

**FERMI 2**  
**SAFETY EVALUATION SUMMARY REPORT**

**FERMI 2 SAFETY EVALUATION SUMMARY REPORT**  
**TECHNICAL SERVICE REQUESTS**

## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0083 UFSAR Revision No. 10  
Reference Document: TSR-28960 Section(s) NA  
Table(s) NA  
Figure Change ☒ Yes ☐ No

Title of Change: Valve Downstream of P6100F148 is not Shown on P&ID or M-2271 (UFSAR Figure 9.4-11)

### SUMMARY:

This safety evaluation evaluates a change to UFSAR Figure 9.4-11, which shows the Plant Heating System for the Turbine, Radwaste, Reactor and Auxiliary Building. The changes consist of revising Dwg. M-2271 to show an existing set of flanges, existing 3/4" gate valve and pipe cap downstream of valve P6100F148 off of the Auxiliary Boiler Steam Supply Header.

UFSAR Figure 9.4-11 (P&ID M-2271) does not agree with the configuration of the plant. The UFSAR figure incorrectly shows valve P6100F148 as a 6" source - 1500#/HR To Hotwell Coils (Future)". The Hotwell Coils are not used at Fermi 2, therefore Valve P6100F148 was never used as a source to the Hotwell Coils. A field walkdown verified a set of 6" flanges along with a 3/4" valve, pipe nipple and cap are installed downstream of valve P6100F148. TSR-28960 and LCR-97-086-UFS were issued to revise this figure to reflect the verified configuration, and thereby effect agreement with UFSAR Section 10.4.1.5, which states, "The condenser hotwell has heating coils in each of the four hotwell sections, however they are not used at Fermi 2."

The accident scenarios evaluated in the UFSAR are not impacted by these changes. The changes have no effect on normal or abnormal operation of the Auxiliary Boiler and Plant Heating System, nor on the safety-related systems necessary for accident mitigation. The piping has been designed in accordance with ASME Section VIII and ANSI B31 1 Code requirements so that the probability of gross structural failure is not increased. Equipment which is connected to, or is part of, the modified systems will continue to function as designed. The Auxiliary Boiler and Plant Heating System are not required to ensure safe shutdown of the plant and have no interface with any safety-related system necessary for accident mitigation or plant safe shutdown.

There is no reduction in the protection of public health and safety due to the consequences of any postulated accident, transient, or radiological event which could be attributable to the proposed changes. The proposed changes do not involve any unreviewed safety question either created by, or resulting from the proposed changes. Therefore, no unreviewed safety questions exist with respect to the above described changes.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 98-0054

UFSAR Revision No. 10

Reference Document: TSR-29916

Section(s) NA

Table(s) NA

Figure Change ☒ Yes ☐ No

Title of Change: Revise UFSAR Figure 10.4-9, Sheet 2 to Show Actual Plant Configuration

### SUMMARY:

This safety evaluation evaluates a change to the UFSAR Figure 10.4-9, Sheet 2. This figure is being revised to change the configuration of the coils for solenoid valves N2200F456 & N2200F506 to show the solenoids energized (air supply) and de-energized (exhaust) and to remove a pipe reducer at Feedwater Heater "5S" drain line.

This change is necessary because Figure 10.4-9, Sheet 2, does not match plant configuration. In a prior revision of this figure, the configuration of the solenoid valves was incorrectly revised, and the pipe reducer at Feedwater Heater "5S" was incorrectly added. TSR-29916 and LCR-98-088-UFS were issued to revise this figure to reflect the verified plant configuration.

The Heater Drain System piping and valves are designed to the ANSI Code for Pressure Piping, B31.1.0 Power Piping. The proposed changes do not involve any field work or new installation practices. Therefore, the design of the Heater Drain System is maintained in accordance with ANSI B31.1.0.

No new equipment type or installation practice was introduced by the changes performed as a result of TSR-29916. The changes do not alter the function or operation of the Feedwater System and the nature of the changes do not affect the function of any system, structure or equipment important to safety.

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### SAFETY EVALUATION SUMMARY

Safety Evaluation No: 98-0061 UFSAR Revision No. 10  
Reference Document: TSR-27465-001, Rev A Section(s) NA  
Table(s) NA  
Figure Change ☒ Yes ☐ No

Title of Change: Revision to UFSAR Figure 5.5-7, Sheet 2

#### SUMMARY:

This safety evaluation evaluates a change to UFSAR Figure 5.5-7, Sheet 2 to reflect as-built configuration. No additional field work is being performed as a result of TSR-27465-001, Rev 0 or Rev A. UFSAR Figure 5.5-7, Sheet 2 and Dwg. M-2045 did not show the RCIC turbine pump-end shaft seal and governor-end shaft seal drain lines and drain valves, pressure indicator, isolation valves, and vendor supplied flex hoses installed in the system. In addition, pressure tap E51L418 was shown to be downstream of valve E5100F086. The pressure tap was not depicted correctly, i.e., capped and valve E5100F086 closed. With the exception of the flex hoses (which are shown on piping isometric drawings), these components were shown on vendor documents. TSR-27465-001 (Rev 0 and Rev A) and LCR 97-015-UFS and LCR-97-170-UFS were issued to revise Figure 5.5-7 Sheet 2 to reflect the correct configuration. The following changes were made to Figure 5.5-7, Sheet 2 (Dwg. M-2045):

1. Add RCIC turbine pump-end shaft seal leak-off drain valve E5100F508 and pressure indicator E51RA07
2. Add RCIC turbine governor-end shaft seal leak-off drain valve E5100F510 and pressure indicator E51RA08
3. Add instrument isolation valves E5100F507 and E5100F509
4. Add classification to existing Class D piping at relief valves E5100F018, E5100F033, and restricting orifice E5150D009
5. Revise the location of pressure tap E51L418 to show tap upstream of valve E5100F086
6. Add existing vendor supplied flex hose on 3/4" leak-off line of Valve E5150F044 and downstream of E510F510.

The changes are in conformance with all applicable design criteria. The design conditions, safety function, environmental conditions, quality group classifications, seismic design and testing programs of the RCIC System are not affected by the changes.

The proposed changes do not affect the RCIC turbine controls for automatic shutdown of the turbine as discussed in UFSAR Section 5.5.6.3.1 and are bounded by the RCIC steam supply line break evaluated in UFSAR Section 3.6.2.2.4. The proposed changes are in accordance with the intended design and operation of the RCIC System, and the changes do not impact other systems and/or components in the performance of their intended functions. The nature of these changes do not affect any equipment important to safety.

## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 98-0073

UFSAR Revision No. \_\_\_\_\_

Reference Document: TSR-29843

Section(s) 4.5.1.2, 5.2.2.3, 6.2.4.2,  
9A.4.1.8.1, 9A.4.1.8.2

Table(s) 3.2-1, 6.2-2, 6.3-1

Figure Change ☒ Yes ☐ No

Title of Change: Abandoned Residual Heat Removal Head Spray Piping

### SUMMARY:

This safety evaluation evaluates a change to abandoned Residual Heat Removal (RHR) Head Spray piping and RHR P&ID. TSR-29843 was issued to change the classification of the abandoned Residual Heat Removal (RHR) Head Spray piping from Quality Group A and B to Quality Group B and D. Additional changes will be made to the RHR system P&ID to correct discrepancies. LCR-98-160-UFS was issued to revise the UFSAR to reflect these changes.

Technical Specifications (TS) Amendment 85 removed valves E11-F022 and E11-F023 from Table 3.4.3.2-1 and 3.4.3.2-2. However, the piping system classifications still reflect the previous system head spray function. The piping and components between the bulkhead blind flange and E11-F022 will be reclassified as Quality Group D. The piping and components between the inboard, E11-F022 and outboard, E11-F023 isolation valves will be reclassified to Quality Group B. The piping and components between outboard isolation valve E11-F023 and the in-line blank flange will be reclassified to quality Group D. In addition, the classification of drywell penetration X-17 in UFSAR Chapter 6 will be changed from GDC 57 to GDC 56 since Group D piping inside containment can no longer be treated as an extension of primary containment. LCR-98-160-UFS will also make various other editorial corrections related to the RHR, to UFSAR Figure 3.2-1, Figure 4.5-1, Table 6.3-1, Sections 4.5.1.2, 9A.4.1.8.1, and 9A.4.1.8.2.

The new quality standards applied to the abandoned RHR head spray are in accordance with the positions of all applicable design criteria. The containment penetration, isolation valves and head spray piping continue to satisfy the containment and penetration design requirements of GDC 16, 50 and 54.

Changing the piping and component classification as described above will eliminate unnecessary inservice inspection nondestructive examinations. The new classification and system design temperature and pressure will reflect the current safety function of the piping system which is to maintain primary containment.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 98-0081

UFSAR Revision No. 10

Reference Document: TSR-29866

Section(s) 11 Annex A

Table(s) 10.1-1

Figure Change ☐ Yes ☒ No

Title of Change: Replacement of CFD "H" Septa Bundle with new Tubesheet and Pleated Filters

### SUMMARY:

This safety evaluation evaluates a change in the type of precoat material used in the condensate filter demineralizer (CFD) "H". LCR-98-170-UFS will revise UFSAR Table 10.1-1 to allow for the use of resin only precoat material. In addition, Chapter 11A Annex A 4.c will be revised to show the surface area of pleated and nonpleated filters.

Due to the high costs associated with burial of radioactive wastes, it is desirable, from an economic standpoint, to minimize the amount of expended condensate resin produced which must be disposed of as solid radioactive waste. This is accomplished by extending the run length of the demineralizer and/or by precoating with less resin. Installation of pleated filter elements will reduce resin usage and provide longer run times. The new design incorporates a tubesheet assembly with polypropylene pleated elements which will increase the filtration surface area of CFD "H" and the use of a blended cation-anion resin precoat versus a resin/fiber mix. While the fiber is necessary in the heavier precoat applications, its use on pleated septa provides no performance enhancement. Additionally, it may degrade performance as it does not backwash off the pleated elements as easily as straight resin precoat..

The condensate polishing demineralizer system will continue to meet the Criteria of Regulatory Guide 1.56. There will be no changes to condensate or reactor water chemistry limits or alarms due to the installation of the septa bundle. Because the new septa bundle will require less resin, an evaluation was performed to ensure that the condensate system will continue to meet the requirements of the UFSAR, i.e., excess capacity exists in the condensate treatment system to provide for the orderly shutdown of the reactor in the event of a postulated condenser leak of 50 gpm.

The functionality of the CFD remains unchanged; it will continue to filter particulate and remove unwanted ions. The condensate system will continue to be operated in accordance with procedures and within design and licensing constraints. Operation of the Condensate Polishing Demineralizer system will continue to meet the water quality requirements of the Fermi 2 Chemistry Specifications. There is no unreviewed safety question as a result of installation of a pleated filter bundle in CFD 'H' vessel.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No:	<u>98-0082</u>	UFSAR Revision No.	<u>10</u>
Reference Document:	<u>TSR-30048</u> <u>LCR-98-164-UFS</u>	Section(s)	<u>NA</u>
		Table(s)	<u>NA</u>
		Figure Change	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

**Title of Change:** Condensate Polishing Demineralizer System and Turbine Building Closed Cooling Water System Labeling and Configuration Discrepancies

### SUMMARY:

This safety evaluation evaluates a change to UFSAR Figures 10.4-7, Sheet 1 and 10.4-7, Sheet 2. The changes consist of changing the vent and bypass valve type from gate to globe, changing the normal operating position for the air-operated bypass valve from open to closed, and changing the type of isolation valve from gate to globe in the CST Flush Condensate Supply to Transfer Pumps.

In Figure 10.4-7, Sheet 2 and Figure 10.4-7, Sheet 1, Valves N2000F409A through N2000F409G, N2000F260A through N2000F260G, N2000F408A through N2000F408G and P1100F167 are incorrectly identified as gate valves instead of globe valves; and, N2000F409A through N2000F409H are incorrectly identified as normally open instead of closed. In Figure 9.2-12, Sheet 1, Valve V8-4022, is incorrectly identified. TSR-30048 and LCR-98-164-UFS were issued to revise these figures to reflect the verified as-built configuration.

The changes are in accordance with the intended design and operation of the Condensate Polishing Demineralizer System and do not impact other systems or components from performing their intended functions. The proposed changes will not affect the process instrumentation from performing its intended function to shut down the reactor in the event that a malfunction of the demineralizers results in an unacceptable Tech Spec limit in reactor feedwater quality. The changes comply with applicable design criteria and are consistent with other similar installations in the Condensate Polishing Demineralizer System. The changes do not introduce any new failure mechanisms, modes, or scenarios.

UFSAR Section 10.4.6.1.2 provides that operating procedures ensure the effluent from the Condensate Polishing Demineralizer System results in reactor impurity levels that meet the requirements of Regulatory Guide 1.56. Changing the type of isolation valve in the CST Flush Condensate Supply to Transfer Pumps does not affect the system's ability to maintain the proper water purity specified for the reactor.

No additional field work is being performed as a result of TSR-30048. The changes do not alter the function or operation of the Condensate Polishing Demineralizer System or other systems interfacing with it.



## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 98-0097 UFSAR Revision No. 10  
Reference Document: TSR-29963 Section(s) NA  
Table(s) NA  
Figure Change ☒ Yes ☐ No

Title of Change: Reconfigure Feed to General Service Water Pump House (GSWPH) DC  
Distribution Cabinet 2PC3-14

### SUMMARY:

This safety evaluation evaluates a change to the facility as described in UFSAR Figure 8.3-11. Temporary Modification 98-0006 reconfigured BOP feeder cables to provide power to the GSWPH such that only two of three single conductor cables were being used to provide power to the DC loads fed from 2PC3-14. In addition, the load fed from position 6 of 2PC3-14 was reconnected to position 7 of 2PC3-14. This was required until a final solution could be obtained for the failure of one of the three cables. TSR-29963 was issued to make this configuration permanent since a spare duct bank sleeve from the Turbine Building to the GSWPH does not exist for a new cable pull. The new design results in no changes to the operation of equipment being fed from cabinet 2PC3-14. The equipment will remain powered at 130 Vdc..

UFSAR Figure 8.3-11 shows distribution cabinet 2PC3-14 as a three wire cabinet, with position 6 feeding the 480 Vac switchgear Bus 72K. TSR-29963 and LCR-98-188-UFS were issued to revise this figure to reflect the permanent configuration. The new configuration is equivalent to the original plant design. The change does not affect the operation or performance of any plant equipment, nor does the change add any additional DC equipment to the system.

This modification does not impact the ability of the battery to support the BOP DC system loads nor does it impact the battery or battery charger sizing. The change in loads is insignificant and is within the rating of the cable and fuses used for distribution cabinet 2PC3-14. DC loads fed from cabinet 2PC3-14 are still powered at 130 Vdc. Capacity of the batteries remains adequate to supply the loads.

The BOP battery system and its loads remain unchanged by feeding power to 2PC3-14 using two single conductor cables instead of three single conductor cables.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 98-0160 UFSAR Revision No. 10  
Reference Document: TSR 30339 Section(s) 9A.4.4.1  
Table(s) NA  
Figure Change ☐ Yes ☒ No

Title of Change: Replace Ionization Smoke Detector V82N406G with a Photoelectric Smoke Detector

### SUMMARY:

This safety evaluation evaluates a change to the facility as described in UFSAR Section 9A.4.4.1. Since 1991, there have been over 30 Fire Alarm Incident reports documenting Smoke Detector V82N406G as the cause of the spurious alarms. A photoelectric smoke detector verses an ionization smoke detector in the V82N406G application would increase the reliability of this component. The function of early warning for the smoke detector will not change. TSR 30339 would only replace the smoke detector itself. The detector base would not be replaced which results in no wiring changes.

The detector portion of the fire detection system is designed per NFPA 72E, 1974. A photoelectric smoke detector in the V82N406G application satisfies the code requirements. A Pyrotronics model DPS-1 smoke detector is compatible with the existing Zone 25 Pyrotronics fire detection system.

Smoke Detector V82N406G is part of the Zone 25 Fire Detection System which encompasses the Radwaste Building 2nd Floor and the Radwaste Building 2nd Floor Mezzanine. UFSAR Section 9A.4.4 (Fire Hazards Analysis) evaluates the impact of a fire in the Radwaste Building on the ability to shut down the plant. The Zone 25 Fire Detection System is not discussed in the analysis. Thus, per this analysis, a change to Smoke Detector V82N406G will not affect the ability to shut down the plant.

Smoke Detector V82N406G is not safety related and does not provide a control function for a safety-related component. The detector only provides an early warning (alarm only) function to the Control Room in the event of a fire in the vicinity of the detector (Radwaste Building 2<sup>nd</sup> Floor Mezzanine). TSR 30339 will not change the function of Smoke Detector V82N406G.

The replacement of Smoke Detector V82N406G with a photoelectric smoke detector has no safety significance or plant impact.

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### SAFETY EVALUATION SUMMARY

Safety Evaluation No: 98-0161 UFSAR Revision No. 10

Reference Document: TSR-30355 Section(s) NA

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Flanges Installed to Ease Future Testing of Small Bore Relief Valves

#### SUMMARY:

This safety evaluation evaluates a change to Pipe Erection Specification 3071-031 Appendix O to strengthen the design control and approval process for design changes regarding the methodology for installing flanges for small bore relief valves.

This change is necessary because CARD 98-16010 identified problems with the methodology for installing flanges for small bore relief valves outlined in Specification 3071-031 Appendix O. The approval and design control process outlined in the specification is informal which led to a plant modification being made without later generating a design document. Also, the process outlined in the specification allows field changes to be made to designs described in UFSAR figures, text or tables without prior review via a preliminary evaluation or a safety evaluation. Specification 3071-031 will be revised to require written documentation of the engineering review and approval of a proposed change in a timely fashion. Specification 3071-031 will also require a means to ensure an "as-built" notice is generated.

The proposed changes do not involve any unreviewed safety question either created by or resulting from the proposed changes to Specification 3071-031. Allowing flange installation does not increase the probability or consequences of an accident or malfunction of equipment or affect the margin of safety since pressure vessel Code requirements are satisfied. No new accident scenarios are created by the flange installation.

The specification revision provides additional design controls in the section which allows flanges to be installed to provide for removing small bore relief valves for testing. The revision to the specification does not change or impact any system function, component, procedure or system operation which has been previously evaluated in the UFSAR.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0001 UFSAR Revision No. 10  
Reference Document: TSR-30353 Section(s) NA  
Table(s) NA  
Figure Change ☒ Yes ☐ No

Title of Change: Revise UFSAR Figure 9.2-3 (DDDMEC M-5444) to Update EECW Test Mode Valve Lineup

### SUMMARY:

This safety evaluation evaluates a change to the facility as described in UFSAR Figure 9.2-3 (DDDMEC M-5444). The EECW valve lineup table presented in UFSAR Figure 9.2-3 specified that the P44F608 EECW supply isolation valve remain closed during EECW testing and that testing of the Division II EECW system be conducted only when the drywell sump heat exchanger is not required (obviously, so that it may remain isolated during the test). The purpose of the drywell equipment sump heat exchanger is to cool collected leakage sufficiently to maintain NPSH margin on the sump pumps. It is, therefore, desirable that EECW cooling to the drywell equipment sump heat exchanger be restored during EECW Division II system functional testing in order to reestablish the designed method of component protection which was not provided under the Division II EECW test configuration as described in the UFSAR.

TSR-30353 revised the valve lineup table on the M-5444 drawing (UFSAR Figure 9.2-3) to show the drywell sump heat exchanger may be unisolated during testing.

Restoration of the drywell sump heat exchanger during Division II EECW system functional testing maintains the designed means for drywell equipment sump pump NPSH protection. As per Note 5 on UFSAR drawing 9.2-3, current procedures prohibit the initiation of a Division II surveillance if the drywell equipment sump is in recirc mode. Since the drywell equipment sump could enter recirc mode after the initiation of a test, the proposed change assures sump cooling capability is maintained during functional testing whereas the mode as currently described in the UFSAR would not.

The operation of Division II EECW for testing with the drywell sump heat exchanger restored does not prevent the EECW system from responding to design basis accidents and transients where a protective action is required, nor does it impact the ability of the system to function as designed in response to a HELB or MELB. The proposed change to the M-5444 design drawing (UFSAR Figure 9.2-3), therefore, does not involve an unreviewed safety question.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0003 UFSAR Revision No. 10  
Reference Document: TSR-30072 Section(s) NA  
Table(s) NA  
Figure Change ☒ Yes ☐ No

Title of Change: Addition of Miscellaneous RB (Reactor Building) Fifth Floor Equipment and Components to UFSAR Figure 9.1-3, Sheet 1.

### SUMMARY:

This safety evaluation evaluates changes to UFSAR Figure 9.1-3 Sheet 1 to reflect as-built configuration. LCR-99-003-UFS and TSR-30072 were prepared to add the following equipment and components to UFSAR Figure 9.1-3, Sheet 1:

1. A cross-over platform between the spent fuel pool and the reactor cavity.
2. The auxiliary platform (PIS No. F1500E010) over the dryer/separator pit.
3. The RPV venting unit fan (PIS No. T4100C046), located near column lines F and 13.
4. The new fuel uprighting stand (PIS No. F1100E025) located near column lines B and 15.
5. The new fuel inspection stand (PIS No. F11E002), located near column lines B and 15.
6. The work platform near the northwest corner of the spent fuel pool.

The items were previously installed on the fifth floor but were not shown on the Figure. There is no relevance to safety since the RB5 equipment has no impact on any plant systems, structures or components important to safety.

The change was necessary because the equipment was not shown in Figure 9.1-3, Sheet 1. Since the new RB5 equipment is used to assist personnel in new fuel inspection and in circumnavigating the refuel floor, and to vent the RPV, the equipment has no effect on any plant systems, structures, or components important to safety.

The additional RB5 equipment does not affect any plant systems, structures or components important to safety. The equipment is used to assist personnel on the refuel floor and to vent the RPV head. The equipment is QA level non-Q and seismic category II/I. The existing structures are adequate to support the new equipment and the new equipment will not cause any damage to existing structures due to tornado wind loads. Therefore, there is no unreviewed safety question.

The additional equipment on the RB fifth floor will not affect safety significance or operation and will not impact any plant systems, structures or components important to safety.

## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0007

UFSAR Revision No. 10

Reference Document: TSR-30436  
LCR-99-016-UFS

Section(s) 5.5.6, 6.3.2, 8.4.2

9.2.6

Table(s) 7.3-1

Figure Change ☒ Yes ☐ No

Title of Change: Water Stored in the Condensate Storage Tank (CST) for HPCI and RCIC

### SUMMARY:

This safety evaluation evaluates a change to the facility as described in UFSAR Figure 9.2-10 and various other sections which describe CST parameters that affect HPCI and RCIC. TSR 30436 and LCR 99-016-UFS were issued to correct discrepancies and clarify descriptions in the UFSAR, design basis documents, calculations and P&ID regarding the volume of water stored in the condensate storage tank for HPCI and RCIC, suction transfer setpoints and a condensate system pressure gage location. No physical changes are being made to the plant.

Notice of Violation 50-341/97011-02 identified that the information in the UFSAR regarding CST volume is not complete or accurate. The UFSAR indicates that the CST contains 150,000 gallons of water reserved for HPCI/RCIC. Due to the design of the tank, the volume from the bottom of the tank to the top of the standpipe is exactly 150,000 gallons. The HPCI/RCIC suction line has a short standpipe (silt protector) that rises 5.25 inches above the tank bottom. The absolute volume between the two standpipes is 143,000 gallons. Therefore, the maximum amount of water reserved for HPCI/RCIC is 143,000 gallons. Also, suction will transfer to the suppression pool at a (nominal) CST level of 32 inches, which reduces the available water in the CST dedicated to HPCI/RCIC to approximately 105,000 gallons. This non-conforming condition, i.e. the discrepancy between the description in the UFSAR and the as-built plant, was accepted "as-is" by considering the discrepancy to be a 'change' and performing a 10CFR50.59 safety evaluation. The UFSAR is being revised accordingly to indicate the usable water from the CST available for HPCI/RCIC. TSR-30436 also revises Design Basis Documents E41-00 and E51-00, Design Calculation DC-0885 Volume 1, and P&ID M-5873 to clarify required CST volumes and HPC/RCIC suction transfer setpoints. No physical changes are being made to the plant; therefore, the proposed change does not change the function of the CST or the HPCI, RCIC or condensate systems.

Based on the normal volume of water maintained in the CST and the additional supply of water in the suppression pool, the change was determined to be acceptable. Accordingly, there is no reduction in the protection of public health and safety due to the consequences of any postulated accident, transient, or radiological event which could be attributable to the proposed changes. Also, the proposed changes do not involve any unreviewed safety question either created by, or resulting from the proposed changes.

## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0025

UFSAR Revision No. 10

Reference Document: TSR-30568

Section(s) NA

Table(s) NA

Figure Change ☒ Yes ☐ No

Title of Change: Reduce the Stroke Time for Valve E5150F019

### SUMMARY:

This safety evaluation evaluates a change in the stroke time of valve E5150F019. TSR-30568 was issued to reduce the stroke time of E5150F019 in order to meet the requirements of the degraded voltage analysis. The stroke length will be shortened via adjustment of the open end geared limit switch in order to meet the stroke time criteria. The flow characteristic shows the valve will still pass the required minimum flow requirements to support operation of the RCIC pump. LCR-99-0059 was issued to revise UFSAR Figure 7.4-1, Sheet 4, to reflect the changes in the limit switch setting of the valve.

This change is necessary because new design requirements concerning degraded voltage and high temperature stroke times for DC valves has tightened the stroke time criteria at normal test conditions where nominal DC voltage and moderate ambient temperatures persist. The valve is projected to stroke slower with less voltage and high temperature; however the valve is still required to stroke within 25 seconds assuming the most restrictive conditions are present. The revised stroke time was reduced from 25 to 23.8 seconds. The latest recorded stroke time was 23.5 seconds. Therefore, it is prudent that corrective action be taken to reduce the stroke time to allow some margin not only for degraded voltage criteria, but for normal valve degradation. With the new design, the valve stroke length will be shortened to compensate for the degraded voltage and high temperature assumptions such that the maximum allowable stroke time of 25 seconds is met without compromising the minimum flow requirements. This will be accomplished by adjusting the open geared limit switch to actuate at approximately 80% open. The valve stroke time will decrease in proportion to the change of the open geared limit switch setting.

The new design is in accordance with the requirements of QA Category I design. A design verification review will be performed for the new design. This assures the highest quality requirements are maintained and satisfies the requirements of GDC 1.

The safety function of the valve remains unchanged. The functions of the minimum flow valve and the degraded voltage criteria are met with enough margin for degradation. The RCIC pump will still perform its design functions.

### SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0028

UFSAR Revision No. 10

Reference Document: TSR-27906 Rev. A

Section(s) NA

Table(s) NA

Figure Change ☒ Yes ☐ No

Title of Change: Add PIS Numbers for Valves and Circulating Water (CW) Screen Cleaning Pump.

#### SUMMARY:

This safety evaluation evaluates a change to the facility as described in UFSAR Figures 10.4-5 and 10.4-6. Piping plan drawings M-R-2002, M-R-2003 and M-R-2022 are being revised to show the as-built configuration of a capped 6" General Service Water (GSW) line and the routing of a 3" CW line going to a pump and associated valves for cleaning the CW screens in the Circulating Water Pump House (CWPH). FOS M-5720 and P&ID M-2007 are being revised to show the GSW line capped and the CW line continuing to M-5743 (UFSAR Fig 10.4-6) as a supply for CW screen cleaning pump.

