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10 CFR 50.59(d)(2)

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U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Subject: Brunswick Steam Electric Plant, Unit Nos. 1 and 2
Renewed Facility Operating License Nos. DPR-71 and DPR-62
Docket Nos. 50-325 and 50-324
Report of 10 CFR 50.59 Evaluations and Commitment Changes

Ladies and Gentlemen:

In accordance with 10 CFR 50.59(d)(2), Duke Energy Progress, Inc., is providing a report summarizing the 10 CFR 50.59 evaluations of changes, tests, and experiments implemented during the period from August 1, 2012, to July 31, 2014. This report is provided in Enclosure 1. In addition, a summary of commitment changes since July 31, 2012 (i.e., the previous report of 10 CFR 50.59 Evaluations and Commitment Changes), made in accordance with Duke Energy's commitment management program (i.e., REG-NGGC-0110, "Regulatory Commitments"), is provided in Enclosure 2.

No regulatory commitments are contained in this submittal. Please refer any questions regarding this submittal to Mr. Lee Grzeck, Manager - Regulatory Programs, at (910) 457-2487.

Sincerely,

Mark McPhee for A.P.

Annette H. Pope
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TMS/tms

Enclosures:

1. Summary of Changes, Tests, and Experiments Requiring 10 CFR 50.59 Evaluations
2. Regulatory Commitment Change Summary Report

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Enclosure 1

Summary of Changes, Tests, and Experiments Requiring 10 CFR 50.59 Evaluations

Table of Contents

Title: Chlorine Tank Car Isolation Valve Removal

Evaluation Identification Number: Action Request 550615

Brief Description:

The scope of this Engineering Change (EC) was to remove the chlorine tank car isolation valve and its adjacent piping since the Chlorination system is no longer in use.

Summary of 10 CFR 50.59 Evaluation:

This modification removed the chlorine railroad tank car isolation valve (2-CS-V1) with the associated adjacent piping and caps the abandoned supply line from where it connected to the chlorine tank car prior to its removal. The chlorination system is no longer used and the chlorine tank car has been removed from the plant site so the isolation capability is no longer needed. This change did not affect other safety significant equipment and had no effect on plant safety response.

Plant References:

Engineering Change (EC) 87418

Updated Final Safety Analysis Review (UFSAR) Change Package 12FSAR-018

Title: Supplemental Diesel Generator System Installation

Evaluation Identification Number: Action Request 579105

Brief Description:

The scope of this change installs the Supplemental Diesel Generator (DGS) System, which provides a commercial grade, non-safety related supplemental three phase AC power source capable of supplying any of the four 4.16 kV emergency buses, via the 4.16 kV Balance of Plant (BOP) bus circuit path. It will supply power within one hour from the Station Blackout (SBO) event, with the capacity to bring the affected unit to cold shutdown.

Summary of 10 CFR 50.59 Evaluation:

This modification activity installs the Supplemental Diesel Generator (DGS) System, which provides a commercial grade, non-safety related supplemental three phase AC power source capable of supplying any of the four 4.16 kV emergency buses, via the 4.16 kV BOP bus circuit path. It will supply power within one hour from the Station Blackout (SBO) event, with the capacity to bring the affected unit to cold shutdown. The 4KV BOP bus impact during monthly testing is the most significant nuclear safety concern. This concern and other concerns were shown to be less than a minimal increase based on similar protective relaying and Emergency Diesel Generator (EDG) testing that has been performed for the life of the plant.

Plant References:

EC 79694

Updated Final Safety Analysis Report (UFSAR) Change Package 12FSAR-024

Title: Flood Protection Basis Update

Evaluation Identification Number: Action Request 587251

Brief Description:

The scope of this change is to update the site flood protection basis.

Summary of 10 CFR 50.59 Evaluation:

The engineering change package updated the evaluation of a High Energy Line Break (HELB) with fire suppression system actuation and documents that essential instruments in the Residual Heat Removal (RHR) room may be submerged. A review of the submerged instruments found that either the function is not essential, or that documentation is available to show that the instrument is qualified for the conditions expected. The reactor and mitigation system response to this postulated event continues to be consistent with the original licensing basis evaluations of HELBs as was previously documented.

