Donald C. Cook Nuclear Plant
Report of Changes, Tests, Experiments Pursuant to 10 CFR 50.59(d)(2)

As required by 10 CFR 50.59(d)(2), the following report contains brief descriptions of changes made to the facility and/or associated documentation, and summaries of the associated 50.59 evaluations.

SS-SE-2015-0354-02

D.C. Cook Units 1 and 2 Boration System Functionality Requirement Change in MODE 4

ACTIVITY DESCRIPTION:

The change revised the Technical Requirements Manual (TRM) resulting in a reduction in the required redundancy of components in the Chemical and Volume Control System (CVCS) that are required to be available in Mode 4. Specifically, there is now a single charging pump and a single flow path required to be available in Mode 4, as opposed to the redundancy that was previously necessary.

Summary of the Evaluation:

Each applicable evaluation question was answered, “No.” There are no UFSAR safety analyses that credit boron injection from events initiated below Mode 3. Reducing the number of required boration flow paths from two to one in Mode 4 reduces the system redundancy to the level credited in the UFSAR. Therefore, the CVCS will continue to operate as described and credited in the UFSAR – neither credited SSC reliability nor credited capacity is impacted. Additionally, it is noted that plant procedures continue to require that the CVCS is capable of performing its design function of meeting Shutdown Margin requirements prior to entering Mode 4. Therefore, it was concluded that the change could be made without prior NRC approval.

SS-SE-2016-0318-01

Installation of Non-Safety Isolation Breaker in 345kV Supply

Activity Description:

The proposed activity added a non-safety related 345kV circuit breaker (J1 breaker) on the high voltage side of 345kV/34.5kV Transformer #5 (TR-5). TR-5 is one of the sources that can be aligned to provide preferred power to a nuclear unit at the station. Provisions for TR-5 control, protection and isolation capability are included in the scope of the modification.

Summary of the Evaluation:

Each applicable evaluation question was answered, “No.” The operation and performance of TR-5 remains essentially the same as described in the UFSAR. Therefore, the primary focus of this evaluation was upon the introduction of postulated spurious failures of the newly added 345kV circuit breaker on the off-site power supply. Per the guidance available in NEI 96-07 Rev. 1, “Guidelines for 10 CFR 50.59 Implementation,” adding devices (e.g., protective devices for breakers) designed consistent with applicable design and functional requirements (including applicable codes, standards, etc.) does not involve a more than minimal increase the likelihood of an accident or malfunction. Moreover, the activity: has no impact upon consequences of an accident or malfunction, does not create a new accident type, does not create a malfunction with a different result, does not alter or exceed a design basis limit for a fission product barrier, and does not involve altering or replacing a method of evaluation described in the UFSAR. Therefore, it was concluded that the change could be made without prior NRC approval.

SS-SE-2017-0164-01

Installation of Safety Related Fuses in Control Room Instrument Distribution Branch Circuits

Activity Description:

The change installed safety related fuses in Control Room Instrument Distribution (CRID) branch circuits (120 Volt AC Vital Instrument Bus System) supplying non-safety loads. The original design did not include electrical isolation between the branch circuits supplying non-safety loads and the branch circuits supplying safety-related electrical loads.

Summary of the Evaluation:

Each applicable evaluation question was answered, “No.” The scope of this Evaluation focuses on the introduction of postulated spurious fuse failures on the non-safety CRID branch circuits. Per the guidance available in NEI 96-07 Rev. 1, “Guidelines for 10 CFR 50.59 Implementation,” adding devices (e.g., protective features) designed consistent with applicable design and functional requirements (including applicable codes, standards, etc.) does not involve a more than minimal increase the likelihood of an accident or malfunction. Moreover, the activity: has no impact upon consequences of an accident or malfunction, does not create a new accident type, does not create a malfunction with a different result, does not alter or exceed a design basis limit for a fission product barrier, and does not involve altering or replacing a method of evaluation described in the UFSAR. Therefore, it was concluded that the change could be made without prior NRC approval.

SS-SE-2019-0274-01

Low Power Physics Testing Methodology Change

Activity Description:

The change implemented a revised method for low power physics testing (LPPT) using the Westinghouse Methodology outlined in WCAP-16260-P-A. The new method performs LPPT at sub-critical conditions, and utilizes inverse-count-rate-ratio based measurements to confirm the key core characteristics that were previously confirmed via rod worth measurements.

Summary of the Evaluation:

Each applicable evaluation question was answered, “No.” The change utilizes the physics test method described in WCAP-16260-P-A, Revision 2 which was approved for use by the NRC as documented in the Safety Evaluation Report (SER) appended to WCAP-16260-13-A, Revision 2. The D.C. Cook application of the method complies with the intended application and with the limitations and conditions specified in the SER. Therefore, it was concluded that the change could be made without prior NRC approval.

SS-SE-2019-0275-00

Change to Unit 2 Boron Dilution Accident Analysis

Activity Description:

The activity changed the UFSAR to reflect recent Westinghouse evaluation results for the use of a conservative Reactor Coolant System (RCS) mixing volume (mid-loop active vessel volume) in the Unit 2 MODE 6 boron dilution accident analysis, and its effects on the time available for the operator to terminate the event. This evaluation concluded that when using the revised input to reflect the RCS mixing volume, the time to reach criticality (i.e., the time available after the initiation of the event for the operator to take the action needed to terminate dilution) was reduced from slightly greater than 31 minutes to 30.8 minutes.