The configuration of the plant does not agree with the UFSAR Figure 10.4-5 (P&ID M-2007). The UFSAR figure shows GSW and CW lines connected with valve N7100F625 in the closed position as an isolation between the two systems in the CWPH. Per PDC 12729 and field walkdown these two lines are no longer connected.

The CW and GSW systems are not accident initiators and are not required to ensure the safe shutdown of the plant. The piping is classified as Non-Nuclear Safety Related, Non-Seismic, Quality Group D and is designed to ANSI B31.1 Code requirements. The changes are located in the CWPH and are not located in the vicinity of any safety-related systems.

There is no reduction in the protection of public health and safety due to the consequences of any postulated accident, transient, or radiological event which could be attributable to the proposed changes. Also, the proposed changes do not involve any unreviewed safety question either created by, or resulting from the proposed changes. Therefore, no unreviewed safety questions exists with respect to the changes identified by TSR-27906 Rev. A.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0030 UFSAR Revision No. 10  
Reference Document: TSR-30596 Section(s) NA  
Table(s) NA  
Figure Change ☒ Yes ☐ No

Title of Change: Remove the Drain Headers for the TBCCW Exchangers P4300B001 & B002 and Add a Threaded Nipple with Cap Downstream of each Drain Valve to Allow for a Hose Connection.

### SUMMARY:

This safety evaluation evaluates a change to the facility as described in UFSAR Figures 9.2-12 Sheet 2 and 9.2-1 Sheet 1. Each Turbine Building Closed Cooling Water (TBCCW) Heat Exchanger has four drains/valves (two on the tube side (General Service Water (GSW)), and two on the shell side(TBCCW)), which tie into a common header and then go to a floor drain. The floor drain is not used because TBCCW and GSW are treated systems. When draining is required for the heat exchangers, the header is removed. A hose is connected downstream of each drain valve and the nearby equipment drain is used. The drain valves for P4300B001 are P4300F167A & F168A (shell side), and P4100F181A & F182A (tube side). The drain valves for P4300B002 are P4300F167B & F168B (shell side), and P4100F181B & F182B (tube side). None of the loads served by TBCCW are required for reactor safe shutdown. Also, the GSW system is not required to be operable in order to effect the safe shutdown of the reactor.

When draining was required for the TBCCW Heat Exchanger P4300B001, the line for drain valve P4300B001 was broken while trying to disconnect the line from the drain header at the union downstream of the valve. To repair this line, a one inch threaded coupling was installed on the vertical leg. To eliminate damage to the other drain lines, each drain line is to be disconnected at their union from their respective header and the header is to be removed. A threaded nipple with a threaded cap (both one inch) are to be added downstream of each drain valve after the union to allow for a hose connection. This proposed change for TSR 30596 Rev. A eliminates the need to disconnect the drain valves from the header each time that Operations needs to drain the TBCCW Heat Exchangers.

The TBCCW and GSW components or piping are not accident initiators. TBCCW and GSW have no interface with EECW or any safety related systems necessary for accident mitigation or plant safe shutdown. The proposed changes have no effect on the normal or abnormal operation of the TBCCW and GSW systems nor on the safety related systems necessary for accident mitigation. Equipment which is connected to, or is part of, the modified systems will continue to function as designed in all operating conditions as will the various safety systems required for safe shutdown of the plant. The piping has been designed in accordance with the

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**Safety Evaluation 99-0030 (Continued)**

pipng code in UFSAR Section 3.2 and Regulatory Guide 1.26, so that the probability of gross structural failure is not increased. These proposed changes do not adversely impact the radiological barriers, including the fuel cladding, reactor pressure vessel and piping, or the containment barriers or the total activity assumed to be released to the environment. TBCCW continues to operate at a lower pressure than the GSW system to protect against radioactive water leakage into the GSW system and the environment. Rupture of the new piping is bounded by existing analyzed pipe breaks. The Fermi 2 Technical Specifications and Bases were reviewed and there are no margins of safety affected by this TSR Modification.

There is no reduction in the protection of public health and safety due to the consequences of any postulated accident, transient, or radiological event which could be attributable to the proposed changes identified by TSR 30596 Rev. A. Also, the proposed changes do not involve any unreviewed safety question either created by, or resulting from the proposed changes.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0032 UFSAR Revision No. 10

Reference Document: TSR-30595 Rev. A Section(s) NA

Table(s) NA

Figure Change ☒ Yes ☐ No

Title of Change: Addition of Vent and Drain Valves for TCV-P42F400 Maintenance

### SUMMARY:

This safety evaluation evaluates a change to the facility as described in UFSAR Figure 9.2-1, Sheet 1. The changes consist of adding a vent and drain valve for Temperature Control Valve (TCV) P42F400, adding a 1" vent valve (P4100F391), adding one 2" drain valve (P4100F392) upstream and one 2" drain valve (P4200F393) downstream.

The GSW Temperature Control Valve (TCV) valve (P42F400) for RBCCW heat exchangers P4100B001 & B002 requires periodic preventative and corrective maintenance. There are no vents or drains between the isolation valves for (P42F400). Adequate isolation cannot be verified without cracking open a flange connection, which has the potential to cause an uncontrolled leak. The addition of these valves will verify if the isolation valves are operating properly without causing the potential of an uncontrolled leak.

The GSW components or piping are not accident initiators, the changes do not effect the normal or abnormal operation of the system nor on the safety related systems necessary for accident mitigation. The equipment which is connected to, or part of, the modified systems will continue to function as designed in all operating conditions as will the various safety systems required for safe shutdown of the plant.

The General Service Water System is classified as Non-Nuclear Safety Related, Non-Seismic and is designed Quality Group D. The piping is designed to ANSI B31.1 Code requirements.

There is no reduction in the protection of public health and safety due to the consequences of any postulated accident, transient, or radiological event which could be attributable to the proposed changes. Also, the proposed changes do not involve any unreviewed safety question either created by, or resulting from the proposed changes. Therefore, no unreviewed safety questions exists with respect to the changes identified by TSR-30595 Rev. A.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0060 UFSAR Revision No. 10  
Reference Document: TSR-30753-Rev A Section(s) 7.4.1.2.5.2  
Table(s) NA  
Figure Change ☒ Yes ☐ No

Title of Change: Abandon In Place the SLC Tank Heater "A"

### SUMMARY:

This safety evaluation evaluates a change to the facility as described in UFSAR section 7.4.1.2.5.2 and Figures 4.5-17 and 7.4-3. TSR-30753 was issued to de-energize and abandon in place the 10 kW tank heater "A" (C4101S001), located on the Standby Liquid Control (SLC) storage tank. This is not a change to any safety-related or important-to-safety active components. LCR-99-109-UFS was issued to revise the UFSAR, and LCR-99-110-TRM was issued to revise the Technical Requirements Manual to reflect this change.

The 10 kW heater "A" in the SLC tank has failed and replacement of the heater would require the SLC storage tank to be drained of approximately 3,000 gallons of sodium pentaborate solution. This would require the plant to be placed in Operating Condition 3, 4 or 5. By abandoning heater "A" in place, the SLC tank will not need to be drained. Raising of the tank temperature during the mixing operation will be provided by tank heater "B".

All regulatory requirements, acceptance criteria, and design requirements for the SLC system continue to be met and the ability to maintain the SLC system as required is not affected. The SLC system's storage tank will still be able to provide boron solution at the correct temperatures required. The SLC tank heaters are only required when mixing sodium pentaborate and/or water to establish the required solution operating parameters during additions to the SLC tank. Normal operation of the SLC system does not depend on these tank heaters to maintain the solution above its saturation temperature. The remaining tank heater 'B' will still meet all existing requirements.

De-energizing and abandoning in place the SLC 10 kw tank heater "A" will not over-ride or preclude the overall operation of the SLC system and the safety and normal operating functions are not affected. The proposed modification will allow continued operation of the mixing process in the SLC tank to establish the required solution parameters by using the 40 kw tank heater "B". The change to abandon in place the SLC tank heater "A" does not change the system design or system operating criteria, therefore the proposed change does not reduce the margin of safety as defined in the bases for any Technical Specification, or as described in the Technical Specifications, UFSAR, or in the SER. There is no Unreviewed Safety Question associated with this change.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0082 UFSAR Revision No. 10  
Reference Document: TSR-30505 Section(s) NA  
Table(s) NA  
Figure Change ☒ Yes ☐ No

Title of Change: Removal of Fermi 1 MTG#1, MTG Transformer #1 and the Connections to the 120 kV Switchyard

### SUMMARY:

This safety evaluation evaluates a change to the facility regarding the removal of Fermi 1 equipment and connections as part of the Fermi 1 decommissioning project. TSR 30505 will remove the Fermi 1 MTG #1, MTG Transformer #1 and the connections to the 120 kV switchyard from the existing design drawings. This modification will not change the function of the 120 kV switchyard as an offsite source of power supply to Division 1 ESF loads since the Fermi 1 MTG #1 does not supply offsite power to Fermi 2.

The Fermi 1 Main Turbine Generator (MTG) #1 was retired in July 1983 and has since been disconnected from the 120 kV switchyard. The Fermi 1 MTG #1, MTG Transformer and the connections to the 120 kV switchyard will be physically removed as a part of the Fermi 1 removal program. The connection between the disconnect switch and the Circuit Breaker (CB)-GF has already been removed. UFSAR Figure 8.3-1 shows the Fermi 1 MTG #1, MTG Transformer and the connections to the 120 kV switchyard. LCR-99-120-UFS was issued to revise UFSAR Figure 8.3-1.

The effects of removing the Fermi 1 MTG #1, MTG Transformer #1 and the connections to the 120 kV switchyard, on the operability, reliability and performance of the 120 kV switchyard as an offsite source were considered. Per UFSAR Section 8.2.2.5.1, based on 1991 Edison grid configuration, generation capability, and predicted equipment, operating requirement limits were identified for Fermi 2 offsite power sources. Fermi 1, which was retired in 1983, was not part of the 1991 system configuration of Edison grid. The Fermi 1 MTG #1 was not considered as an offsite or Station Blackout power source to Fermi 2 Division I ESF loads per the UFSAR and Technical Specifications. The Fermi 1 MTG #1 was not included in the Individual Plant Examination or current Probabilistic Safety Assessment model for the reliability of Fermi 2 Division I offsite power. Therefore, Operability, Reliability and Performance of the 120 kV offsite source of power supply to Division I ESF loads of Fermi 2 will not be affected by this modification.

The MTG #1, MTG Transformer #1 and the bus connections between this equipment are located away from the 120 kV switchyard. Removal of this equipment and bus connections does not affect the design function of the 120 kV switchyard. Hence, the availability of offsite power supply to the Fermi 2 Division 1 ESF loads will not be affected during the removal of the equipment and connections. There is no impact on plant safety.

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### SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0083 UFSAR Revision No. 10

Reference Document: TSR-30236 Section(s) NA  
LCR-99-126-UFS Table(s) NA

Figure Change ☒ Yes ☐ No

Title of Change: Addition of Recirculation Line with Solenoid Valve to Off-Gas Sample Pump D1102C002 and Clarification of System Components

#### SUMMARY:

This safety evaluation evaluates a change to UFSAR Figures 11.3-1, Sheet 3 and UFSAR Figure 11.4-3. To maintain configuration control of the Off-Gas Sample Pump D1102C022 and the Off-Gas Monitoring and Sample system, LCR-99-126-UFS was issued to revise Figures 11.3-1, Sheet 3 and 11.-3.

The following changes were made to UFSAR Figure 11.4-3:

- 1) Added a recirculation line with a recirculation solenoid valve to the D1102C002 Pump configuration.
- 2) Moved Pressure Indicator D11R105 from downstream to upstream of Inlet Solenoid Valve D11FA25.
- 3) Revised a muffler and oil trap description to a filter symbol and identified it as an Oil Mist Eliminator.
- 4) Added identification of Particulate Filter to the existing filter symbol on the suction side of the pump.

UFSAR Figure 11.3-1, Sheet 3, showed a partial group of monitoring/sampling components originating from the off-gas piping that are duplicated and identified in a sequence which conflicts with the actual details on continuation Figure 11.4-3. This provides the potential for confusion by presenting a duplicate and conflicting arrangement. Therefore, the duplicate details were replaced by a reference to continuation Figure 11.4-3.

These changes are enhancements to the overall Off-Gas monitoring and sampling subsystem function and reliability. There is no physical work involved, these items are documentation changes only. The removal of duplicate off-gas subsystem details in favor of the correct reference removes the possibility of confusion. These changes do not add, nor revise any systems, structures or components, that result in the degradation of any safety systems, these changes as described, do not reduce the margin of safety as defined in the basis for any Technical Specification and therefore do not involve an unreviewed safety question.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0086 UFSAR Revision No. \_\_\_\_\_  
Reference Document: TSR 30506 Section(s) 7.6.1.13.3  
7.6.1.13.4  
Table(s) \_\_\_\_\_  
Figure Change ☐ Yes ☒ No

Title of Change: Equivalent Part Evaluation for IRM and SRM Detectors With Enhanced Cables and LEMO Connector Pins.

### SUMMARY:

This Safety Evaluation evaluates an equivalent part replacement for the Intermediate Range Monitor (IRM) and Source Range Monitor (SRM) detector signal cable. TSR 30506 was issued to allow use of improved SRM and IRM detector assemblies supplied by General Electric(GE)/ Reuter Stokes. These assemblies use extruded silica as the insulating material in the signal cable portion of the assembly. The improvement increases the reliability of the SRM and IRM detectors, therefore enhancing the reliability of the Reactor Protection System (RPS) and Reactor Manual Control System (RMCS) safety trips. LCR-99-133-UFS was issued to revise UFSAR section 7.6.1.13.3 and 7.6.1.13.4 to reflect this change.

This change is necessary because the present design uses quartz fiber as the signal cable insulating material. GE/Reuter Stokes made improvements to the existing SRM and IRM detector assembly signal cables to eliminate copper migration. Copper migration was found to result in periodic signal fluctuations due to low insulation resistance in the signal cable. General Electric only supplies these improved detector assemblies.

The new detector signal cables meet the original design standards for normal and abnormal operating conditions (NEDO 10139 section 2.2.8). This change does not alter the detector or its sensitivity. No rerouting of wiring of conduit is required to accommodate this change. The detector will be installed into the original drive tube shuttle tube assembly, consequently the RPS divisional requirements are not altered. This change will not affect the capability to test the SRM or IRM channels. The applicable acceptance criteria have been satisfied by this improvement to the detector assemblies.

The improvement in the SRM and IRM detector signal cables has not altered the design function of the detectors or the design basis for the SRM and IRM Systems. Analysis by General Electric Reuter Stokes shows the original design function of the detectors has not been altered. The improvements to the SRM and IRM detectors have no safety impact on the operation of the SRM and IRM systems safety functions. There is no unreviewed safety question associated with this change.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0096

UFSAR Revision No. 10

Reference Document: TSR-30465 Rev. A

Section(s) 11.4.3.9.2.5

Table(s) NA

Figure Change ☒ Yes ☐ No

Title of Change: Upgrade of RHR Cooling Water Radiation Monitor Tubing for PBI

### SUMMARY:

This safety evaluation evaluates a change to the RHR Radiation Monitor Sample tubing for pressure boundary integrity (PBI). To comply with Pressure Boundary Integrity requirements, the RHR Radiation Monitor sample tubing connecting the 24-inch RHR Service Water piping routed to the north and south radiation Sampling Monitors D11P291 and D11P292 has been upgraded from QA level Non-Q and Seismic category II/I to QA 1 and Seismic I. LCR-00-075-UFS was issued to revise: 1) UFSAR Figure 11.4-5 to clarify that the Sampling Monitors D11P291 and D11P292, and associated tubing, meet the QA Level I and Seismic Category I for PBI, and 2) section 11.4.3.9.2.5 for the subsystem upgrade. To bring the stress levels in line with code requirements, field modifications were made to the tubing supports. TSR-30465 Rev. A was issued to document the changes that were made to correct the overstressing problems of the tubes.

Design calculation DC-5782 Vol. I indicated that several portions of the tubing did not meet code requirements for stress because of the thermal movements of the 24-inch line and other thermal loads. The upgrade of the piping brings the RHRSW Radiation Monitoring instrument lines in compliance with the seismic assumptions in Section 15.6.2.

Although the Residual Heat Removal Service Water Radiation Monitor Subsystem is not explicitly described in Chapter 15 of the UFSAR, an instrument line pipe break is analyzed in Section 15.6.2. The event described in this section involves a postulated small steam line or liquid line pipe break inside or outside primary containment but within a controlled release structure. No specific event or circumstance is identified that results in the failure of an instrument line. The line is assumed to be seismically constructed so it will not fail.

The changes made by TSR-30465, Rev A have no direct or indirect interaction with equipment important to safety. A review of accidents and Abnormal Operating Occurrences in the UFSAR shows that no initiating events exist that would be impacted by the new design. The new design provides a better support arrangement by reducing the thermal stresses on the tubing and upgrading the clamps from non-seismic to seismically qualified. The new design/modification results in an installation that is less likely to fail under postulated design basis accidents. There are no unreviewed safety questions.



## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 00-0001 UFSAR Revision No. 10  
Reference Document: TSR-30874 Rev. A Section(s) NA  
Table(s) NA  
Figure Change ☒ Yes ☐ No

Title of Change: Installation of Temporary Line Stops to isolate P42F400 (RBCCW Temp. Control Valve)

### SUMMARY:

This safety evaluation evaluates changes to the facility as described in UFSAR Figure 9.2-1, Sheet 1. TSR-30874, Rev. A and LCR 00-001-UFS Rev. 0, were prepared to add the installation of temporary line stops so that existing butterfly valves P4100F052 & F054) can be replaced. This will allow maintenance to work on TCV (P42F400) without shutting down the GSW system. The GSW system is not required to be operable in order to effect the safe shutdown of the reactor. No failure in the GSW system can prevent a safe shutdown of the reactor.

The temporary line stops are necessary to allow for the replacement of the existing damaged butterfly valves which do not isolate the Temperature Control Valve P42F400. The new butterfly valves will allow the temperature control valve (P42F400) to be repaired without a GSW system outage. GSW components or piping are not accident initiators. The addition of the temporary line stops in the GSW supply from RBCCW heat exchangers does not affect any safety systems or their response to an accident and do not increase the potential consequences of an accident through direct or indirect affects on the system. The addition of the 16" blind flange connection for the temporary line stops does not impact the radiological barriers in any way including the fuel cladding, reactor pressure vessel and piping or the containment or the total activity assumed to be released to the environment.

The proposed change does not modify any automatic or manual feature of a system, structure or component (SSC) and does not affect the quality group classification of the SSC. Therefore, nuclear safety or the radiological consequences of any accident is not affected by the proposed change in a way not previously evaluated in the UFSAR.

The installation of the line stop through the addition of 16" blind flange connection to facilitate repair of TCV P42F400 has no impact on the operation of the GSW System. Therefore, the proposed changes do not reduce the margin of safety as defined in the bases from any Technical Specification or as described in the Technical Specifications, UFSAR or in the SER and does not involve an unreviewed safety question.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 00-0005 UFSAR Revision No. 10  
Reference Document: TSR-30564 Section(s) 3.6.2.2.5.2.2  
Table(s) NA  
Figure Change ☐ Yes ☒ No

Title of Change: Revise HELB Room Pressures and Structural Calculations

### SUMMARY:

This safety evaluation evaluates a change to high energy line break (HELB) room pressures and structural calculations. CARD 99-13638 notes that the latest room pressures from the (HELB) analyses were not considered in wall or slab structural calculations. In addition, the pressure predicted for the RWCU hold-up room exceeded a wall capacity. TSR-30564 resolves this issue by recomputing RWCU hold-up and heat exchanger room pressures and revising the affected structural calculations. LCR-00-014-UFS will revise UFSAR section 3.6.2.2.5.2.2 to reflect the actual evaluation method for the wall between the RWCU heat exchanger and hold-up rooms for RWCU HELB subcompartment pressurization.

With the implementation of TSR-30564 and LCR-00-014-UFS, the structural calculations for Reactor/Auxiliary building walls and slabs will include evaluation of the correct HELB differential pressures. Satisfying the acceptance criteria of UFSAR 3.8.4.5 ensures the integrity of Reactor/Auxiliary building walls and slabs when subjected to HELB pressure loads. Therefore, safety-related components attached to these walls and slabs will continue to perform as required. The UFSAR will accurately reflect the methodologies and results of the HELB short term environmental analyses.

This proposed change does not increase the number of, or change the location of, postulated pipe break locations previously used as the basis for evaluation of equipment required to function during the HELB event. The reduction in differential pressure across the wall between the RWCU hold-up room and the heat exchanger room was achieved by considering the actual UFSAR postulated pipe breaks instead of a bounding non-mechanistic break of the largest pipe in the worst location. Therefore, although the design HELB differential pressure for this wall is reduced, the margin of safety is not, and the probability of wall failure is not increased. The proposed changes do not involve any unreviewed safety question either created by, or resulting from the proposed changes.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No:	<u>00-0007</u>	UFSAR Revision No.	<u>10</u>
Reference Document:	<u>TSR-30623 Rev. A</u>	Section(s)	<u>9.1.4.2.7</u>
		Table(s)	<u>3.2-1, 3.2-2, 3.7-15</u>

Figure Change ☐ Yes ☒ No

Title of Change: Downgrade the RB5 Refueling Platform from QA Level 1 to Non-Q and Seismic Category I to II/I

### SUMMARY:

This safety evaluation evaluates a change to the facility as described in the UFSAR. The refueling platform is a steel structure on the Reactor Building fifth floor used mainly to shuttle fuel bundles between the RPV and the spent fuel pool. Attached to the platform are three hoists, operator's console, operating instrumentation, and fuel movement interlock instrumentation. The change to the facility, is to downgrade the refueling platform from QA level I to non-Q and seismic Category I to II/I.

The refueling platform was supplied by GE as a seismic Category I component. Any new or replacement parts for the platform are required to be QA level 1 or upgraded by the commercial dedication process before they can be installed in the platform. Such a requirement causes additional procurement costs for the new parts, additional time for dedicating the new parts, and additional receipt inspections before they can be used on the platform. The reclassification of the refueling platform QA level from 1 to non-Q and seismic category from I to II/I has no effect on other plant equipment or systems on the refueling floor. There is no change in the function of the refueling platform. Therefore, there is neither an increase in the probability of occurrence of an accident or malfunction of equipment important to safety previously evaluated nor the creation of the possibility of an accident or equipment malfunction of a different type than any previously evaluated.

The refueling platform change does not affect previously evaluated accidents or create the possibility of a different type accident. The refueling platform change has no effect on equipment malfunction previously evaluated nor does it create the possibility of a different type equipment malfunction. Therefore, there is no unreviewed safety question associated with this change to the facility.

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### SAFETY EVALUATION SUMMARY

Safety Evaluation No: 00-0009 UFSAR Revision No. 10  
Reference Document: TSR-31023 Section(s) 7.5.2  
Table(s) NA  
Figure Change ☒ Yes ☐ No

Title of Change: Add Fire Zone Numbers to Fire Protection Evaluation Drawings

#### SUMMARY:

This safety evaluation evaluates a change to UFSAR Figures 9A-1 through 9A-11. UFSAR Fire Zone numbers are being added to these figures. UFSAR sections 7.5.2.5.1, 7.5.2.5.2 and 7.5.2.5.4 are being revised to: 1) clarify the difference between UFSAR Fire Zone numbers and Fire Detection Zone numbers, 2) clarify the emergency lighting requirements on equipment, and 3) to clarify what fire zones must have the P5000F154 valve closed due to a fire. These sections are used in the shutdown of the plant outside of the control room. No changes are being made to the plant or fire protection program, only clarification to the UFSAR.

These changes are a result of the Action Plan of CARD-99-17222 which investigated the root cause for incorrect fire detection zone identification in the dedicated shutdown procedure 20.000.18 regarding the closing of a P5000F154 valve due to a fire in certain areas of the plant. There is confusion over the numbering systems of the UFSAR Fire Zone numbers and the Fire Detection Zone numbers. UFSAR section 9A.2.2.3.1 divides the plant into fire areas, each further divided into fire zones. The Plant fire detection system also divides the plant into fire zones for the purposes of identifying where the fire alarms are located. These fire detector zone numbers are not the same numbers identified in UFSAR 9A.4; they are the numbers seen on control room panels, in procedures, surveillances and the TRM. CARD-99-17222 Action Plan also identified the need to clarify the emergency lighting description in UFSAR section 7.5.2.5. TSR-31023 and LCR-00-027-UFS were issued to make these changes.

The addition of specific fire zones where recovery using the Dedicated Shutdown Procedure and closing the P5000F154 valve is consistent with the analysis performed in Design Calculation DC-4921. Design Calculation DC-2574 established the emergency light aiming criteria on the plant equipment that is used in the Dedicated Shutdown Procedure 20.000.18. This is consistent with the requirements of 10 CFR 50 Appendix R, section III.J and the wording in NUREG 0798 Appendix R, section IV.

TSR-31023 and LCR-00-027-UFS do not change any UFSAR Fire Zone boundary, or fire detection boundary, emergency light, or fire zone where the P5000F154 valve is being used. Therefore, there is no change to the fire protection program or adverse effect on the ability to achieve and maintain cold shutdown.

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END OF SECTION

**FERMI 2 SAFETY EVALUATION SUMMARY REPORT**  
**ENGINEERING DESIGN PACKAGES**

### SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0027 UFSAR Revision No. 10  
Reference Document: EDP-27418 Section(s) NA  
Table(s) NA  
Figure Change ☐ Yes ☒ No

Title of Change: Modification of the Control Center Heating Ventilation and Air Conditioning

#### SUMMARY:

This safety evaluation evaluates a change to the Control Center Heating Ventilation and Air Conditioning (CCHVAC) system. EDP-27418 will modify the "normal" mode static pressure control loop to improve its performance. This modification will also downgrade a portion of the normal mode instrumentation and control components to reduce the cost of maintenance and spare parts. The "Normal" mode is not required to perform a safety-related function. The other CCHVAC control modes, i.e., Recirc, Chlorine, and Purge modes will not be affected.

This modification will address several problems in the CCHVAC system such as erratic/unstable static pressure control during windy conditions, and excessive calibration/maintenance down time. Experience has shown that the problems are related to the static pressure control "Normal" mode function. The scope of work of EDP-27418 includes:

1. Addition of an isolator to be able to downgrade the existing "Normal" mode pressure controller and associated power supply.
2. Replacement of the existing obsolete Air Monitor "Q" pressure controller with a newer and better Air Monitor pressure controller for the "Normal" mode pressure control loop.
3. New solenoid valves with a larger orifice to improve the exhaust damper response time will be used and new isolation valves will be provided for maintenance purposes to isolate the air supply to the new solenoid valves.
4. Replacement and relocation of the existing "Q" Moore E/P converter with a new Non-Q Moore E/P converter with a booster relay.
5. Increase the control air line size to the exhaust damper and the use of Interruptible Air Supply for the nonsafety-related, Normal Mode, portion of the CCHVAC system.

