U. S. NUCLEAR REGULATORY COMMISION
DOCKET NO. 50-341
LICENSE NO. NPF-43
ENCLOSURE 2 TO NRC-97-0010

FERMI 2

SAFETY EVALUATION SUMMARY REPORT

Detroit
EDISON

ENCLOSURE 2 TO
NRC-97-0010

FERMI 2
SAFETY EVALUATION SUMMARY REPORT

DOCKET NO. 50-341
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SAFETY EVALUATION SUMMARY REPORT

AS-BUILT NOTICES

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 94-0033 Rev 1

UFSAR Revision No. 8

Reference Document: ABN 12128-1
TSR 29117

Section(s) 1.2.2.11.4, 7.6.1.1.3.1, 9.1.4.2.5

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Removal of Refuel Floor Jib Crane and Service Platform

SUMMARY:

The Refuel Floor jib crane and service platform are not used and occupy valuable laydown space on the Reactor Building 5th floor. Other installed equipment is used to accomplish tasks originally projected for these items. Refueling interlocks associated with the service platform will remain intact. No impact to refuel activity safety will occur as a result of this change. This has no impact on Fuel Handling Accident assumptions or results. The refuel platform will assume service platform duties and thus reduce the amount of involved equipment simplifying the process.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0034

UFSAR Revision No. 8

Reference Document: TSR 27648

Section(s) 6.2.4

Table(s) 6.2-2, 6.2-15

Figure Change [X] Yes [ ] No

Title of Change: Drywell-to-Torus Vacuum Breaker Nitrogen Supply Isolation Valve Designation

SUMMARY:

This Technical Service Request (TSR) As-Built Notice justified updating affected documents to provide clarification that the Drywell-to-Torus Vacuum Breaker Nitrogen Supply Isolation Air Operated Valves T4800F416 through F427 are considered locked closed as defined in the Standard Review Plan 6.2.4, and therefore, complies with General Design Criterion 57 and Technical Specification 4.6.1.1.b. In addition, this evaluation corrects the typographical error in Table 6.2-2, where the Engineered Safety Function for valve T4800F426 and F427 now agrees with the rest of these valves, T4800F416 through F425.

The TSR only revised/provided clarification in the UFSAR and other affected documents in order to be consistent with Technical Specification 4.6.1.1.b for valves T4800F416 through F427, and does not affect the as-built condition. It does not reduce the margin of safety as defined in the bases for any Technical Specification, the SER, or the UFSAR.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0044

UFSAR Revision No. 8

Reference Document: TSR 27495

Section(s) NA

Table(s) NA

Figure Change [x] **Yes** [ ] **No**

Title of Change: Add Valve G3300F272 to Condensate Supply Line for RWCU

SUMMARY:

During a plant walkdown of the Reactor Water Cleanup System (RWCU) a previously unidentified manual valve was noted on the condensate supply line used for demineralizer makeup and backwash purposes. This valve was likely a test valve installed during construction. It has been given a valve number and has been included on system drawings. This valve has no function and remains closed ensuring pressure boundary integrity. This valve is non-Q and has no impact to the RWCU system. This change is being made to update the UFSAR drawing.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0021

UFSAR Revision No. 8

Reference Document: TSR 28131

Section(s) NA

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Control Rod Drive Stabilizing Valve Lineup Change

SUMMARY:

The control rod drive system has two pairs of stabilizing valves whose purpose is to maintain a constant system flow during insertion or withdrawal of a control rod. They have no safety function. One pair of stabilizing valves are always in service as controlled by a two position selector switch on panel H11P603 in the main control room. Current plant practices are to have the out of service stabilizing valves isolated, i.e. their inlet and outlet valves are maintained closed.

It is desirable to change the normal lineup of both stabilizing valves inlet and outlet valves to normally open such that the control room operator can truly select the in service pair by means of the provided selector switch. This change requires revision of UFSAR drawings. This change does not adversely impact system operation nor any design requirements.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0033

UFSAR Revision No. 8

Reference Document: TSR 27523

Section(s) NA

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Reclassification of PCMS Nitrogen Purge Subsystem

SUMMARY:

The Primary Containment Atmosphere Monitoring System nitrogen purge subsystem is being reclassified from QA 1 to non-Q. The QA 1 class breaks are being made at manual valves T5000F072A/B. The lines to the nitrogen storage cylinder storage racks are reclassified non-Q, seismic II/I. The nitrogen supply solenoid valves, T50F100A/B, do not have an active safety function and are reclassified from EQ category 2A to 2B. This equipment has no associated safety function and is not required to operate post-LOCA.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0038

UFSAR Revision No. 8

Reference Document: TSR 27159

Section(s) NA

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Update Circulating Water Reservoir Decant Line Radiation Monitor Drawing to Show Vent Valve

SUMMARY:

Vent valve D11F056C , located on the Circulating Water Decant Line Radiation Monitor skid, is normally closed. This valve was not previously shown on existing plant drawings or on UFSAR figures. An evaluation was performed to determine the safety impact of this valve and to justify revision of plant and UFSAR drawings. The position of this valve is controlled by plant procedures. Should it be left open insufficient back pressure would exist and D11N424 would go into alarm. Failure of this valve will not impact any equipment important to safety. This valve is shown on various plant drawings. This change serves to update plant configuration to reflect the existing vent valve.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0083

UFSAR Revision No. 8

Reference Document: TSR 28559

Section(s) 9.2.5.3.1.3

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Revise Section 9.2.5.3.1.3 to Include Mention of Freeze Protection Function of 1-inch Drain Lines

SUMMARY:

Revise Section 9.2.5.3.1.3 to include mention of freeze protection function of 1-inch drain lines. These drain lines provide a means by which the 18" supply headers to the MDCT spray networks can drain subsequent to the cessation of Mechanical Draft Cooling Tower (MDCT) operation. If the drain lines were to become plugged during sustained periods of sub-freezing weather, the 18" MDCT supply header may remain sufficiently full that subsequent freezing and expansion of standing water in these lines may render the Ultimate Heat Sink (UHS) inoperable.

Previously, the freeze protection function served by these drain lines and their associated form of common mode failure were not widely recognized; as a result, actions were not taken to periodically verify unobstructed drainage during normal surveillances.

No unreviewed safety question was found to exist. The MDCT drain lines were installed at the time of original construction of the Fermi 2 RHR Complex for the purpose of providing freeze protection for this system. Including the as-built description of the function of these drain lines in the UFSAR section of RHR Complex freeze protection does not change the intended design of the plant from that which is already described in the UFSAR. Since these drain lines assure availability of the MDCTs during cold weather operation and the freeze protection function of these lines satisfies the same design criteria of the other safety and freeze protection measures mentioned in the UFSAR, including their function will not create an unreviewed safety question.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0084

UFSAR Revision No. 8

Reference Document: TSR 28575

Section(s) NA

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Revised Pressure Drop Across RWCU Restricting Orifice G3352D001 and Flow Control Valve G3300F033

SUMMARY:

TSR 28575 revised the pressure drop across RWCU restricting orifice G3352D001 and flow control valve G3300F033 for the blowdown mode of operation (mode C) where reactor water is sent to the main condenser or to the radwaste system. The system design flow rate for blowdown mode is 92 gpm per flow diagram M-5858 Rev C, however, the pressure drop (800 psi) listed for the restricting orifice is based on a flow rate of 110 gpm per original component specifications. The flow control valve design has adequate margin to compensate for the actual pressure drop of the orifice at the design flow for blowdown mode. Correction of this pressure drop to the proper value for the UFSAR design flow rate resulted in revision of UFSAR Figure 5.5-20.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0113

UFSAR Revision No. 8

Reference Document: TSR 28768

Section(s) NA

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Remove N30N001, N30N612 and N30N613 from UFSAR Figures

SUMMARY:

N30N001, N30N612 and N30N613 are temporary instruments installed under a Temporary Modification to monitor the success of EDP 13893 "Hardpipe of Extraction Steam Line". These instruments were given plant PIS numbers even though they input to a temporary monitoring system. The temporary modification process will track deletion of these PIS numbers once the equipment is removed.