The description of the separation provided by the rooms in the reactor building is being updated. The amount of separation provided remains adequate to prevent water from spilling over from one room into another during any of the flooding events that must be postulated. This continues to meet the functional objective of having redundant trains separated to prevent loss of function.

Plant References:

EC 80408

Updated Final Safety Analysis Report (UFSAR) Change Package 13FSAR-024

UFSAR Change Package 13FSAR-032

Title: Recirculating Motor Variable Frequency Drive (VFD) Interposing Relays With Digital Feedwater Control System (DFWCS)

Evaluation Identification Number: Action Request 592382

Brief Description:

The scope of this change is to evaluate the new failure modes associated with the installation of the interposing relays between the Recirculation Flow Control System (RFCS) and DFWCS.

Summary of 10 CFR 50.59 Evaluation:

Installation of the VFDs required installation of interposing relays to interface between existing plant equipment and the new control system. The interposing relays require AC power to operate and as such, system responses resulting from a loss of a 480 V E-bus have changed. A License Amendment is not required to implement this activity. This activity does introduce new system responses on the loss of a 480 V E-bus, but as shown in the evaluation, these responses are bounded by previous system responses.

Plant References:

EC 90286

Title: Repair of Through-Wall Leak on 2-SW-22-30-R-1

Evaluation Identification Number: Action Request 595513

Brief Description:

This evaluation evaluated the acceptability of performing a temporary repair of a through-wall leak and wall thinning in a 30" flange in the discharge piping of the Turbine Building Closed Cooling Water (TBCCW) heat exchanger.

Summary of 10 CFR 50.59 Evaluation:

The temporary repair consisted of welding a plate over the area of the through-wall leak. The evaluation determined that the installation of the temporary repair did not impact, in any way, the Service Water System's ability to perform its required safety related function.

Plant References:

EC 90921
WO 213065-01

Title: Temporary Power Supply to the Unit 1 1D and 1C Drywell Cooler Fan Motors

Evaluation Identification Number: Action Request 597894

Brief Description:

This change provided temporary power to Drywell Cooler Supply Fans 1-VA-1D1-SF-DW and 1-VA-1D2-SF-DW during the E3 bus outage and 1-VA-1C1-SF-DW and 1-VA-1C2-SF-DW during the E4 bus outage in order to make them functional during these periods.

Summary of 10 CFR 50.59 Evaluation:

Temporary power was used to power Drywell Cooler Supply Fans 1-VA-1D1-SF-DW and 1-VA-1D2-SF-DW during the E3 bus outage and 1-VA-1C1-SF-DW and 1-VA-1C2-SF-DW during the E4 bus outage in order to make them functional during these periods. The installation of temporary power at MCC 1XJ compartment EP1 and EP2 for the duration of the E3/E7 bus outage or at MCC 1XK compartment ER6 and ER7 for the duration of the E4/E8 bus outage was found to be acceptable.

Plant References:

WO 2124914

WO 2223200

Title: Replacement of Analog Ronan Components in the Augmented Off Gas (AOG) System and the Digital Control System (DCS)

Evaluation Identification Number: Action Request 610359

Brief Description:

The scope of this change is to replace 72 obsolete installed RONAN X81 and X82 Series analog circuit cards, which perform various indication and control functions for 23 separate instrument loops in the AOG system with Honeywell Experion compatible modules that tie into the existing Honeywell DCS system to provide indication, control, and alarming for the AOG system.

Summary of 10 CFR 50.59 Evaluation:

The replacement of the existing analog Ronan components in the 23 AOG instrument loops with DCS and digitally emulated functions was shown to be acceptable and resulted in less than a minimal increase of malfunction, consequences, or accident initiation.

Plant References:

EC 57844

EC 90171

Title: Emergency Diesel Generator (EDG) Margin Improvements – Ventilation Relay and Timing Upgrade

Evaluation Identification Number: Action Request 625077

Brief Description:

The scope of this change added a timer relay and interlocking relay to each Diesel Generator Building Ventilation (DGBVA) Supply Fan starter to provide a 34 second delay in the restart of the timer.