The CCHVAC "Normal" mode is not required to perform a safety-related function. A qualified isolator will be installed to provide the required isolation between the nonsafety-related normal mode function and the safety-related recirc mode function. The function of the CCHVAC system remain unchanged. No new failure modes are introduced. This modification will improve the reliability and performance of the CCHVAC static pressure control system. An unreviewed safety question does not exist based on the analysis and evaluation.

## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0004, Rev. 1

UFSAR Revision No. 10

Reference Document: EDP 27499

Section(s) 1.2.2, 3.1.2, 11.4.1, 11.4.3,  
12.2.2

Table(s) 7.1-2, 7.6-2  
11.4-1, 11.4-4

Figure Change ☒ Yes ☐ No

Title of Change: Removal of OSB Machine Shop Process Radiation Monitor SPING Unit

### SUMMARY:

This safety evaluation evaluates changes to the facility proposed by EDP 27499 to remove the OSB Machine Shop Process Radiation Monitor SPING Unit. UFSAR Sections, Tables, and Figures will be updated under LCR-96-014-UFS, Rev A.

The SPING Unit is being removed because the OSB machine shop is utilized as a cold machine shop instead of a hot machine shop as originally intended in the design of the plant. The SPING Unit is not serving its intended function to monitor airborne radioactivity. In addition, several problems have been experienced with this unit, e.g., false alarms which cause operator distraction, difficulties in obtaining maximum flow rate which complicates the completion of I&C functionals, and Radiation Protection (RP) work arounds. This safety evaluation provides the 10CFR50.59 review of the changes to the UFSAR to support the changes required by EDP 27499 and LCR 96-014-UFS.

The basis for installing the Service Building Exhaust Radiation Monitor (OSB SPING) was to monitor service building machine shop exhaust activity from contaminated equipment that may be worked on in the machine shop and/or gaseous and liquid effluents. The SPING would take measurements prior to discharge to the environment. Removal of the OSB SPING Unit and trip function does not impact compliance with any regulatory requirements.

Based on the review and evaluation made, the removal of the OSB SPING Unit does not increase the potential radiological or environmental consequences with regards to onsite or offsite dose. Furthermore, the removal of the OSB SPING Unit does not reduce the effectiveness of the Radiological Emergency Response Preparedness (RERP) plan. Therefore this evaluation concludes that the removal of the OSB SPING Unit does not involve an unreviewed safety question.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0015 Rev. 4

UFSAR Revision No. 10

Reference Document: EDP 28140

Section(s) 1.2.1, 1.2.2, 1.7.2, 3.6.2,  
7.3.3, 7.3.4, 7.6.1, 9.2.1,  
9.2.2, 11.4.3

Table(s) 1.6-2, 5.2-13, 7.1-2, 9.2-2,  
9.2-4, 9.3-1, 9.3-2, 9.4-5

Figure Change ☒ Yes ☐ No

Title of Change: RBCCW Supplemental Cooling System (P4200) and Supplemental Cooling Chilled Water (SCCW) System (P4600)

### SUMMARY:

This safety evaluation evaluates changes proposed by EDP 28140 to the RBCCW Supplemental Cooling System and Supplemental Cooling Chilled Water System as described in the UFSAR. This change was necessary because the RBCCW system cooling capacity is insufficient to maintain adequate drywell temperature margin below the 145°F Tech Spec limit during hot weather conditions. LCR-97-017-UFS, Rev A was issued to revise the UFSAR.

This EDP installs two new divisional loops of the RBCCW system, referred to as RBCCW Supplemental Cooling (RBCCW-SC), designed to provide 70°F RBCCW water to each division of the EECW system during normal plant operation under design warm weather conditions. Each loop is furnished with two 100% capacity pumps and a heat exchanger. Each RBCCW-SC loop takes suction from the RBCCW return header, passes this water through the heat exchanger in that loop to cool it with chilled water from a new Supplemental Cooling Chilled Water (SCCW) system designed for this purpose, and discharges the cooled water to the RBCCW supply header. The RBCCW Supplemental Cooling pumps are designed with a discharge pressure high enough to seat the RBCCW supply header check valves. When these pumps are in operation, each RBCCW Supplemental Cooling loop alone provides RBCCW flow to the respective division of EECW it services. The RBCCW-SC loops and the SCCW system are not credited for safety; however, their operation or failure cannot interfere with the ability of the interfacing loops of the EECW system to function in response to design basis events.

This modification to the RBCCW system enhances its ability to cool the drywell during design warm weather conditions by enabling this system to supply the EECW loops with water at approximately RBCCW 70°F, the original RBCCW nominal supply temperature. The new piping and components related to the RBCCW-SC loops and its auxiliary support system, SCCW maintain the same design, quality, and seismic requirements of the RBCCW system. This modification does not impact the ability of the EECW to automatically initiate when ESF and non-ESF EECW automatic initiation is required.



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**Safety Evaluation 97-0015 Rev. 4 (Continued)**

**The proposed modification does not involve an unreviewed safety question because the probability and consequences of accidents and malfunctions of equipment have not increased, new types of accidents and malfunctions have not been created, and the margin of safety as defined in the Technical Specifications and their bases have been preserved.**

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0111

UFSAR Revision No. 10

Reference Document: EDP-29475

Section(s) NA

Table(s) NA

Figure Change ☒ Yes ☐ No

Title of Change: Add MDCT Bypass Line Restricting Orifice

### SUMMARY:

This safety evaluation evaluates a change to the mechanical draft cooling tower (MDCT) as described in the UFSAR. An orifice plate will be installed in each division of the MDCT cold weather bypass line located in the RHR complex. The orifice plates and the associated flanged connections will be installed downstream of valve E1150F603A/B. The orifice will provide additional back pressure on the EESW system during operations which bypass the MDCT.

During the winter months, the service water systems are operated in the tower bypass mode. Due to the lower discharge pipe resistance and elevation difference when operating in tower bypass, the EESW pump discharge pressures are lower than when operating with flow through the towers. This requires that two residual heat removal service water (RHRSW) pumps remain operable when operating in the tower bypass mode to maintain the required minimum EESW pressure. Should one RHRSW pump become inoperable, the EECW system would be in a restrictive limiting condition of operation (LCO). It was determined that installation of an orifice plate in each division's tower bypass line, with a revision to the Design Calculation margin, would allow continued EECW operability with only one RHRSW pump available with flow either through the tower or bypassing the tower. EDP-29475 replaces the existing long radius elbow with a short radius elbow, and installs a horizontal length of pipe between the elbow and valve E1150F603A/B. A weld neck flange set and orifice plate are to be installed in the vertical space between the elbow and the floor.

System operation does not change due to the installation of the orifice plate, but the pressure flow rates through the bypass line will change. The components associated with this modification will be purchased and installed to ASME section III, QA level 1, and Seismic class 1 standards. System reliability will be unaffected. The orifice plate is a passive component and is not capable of equipment malfunction. The design bases for the service water systems is to provide cooling water to the respective safety related systems. Since the orifice plate is in the bypass line which is used during cold weather operation, the margin of safety, as defined in the bases for the Technical Specifications or in the UFSAR or SER is not reduced. There is no unreviewed safety question associated with this modification.

## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0135, Rev. 1

UFSAR Revision No. 10

Reference Document: EDP-28766, Rev. A

Section(s) 9.4.8

Table(s) N/A

Figure Change ☒ Yes ☐ No

Title of Change: **Modifications to TB HVAC Supply Air Temperature**

### SUMMARY:

This safety evaluation evaluates a change to the facility as described in UFSAR Section 9.4.8 and Figure 9.4-11. EDP-28766, Rev. A was issued to modify the Turbine Building heating control system to improve the automatic mode of temperature control. Major features of this modification included: lowering the supply air temperature by 10°F, replacing the existing pneumatic temperature transmitters and controllers with an electronic temperature controller, and increasing the number of air supply lines to the face and bypass damper actuators. LCR-97-165-UFS was prepared to revise the UFSAR to reflect this modification.

This change was necessary because Turbine building temperatures were maintained too high during the mode where heating steam is used. This prevents the freeze stats from tripping the supply and exhaust air fans to prevent the steam coils from freezing. EDP-28766, Rev A modifies the turbine building area minimum supply air temperature from 65°F to a range of 55°F to 65°F.

Impact of the 10°F lower supply air temperature on the required room temperatures and impact to calibrated instruments were considered. The lower supply air temperature of 55°F is considered acceptable since this is within the normal operating temperature range of structures, systems, and components located in the turbine building. The effect on the calibration of instruments was considered negligible. This safety evaluation also considered impact to other systems which the EDP affected such as Interruptible Air Supply and the nonsafety-related electrical power supply. The ability of the steam leak detection sensors in the Turbine Building steam tunnel was reviewed with no adverse impact noted. Materials used for installation of the air lines and electrical components are in accordance with Detroit Edison specifications.

This change was made to improve reliability of the turbine building HVAC heating control system and lower the supply air temperature to a more desirable turbine building area temperature. This change will not adversely affect equipment important to safety.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No:	<u>98-0038 Rev. B</u>	UFSAR Revision No.	<u>10</u>
Reference Document:	<u>EDP-29792 Rev. A</u>	Section(s)	<u>7.5.2.5.4, 9.2.5.2.6</u>
	<u>ECR-29792-14 Rev 0</u>		<u>9A.4.2.3.2</u>
		Table(s)	<u>N/A</u>

Figure Change ☒ Yes ☐ No

Title of Change: EECW TCV, Moore Controller and EESW PCV Replacement

### SUMMARY:

EDP 29792 Rev. A will enhance the capability of the Emergency Equipment Service Water (EESW) system to maintain the temperature in the Emergency Equipment Cooling Water (EECW) system within its operating temperature limits during normal and accident operating conditions. The EDP will perform the following with all needed supporting changes:

- Replace the EESW pneumatically operated PCV with a Target Rock spring operated, pressure limiting valve.
- Replace the EECW TCV valve with a CCI drag valve, in new location and re-route of NIAS to new valves.
- Replace the EECW TCV GEMAC controller and associated control circuit components with a Moore Model 353 controller
- Interlock the EECW TCV control logic with the EESW pump start to ensure that the TCV remains in the full open position whenever the TCV is in the automatic mode of operation and the EESW pump is in standby or during EESW system initiation

### EESW PCV

The modification will replace the EESW pneumatically operated PCV with a spring operated, pressure limiting valve. The replacement valve is configured as spring to close, system pressure to open. No external power sources are required for valve operation. For EDP 29792 Rev. A, the replacement PCV will be a Target Rock valve that meets the operating characteristics identified above. The discharge piping will be modified and a new sight-glass will be installed for visual verification of flow. The new PCV valve is sized to meet the minimum flow requirements of the EESW Pump. The valve is seismically qualified to perform its safety function after a design basis accident. Pipe stress and structural evaluations ensure there is no adverse impact to EESW system piping.

### EECW TCV

The existing Fisher EECW TCV valve is replaced in its entirety with a new CCI valve. During accident conditions, with high heat loads and high UHS temperature. The replacement TCV fails open on loss of valve demand air signal or loss of supply air. The replacement EECW TCV interfaces with the same systems as the current EECW TCV. The ability of the NIAS

**Safety Evaluation 98-0038 Rev. B (Continued)**

system to perform all of its safety functions, providing air during normal, accident, and Station Blackout (SBO) conditions, is not affected. The replacement EECW TCV has been evaluated and satisfies all the existing seismic and environmental qualification design basis requirements.

**EECW TCV Controllers**

The current EECW TCV GEMAC controller is replaced with a Moore Products digital controller which performs the modulation demand signal function. The digital controller enhances the ability of the circuit to remain stable at low flows. The new digital controllers have been evaluated for seismic effects, EMI/RFI effects, human factors, and common mode software failures. The digital controllers have been qualified as identified in the Commercial Grade Dedication Report CGDR98P0200/1 for Class 1E Qualified Moore Model MYCRO352 and PAC353 Universal Loop Controllers for Detroit Edison Company, Fermi Nuclear Power Generating Station, Edison File No. C1-5096, using digital equipment qualification guidelines endorsed by the NRC in Generic Letter 95-02 and EPRI TR 102348, "Guidance on Licensing Digital Upgrades", December 1993.

As a conservative measure, a disconnect fuse is included in the electrical demand signal path from the EECW TCV controller. Pulling the disconnect fuse forces the TE/P of the EECW TCV to provide a signal that causes the TCV to open. Associated EECW TCV control circuitry was modified for signal matching. A qualified signal isolator was required to be added to isolate the non-safety EECW TCV valve position signal from the Class 1E controller. The new isolator was to be mounted in the Relay Room.

The proposed changes preserve the designed ability for EECW and EESW to function for accident mitigation. The design logic for the system is unaffected by this modification. For equipment malfunctions where EECW automatic actuation is required, the appropriate protective functions also remain unchanged by this modification. On the basis that EECW and EESW respond to plant conditions as designed for transient and accident mitigation, the proposed changes proposed by EDP-29792 Rev. A do not involve a unreviewed safety question.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 98-0047

UFSAR Revision No. 10

Reference Document: EDP-28293

Section(s) NA

Table(s) NA

Figure Change ☒ Yes ☐ No

Title of Change: Permanent Connection of HEPA Filtration Unit

### SUMMARY:

This safety evaluation evaluates a change to the M-G set cooling system. EDP-28293 will permanently connect portable HEPA filtration units to the lower half of the M-G set slip-ring housing. LCR-98-078-UFS will revise UFSAR Figures 1.2-15 and 9.4-13 to reflect this modification.

Operating experience shows that carbon dust generated from the slip-ring housing on the M-G set has a tendency to migrate into the M-G set generator windings. In an effort to eliminate the carbon migration problem and protect the generator windings from premature degradation, a temporary portable HEPA filtration unit with a collapsible hose was connected to the lower half of the slip ring housing and placed into continuous service several years ago. This temporary arrangement has proven to be a necessary integral part of the M-G set ventilation system and ensures continuous reliable operation of the M-G sets. EDP-28293 was issued to make the temporary skid a part of the permanent plant design. In addition to this change, duplicate and discrepant information regarding RBCCW flow rates to the M-G set coolers shown in UFSAR Figures 9.2-13 and 9.2-1 will be deleted. The RBCCW flow rate will be deleted from UFSAR Figure 9.2-13 and will strictly become a ventilation air flow diagram as was originally intended.

The M-G sets are not safety related and are not required for safe shutdown of the plant but are required for normal plant operation. Seismic II/I qualification of the mounting of the HEPA filters was developed and is documented in the Design Calculation. Mounting details are provided in EDP 28293 installation instructions and sketches. Electrical conduit supports are required to be installed to Seismic II/I requirements.

The proposed change is an enhancement to the M-G set ventilation system and is strictly a preventive maintenance measure intended to prolong the M-G set life. There is no unreviewed safety question as a result of the changes being made by EDP-28293..

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 98-0157

UFSAR Revision No. 10

Reference Document: EDP-30214

Section(s) NA

Table(s) NA

Figure Change ☒ Yes ☐ No

Title of Change: Addition of Isolation Valves for TBCCW Supply and Return to the OSB

### SUMMARY:

This safety evaluation evaluates a change to the TBCCW supply and return piping to/from the OSB chiller. EDP-30214 was issued to install manual isolation valves in the TBCCW supply and return lines to/from the Office Service Building (OSB) so that the chillers can be replaced. LCR-98-192-UFS will revise UFSAR Figure 9.2-12, Sheet 1 to show the addition of the isolation valves. Several typographical errors, discovered during preparation of EDP-30214, will be corrected.

This change is necessary because the existing OSB chiller operates on R-11 refrigerant which is obsolete and no longer available. It will be replaced by a new 210-ton chiller was purchased in 1993. Replacing the existing chiller involves interrupting TBCCW flow in the area. Manual isolation valves will be added in the TBCCW supply and return lines to/from OSB so that the chillers can be replaced.

The revised piping system with new manual isolation valves and fabricated tees and blind flanges satisfies ANSI B31.1 Code requirements. Temporary enclosures which function as pressure vessels during installation have been designed in accordance with ASME Section VIII and ANSI B31.1 Code requirements as appropriate and are rated for the design pressure of the TBCCW system.

The proposed changes do not affect the operation of the TBCCW systems nor any safety-related systems necessary for accident mitigation. The modified piping has been designed in accordance with the pressure vessel Codes listed in UFSAR Section 3.2. Rupture of the new piping or components or temporary line stops is bounded by existing analyzed pipe breaks. The Fermi 2 Technical Specifications and Bases were reviewed and there are no margins of safety affected by this EDP. There is no unreviewed safety question associated with the change.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0009, Rev B.

UFSAR Revision No. 10

Reference Document: EDP-29805

Section(s) 9.2.2.2, 9A.4.1.7

Table(s) 8.3-14, 9.2-3, 9.3-2

Figure Change ☒ Yes ☐ No

Title of Change: Replacement of EECW Heat Exchangers

### SUMMARY:

This safety evaluation evaluates a change to the Emergency Equipment Cooling Water (EECW) system. EDP-29805 replaces the existing shell and tube heat exchangers with plate and frame heat exchangers that have greater heat transfer capability and are not susceptible to flow induced erosion at the operating flows of the EECW/EESW systems. LCR-99-032-UFS, Rev C was issued to revise the UFSAR to reflect this modification.

EDP 29805 will replace existing shell and tube EECW heat exchangers with two new 100% capacity plate and frame Heat Exchangers (PFHX). One new PFHX will be installed in each division of EECW. The EECW heat exchangers are QA class 1, seismic Category I components and have a safety-related function of transferring heat from the EECW system to the EESW system. This change does not change the safety-related function of the system to transfer heat from the ECCS components to the EESW system where the heat is transferred to the Ultimate Heat Sink. All piping and components are designed to seismic Category 1 requirements to ensure safe shutdown in the event of an Operating Basis Earthquake or Design Basis Earthquake. The modification does not introduce any new medium energy line breaks not previously analyzed in the UFSAR. The replacement of the shell and tube heat exchangers with plate and frame heat exchangers increases the margin of safety for the cooling water system by providing a heat exchanger with greater heat transfer capability while not affecting the ability of the EESW system to provide safety-related make-up to the EECW make-up tank. This modification does not affect the ability of the EECW system to remove heat from the ECCS components during a design basis accident or equipment malfunction where operation of the EECW system is required.

The Fire Protection Program was reviewed and changes were made to ensure a fire in the second floor of the reactor building will only affect one division of safe shutdown systems ensuring a second division is available under all Appendix R scenarios.

The new piping and components of the EECW system maintain the same design, quality, and seismic requirements of the EECW system. The probability and consequences of accidents and malfunctions of equipment has not increased, no new types of accidents and malfunctions have been created, and this EDP does not impact the ability of the EECW system to supply cooling water flow to safety-related equipment. This change does not involve a unreviewed safety question.



## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0015

UFSAR Revision No. 10

Reference Document: EDP-30399

Section(s) 5.5.6.2.2

Table(s) NA

Figure Change ☒ Yes ☐ No

**Title of Change:** Addition of Anti-pumping Circuit and Elimination of the Throttling Mode of Operation From the Control Logic of the RCIC Test and Bypass Valve.

### SUMMARY:

This safety evaluation evaluates a change to the facility as described in UFSAR. EDP-30399 adds an anti-pumping circuit and eliminates the throttling mode of operation from the control logic of the RCIC Test and Bypass Valve. These changes do not alter the safety function of the valve.

During testing of the RCIC Test and Bypass Valve, it was noticed that the valve was pumping after it was closed. This is due to the relax action of the torque switch when the worm gear slips after the valve is seated. This pumping action can damage the motor or operator.

RCIC is not an initiator of accidents and discussed in the UFSAR. The response time of RCIC and the capacity of the system to makeup to the RPV is not adversely affected with the new design. The new design does not change the safety function of the valve or how the valve interfaces with external equipment. The safety signals and automatic actuation logic are not affected with the new design. The safety function of the valve remains unchanged and the affects of failure of this valve are no different in the new design as in the existing design. All changes are internal to this valve. No new component or equipment interrelationships are being made, no new safety systems are being installed, no system operating modes are being added or changed, and the safety function of the valve does not change.

The modification to the control circuit of valve E5150F022 will not affect its ability to isolate the RCIC pump bypass line from the Condensate Storage Tank. These changes do not cause the RCIC pump test valve to operate outside the structure/system/components' design or testing limits. The new design does not compromise the health and safety of the public. There are no unreviewed safety questions.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0018

UFSAR Revision No. 10

Reference Document: EDP-28916

Section(s) 1.7.2, 4.4.4.6.3, 7.1.2.1.4.4,  
7.6.1.13, 4.4.4.6.4

Table(s) 7.2-3, 7.6-9

Figure Change ☒ Yes ☐ No

Title of Change: Design Improvements to the NUMAC PRNM System

### SUMMARY:

This safety evaluation evaluates changes to the GE Nuclear Measurement Analysis and Control (NUMAC) Power Range Neutron Monitoring (PRNM) system. EDP-28916 will install a new set of Electrically Programmable Read Only Memory (EPROM) in the Rod Block Monitor to bypass the flow compare trip/alarm function when the reactor is not in "Run" (Mode 1). LCR-99-043-UFS will revise various UFSAR sections, tables and figures to reflect this change.

The original Power Range Monitor was replaced during RF06 with a digital computer based NUMAC PRNM system. This change is necessary because in the present NUMAC PRNM design, the flow compare function is active in all reactor modes, including Modes 4, 5 and in shutdown cooling, and is creating nuisance alarms. These alarms are meaningless when not operating in Mode 1 however, the alarms still require operator acknowledgement. EDP-28916 will modify the recirculation flow comparison alarm logic to automatically bypass the alarm when the reactor mode switch is not in the "RUN" position, currently discussed in UFSAR Sections 7.6.1.13.6.1 and 7.6.1.13.7.1 with the logic shown in UFSAR Fig. 7.6-16, Sheet 5.

The APRM flow-biased STP scram and rod block functions, the OPRM trip function, and the flow-upscale rod block function are only required to be operable in plant operational Mode 1. When the mode switch is in the start-up position, both the APRM scram and rod block "setdown" trips are in effect. The setpoint for both the APRM setdown rod block and setdown scram trip are below the "zero-flow" value for the associated flow-biased STP trips.

The required installation of EPROM in the Rod Block Monitor as identified in EDP 28916 will have no adverse affect on any equipment important to safety or on the ability to achieve and maintain the safe shutdown of the plant. The changes per EDP 28916 are in accordance with the existing, as analyzed, design basis of the plant. There will be no change to the function, capacity, or operation of any related systems or components as a result of these changes.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0019

UFSAR Revision No. 10

Reference Document: EDP-29992

Section(s) NA

Table(s) 8.3-6

Figure Change ☒ Yes ☐ No

Title of Change: MOV P4400F603B Stem Speed Increase

### SUMMARY:

This evaluates EDP-29992, which replaces the existing 10 ft-lb, 1700 RPM AC motor installed on MOV P4400F603B, RBCCW to EECW Division 2 supply isolation valve, with a 10 ft-lb, 3400 RPM motor. The EDP also replaces the motor pinion gear set and adds an anti-cycling control circuit to the MOV closing logic. The new circuitry requires routing a control cable from the MCC to the valve. LCR-99-051-UFS revises UFSAR Table 8.3-6 and UFSAR Figure 7.3-15, Sheet 3.

This change modifies the RBCCW to EECW isolation valve timing sequence. It is necessary because there is a potential for over-pressurizing EECW Division 2 piping. Overpressurization could occur when the RBCCW Supplemental cooling (RBCCS-SC) system associated with Division 2 EECW is in service, should a LOCA occur without a LOOP while RBCCW-SC is running. Both P4400F601B and P4400F603B will close; however, since P4400F601B, the return isolation valve, is faster than P4400F603B, the supply isolation valve, certain sections of division 2 of the EECW system would be over-pressurized. This problem only exists with RBCCW-SC pumps running since RBCCW pumps have lower shut-off head than RBCCW-SC pumps, and are not capable of causing the same problem. The plant modification that created the need for this change is evaluated by SE 97-0015.

The new electrical requirements will affect the loading on safety-related bus 72F, MCC 72F-4A. Calculated EDG peak loading is unchanged by the negligible increase of .03 KW in the 3,129 KW peak value. The existing GE Thermal Overload (TOL) Heater was evaluated and was found acceptable. The added MOV anti-pumping circuit is external to the EECW system actuation logic. All component functions and system logic and interlocks remain unchanged.

The replacement motor will essentially provide the same function as provided by the existing motor, however, it will provide for a faster closure/opening of MOV P4400F603B. The impact of replacing the existing 0.7 HP, 10 ft-lb, 1700 RPM motor with a 1.33 HP, 10 ft-lb, 3400 RPM motor has been considered and incorporated into the new design for electrical bus loading, motor voltage drop calculations, and other design calculations. An evaluation was made to assure that the available actuator torque with the faster motor and new gear ratio is adequate for the valve to perform its function and is within the acceptable limits to avoid damage to the operator or valve.

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The added cable for the anti-pumping circuit is classified as an Appendix R cable from R1600S005C to P4400F603B on the south side of the Reactor Building 1st Floor. A spare conductor is being utilized in a cable running from the Relay Room to MCC R1600S005C. This existing cable is upgraded to an Appendix R cable. The larger motor on P4400F603B adds a slightly larger electrical load to R1600S005C, which was evaluated for possible high impedance fault currents.

All changes being made by EDP-29992 are in compliance with GDC 1, GDC 2, GDC 4, GDC 20 and Appendix R.

Increasing the speed of MOV P4400F603B per EDP-29992 resolves the potential of over-pressurizing sections of Division 2 EECW piping and does not affect the functions of plant systems as considered in the Safety Analyses. The evaluated changes do not affect any accident initiating sequence or mitigation capability, nor do they have any effect on a margin of safety. On these bases the change does not constitute an unreviewed safety question.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0026

UFSAR Revision No. 10

Reference Document: EDP-30405

Section(s) 8.3.2.1.1, 8.3.2.1.2,  
8.3.2.1.5 & 8.3.2.2.4

Table(s) \_\_\_\_\_  
\_\_\_\_\_

Figure Change ☒ Yes ☐ No

Title of Change: Replacement of Division I Battery

### SUMMARY:

This safety evaluation evaluates a change to the facility as described in UFSAR Section 8.3.2 and UFSAR Figure 8.3-9, Sheet 1. EDP-30405 replaces the existing (C&D Type KC-17) Division I 260/130 VDC Station Battery (R3200S003) with a physically larger and higher capacity C&D Type LCR-21 battery system. The replacement Div I battery is identical to the battery currently in use for Division II. The existing Division I battery chargers' operating setpoints (i.e. Equalize, Float, High and Low Voltage Alarms) will be re-set to account for the new C&D, Type LCR-21 (116 Cells) Battery System.

The Division I battery will be replaced due to signs of aging in the existing battery, and to enhance operational performance by distributing load over fewer (116 vs. 120), higher capacity cells.

The replacement battery is sized such that it is capable of supporting all of Division I loads for four hours during DBA associated with a LOOP accident without discharging to a battery voltage of less than 210 Vdc. Replacement of the Division I battery will not change the accident analysis as described in Section 15.15 of the UFSAR. Replacement of the existing Div. I battery will not increase the probability and or the consequences of an accident previously evaluated in the UFSAR. The margin of safety remains unchanged.

The replacement battery maintains all critical operating characteristics and is considered more reliable. The new battery is capable of providing sufficient capacity to its connected loads to perform their design function under DBA conditions. Implementation of this modification will not change the accident analysis as described in UFSAR, Section 15.15.

