES from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.3.6.1

This SR requires the performance of a CHANNEL FUNCTIONAL TEST of the ESPS manual initiation. This test verifies that the initiating circuitry is OPERABLE and will actuate the automatic actuation output logic channels. The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. This Frequency is demonstrated to be sufficient, based on operating experience, which shows these components usually pass the Surveillance when performed on the 18 month Frequency.

Failure of reactor building purge valves PR-1, 2, 3, 4, 5, 6 to close following a design basis event would cause a significant increase in the radioactive release because of the large containment leakage path introduced by these 48 inch purge lines. Because of their large size, the 48 inch purge valves are not qualified for automatic closure from their open position under accident conditions. Therefore, the 48 inch purge valves are maintained sealed closed (SR 3.6.3.1) in MODES 1, 2, 3, and 4 to ensure the containment boundary is maintained (Reference 2). Since they are sealed closed in all modes where the Engineered Safeguards system is required operable, testing of these reactor building purge valves is not required per SR 3.3.6.1.

REFERENCES

1. 10 CFR 50.36.

2. NUREG 0737, Section II.E.4.2.6.

B 3.3 INSTRUMENTATION

B 3.3.7 Engineered Safeguards Protective System (ESPS) Automatic Actuation Output Logic Channels

BASES

BACKGROUND

Note: *To clearly differentiate text applicable only to Unit(s) with the RPS digital upgrade complete, the text applicable only to that design is led with a qualifier and italicized.* **Likewise, the text applicable only to Unit(s) that have not been upgraded is led with a qualifier and bolded.** Otherwise, the text applies to both designs.

For Unit(s) with the ESPS digital upgrade not complete, the automatic actuation output logic channels are defined as the instrumentation from the buffers of the ESPS input instrument channels through the unit controllers that actuate ESPS equipment. *For Unit(s) with the ESPS digital upgrade complete, the automatic actuation output logic channels are defined as the Voters, the output relays and associated contacts. For Unit(s) with the ESPS digital upgrade complete, the Voters are used to provide an output signal to the output relays for the LP-1 interlock. Since LP-1 is not an ES valve, any inoperability of the ESPS associated with this particular function would require no action by TS 3.3.7.* Each of the components actuated by the ESPS Functions is associated with one or more automatic actuation output logic channels. If two-out-of-three ESPS input instrumentation channels indicate a trip, or if channel level manual initiation occurs, the automatic actuation output logic channel is activated and the associated equipment is actuated. The purpose of requiring OPERABILITY of the ESPS automatic actuation output logic channels is to ensure that the Functions of the ESPS can be automatically initiated in the event of an accident. Automatic actuation of some Functions is necessary to prevent the unit from exceeding the Emergency Core Cooling Systems (ECCS) limits in 10 CFR 50.46 (Ref. 1). It should be noted that OPERABLE automatic actuation output logic channels alone will not ensure that each Function can be activated; the input instrumentation channels and actuated equipment associated with each Function must also be OPERABLE to ensure that the Functions can be automatically initiated during an accident.

LCO 3.3.7 covers only the automatic actuation output logic channels that initiates these Functions. LCO 3.3.5, "Engineered Safeguards Protective System (ESPS) Input Instrumentation," and LCO 3.3.6, "Engineered Safeguards Protective System (ESPS) Manual Initiation," provide requirements on the input instrumentation and manual initiation channels that feed into the automatic actuation output logic channels.

BASES

BACKGROUND (continued)

For Unit(s) with the ESPS digital upgrade complete, the ESPS Protective Channels (computers) A, B, and C are implemented on two independent and redundant subsystems. One subsystem, containing channels A2, B2, and C2, uses the ESPS protective channel computers, which are installed in the ESPS cabinets. The other sub-system, containing independent and redundant channels A1, B1, and C1, uses the RPS protective channel computers, which are installed in the RPS cabinets.