Summary of 10 CFR 50.59 Evaluation:

The change to add a DGBVA timer upgrade was found to be acceptable. The DGBVA supply fans energize automatically and are available to support operation of the diesel generators following EDG breaker closure. An analysis of DGBVA system performance shows the temperature rise in the Diesel Generator Building (DGB) resulting from a delay in the start time of the DGB supply fans is bounded by existing design calculations; therefore the integrity of the Systems, Structures, and Components (SSCs) served by the DGBVA system is maintained.

Plant References:

EC 86413

Title: Modify Battery Maintenance Surveillance Test (MST) to Verify Adequate Voltage

Evaluation Identification Number: Action Request 669364

Brief Description:

The scope of this change was to update the DC System Load Calculation BNP-E-6.120 and revise the battery surveillance capacity tests for Unit 1. The change allows a higher voltage to be credited for equipment operation by verifying that the voltage during the first minute of the capacity tests are greater than those required for equipment operation. Making these changes required testing the batteries at a load current value closer to their design maximum.

Summary of 10 CFR 50.59 Evaluation:

The change to the first minute load profile from 916 A to 725 A in the service capacity and modified performance capacity tests was evaluated for technical acceptability. The modified performance capacity tests are performed on the Unit 1 batteries by 1MST-BAT11AFY, 1MST-BAT11BFY, 1MST-BAT11CFY, and 1MST-BAT11DFY. This change performed a new load flow test to verify that the load demand on the batteries remained below 725 A with a corresponding battery voltage of 107 V. The previous battery voltage requirement was 105 V. Additionally, at this current the corresponding battery voltage is sufficient that the design function of Systems, Structures, and Components (SSCs) important to safety will continue to be able to perform their design requirements. Based on the evaluation performed, it was determined that changing the first minute of the load profile maintains the design requirements of the facility as described in the Updated Final Safety Analysis Report (UFSAR).

Plant References:

EC 94834

Title: Procedure 1SP-EC85198, Condensate Margin Confirmation

Evaluation Identification Number: Action Request 678640

Brief Description:

This procedure tested the Unit 1 Condensate and Feedwater System to document the condensate system performance of the redesigned and new condensate suction piping following the installation of new condensate pump suction lines. This data will be used to validate analysis, establish operational limits and margins, and improve simulator fidelity.

Summary of 10 CFR 50.59 Evaluation:

1SP-EC85198 and its associated Work Orders (WO) can be safely performed. The combination of procedural controls, simulator modeling, operator training, and past experience demonstrated that the evolution stays within design boundaries and a plant trip is unlikely, but bounded.

Plant References:

Procedure 1SP-EC85198

WO 2241825

EC 85198

Title: Transversing In-Core Probe (TIP) Index Mechanism 1-C51-J001C Limit Switch (LS) S2 Temporary Jumper Installation

Evaluation Identification Number: Action Request 681471

Brief Description:

The scope of this temporary change is to provide a method to continue TIP traces on TIP C.

Summary of 10 CFR 50.59 Evaluation:

This modification involved TIP C operation with a modification to simulate LS S2 actuation at all times and compensatory measures required to minimize the impact of this change. Administrative actions greatly reduced the risk of any complications and all conditions are bounded by existing plant design and subsequent equipment failures.

Plant References:

EC 96160

Title: Emergency Diesel Generator (EDG) Exciter / Voltage Regulator Replacement

Evaluation Identification Number: Action Request 681835

Brief Description:

The scope of this change is to replace the existing General Electric (GE) Shunt Silicon Controlled Rectifiers (SCR) Excitation System with a Basler Stator Exciter Regulator-Current Boost (SER-CB) excitation system.

Summary of 10 CFR 50.59 Evaluation:

The Basler SER-CB contains the RA-70 (i.e., Reference Adjustor). The RA-70 is a microcontroller-based reference adjustor that provides a solid-state method of adjusting the setpoint value for the Basler Automatic Voltage Regulator (AVR). The replacement of the Motor Operated Potentiometer (MOP) with the new RA-70 is considered a digital upgrade. From a digital upgrade perspective, it has been determined that this proposed change does not require a License Amendment since this equipment replacement represents relatively simple digital equipment, the likelihood of software failure is judged to be no greater than hardware failure, and that the likelihood of common mode failures has not been increased.