This change will not affect the design basis function or performance of any plant equipment. There are no unreviewed safety questions as a result of replacing the Division I battery.

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### SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0027 Rev. A

UFSAR Revision No. 10

Reference Document: EDP-29109  
ECR-29109-1  
ECR-29109-2  
ECR-29109-3

Section(s) 2.2.3.5  
Table(s) NA

Figure Change ☒ Yes ☐ No

Title of Change: Replace the Bromine Based Biocide Injection System at the GSW Pump House

#### SUMMARY:

This safety evaluation evaluates a change to the biocide injection system at the General Service Water (GSW) Pump House. EDP-29109 will replace the existing bromide based biocide injection system with a sodium hypochlorite based system. In addition, the backwash from the GSW pump strainers and traveling screens is redirected from Outfall 11 to the intake channel to assure chemical discharge limits are maintained. LCR-99-062-UFS, Rev. A will revise UFSAR section 2.2.3.5 and Figures 6.4-1, 9.2-1 Sheet 1, and 9.2-1 Sheet 2.

This change is necessary because the current bromine based system is incapable maintaining residual oxidant levels high enough to effectively kill zebra mussels. Additionally, routing the backwash from the GSW pump strainers and traveling screens allows continuously treating the pump pit to kill mussels in the pump discharge header within NPDES discharge limits. A source of the live mussels affecting plant systems is the untreated GSW Pump Discharge Header. A backwash screen is added to remove debris generated by backwash activities.

Sodium hypochlorite is maintained in an outside storage tank. This chemical is less volatile than chlorine gas, and Main Control Room habitability is unaffected by this modification. The chemicals and chemically treated water are compatible with all interfacing materials and components. No functional characteristics of GSW or fire protection systems are affected by these changes.

The GSW Biocide Injection System is non-nuclear safety related and will only affect the water chemistry of the GSW and fire protection systems. The proposed modification does not involve an unreviewed safety question because the probability and consequences of accidents and malfunctions of equipment have not increased, new types of accidents and malfunctions have not been created, and the margin of safety as defined in the Technical Specifications and their bases have not been affected. The Environmental Protection Plan was reviewed, and this change does not result in an unreviewed environmental question.

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### SAFETY EVALUATION SUMMARY

Safety Evaluation No:	<u>99-0041</u>	UFSAR Revision No.	<u>10</u>
Reference Document:	<u>EDP 30555</u>	Section(s)	<u>1.1, 1.2.2, 1.4.4, 1.4.5,</u> <u>3.5.1.2.2, 10.2.1, 10.2.2.2,</u> <u>10.2.3, 10.4.1.1.1, 15.0</u>
		Table(s)	<u>1.6-3, 10.1-1</u>
		Figure Change	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Title of Change: Replace the High-Pressure Turbine Steam Path and Rotor.

#### SUMMARY:

This safety evaluation evaluates a change to the facility regarding the replacement of the high pressure (HP) steam path and rotor. EDP-30555 will replace the HP turbine steam path which includes the rotor, buckets, diaphragms, coupling A spacer plate, stepped radial spill strips and packing. The HP turbine outer and inner casings will be re-used along with the diaphragm carrier rings, turning gear, extension shaft and all bearings except No. 2. The HP turbine shaft differential expansion system monitor (N30K609A) alarm setpoints will be changed. LCR-99-081-UFS was issued to revise the UFSAR.

This change is necessary because electrical output is limited to 97% reactor power due to the inability of the HP turbine, stop and control valve combination to pass the rated steam flow at 100% reactor power while maintaining adequate turbine throttle valve margin. In order to pass the rated steam flow through the turbine, EDP-30555 incorporates a high efficiency HP turbine steam path that is designed to pass the rated steam flow at a lower first stage pressure. This will allow additional pressure drop across the existing turbine throttle and stop valves to drive the required flow rate at 100% reactor power. Replacement of the HP turbine steam path allows increasing reactor power from 97 to 100%, eliminates stress corrosion cracking issues and recovers power losses due to aging steam path.

The removal of the grounding strap at Bearing No. 2 bearing oil catcher will not affect the rotor grounding since it will be maintained from the Bearing No. 9 bearing oil catcher. The HP rotor overspeed capability exceeds that of the LP rotors so the HP turbine rotor missile analysis is bounded by the LP turbine rotor missile analysis. Turbine trips result in turbine stop valves closing, which can cause reactor scrams. Turbine first stage/bowl pressure (which will be lower with the new, high efficiency HP turbine steam path) provides a scram bypass signal to the reactor protection system (RPS) logic prior to exceeding 30% thermal power. This permits reactor operation with the turbine stop valves and/or turbine control valves closed at low power. The Fuel Cycle 8 OPL3 Analysis considers the new Main Steam Control Valves position which are changed due to the lower backpressure due to the new HP turbine steam path.

High-energy pipe break is not affected since there is no change to piping. The turbine trip logic functions are not changed, thus not affecting numerous Chapter 15-accident analyses involving the turbine. The rotor is still adequately grounded without the replacement of the ground strap at Bearing No. 2. Compensation was made for the additional throttle valve margin and reduced live steam flow to reheater.

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**Safety Evaluation 99-0041 (Continued)**

The HP turbine is not required for the safe shutdown of the plant. The missile analysis assures that no missiles will penetrate the turbine outer casings and that the existing analysis performed for the LP rotor replacement in RF05 is still valid. The affect of the reduction of live steam flow is accounted for in the Core Operating Limits MCRP and the OPL-3 Analysis. From a process standpoint, the turbine control valves will operate at a reduced open position and the expected first stage operating pressure will be reduced. Control room indicators (N30R900, N30R938) which are color banded to indicate normal/warning conditions will have scales replaced reflecting a new set of normal conditions. Setpoints for Differential Expansion of the new HP turbine will be adjusted to the manufacturer's recommendations. These are not safety significant changes.

Consideration was given to turbine vibration, turbine generated missiles, inner casing drain orifice plugs, turbine overspeed trip, HP turbine first stage pressure instrumentation, steam leads drain valves, the Core Operating Limits Report OLMCPR, the OPL-3 Analysis, rotor grounding, and generator output. The proposed modification does not involve an unreviewed safety question because the probability and consequences of accidents and malfunctions of equipment have not increased, new types of accidents and malfunctions have not been created, and the margin of safety as defined in the Technical Specifications and their bases have not been adversely affected.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0045

UFSAR Revision No. 10

Reference Document: EDP-27238

Section(s) 8.3.1.1.8.3

Table(s) 8.3-8, 8.3-10

Figure Change ☒ Yes ☐ No

Title of Change: Replacement of Governor Control System of Emergency Diesel Generators

### SUMMARY:

This safety evaluation evaluates the replacement of the governor control systems on the four emergency diesel generators (EDG) under EDP-27238. LCR-99-085-UFS was prepared to revise the UFSAR to reflect completed changes.

This change is needed because the existing governor uses a design for which replacement parts are no longer readily available, making it difficult to maintain reliability. EDP-27238 provides the design modifications to resolve obsolescence and reliability concerns, and is expected to maintain the EDG target reliability requirements of 95% (UFSAR Section 8.4.2.3.9). The new governor control system consists of a Speed Control Unit (2301A type), Digital Reference Unit (DRU), Governor/Actuator (EGB-13P), and Magnetic Pickup Unit. These components are suitable replacement for the existing governor control system and are Seismic Category I and QA Category I. Additionally, a speed selector switch will be installed on the EDG local control panel. All these components will be seismically installed/mounted. The existing governor control system utilizes the EG-A Control Unit for controlling engine speed. The 2301A control unit of the new governor control system performs essentially the same function as the EG-A Control Unit. They both compare the speed reference signal to the speed sensed signal and provide a signal to the actuator to adjust the position of fuel racks.

The proposed modification does not impact the safety design basis, compliance with design criteria or safety evaluation of the standby ac power source at Fermi 2. A voltage and frequency response study verifies that performance characteristics are enveloped by the existing design. The proposed activity satisfies applicable GDC, IEEE Standards, and regulatory requirements to maintain the required redundancy, capacity, capability, reliability, testability, and the single failure criterion of the EDG System. Further, capability of EDGs to start and accelerate to the rated speed and voltage within the design-basis time, and the design intent of EDG System is not compromised. On the basis that the standby ac power system continues to fulfill all functions to mitigate the consequences of accidents, and the change does not affect the probability of occurrence of any accident or malfunction, it is determined that no unreviewed safety question exists.

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### SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0046

UFSAR Revision No. 10

Reference Document: EDP-29068

Section(s) 8.3.1.1.8.2, 8.3.1.1.8.3

Table(s) 8.3-8

Figure Change ☒ Yes ☐ No

Title of Change: Replacement of Exciter Voltage Regulator of Emergency Diesel Generator

#### SUMMARY:

This safety evaluation evaluates the replacement of the exciter-voltage regulators on the four emergency diesel generators (EDG) under EDP-29068. The new exciter-voltage regulator is very similar to the existing exciter-voltage regulator and the functional operation is essentially the same. LCR-99-086-UFS was prepared to revise the UFSAR to reflect this change.

This change is needed because the existing exciter-voltage regulator uses a design for which replacement parts are no longer readily available, making it difficult to maintain reliability. Replacing the existing exciter-voltage regulator (Portec) with a new (Basler) series boost exciter-voltage regulator will resolve obsolescence concerns. The proposed replacement of the exciter-voltage regulator is expected to maintain the EDG target reliability requirements of 95% (UFSAR Section 8.4.2.3.9). Although the configuration of the major transformer/reactor components varies between the two systems, both systems develop no-load excitation current based on transformer action and provide for variations to that requirement based on the respective variations in generator output run through current transformers. Control devices, actions and results are the same for both systems. There is virtually no change in the functions of field flashing. Coltec, the manufacturer/vendor of the existing equipment has stated that there is no significant difference in diesel response to loading with the new exciter-voltage regulator.

The proposed modification does not impact the safety design basis, compliance with design criteria, or safety evaluation of the standby ac power source at Fermi 2. The proposed activity satisfies applicable GDC, IEEE Standards, and regulatory requirements to maintain the required redundancy, capacity, capability, reliability, testability, and the single failure criterion of the EDG System. Further, capability of EDGs to start and accelerate to the rated speed and voltage within the design-basis time, and the design intent of EDG System is not compromised. On the basis that the standby ac power system continues to fulfill all functions to mitigate the consequences of accidents, and the change does not affect the probability of occurrence of any accident or malfunction, it is determined that no unreviewed safety question exists.

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**SAFETY EVALUATION SUMMARY**

Safety Evaluation No: 99-0047 UFSAR Revision No. 10  
Reference Document: EDP-30314 Section(s) 9.5.1, Appendix 9A  
Table(s) 9A.6.1-1  
Figure Change ☒ Yes ☐ No

Title of Change: Replace the Main Control Room, Computer Room Under-Floor Ionization Detectors with Photoelectric Detectors

**SUMMARY:**

This safety evaluation evaluates a change to the facility as described in UFSAR sections 9.5 and Appendix 9A. EDP 30314, Revision 0 was prepared to replace the Main Control Room, computer room under-floor ionization detectors with photoelectric detectors. The replacement photoelectric detectors will be installed in the existing bases and will perform the same function as is currently performed by the ionization detectors. LCR-99-084-UFS was issued to revise UFSAR sections 9.5.1.2.2, 9.5.1.2.3.8, 9A.2.3.5.2, 9A.4.2.10.1, Table 9A.6.1-1 and Figure 9A-9.

This change is necessary because ionization detectors are more susceptible to false alarms due to changes in humidity, air-flow and dust than are photoelectric detectors. Replacing the ionization detectors with photoelectric detectors should reduce the number of false alarms due to dust intrusion and changes in the environment. This will reduce the number of distractions to the operators, since they will not have to respond to as many alarms.

The fire detection and suppression systems are installed in the plant to provide early warning in the event of a fire and to provide a suppression medium to control and extinguish potential fires. The NFPA codes allow use of any tested and listed types of detectors in an area. Both types of detectors are listed by Underwriters Laboratories as smoke detectors and are subjected to the same fire tests. The fire detection and suppression system was installed to meet the requirements of 10CFR50 Appendix R and the change in the type of detector has no adverse effect on the ability of the system to operate and suppress a fire.

The replacement of the ionization detectors with photoelectric detectors does not change the ability of the fire suppression system to extinguish a fire in the computer room. There is no change in the ability of the plant to achieve and maintain safe shutdown in the event of a fire. The fire hazards analysis, as contained in the UFSAR is not affected. There is no increase in the risk of radiological exposure to plant personnel or the public. There are no unreviewed safety questions as a result of the installation of a different type of detector.

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### SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0048 UFSAR Revision No. 10  
Reference Document: EDP-30548 Section(s) 9.3.1.2  
Table(s) NA  
Figure Change ☒ Yes ☐ No

Title of Change: Manual Isolation Valve Added to the Station Air Header

#### SUMMARY:

This safety evaluation evaluates a change to the facility as shown on UFSAR Figure 9.3-1. EDP-30548 installs a 3" manual gate isolation valve (P5000F282) in the Station Air System upstream of the Station Air to Control Air isolation valve (P5000F402). In addition, Figure 9.3-1 will be revised to show the correct location of the pressure tap (P50L480) to be upstream of the bypass line for valve P5000F402.

The change is necessary because the P5000F402 valve failed in an indeterminate position and the P5000F282 is required to isolate the Station Air from the P5000F402 to allow for repairs. To install the new isolation valve, a hot tap machine will be required to isolate the air header flow temporarily. This will require a 3" split-tee connection and a 1-1/2" equalization pipe nipple be installed and left installed after the new valve is added. In addition, a previous revision to Drawing M-2015 (UFSAR Figure 9.3-1) incorrectly identified pressure tap (P50L480) downstream of the bypass line for valve P5000F402. LCR-99-087-UFS was issued to revise UFSAR Figure 9.3-1 and section 9.3.1.2 to reflect these changes.

The revised piping system with the manual isolation valve and fabricated tee and blind flange satisfies ANSI B31.1 Code requirements. Temporary enclosures that function as pressure vessels during installation of manual valve P5000F282 have been designed in accordance with ASME Section VIII and ANSI B31.1 Code requirements as appropriate and are rated for the design pressure of the Station Air and Interruptible Control Air Systems. The Station Air System and Interruptible Control Air System are not required to effect a safe reactor shutdown. The Non-Interruptible Control Air System Station Air to Control Air isolation valve (P5000F402) automatically closes to isolate the NIAS from the Station Air System to assure the integrity of NIAS Systems by preserving air pressure to essential users necessary for safe shutdown of the reactor.

There is no reduction in the protection of public health and safety due to the consequences of any postulated accident, transient, or radiological event which could be attributable to the proposed changes. Also, the proposed changes do not involve any unreviewed safety question.

### SAFETY EVALUATION SUMMARY

Safety Evaluation No:	<u>99-0049</u>	UFSAR Revision No.	<u>10</u>
Reference Document:	<u>EDP 29977, Rev. 0</u> <u>LCR 99-088-UFS</u> <u>LCR 99-161-REP</u> <u>LCR 99-162-TRM</u>	Section(s)	<u>7.5.1.4.2.5, 7.5.2.4.2.5</u> <u>9.5.2.1, 9.5.2.2.4,</u> <u>9A.4.2.10.1, 9A.4.2.10.2</u> <u>A.1.47, A.8.5</u>
		Table(s)	<u>7.5-2</u>
		Figure Change	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Title of Change: Control Room Configuration Modification

#### SUMMARY:

This safety evaluation evaluates changes to the facility as described in UFSAR Sections 7.5.1.4.2.5, 7.5.2.4.2.5, 9.5.2.1, 9.5.2.2.4, 9A.4.2.10.1, 9A.4.2.10.2, A. 1.47, A.8.5, Tables 7.5-2 and 9A.6.1-1, and Figure 7.6-6. EDP-29977 was prepared to replace the existing control complex desks, cabinets, and consoles inside the horseshoe areas of the control room. EDP-29977 also modified the operator workstation fire detection system, engineered safety feature status display (ESFSD) panel, site-wide alarm system, and replaced the ERIS display terminals. LCR 99-088-UFS was prepared to revise the UFSAR to reflect these changes.

Additional fire detection capability is necessary because the new workstations are larger than the existing consoles, and they are open to an adjacent raised floor structure that facilitates electrical cable routing from existing floor penetrations.

Operations requested elimination of the ESFSD panel on the basis that it is redundant to ESF and RPS designs that comply with IEEE 279-1971, and to administrative procedures required to comply with Technical Specifications.

Reducing sitewide alarms to a total of three address corrective action program concerns that five distinctly different alarm tones associated with emergency conditions is too complicated.

ERIS terminal hardware updates ease operation and maintenance, and to enhance reliability. The existing terminals and video generators are being replaced with PCs utilizing software to generate the displays.

All of the systems, structures, and components (SSCs) affected by EDP-29977 are nonsafety - related and are isolated from safety-related SSCs. They do not have any control, trip, isolation, or automatic functions. Their failure will not affect safety-related equipment, initiate a transient, accident, or fire, or influence operator response to adverse conditions. Fission product barriers are not affected by the proposed changes.

The combustible loading and burning characteristics of new construction materials were evaluated and found acceptable. Acceptance criteria for these changes were based on a

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**Safety Evaluation 99-0049 (Continued)**

review of the Fermi 2 SER and included NUREG 0700 criteria for human factors review, General Design Criterion 3 and Generic Letter 86-10 for fire protection systems, and Regulatory Guide 8.5 for immediate evacuation signal. The proposed changes do not adversely affect human factor considerations, control room habitability, control room combustible loading severity rating, or emergency evacuation or response.

Failure of the affected SSCs can not propagate to other systems and cause malfunctions, accidents, or fires of a different type than previously evaluated in the UFSAR. Therefore, the proposed modifications will not affect plant safety.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0053 UFSAR Revision No. 10  
Reference Document: EDP 27753, Rev 0 Section(s) 10.4.5.2  
Table(s) 9.3-1  
Figure Change ☒ Yes ☐ No

Title of Change: Modification of Circulating Water Decant Line Flow and Sampling Instrumentation

### SUMMARY:

This safety evaluation evaluates EDP-27753 that removes CW decant flow instrumentation, removes CW decant sampling equipment, and removes the potable water line from the CW Pump House chemical storage area. Removal of CW decant flow instruments changes the primary method of verifying dilution flow for liquid radiological effluents according to ODCM 3.3.7.11. Removal of the flow instruments impacts UFSAR section 10.4.5.2 and Figure 10.4-5. Removal of sampling equipment changes the method of decant sampling as stipulated in UFSAR Table 9.3-1 and Figure 9.3-3. Potable water line reconfiguration impacts UFSAR Figure 9.2-5.

CW decant flow instruments measure inaccurately, therefore, the control room recorder N71R802 displays inaccurate CW decant flow information. Portions of the sample instruments are broken and obsolete, and the maintenance costs of the system are high. The portion of the potable water line extended to the CW Pump House chemical storage area creates the potential for chemical contamination. EDP-27753 eliminates deletes the requirement to verify CW decant flow using recorder N71R802, reduces maintenance burden by eliminating unused and nonfunctional sampling equipment, and eliminates potential potable water chemical contamination.

The scope of this modification precludes any effect from impacting UFSAR accident scenarios. The CW decant flow monitoring, sampling equipment, or potable water system is not relied on for mitigation of the radiological consequences for events described in the UFSAR. The modification is limited to removal of nonfunctioning or obsolete equipment, relocation of CW decant pump discharge pressure taps to obtain more accurate discharge pressure indication , and minor reconfiguration of the potable water line within the CW Pump House. The equipment within the scope of this modification does not mitigate accidents and does not interfere with equipment used during accident mitigation. The equipment interfaces with non-safety piping system, BOP electrical system, and the plant computer system which are not relied on for accident mitigation. A review of Technical Specifications ensures the methods to verify CW decant flow and obtain decant samples are adequate.

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**Safety Evaluation 99-0053 (Continued)**

The changes meet the requirements of 10CFR20.106, 10CFR50.36a, 0.3 6a, Reg. Guide 1.21 and the intent of NUREG-0473. The modification impacts the methodology to verify dilution flow during liquid radwaste effluent discharge activities and CW decant sampling methods stated in the UFSAR. The ODCM presently contains an alternative method to verify dilution flow using pump curves and local instruments. The alternative method becomes the primary method after modification implementation. The alternative flow verification method is presently proceduralized in 23.718.05 and 24.000.01. The change in dilution flow verification does not represent a significant impact to the plant. The present method of obtaining CW decant is manual grab. There is no change to this method. Deleting the potable water supply to the CW pump house chemical storage area is a minor plant impact. Potable water is still available at the CW pump house.

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**SAFETY EVALUATION SUMMARY**

Safety Evaluation No: 99-0056 Rev. A UFSAR Revision No. 10  
Reference Document: EDP-27412 Section(s) Various  
Table(s) NA  
Figure Change ☒ Yes ☐ No

**Title of Change:** Digital Upgrade of Reactor Recirculation Speed Control System, Reactor Feedwater Control System and RHR Temperature Monitoring Circuits

**SUMMARY:**

This safety evaluation evaluates a change to the analog controls for the Recirculation Flow Control System (RFCS) and the Feed Water Control System (FWCS). EDP-27412 will replace these control systems with a digital distributed control system (DCS). The Reactor Feed Pump minimum flow control will also be enhanced as part of this modification. The DCS implementation of the RFCS and FWCS will be similar in function to the existing systems. The new system will employ digital techniques to provide improved reliability and ease of plant operation and will reduce component failures. LCR-99-100-UFS will revise applicable section of the UFSAR to reflect this modification. Training of Operators and other plant personnel is being performed to support the new system.

The existing FWCS and RFCS are analog electronic systems based on an extensive use of the GEMAC instrumentation. In the past, problems with the feedwater control loop and recirculation pump speed control loop have adversely affected unit availability. The GEMAC instrumentation is obsolete and is no longer available. Failures in the feedwater flow or recirculation pump speed control system can lead to such abnormal operational occurrences (AOOs) as a reduction of reactor water inventory or an unexpected reactivity change. Several failures of the reactor water level/feedwater flow control loops and reactor recirculation flow control loops have been experienced in the past. One of the primary contributors to these failures was determined to be age related degradation of the GEMAC electronic modules installed in the loops. To improve the systems' reliability, the DCS modification is being undertaken for the digital upgrade of the existing analog flow control loops. Following implementation of the DCS, the FWCS and RFCS will continue to operate as intended during normal operation and anticipated operational transients. The proposed changes will not degrade the performance of any system assumed to function in the accident and transient analyses.

Review of the transients analyzed in UFSAR for the feedwater and recirculation flow control systems shows that they are structured around the configuration of the hardware components of the analog control system. The architecture and modules of the new DCS are different from those of the analog system and a one-to-one equivalence generally cannot be made. The DCS

**Safety Evaluation 99-0056 (Continued)**

also adds new modes of control system operation. This results in a change to the considerations given to failures of specific analog components in the UFSAR because the components are not the same as the components or the configuration of the new DCS. However, if the DCS is evaluated from the perspective of its effect on the actuated plant equipment, there is no difference if the control demand signal is produced from an analog system or a digital-based system, and there is no effect of the DCS modification on operation of the actuated equipment in regards to demand signal failures. The scoop tube positioner and the feedpump turbine electrohydraulic speed control system will produce the same response as they would when driven by the analog control system. The DCS itself is designed to provide a similar response as the analog system it replaces.

The DCS failures are equivalent to or less severe than those of the analog control systems as far as their effects on actuated plant equipment. The transients currently analyzed, including the limiting transients of a Feedwater Controller Failure to Maximum Demand and the Dual Recirculation Slow Flow Runout bound any occurrence postulated to occur from the DCS. The RFPT Speed Limiters and RR MG Set Mechanical Stop settings are devices that act to terminate these transients and are not being changed by the DCS modification. These transients are exactly what have been considered in the MCPR and MAPLHGR Limits determinations and therefore the current evaluation bounds the same conditions that may be produced by the DCS.

The proposed changes will not reduce the margin of safety as defined in the basis for any Technical Specification, SER, or UFSAR. The FWCS and the RFCS are not relied on to perform any safety functions during or following postulated accidents. The systems are used to control plant processes that have an impact on plant operations and reactivity. The DCS design was evaluated to confirm that the failures which can be associated with the system will not cause plant conditions more severe, different, or more frequent than those described in the UFSAR. Failure of DCS components cannot adversely affect safety-related QA I classified equipment or safety-related functions.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0092 Rev. A

UFSAR Revision No. 10

Reference Document: LCR 99-155-UFS  
EDP-29258

Section(s) NA

Table(s) NA

Figure Change ☒ Yes ☐ No

**Title of Change:** Replace the Three Stage Packing Arrangement on the Reactor Recirculation (RR) Pump Gate Valves with a Single Set of Packing.

### SUMMARY:

This safety evaluation evaluates a change to the facility as described in UFSAR Figure 5.5-2, Sheet 1. The triple stage packing was replaced in the RR pump gate valves with a single stage design. The stem leak off lines were removed and capped. LCR-99-155-UFS was issued to revise UFSAR Figure 5.5-2, Sheet 1, to reflect these changes.

These changes were necessary because the existing packing arrangement leaks and is not easy to adjust or replace. The new design will reduce the potential for reactor coolant leakage, is proven in other applications in the plant and across the industry, and follows the guidelines of Spec 3071-012, Valves. The existing design requirements are met, and the integrity of the reactor pressure boundary is maintained.

The design meets the requirements of GDC 14, Reactor Coolant Pressure Boundary. The design of the components meets ASME III Class 1, 1968 ASME Draft Pump and Valve Code and is consistent with the requirements of valve Specification 3071-012. The packing will be modified without affecting the function and operation of the valves.

The new packing arrangement is designed to withstand full reactor pressure and is consistent with other packing arrangements throughout the plant. The reactor coolant pressure boundary is maintained. The stem leak off isolation valves are removed and the leak off lines are fitted with welded caps which meet ASME III Class 1 criteria for the reactor coolant pressure boundary.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0094 UFSAR Revision No. 10  
Reference Document: EDP-30870 Rev. 0 Section(s) N/A  
Table(s) N/A  
Figure Change ☒ Yes ☐ No

Title of Change: Add New Local Mounted Level Indicator Gage And Valves For Diesel Fire Pump Fuel Oil Tank P8000A015

### SUMMARY:

This safety evaluation evaluates a change to the facility as described in UFSAR Figure 9.5-1. EDP-30870 adds a new local mounted level indicator gage with isolation and drain valve for diesel fire pump fuel oil tank P8000A015. LCR-99-158-UFS was issued to revise UFSAR Figure 9.5-1.

Currently, no level indicator exists on diesel fuel oil tank P8000A015. The current method of checking the level inside the fuel oil tank P8000A015 requires an operator to climb a fixed outside ladder onto a access platform to verify the fuel oil level. This is done using a dipstick inserted inside the tank to measure the level. The change addresses concerns for personnel safety, foreign material exclusion (FME), and possible environmental hazards.

The installation of the local level indicator gage, valves and piping assembly on the diesel fire pump fuel oil tank will be per ANSI B31.1 code requirements. Design Calculation DC-6072 Vol I has been developed to qualify the new level indicator gage mounting and piping configuration. The addition of the local mounted level indicator gage does not affect the ability of the plant to achieve and maintain safe shutdown. There is no increased risk of exposure to the public, and no adverse effect on any safety feature.