Each of the independent ESPS and ESPS/RPS protective channel function output signals are sent to two redundant digital actuation Voter Sets each comprised of an Odd and Even Voter. The Odd Voter is associated with ESPS Automatic Actuation Output Logic Channels 1, 3, 5, and 7 while the Even Voter is associated with Channels 2, 4, 6, and 8. One of the Odd and Even Voter sets (Voter 2) performs the two-out-of-three voting for the actuation signals coming from the ESPS protective channels; the other independent and redundant Odd and Even Voter set (Voter 1) performs the two-out-of-three voting for the actuation signals coming from the ESPS/RPS sets. The independent and redundant ESPS protective safety actuation functions are duplicated in the ESPS and ESPS/RPS subsystems

The ESPS, in conjunction with the actuated equipment, provides protective functions necessary to mitigate accidents, specifically, the loss of coolant accident (LOCA) and main steam line break (MSLB) events. The ESPS relies on the OPERABILITY of the automatic actuation logic for each component to perform the actuation of the selected systems.

The small break LOCA analyses assume a conservative 48 second delay time for the actuation of High Pressure Injection (HPI) in UFSAR, Chapter 15 (Ref. 2). The large break LOCA analyses assume Low Pressure Injection (LPI) flow starts in 38 seconds while full LPI flow does not occur until 36 seconds later, or 74 seconds total (Ref. 2). This delay time includes allowances for Keowee Hydro Unit startup and loading, ECCS pump starts, and valve openings. Similarly, the Reactor Building (RB) Cooling, RB Isolation, and RB Spray have been analyzed with delays appropriate for the entire system.

The ESPS automatic initiation of Engineered Safeguards (ES) Functions to mitigate accident conditions is assumed in the accident analysis and is required to ensure that consequences of analyzed events do not exceed the accident analysis predictions. Automatically actuated features include HPI, LPI, RB Cooling, RB Spray, and RB Isolation.

BASES

BACKGROUND (continued)

Engineered Safeguards Protective System Bypasses

For Unit(s) with the ESPS digital upgrade complete, there are two redundant subsystems. The same analog input signal is fed to each subsystem. In subsystem 1, channels A1, B1, and C1 provide the input to Voter 1 Odd and Voter 1 Even. In subsystem 2, channels A2, B2, and C2 provide input to Voter 2 Odd and Voter 2 Even. Either subsystem provides the full complement of Voters. This allows for a Manual (maintenance) Bypass of one complete subsystem, or portion of a subsystem, without entering into an LCO Condition. While one Voter or a set of Voters are bypassed, the ESPS function is provided by the redundant ESPS subsystem.

Placing a Voter in Manual Bypass is implemented by keyswitches located in the respective ESPS Actuation cabinets. If an ESPS Voter is placed in Manual Bypass, all automatic ESPS actuation functions from that specific Voter are disabled. However, a manual ESPS trip is still available for Operator action to initiate the ESPS safety actuation functions. Only one Manual Bypass keyswitch for the two Odd Voters (Voter 1 Odd or Voter 2 Odd) and one Manual Bypass keyswitch for the two Even Voters (Voter 1 Even or Voter 2 Even) is allowed to be placed in Manual Bypass at a time. Placing an ESPS Voter in Manual Bypass is administratively controlled. The ESPS Manual Bypass keyswitch status information is sent to the Unit control room Statalarm panel and sent to the plant Operator Aid Computer (OAC).

Parameter Change Enable Mode (applicable only to Unit(s) with ESPS digital upgrade complete)

ESPS Voters for subsystems 1 and 2 and Status processors can be placed in a parameter change enable mode through the use of the Parameter Change Enable keyswitches. One keyswitch will place Odd Voter 1 and the Odd Component Status processor in Parameter Change Enable Mode. One keyswitch will place Even 1 Voter and the Even Component Status processor in Parameter Change Enable Mode. Odd Voter 2 and Even Voter 2 each have their own keyswitch that can be used to place each processor in Parameter Change Enable Mode.