Safety Evaluation 94-0077 previously evaluated installation of these instruments. UFSAR Figures 10.4-9 and 10.4-2 were updated and included those instruments. Since these instruments are installed under a TMOD, it is inappropriate to show them on UFSAR drawings. Therefore, they are being removed.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0136

UFSAR Revision No. 8

Reference Document: TSR-28539B

Section(s) NA

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Permanent Installation of the Kelly Enclosure on Fifth Floor Reactor Building

SUMMARY:

The Kelly enclosure is located at the northwest corner of the fifth floor Reactor Building. The enclosure was added to Drawing A-2003-01, which corresponds to UFSAR Figure 9.1-3, Sheet 1. This safety evaluation was prepared to evaluate the impact and safety implications of installing the enclosure on a permanent basis. It was concluded in the SE that there is not an unreviewed safety question as a result of the UFSAR change.

FERMI 2

SAFETY EVALUATION SUMMARY REPORT

ENGINEERING DESIGN PACKAGES

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 86-0137

UFSAR Revision No. 8

Reference Document: EDP 4789
TSR 28079

Section(s) 11.4.3

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Removal of Valves T5000F406A and T5000F406B

SUMMARY:

After completion of EDP 1422 which replaced unqualified hydrogen and oxygen monitoring units in the Primary Containment Monitoring System (PCMS), valves T5000F406A/B were abandoned in place. As these valves were Primary Containment Isolation Valves, they were administratively maintained closed but were still in the plant surveillance program. This change deletes the valves altogether and caps the line which penetrates the Primary Containment. Additional changes include pullback of cabling and removal of unused piping. This change eliminates components that could have affected Primary Containment thus improving safety margin.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 86-0238

UFSAR Revision No. 8

Reference Document: EDP 1786

Section(s) 11.4.2

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Converting PCMS Particulate Monitor to Installed Spare

SUMMARY:

The Primary Containment Monitoring System (PCMS) has an installed particulate radiation monitor. This channel is being converted to an installed spare to in order to conform with the UFSAR description in Section 11.4.2.8.2.1. The remaining noble gas monitor will not be affected. The particulate monitor is not safety related and its removal from use will have no safety impact.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 88-0235 Rev 2

UFSAR Revision No. 8

Reference Document: EDP 7816

Section(s) NA

Table(s) 9.3-1

Figure Change [x] Yes [ ] No

Title of Change: Turbine Building Sample Panel Upgrade

SUMMARY:

This EDP implements the following changes to the Turbine Building Sampling System:

- Install controls for the Sample Drain Collection Tank.
- Install Drain Collection Tank level switches.
- Provide electrical power to Drain Collection Tank Pump motor and discharge valve.
- Install piping from sample panel to Drain Collection tank.
- Install new sample cooler and conductivity monitors.
- Removal of previously installed temporary sampling equipment.

This modification provides enhanced water quality monitoring for the Process Sampling System. This equipment is not safety related. There is no safety impact created by this change.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 90-0123 Rev 2

UFSAR Revision No. 8

Reference Document: EDP 11266

Section(s) NA

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Replacement of Multipoint Recorders

SUMMARY:

This modification replaced various L&N Speedomax multipoint recorders with Westronics Series 3000 and DDR10 recorders as part of a Human Engineering improvement project. The new recorders meet the design criteria of the existing recorders. There is no plant safety impact due to this change.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 91-0101 Rev 1

UFSAR Revision No. 8

Reference Document: EDPs 12563, 12419, 11283 11251, PDC 12974

Section(s) 10.4.1.5

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Proposed changes to Condensate Filter Demineralizer (CFD) system.

SUMMARY:

EDP 12663 replaced the existing seven CFD dp indicators at the local control panel, added new CFD flow indicators which satisfies HED 1202 in regard to CFD operations from local panel. New relays and contacts to existing relays, instrumentation loops, interlocks, logic and annunciator circuits were added to support 8th demin installation. Existing CFD flow inputs to process computer were deleted.

EDP 12663/EDP 12419 deleted all CFD controls from main control room COP H21-P816 insert A500. This control is described in UFSAR 10.4.6.2 CFD system description. HED 1108 and 1202 identified and recommended they be removed. New DP indicator PDI-R605 were added to the main control room.

EDP 12419/EDP 11283 replaced existing CFD conductivity recorder at the main control room COP H11P816 "D" surface, CRE-R603 is now the CFD common recorder, MRE-R603, with inputs from conductivity transmitter, CFD dp transmitter, individual flow indicators.

EDP 11251 removed controls for hotwell coil steam system from main control room. PDC 12974 recommended that the controls be relocated to a local panel. CFD bypass valve position indication in the main control room was relocated from P816 to P805.

Several drawing errors were corrected.

The changes will not cause an increase in probability or the consequences of any accident or transient previously evaluated in the UFSAR. These changes do not degrade the performance of any safety system below its design bases to function in the accident analysis and do not increase challenges to any safety systems. If any of the changes cause CFDs to isolate, all effluent valves close and CFD bypass valve open and maintain FW flow, however if bypass valve fails to open "Loss of Feedwater Flow" would occur which is an analyzed accident in UFSAR 15.2.7 and proposed changes do not increase the frequency.

Opening the CFD bypass valve will introduce untreated water to the reactor which will effect the chemistry however, this is not a new type of accident/transient. The replacement of recorder R603 with a new microprocessor based devise has been evaluated relative to NRC concerns and installation of new recorder will not create the potential for new type of malfunction of equipment important to safety.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 92-0003

Reference Document: EDP 10820
TSR 28679

UFSAR Revision No. 8

Section(s) NA

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Hardened Torus Vent Installation

SUMMARY:

The hardened torus vent allows a controlled torus airspace release to the environment to prevent exceeding the primary containment pressure limit during severe accidents that are outside of the design bases. This modification:

1. Extended the original torus vent through the reactor building wall into a dedicated stack.

2. Installed two torus vent secondary containment isolation valves (TVSCIV) to maintain secondary containment integrity when venting is not required.

3. Installed a radiation monitor to alert the operators that a release is in progress.

4. Supplied non-interruptable air system (NIAS) instrument air to the existing torus primary containment isolation valves.