The fire hazard analysis contained in UFSAR Sections 9.5 and Appendix-9A addresses how the plant would achieve and maintain safe shutdown in the event of a fire. The addition of level indicator gage assembly for the diesel fuel oil tank P8000A015 does not effect the results of this evaluation.

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END OF SECTION

**FERMI 2 SAFETY EVALUATION SUMMARY REPORT**  
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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 98-0074 UFSAR Revision No. NA  
Reference Document: WR 000Z980129 Section(s) NA  
Table(s) NA  
Figure Change ☐ Yes ☒ No

Title of Change: Temporary Freeze Plug for RBCCW Supply and Return Piping

### SUMMARY:

This safety evaluation evaluates a change to the facility regarding the installation of a temporary freeze plug. Installation of valves P4200F305B and P4200F306B per EDP-29794 is planned with the plant in mode 4 or 5. The valves are being installed to allow leak testing of the EECW/RBCCW system isolation valves P4400F601B and P4400F603B. It is desired to maintain RBCCW operable while the piping is cut for installation of the new valves. Under WR# 000Z980129, freeze seals are proposed to be added to the RBCCW supply and return piping to isolate RBCCW from the piping that is being modified.

Safety Evaluation 93-0011 addresses freeze seals on a generic basis. However, a unique safety evaluation is required for this work because these freeze seals will be located in piping that is not normally isolated from the secondary containment boundary. Also, the two freeze seals are located in different piping systems (one in the RBCCW supply line to Division II EECW and one in the RBCCW return line from Division II EECW). The RBCCW piping in which the freeze seals and the new valves are located is classified as non safety-related and is not required for safe shutdown of the reactor.

With the freeze seals in place, RBCCW will be able to operate during installation of EDP-29794. Procedural controls are provided to minimize the possibility of loss of the freeze seal or brittle fracture at the freeze seal location. Methods are also specified for removing the ice plug. Contingency plans for isolation upon an inadvertent loss of seal are developed. Brittle fracture is addressed by providing requirements for pre-freeze NDE, restricting access to the freeze location, cautions regarding impact during repair and cautions regarding transient system operation while the plug is in place. Assuming that the freeze seals are lost, flooding and spray effects are bounded by previous evaluations. Freeze plugs cause no permanent piping material property damage and post-freeze NDE provides further assurance that the freeze seal has not caused any permanent pipe damage.

The greatest potential for release of radioactive material is the fuel handling accident. If a fuel handling accident occurs and the freeze seals were to melt, the water seal would be lost and leakage could occur through the RBCCW piping outside secondary containment. This scenario

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**Safety Evaluation 98-0074 (Continued)**

is bounded by the UFSAR analysis which states that even if no credit is taken for isolation of the reactor building and actuation of the SGTS, the doses are still a small fraction of those permitted by 10 CFR 100.

GDC 4 is satisfied since the structures, systems and components important to safety are protected against discharging fluids and flooding that may result from freeze seal associated failures. GDC 16 is satisfied since secondary containment is maintained by the water seal created by the freeze seals during the time when the piping is cut. If the freeze seal is lost, handling irradiated fuel, core alterations and operations with a potential to drain the reactor vessel will be suspended in accordance with Technical Specification 3/4.6.5. GDC 44 is satisfied by the EECW system.

There is no reduction in the protection of public health and safety due to the consequences of any postulated accident, transient, or radiological event which could be attributable to the proposed changes. Also, the proposed changes do not involve any unreviewed safety question either created by, or resulting from the proposed changes.

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### SAFETY EVALUATION SUMMARY

Safety Evaluation No:	<u>98-0080, Rev. 2</u>	UFSAR Revision No.	<u>NA</u>
Reference Document:	<u>24.324.01</u> <u>23.324</u> <u>20.000.18</u> <u>20.300.01</u> <u>20.300.03</u> <u>20.300.13</u>	Section(s)	<u>NA</u>
		Table(s)	<u>NA</u>
		Figure Change	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Title of Change: CTG 11-1 Start Time Criteria to Include Additional Operator Action

#### SUMMARY:

Safety Evaluation 98-0080, Rev. 1 evaluated a change to the facility as described in UFSAR section 7.5.2.5 for revising the CTG 11-1 start time criteria to include additional operator action at the local controls. LCR-98-168-UFS revised the CTG 11-1 start criteria to include additional time for the Dedicated Shutdown Panel operator to communicate by telephone with the local operator at the CTG 11-1 Control Room. This change was included in UFSAR Revision 9. At the time, it was necessary to declare CTG 11-1 inoperable when it is tested because the local controls remove the remote control functions from the Control Room and Dedicated Shutdown panels, thereby, defeating the use of CTG 11-1 for satisfying Appendix R and Station Blackout (SBO) requirements.

SE-98-0080 was revised in order to provide additional discussion and documentation of the reliability of communications. The high degree of confidence that the local operator will hear the telephone and the reliability of the telephone was not discussed in the original safety evaluation. This revision of SE-98-0080 addresses these two items to provide more documentation of the basis for concluding that this change did not involve an unreviewed safety question.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 98-0092 UFSAR Revision No. 10  
Reference Document: SOE-98-09 Section(s) NA  
Table(s) NA  
Figure Change ☐ Yes ☒ No

Title of Change: Bypass of Reactor Recirculation System Feedwater Flow Input to Limiter #1

### SUMMARY:

This safety evaluation evaluates SOE 98-09. High vibration of the Reactor Recirculation Pump A was experienced following work on the pump. In order to balance the pump/motor combination, vibration data must be taken. However the speed which the pump is currently limited to is believed to be a resonant frequency of the pump. In order to increase the pump speed above this resonant frequency, the feedwater flow input to limiter #1 for Recirculation Pump A must be defeated.

SOE-98-09 will defeat the limiter #1 for the feedwater flow less than 20% by adding jumpers to the reactor recirculation pump logic and will provide operating limits on reactor water temperature, reactor level and recirculation pump flow in order to ensure the reactor recirculation pump and jet pumps will not cavitate. Defeating limiter #1 will enable Reactor Recirculation Pump A speed to be increased above the resonate frequency to allow vibration data collection for pump balancing. During performance of the SOE, reactor water level will be maintained above 198", reactor water temperature will be limited to 145°F, recirculation pump flow limited to 40% rated flow, and reactor vessel top head pressure limited to 30 psig. to maintain compliance with TS 3/4.4.6.1.

GENE-A0005873-15 evaluated increasing the limiter #1 setpoint. GE identified recirculation pump and jet pump cavitation as potential problems when increasing the limiter #1 setpoint. The analysis concluded that at a reactor water temperature of 145°F at atmospheric pressure in the reactor and water level at 564" above vessel zero (equal to 198" indicated level in the reactor), the maximum allowable recirculation pump speed for one pump operation is 40%. Either increasing reactor water level or reactor pressure, or decreasing reactor water temperature will add margin to cavitation of the recirculation pumps and jet pump. SOE 98-09 will limit operation of the reactor recirculation pumps to the "A" pump only.

The purpose of limiter #1 is to protect the recirculation pump and jet pumps from damage due to cavitation and to prevent damage from axial thrust if the recirculation discharge valve is closed. The function of limiter #1 on reactor recirculation pump discharge valve position is not affected by SOE-98-09. The SOE can only be performed during Mode 4 and the SOE will limit the reactor recirculation pump A speed to 40%. which is within the limits of the analysis performed by GE. SOE 98-09 adequately addresses operational concerns of cavitation of the reactor recirculation and jet pumps. There are no safety concerns associated with the performance of this SOE.

**SAFETY EVALUATION SUMMARY**

Safety Evaluation No: 98-0155 UFSAR Revision No. 10  
Reference Document: DC-3053, Vol. I Section(s) 3.6.2.2.3  
Table(s) NA  
Figure Change ☒ Yes ☐ No

Title of Change: **Revise HELB Room Pressures and Structural Calculations**

**SUMMARY:**

This safety evaluation evaluates the elimination of two steam line pipe breaks. The two postulated arbitrary intermediate HPCI steam line pipe breaks in the torus room have been evaluated in Design Calculation DC-3053, Volume 1, and it was concluded that they can be eliminated. Only two pipe breaks at the terminal ends are now postulated, one at the connection to the outboard containment isolation valve and one at the connection to the HPCI turbine stop valve. No plant hardware will be modified so existing mitigation devices at the eliminated pipe break locations will remain installed. LCR-98-186-UFS was issued to revise the UFSAR to reflect that arbitrary intermediate pipe breaks are not assumed to occur in the HPCI steam line outside containment.

The current HPCI steam line torus room pipe break environmental effects evaluation assumes that the pipe break is isolated in ten minutes through operator action. Flow is limited by the 1" NPS bypass around E4150F003, so pipe breaks in other systems govern the environmental response. However, the postulated HPCI steam line pipe breaks in the torus room would be difficult to detect utilizing only existing plant instrumentation since break flow is small and the room is large.

NUREG 1061 Volume 3 concluded that arbitrary intermediate break requirements will not be able to accurately predict break locations so that elimination of these requirements will have no negative impact on plant safety. Generic Letter 87-11 eliminates all dynamic effects (missile generation, pipe whipping, pipe break reaction forces, jet impingement forces, compartment, subcompartment and cavity pressurizations and decompression waves within the ruptured pipe) and all environmental effects (pressure, temperature, humidity and flooding) resulting from arbitrary intermediate pipe ruptures. The elimination of pipe whip restraints and jet impingement shields placed to mitigate the effects of arbitrary intermediate pipe ruptures is also allowed. GDC 4 compliance is maintained.

The proposed elimination of arbitrary intermediate pipe break locations (AIBs) is based on Generic Letter 87-11. As stated in the generic letter, AIBs may be eliminated without NRC approval unless such a change conflicts with the license or technical specifications. Accordingly, the criteria for choosing postulated pipe break locations in the current UFSAR (3.6.2.1.2.2) have already been revised to eliminate consideration of all dynamic effects and environmental effects resulting from arbitrary intermediate pipe ruptures. The changes to the postulated pipe break locations in the HPCI steam line outside containment will now agree with the minimum requirements of UFSAR section 3.6.2.1.2.2.

## SAFETY EVALUATION SUMMARY

Safety Evaluation No:	<u>99-0006</u>	UFSAR Revision No.	<u>10</u>
Reference Document:	<u>DC-5589 Vol I</u> <u>DC-5779 Vol I</u>	Section(s)	<u>3.6.2, 3.6.3, 3.11</u> <u>5.5.6.2.2, 9.3.1 9.4.2.1</u>
		Table(s)	<u>3.11-3</u> <u>3.11-4</u>
		Figure Change	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Title of Change: Revised Reactor Building Environmental Response for HELB and LOCA Conditions

### SUMMARY:

This safety evaluation evaluates an NRC concern that the design calculations supporting the operation of the service and component cooling water systems for HELB and LOCA mitigation did not account for system degradation as allowed by the ASME code inservice testing. This condition was addressed by developing new design basis thermal-hydraulic models, which were incorporated into several Engineering Functional Analyses [EFAs]:

EFA 95-003 EECW Cooling Capability  
EFA 95-007 NIAS - Room Cooler Operation  
EFA 95-008 NIAS - Compressor and Aftercooler Operation  
EFA 95-009 RHRSW/EESW/DGSW Operation

These EFAs evaluated operability and supported the continued safe operation of the plant while the plant generated design calculations and updated the design and licensing bases in the Design Basis Documents (DBDs) and UFSAR as appropriate.

DC-5589 and its supporting calculation DC-5779 reevaluate the Reactor Building long-term environmental response to the DBA, LOCAs, and specific HELBs under the effects of the degraded service/component cooling water flows and essential space cooler performance. In addition, DC-5589 also reevaluates the long-term environmental response of the NIAS room, located in the auxiliary building basement, to HELB and LOCA conditions.

Since the EECW/EESW system cooling capability has been degraded, the predicted area temperature used for environmental qualification of equipment important to safety have changed. In addition, automatic plant responses to the new environmental conditions, i.e., automatic isolations on area high temperatures, previously not credited and, therefore, not qualified because their setpoints were not reached, now occur.

The new environmental results of these design calculations have necessitated the updating of the mechanical and electrical EQ programs in order to requalify previously credited safety-related equipment and to incorporate newly credited components. In addition, the ability of the

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**Safety Evaluation 99-0006 (Continued)**

safety-related equipment in the affected zones to function in the new environment was reviewed to assure their continued ability for accident mitigation.

These reviews assure that all safety-related equipment is still capable of meeting their design functions under the revised environmental conditions; therefore, there is no increase in the probability of malfunctions of equipment important to safety or an increase in the consequences as the result of an accident or malfunction of equipment. There are no direct or indirect impacts to the design of any fission product barrier or its supporting systems; therefore there is no reduction in the margin of safety.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0020 UFSAR Revision No. 10  
Reference Document: DC-0230 Section(s) 6.3.2.14  
Table(s) NA  
Figure Change ☐ Yes ☒ No

Title of Change: Revision of the Core Spray Pump NPSH Margin

### SUMMARY:

This safety evaluation evaluates the design calculation revision and its impact on the UFSAR for the NPSH margins for the Core Spray pumps. LCR 99-052-UFS was prepared to reflect this change.

Deviations in the hydraulic analysis calculations in DC-0230 were identified in CARD 99-10431 and NRC Notice of Violation 99002-01. Revision G to DC-0230 addresses and corrects these deviations. UFSAR section 6.3.2.14 has been revised to correct the reported Core Spray Pump NPSH margin. The calculation results demonstrate that the hydraulic requirements of the Core Spray System are satisfied and that the pumps are adequate.

Design Calculation DC-0230 demonstrates that the hydraulic requirements of the Core Spray System as described in UFSAR Figure 6.3-7 and Table 6.3-6 are satisfied and that the pumps are adequate. Minimum required flows for critical operating modes were also validated during preoperational testing. Using the plant conditions described in UFSAR 6.3.2.14, Generic Letter 97-04 and Regulatory Guide 1.1, and assuming plugging as described in Regulatory Guide 1.82 and NRC Bulletin 96-03, the pump's NPSH margin is acceptable. The core spray system will perform its function to protect the reactor core against fuel-clad damage in excess of the limits set forth in 10 CFR 50.46 and Appendix K.

The changes made do not create a reduction in the protection of public health and safety due to the consequences of any postulated accident, transient, or radiological event. Also, the proposed changes do not involve any unreviewed safety question either created by, or resulting from the proposed changes.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0024 UFSAR Revision No. 10  
Reference Document: 22.000.02 Section(s) NA  
Table(s) NA  
Figure Change ☐ Yes ☒ No

Title of Change: General Operating Procedure 22.000.02, Rev. 43

### SUMMARY:

This safety evaluation evaluates a temporary change to procedure 22.000.02 to delete the use of pressure control valve N30F006 and N30F007, and to add steps to use N3018F609, F607 and opening of N3018F608 to allow proper warm up of the Moisture Separator Reheater (MSR). This temporary change is a compensatory measure for a degraded condition.

UFSAR 10.4.4.3.2 states: "The two automatic pressure control valves (N30F006 and N30F007) are used during initial startup to maintain a controlled heatup rate, however these valves are held completely open during normal operation." These control valves have failed and will not fully open during operation. In order to warm up the MSR, procedure 22.000.02 will be revised to allow the use of 4" bypass motor operated valve N3018F609 in conjunction with opening of motor operated valve N3018F608. Instead of the use of the automatic control valves N30F006 and N30F007, the MSR will be warmed up by remote or manual local operation of the 4" bypass valve N3018F609 in conjunction with opening of motor operated valve N3018F608. After the failed valves are repaired, procedure 22.000.02 will be revised again to use N30F006 and N30F007. Since this change is temporary, no change will be made to the UFSAR.

The heatup rate will be similar to the use of the automatic pressure control valves. Operations will throttle the 4" bypass valve (N3018F609) and the main steam isolation valves, N3018F607 and N3018F608, to meet the same requirements of procedure 22.000.02.

The failed valves N30F006 and N30F007 or the proposed use of MOVs N3018F609/F607 and F608, will not increase the probability of an accident or occurrence of a malfunction of equipment important to safety previously evaluated in the UFSAR. The valves are not located near any systems, structures, or components that are important safety. The valves do not interface mechanically, electrically or with control logic associated with equipment important to safety. A potential failure could be in the pressure boundary of the valves; this is bounded by the analysis of a steam line break outside containment (UFSAR section 15.6.4). By implementing the proposed change to procedure 22.000.02, the passive steam bypass function continues to be operable. Thus, the proposed procedure change will not reduce the margin of safety as defined in the bases of the Technical Specifications. There is no unreviewed safety question associated with this change.

## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0029 UFSAR Revision No. 10  
Reference Document: DC-0872 Section(s) 3.6.2.2.4  
DC-3261 3.6.2.2.5  
Table(s) \_\_\_\_\_  
Figure Change ☒ Yes ☐ No

Title of Change: Elimination of Arbitrary Intermediate Pipe Breaks

### SUMMARY:

DC-0872 and DC-3261 are design calculations which provide the basis for selecting pipe break locations in the RWCU pump discharge and RCIC steam piping outside containment. Calculations revisions were processed to eliminate consideration of arbitrary intermediate pipe breaks. It was concluded that they can be eliminated since the sum of equation 9 (upset) and equation 10 stresses are all less than  $0.8(1.2Sh + Sa)$ . No plant hardware was modified so existing mitigation devices at the eliminated pipe break locations remain installed. The UFSAR was revised to reflect that arbitrary intermediate pipe breaks are not assumed to occur in any high energy piping systems inside or outside containment. The basis for this change is NRC Generic Letter 87-11 "Relaxation in Arbitrary Intermediate Pipe Rupture Requirements" which eliminated further consideration of all dynamic effects and environmental effects resulting from arbitrary intermediate pipe breaks.

DC-0872 has been revised to document the fact that two pipe breaks do not need to be postulated in the RWCU pump discharge line in the RWCU holdup room. Since these two pipe breaks are no longer considered, there is no longer any concern regarding the pressurization of the RWCU holdup room due to a RWCU pump discharge line pipe break.

As stated in GL 87-11, the elimination of the previously required effects of arbitrary intermediate breaks may be performed without prior NRC approval unless such changes conflict with the license or Technical Specifications. The six breaks that are being eliminated by this proposed change meets the stress exclusion criteria of GL 87-11 and do not conflict with the license or Technical Specifications. Based on the information provided above, it is concluded that there is no unreviewed safety question associated with the proposed change.

The conclusion of NUREG 1061 and GL 87-11 is that the arbitrary intermediate breaks previously specified by BTP MEB 3-1 could be eliminated provided the locations met certain criteria and were not high stress and high usage factor locations. Elimination of these requirements will have no negative impact on plant safety.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0089

UFSAR Revision No. 10

Reference Document: COLR Cycle 8

Section(s) Various sections in  
Chapters 4, 6, 10, and 15

Table(s) 3.9-15, 4.4-6, 15.0-1,  
15.0-2, 15.0-3, 15.4.9-2

Figure Change ☒ Yes ☐ No

Title of Change: Core Operating Limits Report Cycle 8

### SUMMARY:

This evaluation justifies changes to the Core Operating Limits Report (COLR) for Fuel Cycle 8. The operating limits reported in the COLR have been revised to reflect the characteristics of the new core. Specifically, the minimum critical power ratio (MCPR) operating limit and the Linear Heat Generation Rate (LHGR) limits for each bundle type and the MCPR Safety Limits applicable to the Cycle 8 core have been updated based on the results of the reload licensing analysis. Maximum Average Planer Linear Heat Generation Rate (MAPLHGR) limits and LHGR limits have been added for the Cycle 8 fresh fuel, and limits for bundles no longer in the core have been deleted.

During the seventh refueling outage, 208 GE11 bundles were discharged to the Spent Fuel Pool. These bundles were replaced with 208 fresh GE11 fuel bundles containing debris filter lower tie plates.

The Rod Block Monitor setpoints remain unchanged for Cycle 8.

The Cycle 8 COLR & UFSAR revision was made to update the documents to reflect the results of the Cycle 8 reload licensing analysis, including the plant specific, cycle specific calculation of the Safety Limit MCPR approved by the NRC in TAC No. MA7372 (TS Amendment 138). All analysis results are in accordance with the NRC approved methodology limits.

The core reload licensing analysis is performed in accordance with GESTAR II, the NRC approved methodology for GE BWR core reload design and other NRC approved documents and methods. The reload represents a change in the nuclear design of the fresh fuel but does not represent a change in the level of safety, margin to a safety limit or a change in the radiological consequences of an accident.

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**SAFETY EVALUATION SUMMARY**

Safety Evaluation No: 99-0091 UFSAR Revision No. 10  
Reference Document: 23.129 Rev. 58 Section(s) 9.3.1.2  
Table(s) N/A  
Figure Change ☐ Yes ☒ No

Title of Change: Change to Procedures as Described in the UFSAR to Describe Alternate Lineup for Station Air Supply to NIAS.

**SUMMARY:**

This safety evaluation evaluates a procedure change and its impact on the UFSAR for Station Air supply to NIAS in the event P5000-F402 is unavailable. This change is considered a compensatory measure for a degraded condition. UFSAR Section 9.3.1, "Compressed Air System" will be revised to add a discussion of the normal and alternate lineup for Station Air supply to NIAS. Procedure 23.129, "Station and Control Air System", will be revised to provide guidance for an alternative lineup for Station Air supply to NIAS in the event P5000-F402 is unavailable.

No procedural guidance currently exists for supplying Station Air to NIAS through the P5000-F212B in the event the P5000-F402 is unavailable. In addition, there is no discussion in the UFSAR related to this proposed alternate lineup.

This safety evaluation concluded that the proposed changes to 23.129 and UFSAR Section 9.3.1 did not affect the performance or reliability of safety systems required to function in response to an accident.. There is no safety significance or plant impact. The change, therefore, did not constitute an unreviewed safety question.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0095 UFSAR Revision No. NA  
Reference Document: 43.401.390 Section(s) N/A  
Table(s) N/A  
Figure Change ☐ Yes ☒ No

Title of Change: Local Leak Rate Testing For Outboard Containment Isolation Valves For Penetration X-26 In The Reverse Direction

### SUMMARY:

43.401.390 is a new procedure that is being written to test the outboard isolation valves on Penetration X-26 (T4800F407 and T4800F408) in the reverse direction to measure leakage past the outboard containment boundary. Temporary blank flanges will be installed to permit reverse direction leak rate testing of the outboard containment isolation valves. The UFSAR currently describes the test for penetration X-26 by pressurizing between the inboard and outboard valves. This Safety Evaluation is to justify the reverse testing of the two outboard containment isolation valves. By testing the outboard isolation valves in the reverse direction, the total penetration (minimum path) leakage from penetration X-26 can be determined.

The inboard valve T4803F601 has been identified as the leaking component on Penetration X-26. It has shown continued degradation over the past several months. If this degradation continues and the testing method for penetration X-26 is not changed, there is the possibility that the overall containment rate will exceed 0.60 La and require a plant shutdown to repair the leak. By leak rate testing in the current configuration it is not possible to identify and quantify the amount of leakage past the inboard or outboard boundary, only the total leakage past both boundaries. Fermi's Technical Specifications Bases 3.6.1.3, D.1 and D.2 states "If two isolation devices are used to isolate the penetration, the leakage rate is assumed to be the lesser actual pathway leakage of the two devices". If the leakage past the outboard boundary can be quantified, and the leakage is within the allowable limits, the Technical Specifications Required Action to "restore leakage rates to within limits" can be met. In order to test the outboard boundary valves independent of the inboard valve, T4803F601, two test blanks are being installed downstream of the outboard valves T4800F407 and T4800F408. By reverse testing, the leakage through the outboard boundary valves can be quantified.

The following documents were reviewed for the acceptability of reverse testing of butterfly valves; UFSAR Section 6.2.4.4.3, ANSI/ANS 56.8-1994, and ASME Section XI 1980 Edition with the 1980 Addenda. All stated that the reverse testing of butterfly valves was acceptable and would provide equivalent or more conservative results as to when tested in the accident direction.

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**Safety Evaluation 99-0095**

**Testing T4800F407 and T4800F408 in the reverse direction will provide equivalent or more conservative results as to when tested in the accident direction. Therefore there is no impact to the plant of safety significance in performing these leakage tests in the reverse direction.**

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 00-0012 UFSAR Revision No. NA  
Reference Document: 35.000.246 Section(s) NA  
Table(s) NA  
Figure Change ☐ Yes ☒ No

Title of Change: Temporary Freeze Plug for Repair of Leaking Weld

### SUMMARY:

This safety evaluation evaluates a new procedure, 35.000.246 for installation of a specialized freeze seal to the B3105F023A under-seat drain piping.. Procedure 35.000.233 prescribes the method of forming freeze seals in Fermi 2 piping systems. However, this freeze seal does not conform with the installation methods of 35.000.233; therefore, procedure 35.000.246 was written to address installation of specialized freeze seals.

Weld 337S38 on the 3/4 inch under-seat drain line (6WM-B31-5296-1) from RRS pump suction isolation valve B3105F023A was found to be leaking during RF07 inspection. The weld repair cannot be made with water flowing from the joint to be welded. Under procedure 35.000.246 and WR# 000Z001127, a freeze seal is proposed to be added to the B3105F023A under-seat drain piping to isolate the weld repair from the RPV. Freeze seals in the reactor coolant pressure boundary require unique safety evaluation.

Procedural controls are provided to minimize the possibility of loss of the freeze seal or brittle fracture at the freeze seal location. Assuming that the freeze seal is lost or that the pipe ruptures at the freeze seal location, maximum possible drywell flooding is limited to the level of the drywell-to-torus vent pipes and flood water would be directed to the torus. Spray effects would be insignificant since the freeze seal is located in the small space between RRS Loop A and the floor. Pressure at the freeze location will be a maximum of approximately 50 psig (static head) while the freeze seal is installed. Again assuming that the freeze seal is lost or the pipe ruptures at the freeze seal location, maximum leakage would be approximately 75 gpm (closing B3105F023A would likely reduce this value). Leakage can be readily terminated by driving a tapered plug into the remaining drain stub. There is an extremely low probability of abnormal leakage. The possibility of rapidly propagating failure or gross rupture of the B3105F023A valve or RRA Loop A header piping is not increased since that piping will not be frozen.

During modes 4 and 5, the B3105F023A under-seat drain line cannot be a small break accident initiator. Procedural controls are provided to minimize the possibility of loss of the freeze seal

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or brittle fracture at the freeze seal location. Methods are also specified for removing the ice plug. Contingency plans for isolation upon an inadvertent loss of seal are developed. Brittle fracture is addressed by providing requirements for pre-freeze NDE, restricting access to the freeze location, cautions regarding impact during repair and cautions regarding transient system operation while the plug is in place. In addition, conservatively assuming leakage from the full flow area from the pipe in which the freeze seal is located, flood levels in the drywell are acceptable and bounded. Freeze plugs cause no permanent piping material property damage and post-freeze NDE provides further assurance that the freeze seal has not caused any permanent pipe damage.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 00-0014

UFSAR Revision No. NA

Reference Document: 23.208  
1D88

Section(s) NA

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Revise Procedures 23.208 and 1D88

### SUMMARY:

This safety evaluation evaluates the change in maintaining the Div 1 EECW TCV in manual, instead of automatic, with the valve full open to support system operability. With the TCV full open and in manual, the EESW system is configured the same as assumed for a loss of power event or loss of air event. This will provide the system safety function to transfer heat from structures, systems, and components important to safety to an ultimate heat sink. This function is maintained by having the TCV open during EESW startup.

