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United States Nuclear Regulatory Commission
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James A. FitzPatrick Nuclear Power Plant
Renewed Facility Operating License No. DPR-59
NRC Docket No. 50-333

Subject: Summary of Plant and Independent Spent Fuel Storage Installation Changes, Tests, and Experiments as required by 10 CFR 50.59 and 10 CFR 72.48, and Summary of Commitment Changes, for 2019 and 2020

Dear Sir or Madam:

This letter transmits the summary of changes, tests and experiments implemented at the James A. FitzPatrick Nuclear Power Plant (JAF) that required performance of a 10 CFR 50.59 or 10 CFR 72.48 Evaluation, for the years 2019 and 2020, as required by 10 CFR 50.59(d)(2) and 10 CFR 72.48(d)(2). Attachment 1 provides the summary of each 10 CFR 50.59 Evaluation. During this period there were no changes to the Independent Spent fuel Storage Installation requiring a 10 CFR 72.48 Evaluation.

Included is the summary of revised regulatory commitments for the years 2019 and 2020 as required by Nuclear Energy Institute Guideline NEI 99-04, "Guidelines For Managing NRC Commitment Changes," revision 0. During this period there were no changes to regulatory commitments which require NRC notification.

There are no new regulatory commitments made in this letter. Should you have any questions concerning this report, please direct them to Mr. Richard M. Sullivan, Regulatory Assurance Manager, at (315) 349-6562.

Very truly yours,

Richard M. Sullivan
Regulatory Assurance Manager

RMS/mh

Attachments: 1. Summary of 10 CFR 50.59 Reports for 2019 and 2020

cc: NRC Regional Administrator, Region 1
NRC Resident Inspector
NRC Project Manager
New York State Department of Public Service
NYSERDA President

JAFP-21-0035

Attachment 1

Summary of 10 CFR 50.59 Reports for 2019 and 2020

(5 Pages)

Summary of 10 CFR 50.59 Reports for 2019 and 2020

Below are a brief description and a summary of the safety evaluation of each of those changes, tests, and experiments which were carried out at James A. FitzPatrick Nuclear Power Plant (JAF) without prior Nuclear Regulatory Commission (NRC) approval, pursuant to the requirements of 10 CFR 50.59.

JAF-SE-2019-001, Rev. 0: Tornado Missile Project

ACTIVITY TYPE: Design Change

Description of Change:

As part of the U.S. Nuclear Regulatory Commission (NRC) issued Regulatory Issue Summary (RIS) 2015-06 and Enforcement Guidance Memorandum (EGM) 15-002, all licensees of operating plants are reminded of their obligations to comply with their licensing basis and regulatory commitments to protect safe shutdown equipment from tornado generated missiles.

This activity evaluates non-conformities in Control and Relay Room HVAC systems and Concrete walls less than 24” thick, using the Tornado Missile Risk Evaluator (TMRE) method provided in NEI 17-02, “Tornado Missile Risk Evaluator (TMRE) Industry Guidance Document.”

This activity does not make any physical changes to any structures, systems, or components (SSC). Existing design analyses are not changed by this activity and continue to ensure equipment meet the current licensing basis. The Final Safety Analysis Report (FSAR) will be updated to clearly identify the Tornado Missile Protection licensing basis which includes the use of the TMRE methodology to address non-conformances.

Summary of Evaluation:

A 50.59 evaluation was performed due to a departure from a method of evaluation described in the FSAR. The new methodology will qualify components with non-conformities due to Tornado Missile. The calculation (JAF-CALC-19-00022) uses the TMRE probability risk assessment (PRA) methodology which was not included in the current FSAR. The TMRE methodology used to evaluate and qualify the non-conformities is done per the methodology provided in NEI 17-02 Rev. 1A which has been approved by the NRC in support of a license amendment for the Vogtle Electric Generating Plant. The TMRE methodology presented in Rev. 1A was approved, with restrictions, as an acceptable method to address non-conformances due to Tornado Missile.

Jensen Hughes Report No. JF-ASM-002, Rev. 0, “JAF TMRE Model Development and Quantification” qualified FitzPatrick’s Tornado Missile Protection non-conformances.

Summary of 10 CFR 50.59 Reports for 2019 and 2020

JAF-SE-2020-001, Rev. 0: Lifting Leads to Turbine Intercept Valve Fast Acting Solenoids and Extension of Steam Turbine Intercept Valve Testing Frequency

ACTIVITY TYPE: Temporary Change

Description of Change:

This activity is a Temporary Configuration Change to lift leads for the four Intercept Valve Operator Fast Acting Solenoid Valves (94SOV-IV1-1, 94SOV-IV2-1, 94SOV-IV3-1 and 94SOV-IV4-1) (FASV) to the respective Turbine Intercept Valves. Due to the leads being lifted, ST-21C, "Main Turbine Combined Intermediate Valve Test" which has a normal performance frequency of 6 months will be extended to 11 months (the remaining operating cycle). A spurious increased speed signal to the Intercept Valves FASVs has resulted in movement of the Intercept Valves when not required. The lifting of the leads prevents movement of the Turbine Intercept Valves.