5. Modified the torus vent pipe support system as required by the new design conditions.

Prior to this modification, Fermi 2 emergency operating procedures directed the operators to vent the torus to the refueling floor inside the secondary containment. It was expected that the discharge would subsequently blow out siding and escape to the environment. This event would breach secondary containment integrity and contaminate the reactor building. The hardened torus vent does not challenge secondary containment integrity and allows reactor building accident recovery activities to continue unhampered due to the absence of radioactive particulates and gases in the building. This change is a recommendation of the NRC Mark I Containment Performance Improvement Program and fulfills the requirements of NRC Generic Letter 89-16.

Torus venting is used to prevent overpressurization damage to primary containment during severe accidents that are beyond any design basis accident. It is only used after all other means of containment cooling are ineffective and primary containment is jeopardized. The design of this system ensures that the primary and secondary containment design bases are not compromised while the system is in standby. The TVSCIVs are designed to assure the availability of the standby gas treatment system (SGTS) when torus venting is not performed. The TVSCIVs are redundant, supplied by divisional power supplies, and fail closed. They are normally positioned closed. The TVSCIVs are operated by a keylock switch and are administratively controlled. Therefore, inadvertent operation of the TVSCIVs is prevented. Opening the TVSCIVs renders the SGTS inoperable. However, temporary loss of the SGTS is acceptable because the system is no longer needed to remove post-accident fission products from secondary containment when primary containment is vented to the environment. Plant emergency operating procedures govern the use of these valves. Changing the source of instrument air for the torus primary containment isolation valves does not change their control logic. These valves fail closed on a loss of instrument air and, therefore, do not rely on pneumatics to achieve their safety objectives. Sufficient NIAS capacity exists for the new air usage loads introduced by these valves. The torus primary containment isolation valves still isolate during a postulated LOCA. However, the isolation signal is bypassed when torus venting is required. Bypassing the isolation signal is governed by Fermi 2 emergency operating procedures. The piping system is designed as a Class D, Seismic I system and has been reanalyzed at the new operating conditions.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 92-0012

Reference Document: EDP 12871
EDP 12666

UFSAR Revision No. 8

Section(s) 3.3, 9A.4, 9A.5

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: New Outage Building

SUMMARY:

This evaluation addresses the erection of the new outage building adjacent to the south wall of the reactor building to house contractors during outages. This building is also connected to the turbine building by a breezeway. The new building eliminates the expense of mobilizing and demobilizing temporary trailers that were previously used to house contractors and improves productivity by locating the contractors close to the heavy work areas in the reactor and turbine buildings.

There is no safety related equipment installed in the outage building or breezeway and no changes are made to the safety related equipment or structures due to this building. The new outage building is not structurally connected to the reactor building. Therefore, the reactor building is not seismically affected. The evaluations of tornado missile damage for the areas of the spent fuel pool, residual heat removal cooling towers and miscellaneous reactor/auxiliary building penetrations are not affected because no new types of missiles are introduced by the existence of the outage building. Reactor/auxiliary building emergency exits are still useable. Emergency battery packs are installed in the outage building to illuminate the operators' exit path during a power failure. The electrical loads are within the available capacity of the construction substation and maintenance ring bus. A fire originating in the outage building will not spread into the plant because of the 3 hour fire rated walls of the reactor/auxiliary and turbine buildings. A dedicated fire detection system and the availability of hose houses in the vicinity, in addition to the control room alarm, will ensure timely suppression of a fire.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 92-0078

Reference Document: EDP 13289

UFSAR Revision No. 8

Section(s) NA

Table(s) 9.3-1

Figure Change ☐ Yes ☒ No

Title of Change: Main Condenser Waterbox Sample Line Replacement

SUMMARY:

This modification replaced and rerouted the main condenser northeast inlet, southeast inlet, and east outlet water box sample lines. The original 1/4 inch sample lines were excessively long which resulted in little or no sample flow. The new 3/8 inch sample lines are routed to new sample locations and provide accurate monitoring of the circulating water (CW) system to prevent fouling and lost plant capacity.

The new sample lines do not interact with and are not located near systems required for safe shutdown of the reactor. Failure of these sample lines does not affect the function of the CW system because it has adequate makeup capacity to overcome any sample line leakage. Sample line failure is bounded by the turbine building flooding accident analysis described in UFSAR subsection 10.4.5.3.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 93-0003

UFSAR Revision No. 8

Reference Document: EDP 12689

Section(s) 9.4.2.2, 9.4.2.5

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Fan-Coil Cooling Unit Control Modifications

SUMMARY:

This modification changed the control scheme of eleven fan-coil cooling units from temperature-based automatic control to continuous running manual control. This change was made on the Division I and 11 standby gas treatment system (SGTS), residual heat removal (RHR), emergency equipment cooling water (EECW), and hydrogen recombiner system coolers. The Division I core spray system / reactor core isolation cooling (RCIC) system, Division 2 core spray system, and Division 11 high pressure coolant injection (HPCI) system coolers were also modified. The original 3-position (run, auto, and off-reset) switches were replaced with 2-position (run and off-reset) switches; the motor trip alarm circuit "auto-off' and "high temperature" contacts were eliminated; and the temperature controller function was disabled. The controller temperature indicator will continue to function. The existing safety related power supply is used. However, since both the controller and temperature indicator have been down graded from Q to non-Q, the fuses are coordinated to provide the required isolation between the temperature indicator and the safety related power supply. This modification was made because, at the temperature control switch setpoint of 75 degF, the fancoil cooling units were running continuously while in the automatic mode. Therefore, there is no need for automatic temperature control. This modification increases the reliability of the fan-coil cooling units by eliminating unnecessary control components and eliminates periodic calibration and procurement of qualified temperature controllers.

This modification does not change the function or operation of any system, equipment, or component important to safety and does not change the function of the subject fan-coil cooling units. The subject fan-coil cooling units are designed to run continuously. An engineering evaluation of this modification indicates that running the fan-coil cooling units continuously will not lower the room temperatures to the extent that safety related equipment is affected. The resulting temperature of the emergency safety features equipment remains in the normal range.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 93-0028

UFSAR Revision No. 8

Reference Document: EDP 13787

Section(s) 1.2.2.15, 9.5.1.2.1

Table(s) 9.5-1

Figure Change [x] Yes [ ] No

Title of Change: Motor Operated Valve Open Torque Switch Bypass Contact Change

SUMMARY:

This modification changed the "open" torque switch bypass contact on Reactor Water Cleanup (RWCU) Inboard Primary Containment Isolation Valve (PCIV) G3352F001 from rotor #2, contact #5 to rotor #4, spare contact #13. This allows the "open" torque switch bypass contact to open when the valve is 5% open. The original scheme allowed the contact to open when the valve was just off its seat. This change prevents the "open" torque switch from torquing out the valve due to initial valve opening forces.