With the EECW TCV full open, the pressure surge felt by EECW/RBCCW is lower than if the valve is in any other position. This is due to the TCV being on the outlet of the heat exchanger, causing any throttling of the valves to increase the backpressure felt in the heat exchange when EESW is started. With the TCV in manual and full open the TCV is in its fail position described in UFSAR Figure 7.5-9 and Table 9.2-4 for loss of air and/or power. Once EECW has started and the pressure surge has dissipated, the TCV can be placed in automatic to control the system temperature.

The proposed changes to procedures allow the EECW/EESW to maintain its safety function of heat removal. This change minimizes the pressure surge discovered during SOE testing of the new heat exchanger installed by EDP 29805. This change is to allow the supported systems of EECW to be considered operable with the EECW TCV in manual and full open.

Maintaining EECW TCV in manual and full open has no safety significance as this condition is described as a possible failure mode in the UFSAR.

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END OF SECTION

**FERMI 2 SAFETY EVALUATION SUMMARY REPORT**  
**TEMPORARY MODIFICATIONS**

## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0014

UFSAR Revision No. NA

Reference Document: TM 99-0010

Section(s) NA

Table(s) NA

Figure Change ☐ Yes ☒ No

**Title of Change:** Provide Temporary Power to the EECW Flow Signal Conditioner P45K802A from Class 1E Power Distribution Cabinet H11-P900, Circuit 24.

### SUMMARY:

This safety evaluation evaluates a temporary change to the facility as described in the UFSAR. This change provides power to the EECW Flow Signal Conditioner P45K802A from Class 1E Power Distribution Cabinet H11-P900, Circuit 24. Temporary Modification TM 99-0010 was issued to provide temporary power to the Flow Signal Conditioner (P45K802A) EECW Service Water To Heat Exchanger P4400B001 from MPU-1. It is currently being powered from BOP MPU-3, Distribution Cabinet H11-906B. The normal power source feeding MPU-3 is Distribution Cabinet 72F-4B, and the standby source is Distribution Cabinet 72E-4A.

Under LOCA associated with a LOOP, power to MPU-3 which feeds the Flow Signal Conditioner will be lost and will not be automatically restored by the EDG loading sequence. If MPU-3 is not available, the alternative source (MPU-1, Division I) will be used to supply power to the Flow Signal Conditioner (P45K802A) at Panel H11-P834. Electrical loading on the EDG was found acceptable, isolation of Class 1E circuits from BOP circuits has been established in accordance with IEEE Standards and circuit protection and fuse coordination have been provided. Impact on other plant programs such as fire protection, seismic and equipment qualification, and emergency lighting have been reviewed and found acceptable.

Feeding the Flow Signal Conditioner (P45K802A located in Panel H11-P834 at the relay room) through Division I EDGs 11 and 12 and the installation of the fuse box and associated fuses, fuse clips, conduits and cables does not change any accident or transient. No new malfunctions are created due to adding the Flow Signal Conditioner (P45K802A) from EDGs 11 and 12. Based on the discussion presented above, no unreviewed safety question will result.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0038

UFSAR Revision No. NA

Reference Document: TM-99-0012

Section(s) 9.2.2.5

Table(s) \_\_\_\_\_

Figure Change ☒ Yes ☐ No

Title of Change: Logic Change to Allow Division I RBCCW-SC Operation Using Single SCCW Chiller

### SUMMARY:

Refrigerant leakage problems have degraded the North and Center Supplemental Cooling Chilled Water (SCCW) chiller condensers and they must be removed from service for repair. This leaves one remaining, operable SCCW chiller; however, the RBCCW-SC logic is designed such that operation of the Division I Reactor Building Closed Cooling Water – Supplemental Cooling (RBCCW-SC) loop is interlocked with the operation of two SCCW chillers. Division II RBCCW-SC cooling is capable of operating on one SCCW chiller; however, due to potential EECW over pressurization concerns, Division II has not yet been brought into service. With the onset of warm weather will come higher lake water temperatures resulting in higher drywell temperatures potentially impacting plant operation.

In order to prevent potential warm weather impacts on plant operation, the logic which trips the Division I RBCCW-SC pumps and permits continued Division II operation on the loss of two SCCW chillers will be temporarily modified, "flipping" the logic such that on a loss of two SCCW chillers, RBCCW-SC Division II is tripped instead and Division I is permitted to operate. This modification will also trip the Division I RBCCW-SC pumps on a loss of the remaining chiller.

By this temporary logic modification, Division I RBCCW-SC will be capable of operating on the remaining (South) SCCW chiller unit until the North and Center SCCW chiller units can be repaired. This temporary modification will remain installed until its removal is necessitated by the return to service of the Division II RBCCW-SC loop. Division I of RBCCW-SC will continue to provide cool water to Division I EECW which will allow the plant to continue to maintain cooler drywell temperatures under warm weather conditions. Tripping the Division I RBCCW-SC pumps on a trip of the remaining chiller protects Division I cooling loads from being overheated.

The proposed change preserves the designed ability of RBCCW to function for accident mitigation when it may be credited (for the case when two SCCW chillers are unavailable). In addition, trips of the RBCCW-SC system required to protect the cooling requirements of the plant have been preserved and are unaffected by the logic change. For equipment malfunctions where EECW automatic actuation is required, the appropriate protective functions still occur.

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**Safety Evaluation-99-0038 (Continued)**

**On the basis of the Division I available cooling margin and the fact that there is no impact on the EECW and RBCCW systems to respond to plant conditions as designed for transient and accident mitigation, the proposed temporary logic change does not involve an unreviewed safety question.**

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0043 UFSAR Revision No. NA  
Reference Document: TM 99-0014 Section(s) NA  
Table(s) NA  
Figure Change ☐ Yes ☒ No

Title of Change: Disconnect and Cap/Plug Supply Tubing to G33-R172A, Reactor Water Cleanup (RWCU) Filter Demineralizer Effluent "A" Pressure Indicator.

### SUMMARY:

This safety evaluation evaluates a change to the facility as described in the UFSAR. TM 99-0014 was prepared to cap/plug the sensing line for G33-R172A, which is a local gauge in the RWCU System. Capping/plugging the sensing line will render the gauge non-functional. G33-R172A provides local pressure indication only and does not provide any control function.

Installation of this temporary modification is required because the sensing line has developed a small leak and it is not feasible to perform a repair at this time. Capping/plugging of the sensing line for G33-R172A per TM 99-0014 will meet the applicable design criteria for this portion of the RWCU system. This new arrangement will be capable of withstanding the same design temperatures and pressures as the old configuration.

The proposed changes do not alter the quality nor the construction of any plant component important to safety. TM 99-0014 does not impact the function of the RWCU system nor any other system in the plant. Elimination of this indicator does not impact any accident previously evaluated in the UFSAR. In addition, no equipment important to safety that is credited with mitigation of the consequences of an accident is being impacted by this temporary modification.

No new equipment malfunctions or accidents are postulated to occur as a result of this temporary modification and installation of the modification does not reduce the margin of safety as defined in the basis for any Technical Specification. Thus, installation of TM 99-0014 does not involve an unreviewed safety question.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0044

UFSAR Revision No. NA

Reference Document: TM 99-0015

Section(s) NA

Table(s) \_\_\_\_\_

Figure Change ☐ Yes ☒ No

Title of Change: Installation of Temporary Pipe Cap on EDG Starting Air Receiver Blowdown Line.

### SUMMARY:

This safety evaluation evaluates a change to the facility as described in UFSAR section 9.5.6.2. Because of through body leakage on an EDG starting Air Receiver Blowdown valve (R3000F0410), TM 99-0015 was prepared to install a temporary pipe cap to maintain air receiver pressure boundary integrity. This had a positive impact on plant safety because the affected EDG remained operable.

Installation of TM 99-0015 was necessary to maintain EDG operability. TM 99-0015 maintains equipment important to safety operable and maintains EDG 14 operable. Because the EDGs are not initiators of accidents previously evaluated in the UFSAR, there is no increase in the probability of occurrence of an accident, nor does the possibility exist of an accident of a different type than previously evaluated in the UFSAR. This temporary modification does not cause inoperability of equipment that is important to safety. During the time the temporary modification was installed, air receiver shiftly blowdowns did not occur because the blowdown valve was stuck in an almost closed position. The lack of receiver blowdowns for a relatively short period of time was judged to not be detrimental to EDG 14. Installation of TM 99-0015 was intended to be of short duration, and since moisture accumulation would be insignificant during this short period of time, this temporary modification would not be detrimental to EDG 14. The margin of safety as defined in the basis for any Technical Specification is not reduced because installation of TM 99-0015 allows compliance with the Technical Specification Air Receiver pressure requirement.

This temporary modification was appropriate from an accident mitigation standpoint because EDG 14 was maintained operable and available to perform its intended function. Upon removal of TM 99-0015, all descriptions and figures in the UFSAR were valid. Therefore, no unreviewed safety question was involved.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0059

UFSAR Revision No. \_\_\_\_\_

Reference Document: TM-99-0018

Section(s) NA

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Installation of Flange Cover On Valve T4800F407 and Removal of Power Supply Fuse to SOV T48F407

### SUMMARY:

CARD 99-16855 identifies the failure of the purge system inboard containment motor-operated butterfly isolation valve, T4803F601, to meet its minimum allowable leakage surveillance. This failed surveillance placed Fermi 2 in a license condition under Technical Specification (TS) 3.6.1.8. Discretionary enforcement was requested and verbal approval was granted on the basis that the T4800F407(8) valves are to be closed until the T4803F601 can be repaired during the next reactor shutdown. The discretionary enforcement requires leak testing of the penetration and the outboard isolation barriers. As a condition of the Notice of Enforcement Discretion (NOED), the NRC also requested that the discharge path to secondary containment down stream of the T4800F407 valve be isolated by a flange cover as an additional barrier against potential primary containment leakage.

A nominal 7/8" thick flange cover and gasket are to be temporarily installed on the downstream side of the 24-in. purge line outboard containment isolation valve, T4800F407, per Temporary Modification 99-0018. In addition, the fuse for the T48F407 SOV will be pulled to disable the air supply to the T4800F407 AOV to make it go and stay closed.

The safety functions of the T4803F601 and T4800F407(8) valves are to automatically close (and remain closed) on low reactor water level (level 2), high drywell pressure, or high radiation signal and remain closed to serve as a primary containment isolation boundary. This 24" purge line is only used during normal plant shutdown and refueling operations and required to be closed during normal plant operation. The purge line is not required to be available for normal shutdown and refueling operations and is not required for safe shutdown. By blanking off this line, the potential for post-accident bypass leakage/ radiological release is reduced in compliance with the conditions of the NOED granted to NRC-99-0092.

The NOED allows operation of the plant with the T4800F407(8) valves closed and "de-energized" in conjunction with periodic leakage testing on an increased frequency. These measures were deemed sufficient to assure sufficient primary containment integrity of the X-26 penetration until the T4803F601 can be repaired. Removing the fuse for the T48F407 SOV places the T4800F407 AOV in its safety-closed position. The flange cover on the downstream

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**Safety Evaluation-99-0059 (Continued)**

side of the T4800F407 valve was requested as an additional leakage barrier. The only requirements associated with the installation of the flange is that it meets ASME III Class 2, Seismic Category I requirements and has been analyzed to perform under the design conditions associated with the T4800F407 valve. Based on these considerations; the installation of the flange and failing closed the T4800F407(8) valves do not constitute an unreviewed safety question.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0093

UFSAR Revision No. \_\_\_\_\_

Reference Document: TM-99-0023

Section(s) NA

Table(s) NA

Figure Change ☐ Yes ☒ No

**Title of Change:** Install Blank Flange in Drywell Nitrogen Inerting Supply Piping on Upstream Flange of T4800F408 and Remove Power Supply Fuse to SOV T48F408.

### SUMMARY:

On 9/22/1999, local leak rate test of penetration X-26 failed its Technical Specification (TS) acceptance criteria. Notice of Enforcement Discretion (NOED) and subsequent License Amendment 135 allowed continued operation, with conditions for continued operation now specified in TS 3.10.8, (Special Operations, T4803F601, Nitrogen Inerting Drywell Air Purge Inlet Supply Valve). Testing performed on 11/4/1999 as required by TS 3.10.8 identified increased leakage in penetration X-26. The increased leakage is believed to be due to further degradation of T4803F601, and not due to an actual leakage increase through the penetration i.e., the leakage through T4800F407 and T4800F408 is still believed to be minimal. However, in the current configuration, the leakage rate test cannot quantify leakage through T4800F407 and T4800F408. Without quantifying the leakage through T4800F407 and T4800F408, actual leakage through penetration X-26 cannot be quantified. (Note: Quantitative leak testing of T4800F407 is facilitated by Temporary Modification (TM) 99-0018 Rev. A which is evaluated in SE 99-0059 Rev. A.)

A nominal 7/8" blank flange with test tap is to be temporarily installed on the upstream flange of the 10-in. nitrogen supply outboard containment isolation valve, T4800F408, per Temporary Modification TM-99-0023. Installation of the test blank will allow leak rate testing to be performed to quantify leakage through T4800F408. Valve T4800F408 is currently closed and deactivated in accordance with TS requirement LCO 3.10.8.a. TM-99-0023 requires the power supply fuse for SOV T48F408 to remain removed to prevent the valve from inadvertently opening and striking the temporary test blank.

The safety function of air-operated isolation valve T4800F408 is to automatically close (and remain closed) on low reactor water level (level 2), high drywell pressure, or a high radiation signal. The T4800F408 fails closed on loss of air. Currently the valve is deactivated in the closed position in compliance with TS LCO 3.10.8.a. Disabling the power supply to SOV T48F408 provides assurance the T4800F408 valve remains closed and obviates the need for the automatic isolation requirements of the valve. This change also prevents the valve from inadvertently opening and striking the temporary test blank. During normal plant operations, the only use of T4800F408 is for drywell nitrogen inerting purposes immediately following a reactor

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startup. This temporary modification renders the nitrogen inerting flow path through T4800F408 unusable. However, this temporary modification will be removed prior to the next reactor startup, which will allow normal drywell inerting to be performed.

The NOED and resulting TS 3.10.8 allows operation of the plant with the T4800F407(8) valves closed and "de-energized" in conjunction with periodic leakage testing on an increased frequency. These measures were deemed sufficient to assure sufficient primary containment integrity of the X-26 penetration until the T4803F601 can be repaired. Removing the fuse for the T48F408 SOV places the T4800F408 AOV in its fail-safe closed position. The installation of the test blank on the outboard side of the T4800F408 has no impact on the ability of T4800F408 to perform its safety function. Based on these considerations; the installation of the flange and failing closed the T4800F407(8) valves do not constitute unreviewed safety questions.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 00-0004

UFSAR Revision No. NA

Reference Document: TM-00-0003

Section(s) NA

Table(s) NA

Figure Change ☐ Yes ☒ No

**Title of Change:** Install a Temporary Standby Diesel Generator to Provide Local Black Start Capability for CTG 11-4.

### SUMMARY:

This safety evaluation evaluates a change to the facility as described in the UFSAR sections 7.5.2.5 and 8.4. Temporary Modification (TM) 00-0003 was prepared to provide an alternative source of power to the Alternative Shutdown bus. Black start capability is provided as the alternative source of power to the Alternative Shutdown bus in accordance with TRM 3.7.7 action statement C.2.2, because CTG 11-1 may not be returned to OPERABLE status within the 7 day completion time of action statement C.2.1. The CTG 11-1 is the black start power supply for the Dedicated Shutdown system described in UFSAR section 7.5.2.5, that is required to operate during certain fire scenarios and loss of offsite power assumptions. CTG 11-1 is also the black start unit credited for the Station Blackout Scenario in UFSAR section 8.4.

This temporary modification is necessary to provide an alternate AC power source to service the Appendix R and SBO system requirements while the existing unit is being investigated and problems corrected. TM 00-0003 installs a temporary standby diesel generator to power the AC starting motors for CTG 11-4, provides procedure changes for local connection and starting of the standby diesel generator, local starting of CTG 11-4, and equipment needed to maintain long term operation of the standby unit. The timing of the local startup of CTG 11-4 is evaluated against the design requirements for the Dedicated Shutdown System and Station Blackout scenarios evaluated in the UFSAR and is shown to meet these design basis requirements.

The starting time requirements of CTG 11-1, and the commitment to establish SBFW flow in 20 minutes in the Dedicated Shutdown scenario of UFSAR section 7.5.2.5.4 are compared to the tests conducted with the local startup of CTG 11-4. (The Station Blackout procedures are less demanding, requiring startup within one hour). A local operator is required to be present to be able to meet the Dedicated Shutdown time requirements in Modes 1, 2, and 3. Additional equipment and lighting is staged to support long term operation of the standby diesel generator unit, since it must operate to support CTG 11-4 operation for the design basis 72 hours for the Dedicated Shutdown scenario.

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**Safety Evaluation 00-0004 (Continued)**

The equipment and procedures installed under TM 00-0003 allow CTG 11-4 to be considered the alternative power supply in place of CTG 11-1, in accordance with TRM 3.7.7 action statement C.2.2, to allow operation of the plant and do not constitute an unreviewed safety question.

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**END OF SECTION**

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 00-0002 UFSAR Revision No. 10  
Reference Document: LCR 00-008-TRM Section(s) NA  
Table(s) NA  
Figure Change ☐ Yes ☒ No

Title of Change: Removal of TRM Requirements Related to the Abandoned In Place SLC Tank Heater "A"

### SUMMARY:

The safety evaluation evaluates a change to the Technical Requirements Manual (TRM) to remove reference to de-energized and abandoned in place 10 kw tank heater "A" (C4101S001) from TRM Table TR 3.8.6-1. LCR-00-008-TRM will revise TRM Table TR3.8.6-1 to remove Item 2, MCC 72C-4A Pos 5C breaker related to the abandoned in place SLC Tank "A".

LCR-99-110-TRM previously revised this table to show the SLC tank Heater "A" as abandoned in place. However, it did not eliminate the requirements of TRM 3.8.6 and TRSR 3.8.6.1, 2, and 3. The operability requirements should not apply to de-energized and abandoned in place equipment. Removal from TRM Table 3.8.6-1 of MCC 72C-4A, Pos. 5C breaker will eliminate the TRM operability requirement TR LCO 3.8.6 and surveillance requirements TRSR 3.8.6.1, 2, and 3 related to SLC Tank Heater "A", de-energized and abandoned in place.

All regulatory requirements, acceptance criteria, and design requirements for the SLC system listed in TS, UFSAR, and TRM are not affected and continue to be met. The ability to maintain the Standby Liquid Control System as required is not affected. The Standby Liquid Control System's Storage Tank will still be able to provide boron solution at the correct temperatures required. The tank heaters are only required during the mixing of the sodium pentaborate. The remaining tank heater 'B' still meets all existing requirements.

This TRM change does not compromise the health and safety of the public in a way not reviewed by the NRC. It will not impact, over-ride or preclude the overall operation of the SLC system. The safety and normal operating functions are not affected. The proposed change will allow continued operation of the mixing process in the SLC tank to establish the required solution parameters by using the 40 kw tank heater "B". The proposed change does not affect SLC design, configuration or function; does not modify any automatic or manual safety feature of a system, structure, or component (SSC); does not affect the quality group classification of the SSC, and does not involve the replacement or the addition of a component. Therefore, nuclear safety probability, or the radiological consequence of any accident or malfunction is not affected by the proposed change in a way not previously evaluated in the UFSAR. The Technical Specifications bases do not identify any margin of safety for the SLC System.

## SAFETY EVALUATION SUMMARY

Safety Evaluation No: Various UFSAR Revision No. NA

Reference Document: Technical Requirements Manual Section(s) NA

Table(s) NA

Figure Change ☐ Yes ☒ No

**Title of Change:** Relocation of Technical Specifications to the Technical Requirements Manual

### SUMMARY:

The Improved Technical Specifications (ITS) NRC approved License Amendment 134 approves verbatim relocation of several Current Technical Specifications (CTS) to the Technical Requirement Manual (TRM). The philosophy and format of NUREG 1433 were applied to the relocated specifications for clarity, consistency, and human factors considerations. As such, some changes to the relocations were determined to be desirable and warranted. A total of twenty (20) safety evaluations were performed for such changes to the Technical Technical Requirements Manual as part of the conversion of CTS to ITS.

These changes were made because the relocated specifications did not meet the criteria of 10 CFR 50.36 for retention in the Technical Specifications and are not credited in the primary success path for any Design Basis Accident or Transient. Additionally, neither operating experience nor probabilistic safety assessment has shown the equipment to be significant to public health and safety. None of the equipment evaluated meets this criteria. Changes to the following Technical Requirements were evaluated:

TRM No.	SE No.	TRM No.	SE No.	TRM No.	SE No.
3.4.3	99-0062	3.3.9	99-0071	3.3.1.1	99-0079
3.3.12	99-0063	3.6.8	99-0072	3.3.2.2	
3.3.3	99-0064	3.7.7	99-0073	3.3.4.1	
3.6.4	99-0065	3.8.5	99-0074	3.3.5.1	
3.4.2	99-0066	3.0.3	99-0075	3.3.5.2	
3.6.5	99-0067	3.3.1.2	99-0076	3.3.6.1	
3.1.1	99-0068	3.3.2.1	99-0077	3.3.6.2	
3.3.6.4	99-0069	3.3.4.2	99-0078	3.3.2.1	99-0080
3.3.6.5	99-0070			3.3.8.1	99-0081

The safety evaluations determined that the changes made to these relocated specifications do not involve an unreviewed safety question. The relocated specifications are not used for, nor capable of, detecting a significant abnormal degradation of the reactor coolant pressure boundary, do not monitor a process variable that is

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**Safety Evaluation (Continued)**

an initial condition of a design basis accident (DBA) or transient event, and are not part of a primary success path in the mitigation of a DBA or transient event.

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**END OF SECTION**

**FERMI 2 SAFETY EVALUATION SUMMARY REPORT**

**UFSAR**

## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0108

UFSAR Revision No. 10

Reference Document: LCR 97-124-UFS  
SOP 23.307

Section(s) 8.3.1.1.7

Table(s) NA

Figure Change ☐ Yes ☒ No

**Title of Change:** Early Shutdown of the Emergency Diesel Generator (EDG) During a LOCA Event Without the Loss of Offsite Power

### SUMMARY:

UFSAR Section 8.3.1.1.7 requires that following a LOCA without a loss-of-offsite power that the EDG be loaded every 4 hours through cold shutdown. System Operating Procedure (SOP) 23.307 states that the EDG cannot be shut down until cold shutdown is reached. This safety evaluation determined that these commitments may be revised.

This change will permit plant operators the ability to shut down the EDGs following a LOCA without the loss of power instead of requiring the periodic paralleling of the idling EDGs with the grid. This can distract operators from other post accident duties during what could be an extended period of time to reach cold shutdown conditions. The bases for this change are: 1) because the reactor is already scrammed, any delay in initiation of core cooling following a subsequent loss of offsite power is bounded by the existing analysis and, 2) a risk-informed determination of the probability of an occurrence, and associated risk, of a LOOP during the time the EDGs are removed from service (and are out-of-service) was evaluated and found to be insignificant.

There is no safety significance associated with the early shutdown of the EDGs since Fermi 2 is not designed or licensed for an accident which involves a non-simultaneous LOCA and LOOP. That is, a subsequent LOOP, not caused by the original LOCA event, is not considered in the design and licensing basis of Fermi 2. It was, however, determined that early shutdown of the EDGs will not impact plant safety if a subsequent LOOP did occur.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 98-0017

UFSAR Revision No. 10

Reference Document: LCR-98-014-UFS  
LCR-98-015-TRM

Section(s) NA

Table(s) 6.2-2  
TRM 3.6.3-1

Figure Change ☐ Yes ☒ No

Title of Change: Maximum Allowed Stroke Time of Valves E1150F008 and E1150F009

### SUMMARY:

This safety evaluation evaluates a change to the UFSAR and Technical Requirements Manual (TRM) Volume 1 regarding the maximum allowed stroke time for the RHR shutdown cooling suction valves E1150F008 and E1150F009. LCR-98-014-UFS and LCR-98-015-TRM were issued to revise UFSAR Table 6.2-2 and TRM Table 3.6.3-1 to change the design maximum allowed stroke time from 52 seconds to 51 seconds.

This change is necessary because the current value of 52 seconds is higher than the maximum allowable stroke time of 51.3 seconds as calculated in GE design specification 22A1341AM, "Residual Heat Removal System". The value of 52 seconds is not conservative and will be changed to 51 seconds. If the valve stroke time were to degrade to 52 seconds, it would be possible to uncover the core if a leak should occur during refueling activities. Changing the stroke time to 51 seconds ensures that the core would remain covered in the event of a loss of vessel inventory during refueling activities.

As discussed above, the maximum allowable stroke time is calculated to be 51.3 seconds. The new value, 51 seconds, is rounded off to the nearest most conservative whole number. This change meets the acceptance criteria of GE specification 22A1341AM and ensures that the closing function of the valves is met.

The actual stroke time for either valve is less than 35 seconds, which meets the specified criteria. Therefore, no physical changes are required, and the configuration, functions, and analyses remain unchanged. Plant procedures have been revised to reflect the more restrictive stroke time of 51 seconds to ensure the proper stroke time criteria is applied during testing.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 98-0058 UFSAR Revision No. 10

Reference Document: LCR 98-094-UFS Section(s) 11.7.1.2

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Provisions for Mixed Waste Storage in the Onsite Storage Facility

### SUMMARY:

This safety evaluation evaluates the storage of mixed hazardous and radioactive waste in the Onsite Storage Facility (OSSF). The present description of the OSSF in UFSAR 11.7.1.2 addresses only the radiological component of the stored waste. It does not address the need to store mixed hazardous and radioactive waste. Such storage is needed due to residual mixed waste with no available treatment or disposal facilities, and the continuing generation of mixed waste streams. LCR-98-094-UFS was issued to revise UFSAR 11.7.1.2 to include provisions for mixed waste storage. This change will allow mixed waste, for which no treatment and disposal facilities are available, to be stored in accordance with applicable requirements while awaiting shipment.

The hazardous component of mixed waste does not impact the radiological release source term and is bounded by the existing OSSF safety analysis. The OSSF does not contain safety-related equipment and is isolated from the rest of the plant. The fire safety of mixed waste storage is bounded by the present fire safety analysis described in the UFSAR. A spill of toxic material would not impact control room habitability.

Factors considered in this evaluation were the existing safety analysis of the OSSF as described in the UFSAR, the fire safety evaluation of the UFSAR, and the description of factors which isolate the OSSF from the rest of the plant as described in Section 11.7 of the UFSAR. In addition, an evaluation of the control room habitability was performed for a bounding spill of toxic material.