When a keyswitch is placed from the normal Operating Mode position to the Parameter Change Enable Mode position:

- *The processors continue with normal operation.*
- *A permissive is provided that allows the Service Unit to be used to change the operating mode of the processors associated with that keyswitch.*

BASES

BACKGROUND *Parameter Change Enable Mode (applicable only to Unit(s) with ESPS digital upgrade complete)* (continued)

With the keyswitch in the Parameter Change Enable Position the following modes of operation are allowed for processors:

- *Normal Operation – with permissive for operating mode change.*
- *Parameterization – allows changes to specific parameters (example placing a parameter into a tripped condition or performing Go/NoGo testing).*
- *Function Test – for disabling the application function and forcing output signal for testing purposes (normally not used).*
- *Diagnostics – for downloading new application software.*

The Function Test and Diagnostics modes result in the processor ceasing its cyclic processing of the application functions. Entry into these modes first requires entry into Parameterization mode and setting a separate parameter.

When a keyswitch is placed in the Parameter Change Enable Mode Position for any activity, the affected processor shall first be declared out of service. In addition to declaring the processor out of service, when loading or revising software in a processor, the affected ESPS voter (Set 1 or Set 2) shall be placed in Bypass. Only one ESPS voter at a time is allowed to be placed into Parameter Change Enable Mode Position for software loading/revision.

Each Parameter Change Enable keyswitch status information is sent to the Statalarm panel and to the OAC via the Gateway.

ESPS Parameter Change Enable keyswitches are administratively controlled (there are no hardware or software interlocks between channels).

BASES (continued)

APPLICABLE SAFETY ANALYSES

Accident analyses rely on automatic ESPS actuation for protection of the core and RB and for limiting off site dose levels following an accident. The automatic actuation output logic is an integral part of the ESPS.

The ESPS automatic actuation output logic channels satisfy Criterion 3 of 10 CFR 50.36 (Ref. 3).

LCO

The automatic actuation output logic channels are required to be OPERABLE whenever conditions exist that could require ES protection of the reactor or the RB. This ensures automatic initiation of the ES required to mitigate the consequences of accidents.

For Unit(s) with the ESPS digital upgrade complete, the ESPS automatic actuation output logic channels are comprised of two independent and redundant subsystems. Only one of the independent subsystems is required to be OPERABLE.

The required Function is provided by two associated output channels as indicated in the following table:

Function	Associated Channels
HPI and RB Non-Essential Isolation, Keowee Emergency Start, Load Shed and Standby Breaker Input, and Keowee Standby Bus Feeder Breaker Input	1 & 2
LPI	3 & 4
RB Cooling and RB Essential isolation	5 & 6
RB Spray	7 & 8

BASES (continued)

APPLICABILITY

The automatic actuation output logic channels shall be OPERABLE in MODES 1 and 2 and in MODES 3 and 4 when the associated engineered safeguard equipment is required to be OPERABLE, because ES Functions are designed to provide protection in these MODES. Automatic actuation in MODE 5 or 6 is not required because the systems initiated by the ESPS are either reconfigured for decay heat removal operation or disabled. Accidents in these MODES are slow to develop and would be mitigated by manual operation of individual components. Adequate time is available to evaluate unit conditions and respond by manually operating the ES components, if required.

ACTIONS

A Note has been added to the ACTIONS indicating separate Condition entry is allowed for each ESPS automatic actuation output logic channel.

A.1 and A.2

When one or more automatic actuation output logic channels are inoperable, the associated component(s) can be placed in their engineered safeguard configuration. Required Action A.1 is equivalent to the automatic actuation output logic channel performing its safety function ahead of time.

In some cases, placing the component in its engineered safeguard configuration would violate unit safety or operational considerations. In these cases, the component status should not be changed, but the supported system component must be declared inoperable. Conditions which would preclude the placing of a component in its engineered safeguard configuration include, but are not limited to, violation of system separation, activation of fluid systems that could lead to thermal shock, or isolation of fluid systems that are normally functioning. The Completion Time of 1 hour is based on operating experience and reflects the urgency associated with the inoperability of a safety system component.