G3352F001 continues to function as originally described in the UFSAR. The new contact arrangement has no impact on the safety function of this valve because the valve is required to close when primary containment or accident isolation signals are present. Running and peak current were measured with the "open" torque switch completely bypassed and the values were well within the valve motor nameplate ratings. This change does not degrade the performance of any safety system below its accident analysis design bases and does not increase the challenges to any safety system. There is no increase in onsite or off site radiation doses or radioactive material release. No new failure or common failure modes are created and single failure/separation criteria are not violated. This modification does not affect the G3352F001 Technical Specification isolation stroke time.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 93-0041 Rev 3

UFSAR Revision No. 8

Reference Document: EDP 13687

Section(s) NA

Table(s) 6.2-2,6.2-13,6.2-15

Figure Change [x] Yes [ ] No

Title of Change: Emergency Equipment Cooling Water to Drywell Piping Modifications

SUMMARY:

This EDP makes the following changes to the supply of Emergency Equipment Cooling Water to the Drywell :

- Replaces internals of two MOVs which have required excessive outage rework.
- Installs new gate valves to allow isolation of EECW to facilitate valve leak testing.
- Reroute piping to Reactor Recirculation Pumps to allow EECW service with portions of the Drywell piping drained thus maintaining operability.
- Installs new manual isolation valves to allow for later connection of a new drywell cooling system that will be implemented by another design change.

The function and operation of the EECW system are not altered by this change. This will not have any adverse effect on the reliability of the EECW system or of any other interfacing system. The new isolation valves will be used only during maintenance and are constructed to the same specifications as the existing system and therefore no more likely to fail. The UFSAR related information is updated for this change.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 93-0047

UFSAR Revision No. 8

Reference Document: EDP-12940

Section(s) NA

Table(s) NA

Figure Change [x] **Yes** [ ] **No**

Title of Change: Replace Four Condensate Filter Demineralizer Precoat Section Impulse Lines and Pressure Gauges

SUMMARY:

The existing sensing devices were susceptible to being plugged with precoat filter materials. The tap was revised with a TEE connection to allow flushing and draining. The armored capillary tubing is mounted to the upper half of the TEE and routing of the lines is similar to the previous lines and gauge mounting is similar to original.

This system is non safety related and the precoat section is only in the Turbine Building. The condensate filter demineralizer system is shown on condensate system drawing, which is figure 10.4-7 in the UFSAR. This drawing was modified to indicate the capillary filled tubing by the addition of cross hatches on the impulse lines. This change will provide more reliable indication for pressure gauges in the precoat cycle. These gauges are not required for normal precoat cycle operation only to provide the operator with information when the precoat is not proceeding properly.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 94-0014

UFSAR Revision No. 8

Reference Document: TSR 26013

Section(s) NA

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: increased Settings of the Reactor Recirculation Pumps (RRP) MG Sets Speed Limiters

SUMMARY:

This modification increased settings of the RRP MG sets A and B speed Limiters 2/3 (B31K621A and B) to approximately 40% rated RRP speed. The actual Limiter 2/3 setpoints were established during the performance of procedure 57.000.15, "Recirculation System Performance Data Collection" at RRP speed equivalent to 52% rated core flow for operation at the maximum extended load line.

The recirculation system runback with the subsequent SBFW pump startup is bounded by the analyses of loss of feedwater flow, inadvertent HPCI actuation and recirculating flow control failure transient. The function of the recirculation speed control limits was not altered by this modification. The new limiter 2/3 settings and the use of the SBFW system enhance plant capability to maintain an adequate margin from the proposed region of thermal hydraulic instability and to avoid a reactor scram. The Limiter 2/3 setpoints are established based on cycle-specific data to maximize the scram avoidance probability. The increase of the RRP Limiter 2/3 setpoints and the actuation of SFBW following the recirculation runback do not alter the operation of either the recirculation or SBFW system. The Limiters 2/3 are used for quick power reduction to maintain plant availability and SBFW is started for a quick level recovery.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 94-0026

UFSAR Revision No. 8

Reference Document: EDP 13821

Section(s) 9.5

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Installation of Cross-Connection for the Emergency Diesel Generator (EDG) Starting Air Compressors

SUMMARY:

This modification installed a hard pipe cross-connection for the EDG starting air compressors. This allows for air receivers within one division to be manually valved into one air compressor when one of the compressors is out of service for maintenance or repair. This ability to provide charging air allows the plant to remain within the Technical Specification limit for air receiver pressure and not to have to enter a Limiting Condition for Operation (LCO) action. In addition, the code classification upstream of the inlet check valve to each receiver was revised to indicate "Group D, Seismic II/I, non-Q," consistent with the stress calculation and the isometric piping drawings. The cross-connection design modification maintains the divisional integrity of the EDGs even when the air receivers are connected. Failures of the cross connection piping or other failures could not result in loss of both divisions of the EDG air receiver pressure or any other impact to more than one divisional equipment. The worst case loss of a divisional pair of EDGs as described in the UFSAR accident analysis is not impacted by this modification. Revision to the code break classification (in UFSAR Figures 9.5-8 and 9.5-9) at the air receiver check valves to indicate Seismic II/I is consistent with existing UFSAR text and SER criteria.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 94-0034, Rev 1 **UFSAR Revision No.** 8

Reference Document: TSR-26484
LCR-94062-UFS

Section(s) NA

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Replacement of Obsolete Conductivity Instruments in Radwaste Sampling System

SUMMARY:

This modification replaced the obsolete conductivity transmitters (G11-N030, -N092, -N726 and -N727), conductivity cells (G11-N031, -N093, -N354 and -N353), associated recorders (G11-R714 and -R726), and modified alarm units (G11-N683 and -N684) in the instrument loops.

The replacement transmitters with the associated instruments perform the same functions as the previous design. The new transmitters are be mounted on the same instrument racks, and the new recorders fit in the same location on the radwaste control panel.

UFSAR Figure 9.3-4 has been revised to reflect the existing plant conditions and show that the replacement conductivity cells have a ball valve instead of a gate valve.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 94-0045

UFSAR Revision No. 8

Reference Document: EDP-26116

Section(s) NA

Table(s) 9.4-3, 9.4-5

Figure Change [x] Yes [ ] No

Title of Change: Replacement of AC Switchgear Rooms Air Conditioners and Modification in Reactor Building Steam Heating System

SUMMARY:

This modification replaced the four non safety related air conditioners that cool both AC switchgear rooms (Division I and II) with new air conditioners with the same cooling capacity. These air conditioners cool the AC switchgear rooms during normal plant operation, and they maintain a room temperature between 80 - 86 degF to prolong the life of energized electrical equipment in the room. During design basis accidents and emergencies, safety-related fan coil units cooled by the emergency equipment cooling water system provide the necessary ambient room cooling. No changes are being made to the safety-related fan cooling units. The existing nonsafety-related air conditioners were reaching the end of their service life and required replacement. The new units will be operated in the same manner from the same local control panels as the old units. This modification also deleted the existing duplication of information in UFSAR Table 9.4-5, and UFSAR Table 9.4-3 information has been revised.

This modification also extended the reactor building heating system vent up the outside of the reactor building wall from just above grade to above the condensing units (for switchgear air conditioners). This will eliminate the moisture and icing problems which have been experienced before. A orifice has also been installed in the vent line to isolate secondary containment (Reactor Building) should the line/tank require breaching for maintenance. The vent line extension is designed to meet the same seismic and structural criteria (wind, tornado, ice) as the old line.

The modification did not impact any electrical equipment in the AC switchgear rooms or secondary containment integrity.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 94-0063 Rev 2

UFSAR Revision No. 8

Reference Document: EDP 26321

Section(s) 10.2.2.4.C.n

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Upgrade of MTG Vibration Supervisory Equipment and Setpoint Revision

SUMMARY:

This safety evaluation describes an upgrade of main turbine generator vibration supervisory equipment. This was required as the existing probes were damaged in the 12/25/93 turbine failure. This also updates UFSAR information on the turbine trip logic vibration setpoints and time delay.