Based on these considerations, it was determined that any potential hazard from the storage of mixed waste in the OSSF is bounded by existing analyses described in the UFSAR, and hence, such storage is not an unreviewed safety question.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 98-0108 UFSAR Revision No. 10

Reference Document: LCR 98-108-UFS Rev A Section(s) 6.2.4.4.3

Table(s) 6.2-2, 7.3-2, 7.3-9,  
7.6-2

Figure Change ☒ Yes ☐ No

Title of Change: Correction of UFSAR Discrepancies Identified by the Validation Project

### SUMMARY:

This safety evaluation evaluates changes to the facility as described in UFSAR Section 6.2.4.4.3, Tables 6.2-2, 7.3-2, 7.3-9, and 7.6-2. LCR 98-108-UFS Rev A was issued to revise the UFSAR to correctly reflect information contained in existing controlled design documents and to correct other inconsistencies within the UFSAR. Changes to the UFSAR are:

1. Table 6.2-2:  
Table 6.2-2 will be revised to list Signal H as an Accident Isolation Signal not a Containment Isolation Signal. Valves G5100F604 and G5100F605 which do not have a bypass leakage path will be revised to indicate this.
2. Section 6.2.4.4.3 will be changed to reflect actual testing methods described in the LLRT procedure for Penetration X-218.
3. Table 7.6-2:  
Table 7.6-2 will be revised to reflect the correct main steam line leak detection area temperature to "160°F increasing" and to correct the main steam line tunnel detection system differential temperature to "70°F increasing". The instrument range for the main steam line tunnel leak detection system temperature instrumentation will be revised to reflect the actual range of "50-350°F".
4. Table 7.3-2 and Table 7.3-9:  
The instrument range for the primary containment high pressure instrument will be changed to "0-5 psig" to reflect actual design information.

The proposed changes in total do not affect the safety function or role of the affected SSCs in the UFSAR accident analyses.

The proposed changes will reconcile UFSAR descriptions with existing design documents of record and will correct inconsistencies within sections of the UFSAR, and the TRM. It was concluded that the proposed changes do not constitute a change in safety features and reliability of SSCs and do not impact the physical plant. There is no unreviewed safety questions resulting from the changes being made by LCR-98-108-UFS Rev A.

## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 98-0110, Rev. A

UFSAR Revision No. 9

Reference Document: LCR 98-110-UFS

Section(s) 5.2.3.2.1.2

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Discrepancy Regarding the Thickness of the Attachment Location of the Recirculation Inlet Nozzles

### SUMMARY:

This safety evaluation evaluates a change to UFSAR Section 5.2.3.2.1.2 regarding a discrepancy between the UFSAR and an existing calculation with respect to the nozzle thickness at the attachment location of the thermal sleeve to the recirculation inlet nozzles (RIN). LCR-98-110-UFS revised the UFSAR to reflect actual, as analyzed, minimum thickness of the boundary at the attachment point of the thermal sleeve. This change does not affect the ability of the reactor pressure vessel and its nozzles to perform their functions.

This change was made to use the correct RIN minimum wall thickness for the UFSAR with a documented source for the value. UFSAR section 5.2.3.2.1.2 previously stated that the thickness of the pressure retaining boundary at the attachment is 6 inches. Based on reviews of the Combustion Engineering Report CENC 1184, the minimum thickness for the RIN in this area is 4.751 in. with a maximum thickness of 4.864 in. Therefore, a change was made to use a minimum number based on the design calculation and RPV manufacturer's drawings. The physical location and dimensions for the RIN were not changed by this revision, only the UFSAR text which is a qualitative discussion of susceptibility to Intergranular Stress Corrosion Cracking (IGSCC) was changed.

Specific to the RIN and this safety evaluation was the issue of IGSCC avoidance. The 4.751 inch minimum is significantly thicker than thermal sleeves that failed as discussed in NUREG 0531. Operating stresses are significantly lower due to the increased section thickness which reduces the susceptibility of the connection to IGSCC crack propagation. This evaluation concluded that the change complies with the ASME Code, NUREGs 0313, GDCs 1, 4, 14, 30, and Regulatory Guides 1.31, 1.43, 1.44, 1.34 and 1.56. It was concluded that the change meets the criteria for safe operation of Fermi.

This change to the UFSAR is in accordance with the existing, as analyzed design basis of the plant. There is no change to the function, capacity, or operation of any related systems or components as a result of this change.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 98-0111

UFSAR Revision No. 10

Reference Document: LCR 98-111-UFS

Section(s) 7.3.1.2.1.9

Table(s) 7.3-2, 7.3-6, 7.5-2

Figure Change ☒ Yes ☐ No

Title of Change: UFSAR Inconsistencies Related to the ADS Initiation Logic and ADS Timers

### SUMMARY:

This safety evaluation evaluates a change to the UFSAR related to the ADS initiation logic and ADS timers where descriptions do not agree with existing design documents. LCR-98-111-UFS was issued to revise the UFSAR. Changes to the UFSAR include:

1. UFSAR Figure 7.3-6 will be revised to delete the seal-in of the ADS initiation logic 7-minute bypass time on low water level (level 1). A review of DECo Drawings confirms this seal-in does not exist.
2. Table 7.3-6 will be revised to add complete ADS trip channel and instrumentation information.
3. UFSAR Table 7.5-2 will be revised to reflect the correct instrument range for the Indicating Timer on ADS.
3. UFSAR Table 7.3-2 will be revised to reflect the correct design for the ADS high drywell pressure bypass timer instrument range. This change was verified with the GE Design Specification.
5. UFSAR Section 7.3.1.2.1.9 will be revised to add a statement that ADS can be automatically initiated following a LOCA and to correct the reference section number from 7.3.1.2.2.10 to 7.3.1.2.2.

The safety functions of the ADS instrumentation are not altered by the above changes. The information in the UFSAR will now accurately reflect design information and performance characteristics as described in other design documents.

The proposed changes were found not to introduce new accidents or new equipment malfunctions than those previously evaluated in the UFSAR. Finally, Technical Specifications and their Bases were reviewed and the margin of safety was found not to be reduced by any of the proposed changes. No Unreviewed Safety Question is generated by these changes.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 98-0121 UFSAR Revision No. 10  
Reference Document: LCR 98-121-UFS Section(s) NA  
Table(s) 7.3-4  
Figure Change ☐ Yes ☒ No

Title of Change: Discrepancies in Table 7.3-4, "Low Pressure Coolant Injection (LPCI)  
Instrument Specifications"

### SUMMARY:

This safety evaluation evaluates a change to UFSAR Table 7.3-4 regarding the range of several instruments of the LPCI Instrument Specifications table which do not agree with existing design basis information. LCR 98-121-UFS was prepared to revise the UFSAR to reflect existing plant/component configuration. The changes being made by this LCR are:

1. Primary containment (drywell) high pressure (LPCI Initiation) specifies an instrument range 0 - 10 psig. The GE Design Specification and the Design Calculation identify the instrument range as 0 - 5 psig.
2. Recirculation loop break detection specifies an instrument range of 0 - 10 psid. The GE Design Specification identifies the instrument range as 0 - 2 psid.
3. LPCI break detection circuit timers specify an instrument range of 0 - 180 seconds. The design drawings identify the instrument range as 0.15 - 3 seconds.
4. LPCI reactor vessel low pressure specifies an instrument range of 0 - 1200 psig. The GE Specification identifies the instrument range as 0 - 1500 psig.
5. LPCI valve initiation signal cancellation timer specifies an instrument range of 2 - 60 minutes. The Central Component Database (CECO) identifies the instrument range as 3 - 30 minutes.
6. Recirculation pump differential pressure transmitters specify an instrument range of 0 - 10 psid. GE Design Specification identifies the instrument range as 0 - 5 psid.

Each of the above items will be revised to reflect the actual existing range of the instrument. No physical facility changes are being made by LCR-98-121-UFS. All revised ranges have the trip setpoint for the parameter being monitored well within the range of the instrument. The ability of the instruments to measure the associated parameters and to encompass the appropriate trip setting is not altered by these changes.

The revision to UFSAR Table 7.3-4 will have no adverse affect on the operation or function of the instruments or components, or on the operation of any other systems important to the safety of the plant. No Unreviewed Safety Question is generated by these changes.

## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 98-0122

UFSAR Revision No. 10

Reference Document: LCR 98-122-UFS

Section(s) NA

Table(s) 7.5-2

Figure Change ☐ Yes ☒ No

**Title of Change:** UFSAR Validation Project – Discrepancies regarding Table 7.5-2, "Safety-Related and Power Generation Display Instrumentation"

### SUMMARY:

This safety evaluation evaluates a change to the facility as described in UFSAR Tables 6.3-10, 7.4-1, and 7.5-2. The UFSAR Validation Project identified discrepancies between the UFSAR and referenced design basis documentation regarding the instruments range for the Residual Heat Removal (RHR) pump motor current. LCR 98-122-UFS was prepared to revise the UFSAR.

The revision will properly identify the correct instrument range, reflect the existing installed component configuration, and agree with the referenced design documentation.

The identified revisions will not change the function, capacity, or operation of any of the associated systems as a result of these changes. No Unreviewed Safety Question is generated by these changes. This revision will have no adverse affect on any equipment important to safety nor on the ability to achieve and maintain the safe shutdown of the plant.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 98-0132

UFSAR Revision No. 10

Reference Document: LCR 98-132-UFS

Section(s) NA

Table(s) 7.3-1

Figure Change ☐ Yes ☒ No

Title of Change: UFSAR Validation Project – Discrepancies Regarding Table 7.3-1, "High Pressure Coolant Injection (HPCI) System Instrumentation Specifications"

### SUMMARY:

This safety evaluation evaluates a change to the facility as described in UFSAR Table 7.3-1. The UFSAR Validation Project identified discrepancies between the UFSAR and referenced design basis documentation regarding the instruments range for HPCI. LCR 98-132-UFS was prepared to revise the UFSAR.

UFSAR Table 7.3-1, "High Pressure Coolant Injection System Instrumentation Specifications", will be revised to be consistent with the identified design basis documentation as follows:

1. Revision to RPV High Water Level Turbine Trip (Level 8) to properly identify the instrument range of 10 - 220 inches,
2. Revision to Turbine Exhaust High Pressure to properly identify the function as Turbine Exhaust Diaphragm High Pressure with an instrument range of 0 - 50 psig,
3. Revision to Turbine Overspeed to properly identify the actual trip setting of 125 percent of turbine rated speed,
4. Incorporate the HPCI Function for Turbine Exhaust High Pressure (E41-N017A/B) with an instrument range of 0 - 200 psig and a trip setting of 140 psig.

These changes to update the UFSAR to reflect the existing, as analyzed design configuration will have no affect on the operation or function of these instruments and components, or on the operation of other systems within the plant. Therefore, the revisions to UFSAR Table 7.3-1 will have no adverse affect on any equipment important to safety nor on the ability to achieve and maintain the safe shutdown of the plant.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 98-0136, Rev. A

UFSAR Revision No. 10

Reference Document: LCR 99-138-UFS

Section(s) NA

Table(s) 3.2-4

Figure Change ☐ Yes ☒ No

Title of Change: UFSAR Validation Project-Discrepancy Regarding Safety Relief Valves

### SUMMARY:

This safety evaluation evaluates changes to the facility as described in UFSAR Table 3.2-4. The UFSAR Validation Project identified documentation discrepancy with the Safety Relief Valves (SRVs). LCR 99-138-UFS was prepared to revise the UFSAR to reflect the change.

UFSAR Table 3.2-4 is revised to accurately reflect the primary code applied for the SRV design and clarify the primary containment pressure used in sizing the SRV tailpipe vacuum breakers in agreement with the existing design and licensing basis. Revision to UFSAR Table 3.2-4 will change the component description of the code applied for the SRV to NPVC-70, and the actual pressure used for sizing the SRV tailpipe vacuum breakers to a pressure of 14.2 psia. This is conservative in comparison to the minimum containment pressure of -0.1 psig. The code for designing the SRVs comply with the 1968 ASME Draft Code for Pumps and Valves for Nuclear Power, ASME Section III, 1968 Edition with Addenda through Summer 1970, and agree with the waiver of compliance to section 50.55a of 10 CFR Part 50 that was approved by the AEC.

This change has no adverse affect on any equipment important to safety or on the ability to achieve and maintain the safe shutdown of the plant. The change is in accordance with existing, as analyzed, design and licensing basis of the plant. There is no impact to the function, capacity, or operation of the SRVs, the SRV Discharge Line Vacuum Breakers or any equipment or components as a result of this change.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 98-0139

UFSAR Revision No. 10

Reference Document: LCR 98-139-UFS

Section(s) \_\_\_\_\_

Table(s) 3.2-1

Figure Change ☐ Yes ☒ No

**Title of Change:** Change the QA Requirements for the Main Steam Isolation Valve Leakage Control System (MSIVLCS) Condensing Chambers

### SUMMARY:

This safety evaluation evaluates a change to UFSAR Table 3.2-1 regarding the QA requirements for MSIVLCS Condensing Chambers. LCR-98-139-UFS was issued to revise UFSAR Table 3.2-1 to reflect actual plant design.

UFSAR Table 3.2-1 states that the MSIVLCS condensing chambers are Quality Assurance Requirements - "S", which indicates that the items were purchased prior to the issuance of 10CFR 50 Appendix B. Investigation revealed that the MSIVLCS condensing chambers were actually purchased after the issuance of 10 CFR 50 Appendix B as Quality Level I and complied with 10CFR 50 Appendix B requirements. The Design Calculation was revised, but the FSAR, and later the UFSAR, were not revised accordingly. UFSAR Table 3.2-1 is being revised to state that the MSIVLCS condensing chambers are Quality Assurance Requirements - "B" which means the SSC meets the QA requirements of 10 CFR 50 Appendix B. This change does not alter the function of the MSIVLCS.

This change will bring the information contained in the UFSAR into agreement with the actual plant design as validated.

The revision of UFSAR Table 3.2-1 does not impact the plant operation, change any existing processes, or create any new safety concerns. The design calculation verifies the accuracy and the acceptability of the QA Requirement information for the MSIVLCS condensing chambers. No Unreviewed Safety Question is generated by this change.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No:	<u>98-0140</u>	UFSAR Revision No.	<u>10</u>
Reference Document:	<u>LCR 98-140-UFS</u>	Section(s)	<u>5.5.6.3.6</u> <u>5.5.7.3.2, 5.5.7.3.3</u>
		Table(s)	<u>NA</u>

Figure Change ☐ Yes ☒ No

**Title of Change:** UFSAR Validation Project-Discrepancies Between the UFSAR and the System Operating Procedure for the Residual Heat Removal System

### SUMMARY:

The UFSAR Validation Project identified discrepancies between the UFSAR Summary and System Operating Procedure (SOP) 23.205 regarding the operation of the Residual Heat Removal (RHR) system. These differences were investigated, and LCR 98-140-UFS was prepared to revise the UFSAR to more accurately summarize the SOP.

The UFSAR was revised to accurately reflect the operation of the RHR System in accordance with approved plant procedure, SOP 23.205. The revision includes:

1. Section 5.5.6.3.6, Auxiliary Heat Removal Operation describes necessary actions for the operator to place the RHR system in the suppression cooling mode emergency operations.
2. Section 5.5.7.3.2, Shutdown Cooling, to state "Reactor coolant can be returned to the RPV through either RRS loop."
3. Section 5.5.7.3.3, Containment Cooling Subsystem, will delete the valve lineup for Suppression Pool cooling which was incorrect and is not needed.

These changes update the UFSAR to reflect the existing, as analyzed, proceduralized operation of the RHR System. They have no adverse affect on any equipment important to safety or on the ability to achieve and maintain the safe shutdown of the plant. The required changes to the UFSAR are in accordance with the existing design basis of the plant as reflected in SOP 23.205. These changes have no safety significance and do not represent an unreviewed safety question.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 98-0143

UFSAR Revision No. 10

Reference Document: LCR 98-143-UFS

Section(s) NA

Table(s) 6.2-15

Figure Change ☐ Yes ☒ No

Title of Change: UFSAR Validation Project – Discrepancy Within the UFSAR Regarding the Containment Isolation Signals

### SUMMARY:

This safety evaluation evaluates a change to the facility as described in UFSAR Table 6.2-15. The UFSAR Validation Project identified a discrepancy within the UFSAR regarding the Containment Isolation Signals. LCR 98-143-UFS was prepared to revise the UFSAR.

This revision to UFSAR Table 6.2-15 was necessary to remove redundant information on the configuration and the functions of the components of the Containment Isolation Signals. This isolation signal information is contained in UFSAR Table 6.2-2, but in greater detail. UFSAR Table 6.2-2 more accurately describes information relating to containment penetrations including the applicable isolation signals and differences between the four types of isolation signal data. A reference to Table 6.2-2 was added to Table 6.2-15 regarding the Containment Isolation Signals to direct the user to this information.

Since the information is also contained in Table 6.2-2, there was no impact on any previously evaluated accidents or malfunctions, nor were any new accidents or malfunctions created by the removal of the redundant containment isolation signal information from Table 6.2-15. No margins of safety are reduced. There is no Unreviewed Safety Question generated by this change to the UFSAR.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 98-0151 UFSAR Revision No. 10  
Reference Document: LCR 98-151-UFS Section(s) 7.6.1.2.3.3  
Table(s) NA  
Figure Change ☐ Yes ☒ No

**Title of Change:** Revision of UFSAR Section 7.6.1.2.3.3 to Reflect an Alternative Method of Determining Total Core Flow.

### SUMMARY:

This safety evaluation evaluates a change to the facility as described in UFSAR Section 7.6.1.2.3.3. This change involves a description revision of a second method for determining total core flow. LCR 98-151-UFS was prepared to revise the UFSAR.

The description contained in UFSAR Section 7.6.1.2.3.3 discusses a second method for determining total core flow. The method described deals with using jet pump prototype performance data, jet pump differential pressure, and core plate differential pressure to determine total core flow. This alternative core flow determination method is not used at Fermi, and is not described in the GE Nuclear Boiler Design Specification (22A2919) as a method of determining total core flow. The description in this section of the UFSAR is being changed to reflect the alternative method of using a pre-established correlation between the recirculation loop drive flow and total core flow to determine core flow when the total core flow instrumentation is not available. This is one of the methods of determining total core flow described in the GE Nuclear Boiler Design Specification and is currently used in Fermi plant procedures.

The UFSAR Section 7.6.1.2.3.3 will then read, "The second method involves establishing a correlation between drive loop flow and core flow rate with reactor power as a parameter. The correlation can then be used to convert the flow in the recirculation pump loops to core flow rate." The primary method for measuring total core flow by summing the individual jet pump flows remains the same. Since the revised wording of the UFSAR does not alter any items that were previously analyzed, no unreviewed safety question is generated by this change.

This change will have no adverse affect on any equipment important to safety or on the ability to achieve and maintain safe shutdown of the plant. This change updates the UFSAR to reflect the accurate alternative method of determining total core flow. The required change to the UFSAR is in accordance with the existing design basis of the plant. There will be no change to function, capacity, or operation of the Containment Penetration Isolation System as a result of this change.

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### SAFETY EVALUATION SUMMARY

Safety Evaluation No: 98-0156 UFSAR Revision No. 10

Reference Document: LCR 98-189-UFS Section(s) NA

Table(s) NA

Figure Change ☒ Yes ☐ No

Title of Change: Revision of UFSAR Figure 9.5-3 Regarding the Location of the Wintergreen Odorizer Pack on the RHR Complex Low Pressure CO2 Systems

#### SUMMARY:

This change involves an addition of the location of the Wintergreen Odorizer Pack on the Residual Heat Removal (RHR) Complex low pressure CO2 Systems as described in UFSAR Figure 9.5-3. LCR 98-189-UFS was prepared to revise the UFSAR.

The odorizer performs a function of olfactory notification that CO2 is present in the affected EDG room. The odorizer does not result in any change to the operation or function of the CO2 systems, does not introduce any new operating concerns for the EDGs, and does not affect the adequacy of the CO2 piping supports. The odorizer does not perform a function beyond warning of CO2 initiation. The fire hazards analysis, contained in UFSAR Sections 9.5 and Appendix 9A addresses how the plant would achieve and maintain safe shutdown in the event of a fire. The installation of the odorizer packs in the RHR CO2 systems does not affect the ability of this system to perform its function of suppressing fires. Therefore, this change is not an Unreviewed Safety Question.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 98-0159

UFSAR Revision No. 10

Reference Document: LCR-98-197-UFS

Section(s) 7.6.1.10.1

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Removal of Card Reader from ERIS Computer System

### SUMMARY:

This safety evaluation evaluates a change to UFSAR section 7.6.1.10.1 regarding the ERIS computer system. LCR-98-197-UFS was issued to remove the card reader as part of the ERIS computer system from UFSAR section 7.6.1.10.1.

This change is necessary because card readers are no longer used for data input into the computer system; data input is done directly through the keyboard. Deletion of this obsolete component which is no longer part of ERIS has no impact on the design, function and operation of the system.

By deleting the card reader from UFSAR section 7.6.1.10.1, the UFSAR description will match that of DECo Specification 3071-362. NUREG-0737 and NUREG-0660 do not discuss the level of detail with respect to data input by the card reader. Therefore applicable acceptance criteria will continue to be met after the proposed changes are made.

Deleting the obsolete card reader from UFSAR section 7.6.1.10.1 is a change to text only. No physical change is being made to the ERIS computer system. The ERIS computer system will continue to operate as before this change.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0005 UFSAR Revision No. 10  
Reference Document: LCR 99-005-UFS Section(s) 6.3.2.20  
Table(s) NA  
Figure Change ☐ Yes ☒ No

Title of Change: Discrepancy in Program Description

### SUMMARY:

This safety evaluation evaluates a change to the facility as described in UFSAR Section 6.3.3.20 regarding the seismic analysis description for the RHR and Core Spray pumps.

The dynamic qualification of Seismic Category 1 equipment is achieved by assuring its structural integrity and verifying the operability of active equipment when subjected to equivalent conditions which would be seen during a postulated plant condition. During the UFSAR Validation Project, it was identified that equivalent static analysis was performed for the RHR and core spray pumps, not a "full dynamic analysis" as described in UFSAR section 6.3.2.20. LCR-99-005-UFS will revise that section to remove the statement that the full dynamic analysis method is used to demonstrate the ability of the RHR and Core Spray pumps to operate during and after seismic or hydrodynamic loadings. Instead, a reference will be made to UFSAR Section 3.9.4.3, which accurately describes the operability assurance program for these pumps in detail.

The proposed change does not adversely affect any SSC but merely corrects an inconsistency in the UFSAR.

There is no reduction in the protection of public health and safety due to the consequences of any postulated accident, transient, or radiological event which could be attributable to the proposed change. Also, the proposed change does not involve any unreviewed safety question either created by or resulting from the change.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0008

UFSAR Revision No. 10

Reference Document: LCR-00-026-UFS

Section(s) 11.4.3.8.2.16

11.4.3.11.1

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Revision of Accident Range Monitor (Standby Gas Treatment Grab Sample Flow) Description

### SUMMARY:

This safety evaluation evaluates a change to UFSAR Sections 11.4.3.8.2.16 and 11.4.3.11.1 concerning the relationship between grab sample pallet (GSP) and noble gas pallet (NGP) flow rates. The ratio between NGP and GSP flows will be changed from 1/60 to 1/73.2. The NGP flow rate will be changed from 6 liters/min. to 5.43 liters/min and GSP flow rates will be changed from 100 cc/min to 74.1 cc/min. LCR 00-026 UFS was prepared to revise the UFSAR.

This change was necessary because UFSAR sections 11.4.3.8.2.16 and 11.4.3.11.1 were originally prepared using the system description from the original vendor manual which is generic in nature and not Fermi 2 plant specific. Subsequent vendor notification and DECo correspondence for Fermi 2 plant specific application were never factored into later UFSAR revisions. The vendor, Eberline, notified Detroit Edison (DECo) that the ratio between the GSP and NGP flows is 1/73.2. The vendor also notified DECo in November 1999 that the nominal flow rate for accident range monitor (AXM-1) is 6 liters/min +/- 15%. The flow rates within this range will not affect the monitor's performance. DECo used the value 1/73.2 and the flow of 3800 SCFM from UFSAR section 6.2.2.3.2 and calculated flow rates. The NGP and GSP flow rates were calculated at 5.43 SLPM and 74.1 cc/min respectively. This demonstrated that the AXM system will perform its function with a minimum volumetric flow of 3800 SCFM assumed in UFSAR section 6.2.3.3.2.

The AXM monitors do not have any direct or indirect interaction with equipment important to safety. Compliance to Regulatory Guide 1.97 and General Design Criterion 64 are met.

The AXM monitors provide no control function but are diagnostic tools that enable the main control room operator to take appropriate actions during and following an accident. The new flow rates will not adversely impact the performance of AXM monitors.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0011

UFSAR Revision No. 10

Reference Document: LCR 99-035-UFS

Section(s) 10.4.1.1.1.f.3

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Removal of UFSAR Requirement Regarding Circulating Water (CW)  
Temperature

### SUMMARY:

This safety evaluation evaluates a change to a procedure as described in UFSAR Section 10.4.1.1.1.f.3 regarding Circulating Water (CW) temperature requirement. Procedures will be revised to remove the requirement that power must be reduced when the CW temperature reaches 100°F. The associated Alarm Response Procedures will be revised, as necessary, to not require immediate power reduction, but to monitor the situation after an alarm is activated and reduce power if there is a threat to equipment. LCR 99-035-UFS was prepared to revise the UFSAR to reflect these changes.

The change is necessary since procedural requirement as described in UFSAR Section 10.4.1.1.1.f.3 is overly restrictive. Power must be reduced if CW temperature reaches 100°F when outside temperatures are highest and power is needed the most. This is not economically competitive. The only equipment important to safety using CW inlet temperature is the condenser. The 100°F inlet temperature is based on condenser backpressure and hotwell temperature. Increased backpressure can cause potential LP turbine blade damage and high hotwell temperature may cause possible Condensate Filter Demineralizer resin degradation.

UFSAR Section 10.4.1.1.1.f.3 continues to satisfy the acceptance criteria that the CW inlet temperature is to be maintained low enough to prevent other plant parameters from causing equipment degradation, damage, or a SCRAM. The setpoint for CW temperature of 100°F remains intact. The proposed change does not affect the setpoints of associated alarms. Should a threat to equipment increase, Alarm Response Procedures will require power to be reduced.

The proposed change has no adverse affect on equipment important to safety. Radiological consequences remain the same since there is no condenser failure mechanism related to CW inlet temperature. Therefore, there is no impact on plant safety as a result of the proposed change.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0013

UFSAR Revision No. 10

Reference Document: LCR-99-038-UFS

Section(s) 1.2.2.11.9

Table(s) 7.5-2  
7.6-2

Figure Change ☐ Yes ☒ No

Title of Change: Discrepancies in UFSAR Regarding the use of Primary Containment  
Atmospheric Monitoring System (PCAMS)

### SUMMARY:

This safety evaluation evaluates a change to the facility as described in UFSAR Section 1.2.2.11.9 regarding oxygen monitors. The UFSAR is being revised to eliminate the use of nonconservative oxygen indication for determination of containment entry, thereby preventing any potential health hazard due to insufficient oxygen for breathing.

The change is necessary because the existing description in UFSAR section 1.2.2.11.9 indicates that the hydrogen, oxygen, and radiation monitors provide vital information for the determination of personnel access to the primary containment. The hydrogen and oxygen monitoring system is calibrated in an inerted environment and when used in de-inerted environment (i.e., during shutdown), the oxygen monitor exhibits a zero-shift in such a way that the monitor reads more than the actual level of oxygen concentration in the containment. Therefore, the information from the oxygen monitor for the purpose of containment entry is not accurate. LCR-99-038-UFS was issued to revise UFSAR section 1.2.2.11.9 to remove the word "oxygen" and notes are being added to UFSAR Tables 7.5-2 and 7.6-2 to indicate that 0-38% O<sub>2</sub> range for oxygen indication in the control room is for information only. The physical design and configuration of the primary containment H<sub>2</sub>/O<sub>2</sub> monitoring system will remain unchanged after the proposed changes. The proposed changes have no affect on any component of any system.