The system dependability is adequate and the likelihood of software failure occurring in multiple diesel generator governors is low relative to the likelihood of a hardware failure. Based on the dependability and redundancy of the emergency diesel system combined with the low probabilities of the other events identified above, the software common cause failures in the exciter RA-70 is not a significant concern.

Plant References:

EC 70989

Title: Reactor Feed Pump (RFP) Rotating Assemblies and Diffusers Replacement

Evaluation Identification Number: Action Request 682472

Brief Description:

The scope of this change is to install new RFP impeller/diffuser assembly in each of the RFPs.

Summary of 10 CFR 50.59 Evaluation:

Based on the evaluation, there are minimal increases in the frequency and likelihood of occurrence of Reactor Feed Pump Turbine (RFPT) damage due to high turbine condensate level in the operating turbine casing following a loss of a single RFP during near full power operation. The increases are considered minimal because procedures are being revised to lower allowable reactor power during single pump operations to prevent a RFPT high drain level alarm. There is sufficient time following a RFP trip for operators to respond appropriately. Even though there is a minimal increase in the probability of the loss of the second RFP due to high drain level following a single RFP trip, the event would simply become the loss of all feed flow transient described in the Updated Final Safety Analysis Report (UFSAR). A loss of all feed flow event is not a significant challenge to plant safety.

Plant References:

EC 76965

Title: Supplemental Diesel Generator System Installation Change Package Revision

Evaluation Identification Number: Action Request 684822

Brief Description:

The scope of this change is to revise the change package that will install the Supplemental Diesel Generator (DGS) System, which provides a commercial grade, non-safety related supplemental three phase AC power source capable of supplying any of the four 4.16 kV emergency buses, via the 4.16 kV Balance of Plant (BOP) bus circuit path.

Summary of 10 CFR 50.59 Evaluation:

The DGS System, which provides a commercial grade, non-safety related supplemental three phase AC power source capable of supplying any of the four 4.16 kV emergency buses, via the 4.16 kV BOP bus circuit path. It will supply power within one hour from the Station Blackout (SBO) event, with the capacity to bring the affected unit to cold shutdown. The revision to the change package adds BOP tuning of Digital Synchronizer and Load Controller (DSLC) and the removal of operator restrictions to leave electrical enclosure when closing the 4 kV breakers. This concern and other concerns were shown to be less than a minimal increase based on similar protective relaying and Emergency Diesel Generator testing.

Plant References:

EC 79694

12-FSAR-0024

Title: Revise Battery Maintenance Surveillance Tests (MST's) to Validate Voltage

Evaluation Identification Number: Action Request 687993

Brief Description:

The scope of this change is to update the DC System Load Calculation BNP-E-6.120 and revise the battery surveillance capacity tests for Unit 2.

Summary of 10 CFR 50.59 Evaluation:

The change will allow a higher voltage to be credited for equipment operation by verifying that the voltage during the first minute of the capacity tests are greater than those required for equipment operation. The change to the first minute load profile of the station battery service capacity tests and the modified performance capacity tests indirectly limits the amount of load that can be supported by the batteries. The station batteries and the DC system are designed to not require greater than 916 Amperes during the first minute of a Design Basis Accident (DBA) concurrent with a loss of offsite power (LOOP). Therefore, reducing the one minute load limit to 725 Amperes adversely affects how the station batteries and the DC power system design function is performed and controlled. It was determined that this change maintains the design requirements of the facility as described in the Updated Final Safety Analysis Report (UFSAR).

Plant References:

EC 95804

Title: Reactor Feed Pump (RFP) Rotating Assemblies and Diffusers Replacement Revision

Evaluation Identification Number: Action Request 689425

Brief Description:

This is a revision to REG AR 682472-02 to document a licensing review that was not performed in the original 50.59 evaluation.