Summary of the Evaluation:

Each applicable evaluation question was answered, “No.” The very slight reduction in time available to the operator to terminate the event did not significantly challenge the operator's ability to take the credited action in time to support the conclusion of the impacted safety analysis. Criticality would continue to be prevented. The change to the single safety analysis input representing RCS volume did not affect the frequency of any accidents nor the likelihood of any malfunction of SSCs important to safety. Neither did it impact: the radiological consequences from any analyzed accidents or malfunctions, a design basis limit for a fission product barrier (DBLFPB), or the ability to conform to existing DBLFPBs. The change created no new accident or a malfunction of an SSC important to safety with a different result, and employed no new or revised methods of evaluation. Therefore, it was concluded that the change could be made without prior NRC approval.

SS-SE-2020-0014-00

Addition of Transformer 12-TR-6 Isolation Breaker

Activity Description

The change replaced 34.5 kV Bus #1 grounding transformer (12-TR-6) and circuit breaker 12-52-12AB, as well as associated controls, foundations, and other appurtenances, which were reaching their end of life.

This change consisted of the following elements:

1. 34.5 kV Bus #1 grounding transformer 12-TR-6 was replaced
2. Circuit Breaker 12-52-12AB, which provides offsite power to Unit 1 and Unit 2 Reserve Auxiliary Transformers (RATs), was replaced.
3. Associated transformer and circuit breaker controls (including protective relaying, cable, and other appurtenances) were replaced. Protective relay functions were implemented on new digital equipment.

Summary of Evaluation:

Each applicable evaluation question was answered, “No.” The RATs’ design function of providing the preferred source of offsite power is described in the UFSAR and the Technical Specifications. It was determined that the aggregate impact of the installation of digital modules for breaker control in breakers 12-52-12AB, 12-52-12CD, 12-52-BF, and 12-52-BG has an adverse effect upon the UFSAR described design function.

The change resulted in no more than a minimal increase in the frequency of occurrence of the loss of all AC power to the plant auxiliaries – the accident that could result from the common mode failure of interest. This determination was substantiated by an engineering evaluation of the dependability of the digital Input/Output (I/O) modules, which concluded that the devices were sufficiently dependable for use in the application due to their simplicity testability, diagnostic capabilities, operating history, and development processes.

The change resulted in no more than a minimal increase in the likelihood of malfunction of structure, system or component important to safety. This determination was substantiated by an engineering evaluation of the dependability of the digital I/O modules, which concluded that the devices were sufficiently dependable for use in the application due to their simplicity, testability, diagnostic capabilities, operating history, and development processes.

Therefore, it was concluded that the change could be made without prior NRC approval.

SS-SE--2020-0019-00

Emergency Operating Procedure Revision – Open Phase Condition

Activity Description:

The Emergency Operating Procedures (EOPs) were revised to incorporate an operator action to check the Open Phase Annunciator alarms when confirming the availability of AC emergency power and added contingency actions to trip the affected Reactor Coolant Pump Bus in-feed breakers, if required, based on detection of an open phase condition.

Summary of the Evaluation:

Each applicable evaluation question was answered, “No.” The evaluation of the EOP change assessed the impact of the addition of a step to check the OPC annunciator alarm, considering its impact on the design basis time critical action (TCA) response. The annunciators that are required to be checked (that would provide indication of a potential OPC) are located on the Station Auxiliary panel, which is easily visible from the operator's and Unit Supervisor's workstations. Therefore the addition of the step would require only seconds to verify. Because the duration of the added check is limited to several seconds, its addition does not involve a delay to the performance of any TCAs that would invalidate any of the safety analyses described in the UFSAR (i.e., the limited delay would not involve a more than minimal increase in the likelihood of a malfunction of a system structure or component (SSC) important to safety supported by the TCA). Credited operator actions would continue to be performed successfully, and within the assumed time. The plant response to applicable events would continue to be consistent with applicable safety analyses. Therefore, it was concluded that the change could be made without prior NRC approval.

SS-SE-2020-0128-00

Covid Risk Reduction - Unit 1 Ice Basket Replenishment Deferral

Activity Description:

The Unit 1 (U1) ice condenser was returned to service after the U1 fall-2020 refueling outage without undergoing typical ice basket replenishment. The Unit was approved to operate through the ensuing operating cycle with ice bed basket weights less than the safety analysis mean value.

Summary of the Evaluation:

Each applicable evaluation question was answered, “No.” Although ice bed replenishment was deferred for an operating cycle, it was shown that operation with some ice basket weights below the safety analysis mean value (but above a projected minimum) would continue to support all applicable design basis functional requirements. Specifically, it was shown using methods of evaluation consistent with those within the UFSAR (where applicable) that the ice bed would continue to ensure sufficient ice mass, heat transfer area, flow passages, and ice distribution would be provided in the ice condenser so that the magnitude of a pressure and temperature transients resulting from accidents described in the UFSAR would not exceed the containment design pressure or temperature.