This modification also made a number of other improvements in the control room instrumentation. These improvements include the same scaling (0-20 mils) for both shaft and pedestal, shaft only inputs are connected to control room recorder, and adding a new turbine supervisory trouble annunciator in the control room.

Turbine supervisory equipment is not safety related and has no accident mitigation function. These changes are being made to enhance protection of the main turbine and related equipment.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 94-0109

Reference Document: EDP 26837

UFSAR Revision No. 8

Section(s) 10.4.9.1

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Implementation of Zinc Injection System

SUMMARY:

This modification installed skid mounted equipment in the TB-1 steam tunnel that will be used for the injection of depleted zinc oxide into the feedwater. The skid includes a zinc oxide dissolution column, strainer, filter, flow straightener, flow control valves, other associated piping and valves, and instrumentation. The zinc injection system was tested and placed in operation during Cycle #5. Zinc has been shown to reduce radiation fields coming from various primary coolant pipes by occupying the deposition sites that cobalt-60 would occupy. The cobalt-60 will then be removed by the reactor water cleanup filter demineralizer instead of deposited on piping surfaces. The zinc injection system is nonsafety-related, QA level Non-Q, seismic category None. The new system is not required to mitigate consequences of an accident or for safe shutdown of the reactor. The system is a passive system with no active components.

The impact of zinc addition in the feedwater has been evaluated for nuclear fuel, primary coolant loop materials, feedwater and reactor water chemistry, radwaste accident (UFSAR 15.7.3), feedwater system operation and postulated double ended break of 2-inch line in the zinc addition system. The results of these evaluations indicated either an insignificant impact or no adverse consequences from those already analyzed in the UFSAR.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0002

UFSAR Revision No. 8

Reference Document: EDP 27275
EDP 27329

Section(s) NA

Table(s) NA

Figure Change [x] Yes [ ] No

Titie of Change: Replacement of Flow Indication Switches on Residual Heat Removal (RHR) System.

SUMMARY:

This modification replaced the degraded flow indicating switches, E11N021A & B with a Barton 581A-2 flow switch. The RHR system function only requires the switch and therefore using model 581A-2 is an improvement over the old Barton 289A flow indicating switch. The new switches have the same span, 0-20 inches water column, as the old switches. The modification also provided new tubing configuration to utilize the calibration/vent ports on the switches to help in removing any trapped air during calibration. The flow switch set points were also changed from low to middle range of the instrument spans thus making them more reliable.

The new switches are QA 1, Seismic 1, EQ qualified switches. These switches are mounted in the same instrumentation racks as the old instruments. The tubing design from the existing flow transmitters to these instruments has not been altered and therefore the probability of the instrument line failure is not altered. The new switches do not impact any of the plant's safety or protective functions. Therefore, it has no impact on any margin of safety as defined in the plant's Technical Specifications, SER, or the UFSAR.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0010

UFSAR Revision No. NA

Reference Document: EDP 27444

Section(s) NA

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Replacement of an Expansion Joint in Condensate Storage and Transfer System.

SUMMARY:

This modification replaced the leaking expansion joint P1100D007F with a new expansion joint that is similar in design except for it being longer and having more corrugations to the bellows. The purpose of the safety evaluation was to evaluate the temporary measures (freeze plug and expandable pipe plugs) used to isolate the affected portions of the Condensate Storage and Transfer System during implementation of the modification. This modification was performed with the plant in cold shutdown (Mode 4).

The expandable plugs perform a passive function and will be able to seat tight against the maximum expected pressure. Per UFSAR 9.2.6.3 the condensate storage and transfer system is not required during a reactor shutdown and any accidental release of liquids from the condensate tanks would not result in exceeding 10 CFR 20 limits. The possibility of brittle fracture or loss of the freeze plug was minimized by procedure control. Therefore, the potential for pipe failure was not considered to have increased over other more bounding turbine building pipe failures (UFSAR 10.4.5.3). Loss of freeze plug was bounded by the UFSAR 9.2.6.3 accidental release of liquids in the condensate tanks.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0011

UFSAR Revision No. 8

Reference Document: EDP 27301

Section(s) NA

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Replacement of Condenser Low Level Trip Switches.

SUMMARY:

This modification replaced the existing magnetrol condenser level switches (N61N405A, 405B, 406A, and 406B) with Barton differential pressure switches (N61N405C, 405D, 406C, and 406D) with sealed sensors and adjustable setpoints. The use of the Barton differential pressure instruments isolates the process sensing leg from the reference leg. This prevents hotter water in the process sensing leg from being exposed to the condenser low atmospheric pressure as felt in the reference leg and eliminates flashing and boil off which was experienced in old magnetrol switches. The new Barton level switches have an adjustable setpoint which is an enhancement. The new switches perform the same function as the original devices.

The probability of a feedwater line break outside the containment is unaffected by this modification. However, the new trip setpoint of 16 inches of water decreasing trips the condenser pumps, heater feed pumps, and the reactor feed pump turbine sooner in a feedwater line break. Therefore, less water will be deposited in the reactor building. Thus, the consequences of a feedwater line break is reduced and the flooding analysis (UFSAR 3.6.2.2.2.2.2), as is remains conservative. The installation of Barton level switches does not alter or reduce the margin of safety as defined in the Technical Specifications, UFSAR, or SER.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0016

Reference Document: EDP 26175

UFSAR Revision No. 8

Section(s) NA

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Corrosion Monitoring and System Cleanup in Reactor Building Closed Cooling Water System.

SUMMARY:

This modification installed four taps in the reactor building closed cooling water (RBCCW) system supply and return header for monitoring corrosion and system cleanup. This modification allows maintenance of water purity levels with the new water treatment taps and measurement of corrosion rates such that corrective action can be completed before any system problems develop.

The RBCCW system design parameters are not changed by this modification. Therefore, the potential for release of contaminated water is not increased. The installation of the side stream water treatment increases the flow in the header sections but this increase is negligible. The radioactive source term available for release during any accident scenario is not impacted by the modification. This modification and its use makes the system more reliable by providing corrosion monitoring and cleanup capability. This modification does not reduce the margin of safety as defined in the bases for any Technical Specification, the UFSAR, the SER and its supplements, or any other design specification.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0020

UFSAR Revision No. 8

Reference Document: EDP 27247

Section(s) 8.2.1, 8.2.2

Table(s) 8.2-1, 8.2-2

Figure Change [x] Yes [ ] No

Title of Change: Addition of New Shoal Substation

SUMMARY:

This modification installed a new Shoal substation between Custer substation and Fermi 120KV switchyard. The nameplates at various panels such as control room and the simulator (panel H11P811), and at the dedicated shutdown panel (H11P623) were replaced to change Custer line to Shoal line. Due to installation of the Shoal substation, the transmission line length between Custer and Fermi has increased to 13.8 miles. This modification also incorporated previously missed drawings revisions associated with the renaming of the Fermi 1 Brownstown line with Swan Creek line performed under PDC-9353.