Summary of 10 CFR 50.59 Evaluation:

Based on the evaluation, there are minimal increases in the frequency and likelihood of occurrence of Reactor Feed Pump Turbine (RFPT) damage due to high turbine condensate level in the operating turbine casing following a loss of a single RFP during near full power operation. The increases are considered minimal because procedures are being revised to lower allowable reactor power during single pump operations to prevent a RFPT high drain level alarm. There is sufficient time following a RFP trip for operators to respond appropriately. Even though there is minimal increase in the probability of the loss of the second RFP due to high drain level following a single RFP trip, the event would simply become the loss of all feed flow transient described in the Updated Final Safety Analysis Report (UFSAR). A loss of all feed flow event is not a significant challenge to plant safety.

Plant References:

EC 76965

Title: Supplemental Diesel Generator (DGS) Modification Testing

Evaluation Identification Number: Action Request 691361

Brief Description:

The scope of this change involves the non-safety related DGS output power (4KV) tying to existing Balance of Plant (BOP) 4KV buses for testing.

Summary of 10 CFR 50.59 Evaluation:

The use of this power during on-line testing and Digital Sequencer Load Control (DSLC) or Electro-Motive Diesel Electronic Controls (EMDEC) tuning represents a potential challenge to normal steady state operation by synchronizing another source of power to the bus or tuning changes while connected to plant buses. The 4KV BOP bus impact during monthly testing is the most significant nuclear safety concern. This concern and other concerns were shown to be less than a minimal increase based on similar protective relaying and Emergency Diesel Generator (EDG) testing that has been performed for the life of the plant. This provided the bases for a quantifiable probability.

Plant References:

EC 79694

12FSAR-0024

Enclosure 2

Regulatory Commitment Change Summary Report
Table of Contents

Title: Update License Renewal Commitments In NUREG-1856, Appendix A

Originating Document: LDCR 13FSAR-037

Original Commitment:

The approval of the BNP License Renewal Application in June 2006 resulted in new commitments, aging management programs, and the incorporation of these changes into the Updated Final Safety Analysis Report (UFSAR). Consistent with the requirements of 10 CFR 54, a new UFSAR supplement was issued subsequent to the receipt of the renewed operating license as Chapter 18 under LDCR 06FSAR-027.

Revised Commitment:

The programs and commitments described in UFSAR Chapter 18 were required to be implemented prior to the period of extended operation, and the descriptions in Chapter 18 were written to be forward looking to reflect that these actions were pending. With BNP Unit 2 entering the period of extended operation in December 2014, it is necessary to update these program and commitment descriptions to reflect their current status, as implemented. This LDCR incorporates changes arising from License Renewal implementation into Chapter 18.

A description has been added of a new aging management program. The Compressed Air Monitoring Program has been implemented at BSEP based on operating experience (OE) and updated regulatory guidance.

UFSAR Chapters 9 and 18 are being revised to reflect that the Intake Structure Gantry Crane is being retired from service. This affects the description of the crane with regard to control of heavy loads in UFSAR 9.1, the description of the Intake Structure in UFSAR 9.2, the description of Overhead Heavy Load and Light Load Handling Systems Program in UFSAR 18.1.9, and the deletion of the Time Limited Aging Analysis regarding crane load cycles in UFSAR 18.2.7.3. Additional changes are made of an administrative or editorial nature. These include updating program descriptions to reflect current ASME Code Year and Addenda as approved under 10 CFR 50.55a, and to clarify instances where aging management requirements of one program are accomplished, in whole or in part, by activities prescribed by another.

Basis:

These changes did not affect the design function of any UFSAR-described Systems, Structures, and Components (SSCs). These revisions are generally associated with the implementation of License Renewal aging management programs and commitments, and represent the completion status of those activities.

With regard to administrative changes included in this revision, these are not of a scope or nature as to impact the design function or control of any UFSAR-described SSCs.

With regard to additional aging management activities being performed on the basis of OE or updated guidance, or are follow-up items arising from one-time inspection programs, these are

non-intrusive inspection / monitoring activities that do not impact the control of any UFSAR described SSCs. This includes Fire Water System activities arising from the Selective Leaching Program, Preventive Maintenance Program activities arising from the One-Time Inspection Program, and the development of the new Compressed Air Monitoring Program.