The proposed changes do not negate any of the acceptance criteria of Regulatory Guide 1.97 Rev. 2 which are applicable to the primary containment oxygen monitoring instrumentation. Control Room operating personnel are provided with 0-10% O<sub>2</sub> indication which meets all the design and qualification requirements of Regulatory Guide 1.97 Position 1.3. The use of oxygen monitors with 0-30% range during plant shutdown is outside the required acceptance criteria of the system. Therefore, there is no unreviewed safety question as a result of the proposed changes.

The proposed changes of LCR-99-038-UFS have no adverse affect on any equipment important to safety. They have no affect on operation of any equipment of the primary containment H<sub>2</sub>/O<sub>2</sub> monitoring system or any other system, structure, or component important to safety. Thus, the changes have no impact on pant safety

## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0017 UFSAR Revision No. 10

Reference Document: TSR-29904 Section(s) NA  
LCR-99-046

Table(s) 9.3-2

Figure Change ☐ Yes ☒ No

Title of Change: Revision of the Operating Pressure for Sample Point # 57 as Shown in  
UFSAR Table 9. 3-2.

### SUMMARY:

This safety evaluation evaluates changes to the facility as described in UFSAR Table 9.3-2. The revision is to correct and lower the operating pressure value from 1220 psig to 1050 psig for Sample point 57 shown as reference in UFSAR Table 9.3-2. The correction of this reference value is not a change to the P33 system design criteria, nor a change to any safety-related or important-to-safety active component and is not a change to any safety-related flow paths. The operating pressure for the sample tap # 57, shown as 1220 psig at 537° F on UFSAR Table 9.3-2 is in conflict with the same sample tap # 57, shown as 1050 psig at 537°F on the Plant Sampling Requirements drawing I-2400-01.

This sample tap # 57 location is on the suction side of the RWCU Pump which takes its suction directly from the reactor with no components existing in the suction piping between the reactor and the RWCU Pump that would serve to increase the potential sample tap #57 pressure to be above that of the reactor pressure, which has a referenced normal operating value of 1050 psig.

The Sample point 57 revision of the operating pressure on UFSAR Figure 9.3-2 is as a reference value, and is not a change in the bases or design criteria of the Plant Process Sampling System.

The change to correct the reference value for the operating pressure of the sample line does not change the system design or system operating criteria. Therefore, the proposed change does not reduce the margin of safety as defined in the bases for any Technical Specification, or as described in the Technical Specifications, UFSAR or in the SER and does not involve an unreviewed safety question.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0022 UFSAR Revision No. 10  
Reference Document: LCR-99-055-UFS Section(s) 4.5.2  
Table(s) NA  
Figure Change ☐ Yes ☒ No

Title of Change: UFSAR Validation Project – Identified Discrepancy Regarding CRD Housing Bolt Load Values

### SUMMARY:

This safety evaluation evaluates a change to three bolt load values for the CRD housing. A change to UFSAR section 4.5.2.2.3.1 will revise the allowable load capacity of each bolt, the total capacity of all eight bolts and the major load carried by the eight bolts at reactor design pressure. The use of these values does not affect the installed design, but accurately states the correct value. There are no changes to any system, structure, or component due to the revision of these values.

During the UFSAR validation effort, three bolt load values could not be independently verified with a supporting design basis document. Through research, the correct design basis document was located, i.e., the GE ASME Code stress report for the CRD housings. This report contains the analysis and correct values to be included in the UFSAR. LCR-99-055-UFS was issued to revise UFSAR section 4.5.2.2.3.1 to reflect the correct values.

No changes are being made to the physical plant by this change, only a revision of UFSAR Section 4.5.2.2.3.1 values. These values are based on the professional engineer certified GE stress analysis report that satisfies applicable code criteria and fulfills regulatory requirements. Bounded by the ASME Code Stress report, the changes do not constitute an unreviewed safety question.

Revision of the UFSAR CRD bolt loading and strength values does not affect the safety basis designed into the plant. Nor do these changes place any component, system, or structure outside its design basis, and ultimately the license basis for the facility. There is no reduction in the protection of public health and safety due to the consequences of any postulated accident, transient, or radiological event which could be attributable to the proposed changes.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0031 UFSAR Revision No. 10

Reference Document: LCR-99-070-UFS Section(s) 9A.2.2.2

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Revise Appendix 9A of the UFSAR to Incorporate the Results of the Combustible Loading Calculation

### SUMMARY:

This safety evaluation evaluates a change to a procedure as described in UFSAR section 9A.2.2.2. LCR-99-070-UFS was issued to revise UFSAR section 9A.2.2.2 to document the changes in the methodology used to calculate the quantity of insulation in each fire zone. In addition, an editorial change not related to the calculation will be made to correct a typographical error.

This change is being made as a result of a revision to Design Calculation DC-5702 Vol 1. The changes to the UFSAR result in section 9A.2.2.2 briefly summarizing the methodology used in DC-5702. The methodology now uses actual cable fill percentage and cable tray lengths as provided by the cable routing database. The changes to the methodology constitute an equally acceptable alternative approach to determining the combustible loading.

In addition, UFSAR section 9A.2.2.2 describes one of the combustible materials inventoried for the Fire Hazards Analysis as "Thermo-Log". As correctly described in other sections of Chapter 9A, the actual material is "Thermo-Lag." Therefore, section 9A.2.2.2 will be revised to correct this error.

The effect of the design calculation revision on the fire hazards analysis in the UFSAR was considered. The changes to the methodology used to evaluate the combustible loading in the fire zones and the effect on the current UFSAR values were evaluated. It was determined that there was no impact on the ability of the plant to achieve and maintain safe shutdown following a fire. The change being made by LCR-99-070-UFS is in accordance with License condition 2.C.(9). The fire hazards analysis contained in the UFSAR is not adversely effected, and there are no unreviewed safety questions.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No:	<u>99-0040</u>	UFSAR Revision No.	<u>10</u>
Reference Document:	<u>LCR 99-079 UFS</u>	Section(s)	<u>9A.4.2.9.1</u> <u>9A.4.2.12.1</u>
		Table(s)	<u>NA</u>

Figure Change ☐ Yes ☒ No

**Title of Change:** Evaluation of Penetration Seals Between Fire Zones 11AB and 8AB

### SUMMARY:

This safety evaluation evaluate changes to the UFSAR Fire Hazards Analysis regarding penetration seals between fire zones 11AB and 8AB. LCR-99-079-UFS was issued to revise UFSAR sections 9A.4.2.9.1 and 9A.4.2.12.1 to provide documentation of how the plant meets the regulatory requirements of BTP APCS 9.5-1 and 10CFR50 Appendix R.

This change is necessary because not all penetration seals between fire zones 8AB and 11AB are installed in a tested configuration that would provide a fire-resistance rating equivalent of the floor or ceiling in which they are installed. This was discovered during a walkdown being performed to verify actual plant configuration for penetration P-12673. The penetration seals that did not provide the required fire resistance rating have been evaluated and are considered acceptable based on their installed configuration, the fire loading on both sides of the barrier, and the other fire protection features present in the plant. The revisions to the UFSAR will provide documentation that the barrier separating fire zones 8AB and 11AB contain penetration seals rated for less than the fire resistance rating of the barrier but that have been evaluated as being acceptable.

GL-86-10 allows the licensee to perform an evaluation to assess the adequacy of fire boundaries in their plant to determine if the boundaries will withstand the hazards associated with the area. The existing configuration of the penetration seal and barrier has been evaluated and will provide adequate protection so that a fire in either fire zone will not propagate through the penetration and adversely affect the ability of the plant to achieve and maintain safe shutdown. The revision to the UFSAR is in accordance with applicable acceptance criteria and License Condition 2.C(9).

Fire barriers and penetration seals are installed in the plant to provide for separation of safety related SSCs and to prevent propagation of fires from one fire zone to another. The major safety consideration for the fire barriers and penetration seals is to provide sufficient protection for required SSCs so that the plant can achieve and maintain safe shutdown following a fire. The revisions to Sections 9A.4.2.9.1 and 9A.4.2.12.1 have no adverse effect on the ability of the plant to achieve and maintain safe shutdown following a fire. The fire hazards analysis contained in the UFSAR is not adversely effected. There are no unreviewed safety questions.

## SAFETY EVALUATION SUMMARY

Safety Evaluation No:	<u>99-0084</u>	UFSAR Revision No.	<u>10</u>
Reference Document:	<u>LCR 99-129-UFS</u>	Section(s)	<u>6.3.2.2.3</u> <u>6.3.2.2.3.3</u>
		Table(s)	<u>NA</u>

Figure Change ☐ Yes ☒ No

**Title of Change:** Core Spray (CS) System Minimum Flow Valve Opening and Closing Setpoint and Suction Valve Opening Interlocks

### SUMMARY:

This safety evaluation evaluates a change to the facility as described in UFSAR Sections 6.3.2.2.3 and 6.3.2.2.3.3. UFSAR section 6.3.2.2.3 will be revised to delete the function of the CS pump suction valves from the torus to automatically open. UFSAR section 6.3.2.2.3.3 will be revised to change the setpoint of the CS pump minimum flow valves from 635 gpm to 775 gpm. LCR 99-129-UFS was issued to make these changes.

These changes are necessary because UFSAR sections 6.3.2.2.3 and 6.3.2.2.3 do not reflect the as-built configuration of the plant and are not consistent with UFSAR Figure 7.3-8, Sheet 2. Section 6.3.2.2.3.3 currently states that the minimum flow bypass valve in each division of CS is signaled to open at 635 gpm. Per the CS design specification and CECO, the setpoint is 775 gpm. UFSAR 6.3.2.2.3 states that the suction valves from the torus are signaled to open to confirm suction is available to the associated pump. Per UFSAR Figure 6.3-7, the valves are normally open and, therefore, not required to open in order for the CS System to perform its safety function. UFSAR Figure 7.3-8, sheet 2, accurately depicts the control logic and shows no signals that would ensure the suction valves are open. This figure also shows a keylock switch which prevents manual actuation of the valves unless the switch is activated.

The Core Spray system falls under the criteria of GDC 35. The new flow rate of 775 gpm is higher than the current value of 635 gpm, and this assures adequate cooling is available to the pump. The change to the control circuit is passive in nature. The suction valves from the torus do not have an active function to open. Therefore, there is no technical requirement to have an automatic actuation signal. The suction valves from the torus are normally open, the control logic employs a keylock switch to permit manually operating the valves, and continuous indication of valve position is available to the control room operator in the main control room. This change to the control circuit does not introduce a failure of other control mechanisms.

The changes do not affect the ability of CS to perform its function. The flow rate and response time of the CS system do not change. No new logic is being added which would affect related components. The fuel cladding, reactor coolant pressure boundary, and containment boundary are not affected. Therefore, no impact to plant safety is caused by the proposed changes.



## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0087

UFSAR Revision No. 10

Reference Document: LCR 99-139-UFS

Section(s) 6.4.1.2, 7.3.5.2.2, 7.3.5.2.5  
9.4.1.2.1 and 12.2.2.1

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Control Center Heating Ventilation and Air Conditioning (CCHVAC)  
Inconsistencies

### SUMMARY:

This safety evaluation evaluates a change to UFSAR inconsistencies regarding Control Center air volumes. The UFSAR Validation Project identified control center air volume discrepancies between Design Calculations and the UFSAR. The control center air volumes are used for the calculation of radiation exposure to control room workers during a radiological release.

The air volume of the control room during an emergency mode as described in UFSAR section 6.4.1.2 is inconsistent with UFSAR section 15A.2.2. The air volume described in UFSAR sections 9.4.1.2 and 12.2.2.1 also is not consistent with UFSAR section 15A.2.2 and was not supported by Design Calculation or other design document.. The Design Calculation was revised to compute the level of CO<sub>2</sub> concentration inside the control room during an emergency mode, and to document the control center volume during normal mode and emergency mode. These were developed to support changes to UFSAR sections 6.4.1.2, 9.4.1.2.1 and 12.2.2.1. LCR-99-139-UFS will revise these sections to be consistent with UFSAR section 15A.2.2.

UFSAR section 7.3.5.2.5a states that supply and return air fans are initiated manually by control switches on local panels and the main control board. This is contrary to UFSAR section 7.1.1.1.17 and other configuration design documents which verify that the switches are on the main control panel. Section 7.3.5.2.5 includes the battery room exhaust fan as a control center actuated device when, in fact, they are part of the Reactor/Auxiliary Building ventilation system as described in UFSAR section 9.4.2.2 and Figure 9.4-4 Sheet 2. LCR-99-139-UFS will revise sections 7.3.5.2.5a and 7.3.5.2.5 to correct these discrepancies.

These changes remove inconsistency and provide enhancement to various sections of the UFSAR. No physical changes are being made to the CCHVAC supply and return system. Control room habitability is not degraded for the operation of the plant during a radiological, fire and offsite chlorine release and due to other accidents as analyzed in UFSAR Chapter 15. This design change does not increase radiological dose to the control room operators or public and does not degrade the safe operation of the plant due to accidents previously evaluated in the UFSAR. Therefore, there is no unreviewed safety question resulting from this change.

## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0088

UFSAR Revision No. 10

Reference Document: LCR-99-141-UFS

Section(s) 11.3.3.3.9

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Clarify Text of UFSAR 11.3.3.3.9 – Off Gas Charcoal Adsorber Interlock

### SUMMARY:

This safety evaluation evaluates a change to the offgas system description in UFSAR Section 11.3.3.3.9 regarding "interlocks." LCR-99-141-UFS was issued to revise the UFSAR.

This change was necessary because the UFSAR referred to "interlocks" and there are no physical interlocks. The LCR replaced "interlocks" with "administrative controls". Section 11.3.3.3.9 will also be revised to delete the reference to "both trains" as there is only one adsorber chain.

The changes being made by LCR-99-141-UFS provide consistency within UFSAR section 11.3. This change did not involve any physical changes to the plant and has no safety significance or impact on the plant.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 99-0090 UFSAR Revision No. 10  
Reference Document: LCR 99-148-UFS Section(s) 5.5.1.4  
Table(s) NA  
Figure Change ☐ Yes ☒ No

Title of Change: Qualification of the Load Support Components of the Reactor Recirculating Pump Motors

### SUMMARY:

This safety evaluation evaluates a change to the facility as described in UFSAR section 5.5.1.4 regarding the qualification of Reactor Recirculating (RR) motor bearings. UFSAR section 5.5.1.4 will be revised to clarify the qualification of the RR pump.

The change is necessary because the current wording in UFSAR section 5.5.1.4 states that GE purchase specifications require the reactor coolant pressure boundary integrity of the pump case be maintained through all normal and upset conditions and that the design of the pump and motor bearings is required to be such that dynamic load capability at rated operating condition is not exceeded during a safe-shutdown earthquake (SSE). Contrary to this, the motor bearings are not required to maintain the reactor coolant pressure boundary and are not required to operate during an SSE or other accidents discussed in the UFSAR, thus the motor bearings need not be seismically qualified.

The seismic qualification of the bearings has no affect on how the pumps operate or how the pumps respond to transients or events. The motor bearings are only required to support the rotation of rotating parts and are not part of the reactor coolant pressure boundary. Therefore, the bearings are not required to be designed for seismic loading as Seismic Category 1 components. The proposed change will not compromise the operation of the RR pump and will not reduce the margin of safety defined in the Technical Specifications.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No:	<u>99-0098</u>	UFSAR Revision No.	<u>10</u>
Reference Document:	<u>DC-5957, Vol. I</u> <u>DC-5957, Vol. II</u> <u>LCR-99-164-UFS</u>	Section(s)	<u>3.8.2.1.3.1 and 5.2.1.11</u>
		Table(s)	<u>NA</u>

Figure Change ☐ Yes ☒ No

Title of Change: Acceptability Criteria for Evaluation of GL 96-06 Overpressurization

### SUMMARY:

This safety evaluation evaluates a change to UFSAR sections 3.8.2.1.3.1 and 5.2.1.11. LCR-99-164-UFS will revise the UFSAR to reflect the criteria of ASME Section III Appendix F as applied in the evaluation of susceptible Fermi 2 piping systems in applicable design calculations for this thermal overpressure load case.

Generic Letter GL 96-06 raises the concern that during a postulated LOCA, piping inside containment will be heated beyond its normal operating temperature. The temperature increase would cause water trapped in piping, isolated by closed valves, to expand and the resulting pressurization could challenge piping integrity. The NRC requested that Fermi 2 perform an evaluation of these penetrations using acceptance criteria acceptable to the staff and also noted that the criteria used for evaluation should be stated in the UFSAR. Drywell penetrations X-8, X-18, X-19, X-29Aa, X-49a and X-51a are nonessential penetrations that remain isolated and do not have to operate post LOCA. Therefore, Level D Service Limits are sufficient to demonstrate containment integrity since the acceptance criteria ensure that violation of the pressure retaining boundary will not occur. The revision to UFSAR section 5.2.1.11 allows any analysis method in ASME III Appendix F to be used to evaluate faulted conditions. 10 CFR 50.55a contains no limitations regarding the use of Appendix F. The additional operability requirements in UFSAR section 3.9.4 are unaffected by this change and must still be satisfied.

The revision to the UFSAR and calculations does not change or impact any component, procedure, system function, or system operation which has been previously evaluated in the UFSAR. The containment penetrations and piping will maintain pressure integrity during and after a postulated LOCA. GDC 50 and GDC 54 compliance is maintained.

There is no reduction in the protection of public health and safety due to the consequences of any postulated accident, transient, or radiological event which could be attributable to the proposed changes to the UFSAR or design calculations.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 00-0003 UFSAR Revision No. 10

Reference Document: LCR-00-010-UFS Section(s) 3.6.2.2.5.2.1  
LCR-00-011-TRM

Table(s) 6.2-2  
TR3.6.3-1

Figure Change ☐ Yes ☒ No

Title of Change: Maximum Allowable Closure Stroke Time for RWCU Supply Primary Containment Isolation Valves

### SUMMARY:

This safety evaluation evaluates a change to a procedure as described in UFSAR section 3.6.2.2.5.2.1 and Table 6.2-2 regarding the maximum allowable closure time for RWCU supply primary containment isolation valves G3352F00I and G3352F004. The maximum allowable closure time for these valves will be changed from 10 seconds to 12 seconds. Also, the assumption that EDG start occurs prior to valve isolation on a pipe break will be removed. These valves need to close in order to provide primary containment integrity upon a containment isolation signal and provide RWCU equipment integrity upon a RWCU high energy line break. In addition, G3352F004 is required to close upon a Standby Liquid Control (SLC) isolation signal in order to prevent removal of SLC boron solution from the reactor.

This change is needed because there is very little margin for valve degradation with the existing stroke times. The additional 2 seconds will provide some margin to accurately trend valve operability. The EDG start time of 10 seconds is a conservative assumption that is not required in accordance with the criteria of BTP APCSB 3-1, "Protection Against Postulated Piping Failures in Fluid Systems Outside Containment." The valve stroke time is increased to 12 seconds, and the total time of 20 seconds remains unchanged. The remaining time of 8 seconds equates to 6 seconds for instrument and loop response with 2 seconds of margin.

This change does not change the overall isolation response time for an RWCU pipe break. The 12 second closure time is still less than other primary containment isolation valves with similar actuation logic. Removal of the assumption that EDG start occurs subsequent to the pipe break is consistent with BTP APCSB 3-1.

The increase in stroke time for G3352F00I and G3352F004 from 10 to 12 seconds provides necessary margin to trend the valves operability in accordance with the ISI / IST program. The total response time of either valve remains unchanged. No new components are being installed as a result of the change, and component interrelationships and functions are not affected. The analyzed environmental conditions of the area do not change and all equipment important to safety remains qualified. Therefore, there is no unreviewed safety question associated with this change.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 00-0015

UFSAR Revision No. 10

Reference Document: LCR-00-043-UFS

Section(s) 9.4.2.1

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Revise the Battery Room Temperature to Reflect As-built Configuration

### SUMMARY:

This safety evaluation evaluates a change to the facility as described in UFSAR section 9.4.2.1. LCR-00-043-UFS will revise the battery room temperature in this section from 77°F to 75°F to reflect the as-built condition of the plant.

CARD 98-10271 (DBD Open Item R3200-004) identified a discrepancy between the UFSAR stated battery room temperature of 77°F, and the as-built condition of 75°F as determined by PDC 8244 Rev. B, "Review of Battery Rooms HVAC Requirements". The battery design is to support the operation of systems and components important to safety for accident mitigation.

Design Calculation DC-0213 Vol. I Rev. P, "Sizing of 130/260 V Batteries", determined that Div. I and Div. II batteries have adequate capacity to satisfy the design basis load requirement, based on 60°F minimum ambient temperature, using the methodology and correction factors of ANSI/IEEE Standard 485-1978. Therefore, the battery capacity is not affected by changing the room temperature from 77°F to 75°F. Since the battery capacity is not affected by the change in temperature from 77°F to 75°F, these systems will perform as designed.

Revision of the UFSAR Section 9.4.2.1 to reflect the actual battery room temperature of approximately 75°F, does not reduce the design capacity of the batteries. Therefore, there is no adverse impact to plant safety systems.

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## SAFETY EVALUATION SUMMARY

Safety Evaluation No: 00-0016 UFSAR Revision No. 10  
Reference Document: LCR-00-048-UFS Section(s) 5.5.6.3.1  
Table(s) NA  
Figure Change ☐ Yes ☒ No

Title of Change: Condensate Storage Tank Low Level Alarm for RCIC

### SUMMARY:

This safety evaluation evaluates a change to UFSAR section 5.5.6.3.1 regarding the Condensate Storage Tank (CST) volume low level alarm. LCR-00-048-UFS was issued to revise the UFSAR to remove an incorrect statement regarding the low level alarm.

Per GE Specification the required volume of water stored in the CST for RCIC is 135,000 gallons which is sufficient to allow operation for eight hours after shutdown. The UFSAR states that a low level alarm is energized when the level in the CST falls to the minimum required to meet the design requirements for RCIC. The alarm setpoint is 9' -6". Accounting for suction transfer to the suppression pool at a nominal CST level of 32 inches, the available water in the CST for RCIC is approximately 115,000 gallons. Normal water level is procedurally maintained to ensure that there are 361,000 gallons of water available during dedicated shutdown, more than twice the volume required to support RCIC operation per the GE specification. A low level alarm used to alert operators when the level in the CST falls to the minimum requirement needed to meet the design requirements for RCIC, is not necessary since the level is maintained much higher than the minimum. Also, suction transfer ensures that water is always available.

The CST is not considered as important to safety and is not designed Seismic Category I, therefore the RCIC pump suction is automatically transferred to the suppression pool upon a CST low water level. The transfer to the suppression pool feature on low CST level assures an adequate long-term quantity of coolant. Also, the RCIC can be manually switched to the suppression pool at anytime. In Operating Condition 1, 2 and 3 the CST level is maintained greater than 24 feet which is more than twice the level needed to provide 135,000 usable gallons for RCIC. This level is maintained to ensure sufficient water for Standby Feedwater (SBFW) in the event that plant shutdown is initiated using the dedicated shutdown panel, and to ensure that other system requirements for condensate do not affect the HPCI/RCIC reserve. Also, the other systems that interface with the CST can be isolated.

There is no reduction in the protection of public health and safety attributable to this change and the change does not involve an unreviewed safety question.

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Listed below are NRC approved Technical Specification amendments which resulted in changes to UFSAR Sections, Tables and Figures. These changes have been incorporated into Revision 10 of the UFSAR. The NRC Safety Evaluation provides the basis and justification for the UFSAR change. No Safety Evaluation is included for these changes as the change was described in the Detroit Edison proposed Technical Specification change and approved by the NRC Safety Evaluation included with the License Amendment.

<u>TS Amendment</u>	<u>Description</u>	<u>UFSAR Section/Table/Figure</u>
131	Volume and level requirements for the condensate storage tank (TAC No. MA1416)	5.5.6.2.2, 5.5.6.3.1, 5.5.6.3.2, 6.3.2.6, 6.3.2.14, 8.4.2.3, 9.2.6.1, 9.2.6.2 Table 7.3-1 Figure 6.3-3 Figure 9.2-10 (LCR-99-016-UFS)
134	Implementation of Improved Technical Specifications (TAC No. MA1465)	8.3.2.1.4, 8.3.2.2.2 (LCR-99-012-UFS)  9.1.4.2.2 (LCR-99-013-UFS)  9.1.4.3.2 (LCR-99-021-UFS)  Table 5.2-2 (LCR-99-022-UFS)  4.5.2.4.4 (LCR-99-023-UFS)  13.5.1 (LCR-99-024-UFS)  13.1.1.2 (LCR-99-025-UFS)  13.1.2.5 (LCR-99-026-UFS)  13.5.4.9 (LCR-99-027-UFS)  13.1.2.5 (LCR-99-028-UFS)  Appendix A.1.52 (LCR-99-042-UFS)  2.1.2.2, Figure 2.1-5 (LCR-99-047-UFS)



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<u>TS Amendment</u>	<u>Description</u>	<u>UFSAR Section/Table/Figure</u>
134 (Cont'd)	Implementation of Improved Technical Specifications (TAC No. MA1465)	3.8.2.1.2, 4.5.2.1.2, 5.2.1.2 (LCR-99-049-UFS)  9A.6 (LCR-99-114-UFS)  17.2.5.1.2.2 (LCR-99-115-UFS)  1.5.2.8, 2.4.5.7, 2.4.13.4, 3.4.4.5 (LCR-99-116-UFS)  7.2.1.1.3.8, Table 7.2-4 7.3.1.2.1.7, Table 7.3-11 7.3.2.3.2, Table 7.3-12 (LCR-99-117-UFS)  Appendix A.1.95 (LCR-99-118-UFS)
136	Replacement of the division 1 130/260 Volt DC battery (TAC No. MA6735)	8.3.2.1.1, 8.3.2.1.2, 8.3.2.1.5 8.3.2.2.4, Figure 8.3-9, Sheet 1 (LCR-99-060-UFS)
138	Safety limit minimum critical power ratio limits for Cycle 8 (TAC No. MA7372)	Table 3.9-15, 4.4.4.1.1.1, 4.4.4.1.2.5, 4.4, Table 4.4-3 Table 4.4-6, 4.5.2.2.2.4 Figure 5.2-1c, 6.3, 7.7.1.2.3.1 10.4.4.1, 15.0.3.3.1, 15.0.4 Table 15.0-1, Table 15.0-2, Table 15.0-3 Figures 15.0-4 through 12 15.1.2.2.1, 15.2.3.3.3.2, 15.4.9.5.1, 15.4.9.6, 15.7.4.5, 15.7.5 (LCR-99-144-UFS)
139	Enabling the Oscillation Power Range Monitor upscale trip function (TAC No. MA6267)	1.7.2, 4.4.4.6.3, 7.1.2.1.4.4 7.6.1.13.6.1, 7.6.1.13.7.1, 7.6.2.13.4.1, 7.6.2.13.4.2 4.4.4.6.4, Tables 7.2-3 & 7.6-9 Figure 7.1-2 Figure 7.6-16, Sheets 1,4, & 5 Figure 7.6-21 (LCR-99-043-UFS)

END OF SAFETY EVALUATION SUMMARY REPORT