The installation of the new substation between Fermi and Custer was evaluated for the following design criteria: the transmission circuit outage ratio and restoration times (UFSAR Table 8.2-2), the relay schemes at the 120KV switchyard, the available short circuit MVA at Fermi 120KV switchyard, and the per unit voltage available at Fermi 120KV switchyard. The evaluation concluded that there is no adverse impact due to installation of the new Shoal substation.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0024 Rev 1

UFSAR Revision No. 8

Reference Document: EDPs 26834, 26835, 27352, 27353,27324
TSR 27567
IPTE 94-04
SOE 95-12

Section(s) 1.7.2, 2.2.3, 3.3.2, 3.5.1, 3.6.1, 3.6.2, 5.2.3, 9.A.4.7, 15.0

Table(s) 11.1-5, 11.3-2, 12.1-18

Figure Change [x] Yes [ ] No

Title of Change: Implementation of Hydrogen Water Chemistry (HWC) Demonstration Program

SUMMARY:

This modification implemented the HWC Demonstration Program for eventual long-term usage of HWC system. HWC is a method of reactor water chemistry control aimed at the control and mitigation of Intergranular Stress Corrosion Cracking (IGSCC). IGSCC control is accomplished by the addition of hydrogen gas to the final feedwater in an effort to reduce dissolved oxygen concentration resulting from radiolytic decomposition of water in the reactor core. By reducing the oxygen concentration in the reactor water, the corrosion potential of the water is reduced. The HWC system is non-safety related QA Level non-Q, and Seismic Category none. The HWC system is not required to mitigate the consequences of any accident or malfunction nor to achieve safe shutdown of the reactor. All modifications to support HWC were performed in the Turbine Building or outside in the yard to non Q systems, structures and components. HWC system installation conforms with essentially all requirements ("shall" statements) of the EPRI Guidelines for Permanent BWR Hydrogen Water Chemistry Installation - 1987 Revision. Any exceptions to EPRI document have been properly evaluated and dispositioned. The HWC system design also meets applicable industry codes and standards.

HWC impact on plant systems/components (gas supply facility-siting criteria, flooding, seismic, tornado, transportation accident, fire protection, security, lightning, meteorology; main condenser; steam jet air ejectors; off gas system; steam piping and torus; sumps; reactor fuel; reactor internals; water level reference leg backfill system; feedwater system; reactor protection system; water chemistry; and hydrogen and oxygen monitoring system) and plant programs (accident analysis, radiation protection/ALARA, environmental qualification and technical specifications) has been carefully evaluated. The evaluation has concluded that operation of plant systems will not be adversely affected by operation of HWC system.

The HWC system is not an initiator for any of the accidents previously evaluated for Fermi 2 and described in the UFSAR. Installation and operation of the HWC System does not alter any of the initial inputs, conditions or assumptions for the probabilities of these accidents. The HWC system components are designed to the same codes and standards as the plant systems with which they interface. The only accident that is affected by implementation of HWC is the Control Rod Drop accident (CRDA). An evaluation of this accident by GE indicates that for a CRDA, the resulting dose rate at the MSLRM is over 160 R/hr. This value is irrespective of whether HWC is operating or shutdown. If HWC is in operation, with the setpoint of 30 R/hr, a design basis CRDA would still easily be detected by the MSLRM. Since the MSLRM dose rate from a CRDA is over five times the proposed MSLRM setpoint, the high radiation signal caused by the CRDA will still provide an early response to cause scram and MSIV isolation.

Any increase in MSIV closure time due to a MSLRM setpoint change from 3 R/hr. to 24 R/hr. with HWC is relatively insignificant because the activity released from the fuel, 100% of the noble gases and 10% of the iodine (as required per SRP 15.4.9) are assumed to be carried to the condenser before MSIV closure is complete. Consequently, the design basis assumptions of the accident as analyzed in section 15.4.9 of the UFSAR remain unchanged and the consequent off site doses also remain unchanged.

The installation of a 20,000-gallon cryogenic liquid H_2 tank at the Fermi 2 site creates the possibility of an explosion that could affect the plant's safety system. The installation of this H_2 tank does not create the possibility of an accident of a different type, because the previously issued SER has considered the hazards due to operation of the nearby Edward C. Levy Company Quarry. This quarry is located about 5,600 feet from the nearest safety-related structure at Fermi 2 and about 1,600 feet from the Nuclear Operations Center (NOC). In the SER, the Staff concluded that, for operation of the proposed quarry, the hazard due to an air blast or ground motion are not significant, if the maximum amount of explosives on the quarry site is limited to 25,000 pounds. Although the explosion potential from the 20,000-gallon cryogenic liquid H_2 storage tank exceeds the 25,000 pounds explosive and the siting distance between the nearest safety-related structure and the tank is much closer than the 5,600 feet identified in the SER, the tank's siting meets the guidelines provided in EPRI document, which was accepted by the NRC staff. The cryogenic liquid H_2 tank has been designed and sited in accordance with EPRI document, which has been reviewed and approved by the NRC. The liquid H_2 blast analysis confirms that, in the unlikely event of a tank explosion, there is no effect on safety-related structures. the impact forces on the non-safety related structures is less than those from the site design-basis earthquake and tornado.

The Technical Specifications Table 3.3.2-2 require that the MSLRM nominal trip point be set at less than or equal to three times the full-power background. At the system design point of up to 3.8 ppm, H_2 injection, the dose rates may increase by a factor of up to eight. This will require an adjustment of the MSLRM setpoint to avoid undesirable scrams or MSIV isolations. Fermi 2 will keep the MSLRM scram and isolation trip at the current three times full-power background. However, the full-power background will be redefined to include the effects of HWC. The wording in the Technical Specifications and the Basis, need not be changed. HWC does not affect any other Fermi 2 Technical Specifications. The modification does not reduce the margin of safety as defined in the basis for any Technical Specification, UFSAR and SER.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0025 Rev 1

UFSAR Revision No. 8

Reference Document: EDP 26836

Section(s) 10.4.1

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Installation of Oxygen Injection in Condensate System.

SUMMARY:

This modification installed a new oxygen injection system into the suction of the condensate pumps. Increased concentration of dissolved oxygen (10-50 ppb) in the condensate system is necessary to provide corrosion protection to the carbon steel components in the condensate and feedwater systems. The oxygen is supplied from one of three sources manifolded together: local high pressure gas cylinder, local liquid cryogenic container producing low pressure gas, or gas from the main hydrogen water chemistry oxygen gas supply facility. The system is designed to ANSI B31.1 requirements and that of an ANSI 150 pound system similar to the portion of the condensate system that the oxygen is being injected to.

The addition of oxygen to the condensate/feedwater system is to increase long term reliability of the piping and components by controlling corrosion. This will also reduce the amount of corrosion products that goes to the reactor that could get irradiated or plate out on the fuel cladding. This modification does not reduce the margin of safety as defined in the basis for any Technical Specification, UFSAR, or SER or any other design specification.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0029

UFSAR Revision No. 8

Reference Document: EDP 26241

Section(s) NA

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Modification to Cooling and Lubricating Water Piping in the Circulating Water System.

