Constellation

CCN: 23-01

10 CFR 50.59
10 CFR 72.48

February 9, 2023

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

Peach Bottom Atomic Power Station (PBAPS), Units 1, 2, and 3 and
PBAPS Independent Spent Fuel Storage Installation (ISFSI)
Facility Operating License No. DPR-12
Subsequent Renewed Facility Operating License Nos. DPR-44 and DPR-56
NRC Docket Nos. 50-171, 50-277, 50-278, and 72-29 (ISFSI)

Subject: Biennial 10 CFR 50.59 and 10 CFR 72.48 Reports for the Period 1/1/2021 through 12/31/2022

Attached are the 2021-2022 Biennial 10 CFR 50.59 and 10 CFR 72.48 Reports for Peach Bottom Units 1, 2, and 3, forwarded pursuant to 10 CFR 50.59(d)(2) and 10 CFR 72.48(d)(2). This report included brief descriptions of any changes, tests and experiments, including a summary of the evaluation of each.

Four plant changes were implemented using 10 CFR 50.59 Evaluations during this 24-month period.

One plant change was implemented using a 10 CFR 72.48 Evaluation during this 24-month period.

There are no new regulatory commitments contained in this transmittal.

If you have any questions or require additional information, please contact Amy Huber at (717) 456-3526.

Sincerely,

David A. Henry
Site Vice President
Peach Bottom Atomic Power Station

Attachments

cc: w/ Attachments
USNRC Region I, Regional Administrator
USNRC Project Manager, PBAPS
USNRC Senior Resident Inspector, PBAPS
Director, Pennsylvania Department of Environmental Protection, Bureau of Radiation Protection

Docket Nos. 50-171
50-277
50-278
72-29

2021-2022 Biennial 10CFR 50.59 and 10CFR 72.48 Report

This report is issued pursuant to reporting requirements for Peach Bottom Atomic Power Station Units 1, 2, and 3. This report addresses tests and changes to the facilities and procedures as they are described in the Peach Bottom Updated Final Safety Analysis Reports (UFSAR) and Independent Fuel Storage Safety Analysis Report. This report consists of those tests and changes that were implemented between January 1, 2021, and December 31, 2022.

BIENNIAL 10 CFR 50.59 REPORT
JANUARY 1, 2021 THROUGH DECEMBER 31, 2022
EVALUATION SUMMARIES

Title:	**NETCO SNAP-IN Neutron Absorbing Inserts Retention Force**
Units Affected:	**2 and 3**
Year Implemented:	**2021**
Tracking No.:	**PB-2020-002-E, Rev. 0**

Brief Description:

NETCO SNAP-IN neutron absorbing inserts are manufactured with a greater than 90 degree bend angle when formed, but are subsequently compressed to a 90 degree bend angle when installed in the individual spent fuel rack cells. This provides a bearing force against the inside of the cell walls to retain the inserts in place.

This change removes the credit for this retaining force along with the requirement to test the coupons for stress relaxation. The seismic loading on the inserts is reduced such that no retention force is required to hold them in place. By procedure, the inserts are monitored for dislodgement during normal fuel moves. UFSAR section 10.3.6.2 and station procedures are revised to remove the requirement for stress relaxation.

Summary of Evaluation:

Removal of credit for the insert retention force was considered an adverse change within the 50.59 screening, because it decreases the overall reliability of the insert. As described in the evaluation, the inserts are still capable of performing their design basis function.

Although reliability of the insert is decreased, this activity does not result in a more than minimal increase in the occurrence or consequence of an accident previously evaluated in the UFSAR. As described in chapter 14 of the UFSAR, the NETCO inserts have no effect on the fuel handling accidents. This activity also does not result in more than a minimal increase in the occurrence or consequence of the malfunction of an Structure, System or Component (SSC) important to safety. A missing insert is already considered in the Spent Fuel Pool criticality analysis such that full or partial removal of a single insert is bounded by the analysis.

The activity does not create an accident of a different type or change the results of a malfunction of an SSC important to safety. Removal of credit for the NETCO insert retention force does not create a new failure mode or alter the consequence of failure.

Based on the results of the 50.59 evaluation, prior NRC approval is not required and this activity may be implemented without obtaining a License Amendment.