The FSAR requires the steam turbine valves to be tested within every 225 days (approximately 7.4 months). To support the lifting of the leads, the steam turbine combined intermediate valve testing interval requires extension to 11 months.

Summary of Evaluation:

This activity lifts the leads to the Intercept Valves for FASVs, along with extending the turbine valve testing interval from 7.4 months to 11 months. This impacts the turbine missile probability. A turbine missile is considered an "accident" for the purposes of 10 CFR 50.59 in accordance with NEI 96-07 Section 3.2. FSAR section 10.2.4 requires a missile generation probability of less than 1.0E-04 events per year. This limit is based upon Regulatory Guide 1.115 for a favorable turbine orientation and a resultant failure probability. By maintaining the turbine missile generation below 1.0E-04, the resultant accident probability is maintained less than 1.0E-07. Turbine missiles are postulated to occur due to two potential events: a low speed rotor failure (design overspeed) and a failure at speeds well greater than rated turbine speed (destructive overspeed).

Due to this activity, the calculated turbine missile generation probability is increased from 4.35E-05 events per year to 1.78E-04 events per year. The new value does not meet the applicable requirement given in the FSAR Section 10.2.4, however, the activity does not result in more than a minimal increase in the frequency of occurrence of an accident previously evaluated.

JAF-SE-2020-002, Rev. 0: Digital Reactor Water Level Controls Upgrade

ACTIVITY TYPE: Design Change

Description of Change:

This activity upgrades the JAF Reactor Water Level Control System (RWLCS). The physical scope of this Activity includes replacing the existing RWLCS controller system, including the Level 8 turbine trip logic relays in Control Room back panel 09-18. The upgrade is based on the Ovation OCC-100. The digital control system was developed by Westinghouse Electric Company (WEC). This new system provides improved reliability, more precise system control, greater flexibility for future upgrades and reduced Operator burden during/following a SCRAM. The new control scheme is designed to remove almost all Operational Critical Components (OPCCs) presently in the previous control system equipment.

Summary of 10 CFR 50.59 Reports for 2019 and 2020

Summary of Evaluation:

This does not adversely impact any safety analyses described in the FSAR and maintains the present design bases. The feedwater controller failures analyzed in the FSAR bound those of the new control system. The results of the accident and transient evaluations in the FSAR have not identified any transient requiring further review.

Based on the 10 CFR 50.59 Screening and Evaluation the activity may be implemented per plant procedures without obtaining a License Amendment; because no increased transient, accident, or malfunctions, consequences, and increased probabilities or likelihood of an accident or malfunction have been identified as more than minimally adverse in the 50.59 Evaluation's review process.

JAF-SE-2020-003, Rev. 0: Revised Core Decay Heat Evaluation

ACTIVITY TYPE: Design Change

Description of Change:

This activity replaces the existing GE12-based decay heat with a bounding GNF2-based decay heat. This activity changes the facility's underlying analytical basis because the decay heat is an input into multiple evaluations that demonstrate how intended design functions are accomplished. This activity revises those evaluations, as appropriate, for the GNF2-based decay heat change. This activity is a document-only change. There are no physical changes to the facility.

The existing 1999 GE12-based decay heat curve is replaced by a bounding GNF2-based decay heat curve. Both the 1999 curve and the GNF2 curve apply the ANSI/ANS-5.1-1979 decay heat standard. These new core design limits allow the core designer to greater flexibility and permit increased fuel economy via fewer bundles purchased. Correspondingly, there is also a reduction in the number of spent bundles discharged, reducing the demand for spent fuel pool and dry storage space.

The containment licensing basis is directly impacted by the new GNF2 curve. Short-term effects, such as containment loads and peak pressure, are unaffected. Long-term effects, such as peak suppression pool and peak drywell temperature, are affected, and the impact of this change is quantified. Additionally, the impact upon the containment pressure / temperature profiles for downstream evaluations such as equipment qualification and netpositive suction head are also quantified.

The existing station blackout, and Appendix R fire protection, calculations are revised to address the long-term impact from the bounding GNF2 decay heat.

Impacts upon the ECCS-LOCA evaluation, the loss-of-feedwater transient, and anticipated transient without scram are also evaluated.

Summary of Evaluation:

The 50.59 review finds that the activity increases the peak drywell temperature and peak suppression pool temperatures above the values shown in UFSAR Sections 4.7, 6.5, and 8.11. Consequently, this review concludes that a 10 CFR 50.59 Evaluation is required because the effect of the change is such that existing safety analyses are no longer bounding, and FSAR safety analyses are re-run to demonstrate that all required safety functions and design requirements are met.