Required Action A.2 requires declaring the associated components of the affected supported systems inoperable, since the true effect of automatic actuation output logic channel failure is inoperability of the supported system. The Completion Time of 1 hour is based on operating experience and reflects the urgency associated with the inoperability of a safety system component. A combination of Required Actions A.1 and A.2 may be used for different components associated with an inoperable automatic actuation output logic channel.

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.3.7.1

The SR is modified by a Note indicating that it is only applicable to Unit(s) with the ESPS digital upgrade complete. This SR requires manual actuation of the output channel interposing relays (referred to as Ro relays) to demonstrate OPERABILITY of the relays. The proper functioning of the processor portion of the channel is continuously checked by automatic cyclic self monitoring.

Failure of reactor building purge valves PR-1, 2, 3, 4, 5, 6 to close following a design basis event would cause a significant increase in the radioactive release because of the large containment leakage path introduced by these 48 inch purge lines. Because of their large size, the 48 inch purge valves are not qualified for automatic closure from their open position under accident conditions. Therefore, the 48 inch purge valves are maintained sealed closed (SR 3.6.3.1) in MODES 1, 2, 3, and 4 to ensure the containment boundary is maintained (Reference 4). Since they are sealed closed in all modes where the Engineered Safeguards system is required operable, testing of these reactor building purge valves is not required per SR 3.3.7.1.

The Frequency of 92 days is considered adequate based on operating experience that demonstrates the rarity of more than one channel's relay failing within the same interval.

SR 3.3.7.2

SR 3.3.7.2 is the performance of a CHANNEL FUNCTIONAL TEST on a 92 day Frequency for Unit(s) with the ESPS digital upgrade not complete *and an 18 month Frequency for Unit(s) with the ESPS digital upgrade complete. For Unit(s) with the ESPS digital upgrade complete, the functional test consists of rebooting the digital processors. This verifies that the software has not changed.*

Failure of reactor building purge valves PR-1, 2, 3, 4, 5, 6 to close following a design basis event would cause a significant increase in the radioactive release because of the large containment leakage path introduced by these 48 inch purge lines. Because of their large size, the 48 inch purge valves are not qualified for automatic closure from their open position under accident conditions. Therefore, the 48 inch purge valves are maintained sealed closed (SR 3.6.3.1) in MODES 1, 2, 3, and 4 to ensure the containment boundary is maintained (Reference 4). Since they are sealed closed in all modes where the Engineered Safeguards system is required operable, testing of these reactor building purge valves is not required per SR 3.3.7.2. This applies to units with the ESPS digital upgrade complete and not complete.

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.3.7.2 (continued)

For Unit(s) with the ESPS digital upgrade not complete, the 92 day Frequency is based on operating experience that demonstrates the rarity of more than one channel failing within the same interval.

For Unit(s) with the ESPS digital upgrade complete, the 18 month Frequency is based on the design capabilities and reliability of the digital ESPS. The digital ESPS software performs a continuous online automated cross channel check, separately for each channel, and continuous online signal error detection and validation. The protection system also performs continual online hardware monitoring. The CHANNEL FUNCTIONAL TEST essentially validates the self monitoring function and checks for a small set of failure modes that are undetectable by the self monitoring function. The reliability of components whose failure modes are not automatically detected or indicated also supports a test frequency of 18 months.

REFERENCES

1. 10 CFR 50.46.
2. UFSAR, Chapter 15.
3. 10 CFR 50.36.
4. NUREG 0737, Section II.E.4.2.6.

Attachment 2

Markup of current TSB

BASES

ACTIONS

B.1 and B.2 (continued)

With the Required Action and associated Completion Time 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 MODES from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.3.6.1

This SR requires the performance of a CHANNEL FUNCTIONAL TEST of the ESPS manual initiation. This test verifies that the initiating circuitry is OPERABLE and will actuate the automatic actuation output logic channels. The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. This Frequency is demonstrated to be sufficient, based on operating experience, which shows these components usually pass the Surveillance when performed on the 18 month Frequency.