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Title:	**GNF3 Impact on the Long-Term Anticipated Transient Without Scram (ATWS) Analysis Results and the Alternate Source Term (AST) Core Inventory, Loss of Coolant Accident (LOCA), Fuel Handling Accident (FHA) and Control Rod Drop Accident (CRDA)**
Units Affected:	**2 and 3**
Year Implemented:	**2021**
Tracking No.:	**PB-2021-001-E, Rev. 0**

Brief Description:

This change supports operation and use of the GNF3 fuel type in reload cores up to and including a full-core scale. The GNF3 fuel bundle has mechanical, chemical, and neutronic characteristics that require reanalysis in many areas; however, the scope of this 50.59 is limited to the impacts on the long-term ATWS containment response analysis results and the AST personnel dose changes. GNF3 allows for a higher loading of uranium per bundle, yielding a larger potential radionuclide inventory available for release under accident conditions. A new source term was calculated assuming a higher total core weight; this was then percolated into the downstream AST dose calculations that assume a release of radionuclides from the fuel, namely the CRDA, FHA, and LOCA. The doses at the Exclusion Area Boundary, Low Population Zone, and Control Room have been re-calculated to support GNF3 introduction and operation.

Summary of Evaluation:

The re-analysis of the long-term containment response to an ATWS confirmed that the design limits for peak suppression pool temperature and peak containment pressure continue to be met. There is no design limit for the time at which hot shutdown is achieved. Therefore, this re-analysis can be implemented under the 50.59 process and does not require an amendment to Peach Bottom's license.

The total effective dose equivalent results for the dose-significant scenarios have increased slightly at select locations of interest. These increases are no more than minimal and therefore can be implemented under the 50.59 process and do not require an amendment to Peach Bottom's license.

The methods and elements thereof continue to be as defined in Regulatory Guide 1.183 for generation and use of source term inputs. There is a new version of a computer code (ORIGEN) employed; however, the code is a common industry tool and the NRC has explicitly endorsed its use in Regulatory Guide 1.183. Peach Bottom's AST basis was approved based on compliance with RG 1.183 code specifications. The use of this code is within Peach Bottom's license and not a departure from an approved method.

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Title:	**Procedure Changes for Emergency Diesel Generator Shut Down**
Units Affected:	**2 and 3**
Year Implemented:	**2021**
Tracking No.:	**PB-2021-002-E, Rev. 0**

Brief Description:

The shutdown solenoid for E1 Emergency Diesel Generator (EDG) was found to be operating unreliably and could not be relied upon to shut down the EDG when a manual or automatic shutdown signal was initiated. This activity implemented mitigating actions until the solenoid was replaced.

The activity involves revising operating procedural guidance to bypass the E1 mechanical governor shutdown solenoid and utilize Operator action to perform a manual shutdown of E1 EDG instead. This requires using the E1 EDG fuel racks trip push button in addition to initiating an E1 EDG manual shutdown signal using a Main Control Room switch. To eliminate the potential for a reflash, the PULL-TO-LOCK feature of the Main Control Room switch is being utilized. This activity has no impact on the EDG capability to start, accelerate to rated speed and voltage, and connect to its respective emergency bus on detection of bus undervoltage.

Summary of Evaluation:

The activity resulting from the troubleshooting events resulted in an adverse impact to a safety system function described within the UFSAR and therefore required a 50.59 Evaluation. The 50.59 Evaluation determined that the EDG remains fully capable of performing all required safety functions and performance parameters. The shutdown process described within this activity does not increase the probability of an accident or malfunction and does not create the possibility of a different type of accident or malfunction. There are also no impacts to any design basis limit for a fission product barrier.

This change has no impact on the EDG's safety function, to start and provide the required electrical power, and run for the required duration. There is no increase in the likelihood of the EDG shutting down when it is not intended to. The faulty solenoid only presents the possibility that the EDG will not shut down when the control logic directs a shutdown. The specified compensatory actions ensure that the EDG is manually shut down and is left in a configuration that would not allow the solenoid to prevent subsequent restart of the EDG. Therefore, there is no potential for an increase in any malfunction that could affect the required functions of the EDG.

The only automatic trip affected by this activity is in the case of CO2 discharge into the E1 EDG room. In this scenario, although the EDG is likely to shut down on its own due to the lack of oxygen needed for combustion, the potential consequence of this scenario is damage to the EDG. While this is a significant financial consequence to the station, it does not affect the radiological consequences of an event that requires utilization of the EDG. If the EDG is intended to be shut down because of the CO2 discharge, it is no longer expected to run.