Summary of 10 CFR 50.59 Reports for 2019 and 2020

Because the decay heat is produced by an accident, this activity cannot alter any accident frequency or malfunction likelihood. Similarly, the decay heat change cannot introduce a new failure mode, or initiate a new accident or malfunction; therefore, this activity cannot create a new accident type or change a malfunction result. All design basis limits remain satisfied; therefore, there is no change in the radiological consequences of any accident or malfunction. This activity does not exceed or alter any design basis limit for a fission product barrier, and this activity does not depart from a method of evaluation described by the FSAR. The 10 CFR 50.59 Evaluation concludes that the proposed activity may be implemented without prior NRC approval because there is no change to the Technical Specifications, no change to the Facility Operating License, and none of the eight 10 CFR 50.59 criterion are satisfied.

JAF-SE-2020-004, Rev. 0: Main Turbine Thrust Bearing Wear Detector

ACTIVITY TYPE: Design Change

Description of Change:

This activity is a design change that removes the excessive thrust bearing wear trip of the main turbine by the Thrust Bearing Wear Detector (TBWD). A control room annunciator alarm and a computer point will still be actuated on excessive thrust bearing wear. The automatic turbine trip is replaced with manual operator action based on the alarm response to trip the main turbine on excessive thrust bearing wear.

The resultant automatic trip removal requires that the operator be informed in order to respond and trip the turbine manually. The operating procedure OP-9 listed in FSAR Section 13.8.2 revision to remove the TBWD trip discussion and include this new manual trip action in response to the TBWD alarm.

Summary of Evaluation:

Per JAF's procedure AP-16.01 Attachment 4 Section 3.2, an annunciator alarm requiring immediate attention is required to have a yellow coloration, so the main control room annunciator point being revised from a trip alarm to alarm only for this thrust wear condition will be provided with the yellow heightened awareness for immediate operator response to trip the turbine, as provided in this Activity.

Thus, the proposed Activity involves a change to a procedure that adversely affects how a FSAR described SSC design function is performed and controlled, requiring a 50.59 Evaluation.

The 50.59 Evaluation determined that the proposed activity will not change the expected frequency of a turbine trip due to excessive thrust bearing wear. Therefore, proposed activity does not result in more than a minimal increase in the frequency of occurrence of an accident previously evaluated in the FSAR. The proposed activity will not increase the likelihood of occurrence of a malfunction of an SSC important to safety previously evaluated in the FSAR.

Summary of 10 CFR 50.59 Reports for 2019 and 2020

JAF-SE-2020-005, Rev. 0: Lifting Leads to Turbine Intercept Valve Fast Acting Solenoids and Extension of Steam Turbine Intercept Valve Testing Frequency

ACTIVITY TYPE: Temporary Change

Description of Change:

This activity is a Temporary Configuration Change to lift the leads for the four Intercept Valve Operator Fast Acting Solenoid Valves (94SOV-IV1-1, 94SOV-IV2-1, 94SOV-IV3-1 and 94SOV-IV4-1) (FASV) to the respective Turbine Intercept Valves. Due to the leads being lifted, ST-21C, "Main Turbine Combined Intermediate Valve Test" which has a normal performance frequency of 6 months is extended indefinitely until the FASV function is restored. A spurious increased speed signal to the Intercept Valves FASVs has resulted in movement of the Intercept Valves when not required. The lifting of the leads prevents movement of the Turbine Intercept Valves. Work was performed in J1R24 to address the issue, but the leads will remain lifted for the duration of the next cycle to prevent undesired movement of the Intercept valves. This will allow the site to monitor the circuit to determine if troubleshooting was successful, without the risk.

The FSAR requires the steam turbine valves to be tested within every 225 days (approximately 7.4 months). Extending the test interval is an adverse change to how the FSAR described SSC design functions are performed or controlled, requiring evaluation under 10 CFR 50.59.

Summary of Evaluation:

Lifting of the leads for the FASVs of the Turbine Intercept Valves and extending the turbine valve testing interval will have an impact on the turbine missile probability. A turbine missile is considered an "accident" for the purposes of 10 CFR 50.59 in accordance with NEI 96-07 Section 3.2. FSAR section 10.2.4 requires a missile generation probability of less than 1.0E-04 events per year.

The methodology used to determine the probability remains the same as when it was previously calculated as discussed in JAF-SE-17-001 and JAF-CALC-20-00005 and documented in UFSAR section 10.2.4. This limit is based upon Regulatory Guide 1.115 for a favorable turbine orientation and a resultant failure probability. By maintaining the turbine missile generation below 1.0E-04, the resultant accident probability is maintained less than 1.0E-07. Turbine missiles are postulated to occur due to two potential events: a low speed rotor failure (design overspeed) and a failure at speeds well greater than rated turbine speed (destructive overspeed). The lifting of the leads affects the design of the control signal and prevents the function of the Intercept Valves to fast close but does not affect the design of the valves or prevent them from slow closing.

The calculation has been modified to assess the activity and the revised probability is below the NRC limit of 1.0E-4 as specified in FSAR section 10.2.4.