X

Insert A

REFERENCES

1. 10 CFR 50.36.
2. NUREG 0737, Section II.E.4.2.6

TSB 3.3.6 Insert A

Failure of reactor building purge valves PR-1, 2, 3, 4, 5, 6 to close following a design basis event would cause a significant increase in the radioactive release because of the large containment leakage path introduced by these 48 inch purge lines. Because of their large size, the 48 inch purge valves are not qualified for automatic closure from their open position under accident conditions. Therefore, the 48 inch purge valves are maintained sealed closed (SR 3.6.3.1) in MODES 1, 2, 3, and 4 to ensure the containment boundary is maintained (Reference 2). Since they are sealed closed in all modes where the Engineered Safeguards system is required operable, testing of these reactor building purge valves is not required per SR 3.3.6.1.

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.3.7.1

The SR is modified by a Note indicating that it is only applicable to Unit(s) with the ESPS digital upgrade complete. This SR requires manual actuation of the output channel interposing relays (referred to as Ro relays) to demonstrate OPERABILITY of the relays. The proper functioning of the processor portion of the channel is continuously checked by automatic cyclic self monitoring.

Insert A →

The Frequency of 92 days is considered adequate based on operating experience that demonstrates the rarity of more than one channel's relay failing within the same interval.

SR 3.3.7.2

SR 3.3.7.2 is the performance of a CHANNEL FUNCTIONAL TEST on a 92 day Frequency for Unit(s) with the ESPS digital upgrade not complete *and an 18 month Frequency for Unit(s) with the ESPS digital upgrade complete. For Unit(s) with the ESPS digital upgrade complete, the functional test consists of rebooting the digital processors. This verifies that the software has not changed.*

Insert B →

For Unit(s) with the ESPS digital upgrade not complete, the 92 day Frequency is based on operating experience that demonstrates the rarity of more than one channel failing within the same interval.

For Unit(s) with the ESPS digital upgrade complete, the 18 month Frequency is based on the design capabilities and reliability of the digital ESPS. The digital ESPS software performs a continuous online automated cross channel check, separately for each channel, and continuous online signal error detection and validation. The protection system also performs continual online hardware monitoring. The CHANNEL FUNCTIONAL TEST essentially validates the self monitoring function and checks for a small set of failure modes that are undetectable by the self monitoring function. The reliability of components whose failure modes are not automatically detected or indicated also supports a test frequency of 18 months.

REFERENCES

1. 10 CFR 50.46.
2. UFSAR, Chapter 15.
3. 10 CFR 50.36.
4. NUREG 0737, Section II.E.4.2.6

TSB 2011-11, TSB 3.3.7

TSB 3.3.7 Insert A

Failure of reactor building purge valves PR-1, 2, 3, 4, 5, 6 to close following a design basis event would cause a significant increase in the radioactive release because of the large containment leakage path introduced by these 48 inch purge lines. Because of their large size, the 48 inch purge valves are not qualified for automatic closure from their open position under accident conditions. Therefore, the 48 inch purge valves are maintained sealed closed (SR 3.6.3.1) in MODES 1, 2, 3, and 4 to ensure the containment boundary is maintained (Reference 4). Since they are sealed closed in all modes where the Engineered Safeguards system is required operable, testing of these reactor building purge valves is not required per SR 3.3.7.1.

TSB 3.3.7 Insert B

Failure of reactor building purge valves PR-1, 2, 3, 4, 5, 6 to close following a design basis event would cause a significant increase in the radioactive release because of the large containment leakage path introduced by these 48 inch purge lines. Because of their large size, the 48 inch purge valves are not qualified for automatic closure from their open position under accident conditions. Therefore, the 48 inch purge valves are maintained sealed closed (SR 3.6.3.1) in MODES 1, 2, 3, and 4 to ensure the containment boundary is maintained (Reference 4). Since they are sealed closed in all modes where the Engineered Safeguards system is required operable, testing of these reactor building purge valves is not required per SR 3.3.7.2. This applies to units with the ESPS digital upgrade complete and not complete.