Based on the results of the 50.59 evaluation, prior NRC approval is not required and this activity may be implemented without obtaining a License Amendment.

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Title:	**Upgrade CPU and ASP Modules for APRM / LPRM / RBMs**
Units Affected:	**2 and 3**
Year Implemented:	**2022**
Tracking No.:	**PB-2022-001-E, Rev. 0**

Brief Description:

This activity upgrades the 386SX Computer (CPU) module and the Automatic Signal Processing (ASP) module for Average Power Range Monitors (APRM), Local Power Range Monitors (LPRM) and Rod Block Monitors (RBM) at Peach Bottom. The modification is being prepared with technical pre-approval for all modules in these applications. This change evaluates design refinements to the modules as a part of the Power Range Neutron Monitoring system (PRNMS). The APRM & LPRM chassis contain one Computer module and three ASP modules. The RBM only contains one Computer module and no ASP modules. These refinements include adding bypass & decoupling capacitors to various Integrated Circuit components on the computer module to block & filter digital noise spikes. Also, the firmware for select Programmable Logic Devices on the Computer and ASP modules were revised to address bus timing issue between the Computer module and other chassis cards.

Summary of Evaluation:

There is no impact to Technical Specifications or licensing documents. Since the modules involved are complex safety-related digital components approved for installation in redundant safety system channels, Question 1 of the Screening was conservatively answered 'No' (potential adverse impact to UFSAR described safety function). A 50.59 Evaluation was prepared, including a Qualitative Assessment of Quality, Reliability and Common Cause Failure Susceptibility developed per the guidance in RIS-2002-22 Supplement 1. Based on the results of the Qualitative Assessment, the Evaluation determined that this activity does not result in more than a minimal increase in the frequency of an accident previously evaluated in the UFSAR or in the likelihood of occurrence of a malfunction of an SSC important to safety previously evaluated in the UFSAR. Because the PRNMS is not an accident initiator, the activity does not result in a more than minimal increase in the consequences of an accident or a malfunction of an SSC important to safety previously evaluated in the UFSAR. Based on the results of the Qualitative Assessment, the possibility for an accident of a different type or a malfunction of an SSC important to safety with a different result than any previously evaluated in the UFSAR is not created. This activity does not impact any design basis limit for a fission product barrier, nor does it involve any method of evaluation. Based on the results of the Evaluation, the activity may be implemented without prior NRC approval.

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There were no 10 CFR 50.59 Evaluation Reports performed / implemented for Unit 1 during this reporting period.

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End of 10CFR 50.59 Report

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Peach Bottom Atomic Power Station
Independent Spent Fuel Storage Installation (ISFSI)
Docket No. 72-29

BIENNIAL 10 CFR 72.48 REPORT
JANUARY 1, 2021 THROUGH DECEMBER 31, 2022
EVALUATION SUMMARIES

Title:	**Peach Bottom ISFSI Expansion – Components, Loading and Licensing**
Year Implemented:	**2021**
Tracking Nos.:	**PB-2021-7248-001-E, Rev. 0**

Brief Description:

This activity implements the Holtec HI-STORM System described by Certificate of Compliance (CoC) 1032 Revision 1, Amendment 1. This activity also evaluates the procedures necessary to implement the HI-STORM System. The 10 CFR 72.48 Evaluation (and the 10 CFR 72.212 Report) documents the site-specific evaluations performed to allow the use of the 10 CFR general license at PBAPS.

Summary of Evaluation:

The activity provides a collection of drawings, purchase specifications, new licensing documents, analyses, calculations, and procedures for configuration control of the HI-STORM System. The 72.48 review determined that several Holtec-prepared, site-specific evaluations adversely affect some design functions credited in the Holtec IFSSAR by reducing margin to a design function allowable limit, although none exceed the design function allowable limit. The activity does not result in SSCs being utilized or controlled in a manner that is outside the design reference bounds and hence does not constitute a test or experiment. No changes are required to the TN-68 or HI-STORM CoC's, including their Technical Specifications (Appendices A) and their Approved Contents and Design Features (Appendices B). This 72.48 Review concludes the proposed activity may be implemented without prior NRC approval.

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End of 10CFR 72.48 Report

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