SUMMARY:

This modification improved the design of cooling and lubricating water piping systems to the five circulating water pumps. The scope of the modification included changes in the piping material, moving the flow controls to the first floor at eye level, disconnecting from the general service water supply piping feeding the lower pump bearing and converting it to a pump pit vent, and redirecting the motor bearing lubricating oil cooler drain line to circulating water reservoir rather than the building sump. The changes in piping material will reduce the susceptibility to corrosion product build-up. The flow rotometers were also replaced by new flow meters with a larger bore thus not requiring periodic cleaning of the glass since the water flow is internal to a metal housing. The existing General Service Water System isolation valves (P4100F801 through F805) were replaced with new air actuators. The new isolation valves will fail closed on loss of power and fail as-is on loss of air supply. A duplex basket type strainer was also installed in the cooling water supply thus enabling on-line cleaning of the strainer.

The modification is non-safety related, QA level non-Q; and seismic category none. The design meets the Fermi system and Plant Engineering design standards applicable to this type of installation as specified in UFSAR 10.4.5.2. The failure of the cooling water lines to the circulating water pumps will affect pumps and result in shutting down that pump which could affect condenser vacuum. This has been analyzed in the UFSAR 15.2.5 and bounds the design of this modification. The circulating water pumps are not required for the safe shutdown of the plant.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0030 Rev 2

UFSAR Revision No. 8

Reference Document: EDP 27575

Section(s) 9.3.1

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Installation of a Maintenance Tap in Station Air System.

SUMMARY:

This modification installed a maintenance tap on the 8 inch inlet line to the west receiver tank (P5101A002) of the station air system and a 6 inch permanent air line tied to the maintenance tap so that alternate air source may be installed outside the north wall of the turbine building to support the station and control air system. The purpose of the tap is to facilitate installation of temporary air compressor(s) during maintenance or modification of the station air compressors or to supplement the need of compressed air. The components installed by this modification include two manual isolation valves, one swing check valve, one 3/4 inch drain valve and a full flow relief valve. A blind flange has been installed at the outside air line connection whenever the air line is not in use. All materials used in this modification meet or exceed the existing material requirements for the station air system.

Failure of additional components installed under this modification, or mis-operation of these components, will not impact the safe shutdown of the reactor and will not increase on-site or off-site dose to the public and/or employees. The station air system is isolated from Non-Interruptible Air System (NIAS) on low header pressure and does not impact the ability of NIAS to perform its safety related function. Loss of the station air system is bounded by UFSAR 15.16 (Loss of Instrument Air System). This modification does not reduce the margin of safety as defined in the basis for any Technical Specification.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0033 Rev 1

UFSAR Revision No. 8

Reference Document: TSR 27361

Section(s) 7.6.1

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Replacement of the Emergency Response Information System (ERIS) Display Consoles and Printers.

SUMMARY:

This evaluation justified the replacement of ERIS display consoles and printers located in the Technical Support Center (TSC) and the Emergency Operations Facility (EOF) with off-the-shelf personal computers and a combination of color inkjet printer for color or gray-scale screen hard copies and a laser printer for text type reports. This evaluation also justified removal of Figures 7.6-10 from the UFSAR which included the ERIS key board layout which was being replaced by a standard PC style keyboard.

This modification does not affect the design bases of ERIS, TSC, or EOF as described in the UFSAR. The controlled Detroit Edison drawing is still considered a Base Configuration Control Document, and as such, will remain a controlled document. This modification does not reduce margin of safety as defined in the bases for any Technical Specifications or UFSAR or SER.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0041

UFSAR Revision No. NA

Reference Document: EDP 27509

Section(s) NA

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Replacement and Reconfiguration of Differential Pressure Switch(es) in Emergency Equipment Cooling Water (EECW) System.

SUMMARY:

This modification replaced pressure switch P44N426A with a new switch of an identical model and reconfigured the instrument tubing for pressure switches P44N425A, B and P44N426A, B in EECW system instrument racks H21P474 and H21P475. The old pressure switch P44N426A had a history of failure during routine calibration. The new instrument tubing configuration corrects the past human factors concerns and reduces the potential of opening/closing of the wrong instrument valves. To facilitate the proper venting of pressure switches, the process tube connections have also been relocated from the top of the instrument to the bottom and vent valves have been added at the top of the instrument. This ensures a positive fill up of the instrument with water and any air pockets that may exist can easily by vented. In addition, this modification installed physical barriers around pressure switches P44N425A and P44N426A on instrument rack H21P474 to preclude damage to the instruments due to external objects. "INDICATOR NOT CALIBRATED" labels have also been installed on all four pressure switches. This essentially makes the indicating switches "Blind" switches with no useable local indication. The local indication was not used in any procedure or during operation of the system.

The replacement switch for P44N426A does not have a failure or malfunction mode that is different than the switch replaced. The physical barrier is seismically mounted on a Seismic I rack. This modification did not alter any system design, interface logic, principle of operation, or safety function of any safety related systems or any support systems. All newly added components are qualified and seismically installed. This modification does not reduce the margin of safety as defined in the bases for any Technical Specification, UFSAR, or SER.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0042

UFSAR Revision No. 8

Reference Document: EDP 26881

Section(s) NA

Table(s) 8.3-3, 8.3-4,8.3-6, 8.3-7

Figure Change ☐ Yes ☒ No

Title of Change: Replacement of Motor for Fan Cooling Unit (PIS # T4100B018)

SUMMARY:

This modification replaced the existing 20 HP Westinghouse motor with a 20 HP Reliance motor on Division 1 Residual Heat Removal pump room cooler (T4100B018). The replacement was made to assure that EQ requirements are maintained for this motor. Full load current of the Reliance motor is 23.5 amps where as the old Westinghouse motor was 26.6 amps. Therefore, due to a decrease in load by 2kw for EDG #12, the UFSAR tables 8.3-3, 8.3-4, 8.3-6, and 8.3-7 have been revised.

The replacement motor is environmentally and seismically qualified to meet the requirements of NUREG 0588 Category 1. The total load on each EDG for all conditions is within the short time rating of the diesel generator in accordance with paragraph C.2 of Regulatory Guide 1.9, Revision 2 and item 3.7.2 of IEEE Standard 387-1977.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0043

UFSAR Revision No. 8

Reference Document: EDP 26748

Section(s) 2.2.3, 9.2.3
A.1.7e

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Replacement of Makeup Water Demineralizer (MUD) with Reverse Osmosis (RO) System.

SUMMARY:

This modification replaced existing skid mounted MUD units and its associated acid and caustic systems with new RO unit. The influent and effluent water qualities as specified in UFSAR Tables 9.2-5 and 9.2-6 remain unchanged with this modification. The purified water is stored in the Demineralized Water System Tank as before. the RO unit provides higher makeup water quality, operational ease and better reliability than old MUD system. The RO unit does not use hazardous chemicals during operation. The new system is designed as non-Q and non-seismic, and conforms to ASME Section VIII and ANSI B31.1.0 Code requirements.

The demineralized makeup water system is not a safety related system and is not required for the safe shutdown of the reactor. The removal of acid and caustic tanks from the site reduces the probability and consequences of a chemical spill associated with the MUD system. No interconnection between potable water system and systems having the potential for containing radioactive material are generated by this modification. This modification does not reduce the margin of safety as defined in the bases for any Technical Specification, UFSAR, or SER.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0046 Rev 2 **UFSAR Revision No.** 8

Reference Document: EDP 27354 **Section(s)** Various

Table(s) 7.1-2,10.1-1

Figure Change [x] Yes [ ] No

Title of Change: Replacement of the Low Pressure (LP) Steam Path

SUMMARY:

During RF04, as the result of the 12/25/93 turbine failure, the 7th and 8th stage blades and diaphragms were replaced with pressure plates. This resulted in a 200 MWe loss in generator output. Therefore, it was necessary to replace the LP steam path to achieve a reliable 100% power level. This modification installs a new LP steam path designed and manufactured by GE. This new steam path has a slightly higher efficiency which should result in an 11MWe increase over rated output of the old English Electric machine.

Other changes that are part of this design include:

- Modification of LP drain pots
- Addition of stiffener plates to bearing boat supports
- Relocation of instrumentation
- Modification of LP Hood Spray system for manual operation.
- Change to overspeed trip settings

The LP turbines, as well as the entire MTG, are not safety related and are not required for safe shutdown of the plant. The increased efficiency will affect generator output slightly, but Feedwater temperatures will not be affected. Therefore, reactor power will not be impacted. Extraction steam and heater drain systems have been reviewed for impact. The minor changes have been found acceptable.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0051

Reference Document: EDP 27049

UFSAR Revision No. 8

Section(s) 5.5.8.2

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Add Bypass Lines to Reactor Water Cleanup (RWCU) System Regenerative Heat Exchanger.

SUMMARY:

Bypass lines will be used to maximize cooling potential of the non-regenerative heat exchanger and to prevent reheating RWCU return flow. The bypass line is intended to be used during Operating Condition 5 with Reactor cavity flooded. In the future, during refueling outages, to reduce total refueling time, complete offload of the core will not be done, instead, a core shuffle will be utilized. During some portion of refuel outages when decay heat loads are within RWCU capabilities, RHR shutdown cooling may be removed from service for maintenance

The bypass modification will have no effect on the chemistry control function of the RWCU and does not change operability of the RWCU filter demineralizers during the refueling outages. The bypass line is designed to the same requirements as the RWCU piping to which it is connected. As determined by the analysis prepared for the EDP, no additional pipe break scenario is created by the modification. The bypass line has no effect on RWCU functions or on the safety related design provisions for leak monitoring and isolation of the system which prevent reactor coolant loss and maintain RCPB integrity.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0058

UFSAR Revision No. 8

Reference Document: ECR 9207-2

Section(s) 7.7.1.3.3.5

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Add Description of Post-Scram Reactor Feedwater Level Setdown Logic to UFSAR text

SUMMARY:

UFSAR section 7.7.1.3.3.5 is being revised to add a description of Post-Scram Reactor Feedwater Level Setdown Logic. Following a reactor scram, the RPV water level controller setpoint is capable of being automatically lowered so that the Reactor Feed Pumps do not overfill the reactor vessel. On receipt of a scram signal via a contact of a RPS auxiliary relay, Post-Scram Reactor Feedwater Level Setdown Logic lowers the level controller setpoint after a time delay. The feedwater control system is not required for reactor safe shutdown nor is it required to operate after the Design Basis Accident. However, the feedwater control system continued operation is considered an important input for plant transients that cause level changes. There is no impact to plant safety functions or accident mitigation as a result of this change.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0061

Reference Document: EDP 27384

UFSAR Revision No. 8

Section(s) 15.1.2.2.2, 15.2

Table(s) 15.0-1

Figure Change [x] Yes [ ] No

Title of Change: MSR Modification

SUMMARY:

The actual modification to the Turbine Steam Moisture Separator Reheaters was not completed in RF05, however existing plant analyses and the COLR have been updated to the new MSR characteristics. The MSR is considered a passive bypass system in that steam is sent to the MSR following a turbine trip until the isolation valves close. This bypass flow provides a beneficial ΔCPR for operating limits. Analyses have shown that the new MSR design is conservative to any thermal limits analysis. This information was included in the COLR and UFSAR Chapter 15 accident scenarios for UFSAR Revision 8.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0001 **UFSAR Revision No.** NA

Reference Document: EDP 26858 **Section(s)** NA

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Replace motor operator on RWCU Inboard valve, G3352F001

SUMMARY:

This EDP will increase the actuator size from an SMB-00 to an SMB-0 and will increase the motor size from 1.6 HP to 2.6 HP on G3352F001 to improve the valve's ability to stroke and to extend the actuator's life in this application. The total load on each EDG was evaluated for all the applicable conditions, taking into consideration the impact of all open design change documents and no impact existed. Thus the change of a larger actuator for G3352F001 will improve the valve's ability to perform its function while maintaining within design requirements of the EDG. No safety impact is created by this change.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0008 Rev 1 **UFSAR Revision No.** 8

Reference Document: EDP 26178 **Section(s)** 3.7.4, A.1.2

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Replacement of the Seismic Monitoring System

SUMMARY:

Seismic monitoring equipment is used to record seismic data to evaluate earthquake response spectra to assess impact to plant systems, structures and components. The existing seismic monitoring system is of an obsolete design that requires excessive maintenance expenditures. The new system incorporates state of the art digital technology to interpret, store and analyze seismic data.

The new system will comply with all existing requirements as well as implement the EPRI recommendations for seismic system upgrades. This change does not impact any Technical Specification. The design has been reviewed for security, fire protection, ventilation, electrical loading and EMI/RFI impact. No adverse consequences were identified. This modification will increase the seismic monitoring system's reliability and vastly improve the control room staff's ability to respond to a seismic event.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0015

Reference Document: EDP 12744

UFSAR Revision No. NA

Section(s) NA

Table(s) NA

Figure Change ☐ **Yes** ☒ **No**

Title of Change: Replacement of RWCU Filter Demineralizer Control Panel

SUMMARY:

The existing RWCU filter demineralizer control panel, G33P001, uses CAM timers and microswitches to execute backwash and precoat operations on the two RWCU filter demineralizers. This old technology is prone to performance problems and is difficult to calibrate. Also, there was no capability for operations personnel to perform a manual backwash should the timers malfunction.

This design change replaces the current RWCU filter demineralizer control panel with a new panel containing two microprocessor based units, one for each demineralizer. The new panel including the annunciator system will function essentially the same as the existing panel with regard to filter demineralizer functions. All logic interlocks to protect low pressure piping, alarm logic and setpoints will remain functionally the same. The new control panel will allow the entire filter demineralizer cycle to be programmed to maximize filter demineralizer performance. This will be a manpower savings for operations, improve plant chemistry, reduce operations in a radiation area and reduce radwaste generation (spent resins). This design also provides the capability for manual operation in the event of a control problem.

No safety functions of the RWCU system are affected by this change. No UFSAR descriptions are impacted. This new design will resolve chronic problems associated with the existing panel while improving RWCU system reliability and operability.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0020

UFSAR Revision No. 8

Reference Document: EDP 26849

Section(s) 9.3.1

Table(s) NA

Figure Change [x] **Yes** [ ] **No**

Title of Change: Replace Center and West Station Air Compressors with CENTAC Models

SUMMARY:

The Fermi 2 station and control air system provides the plant with a reliable source of clean, dry, oil-free compressed air. The non-interruptible portion of the control air system provides air to ESF equipment and is therefore classified as safety related. The station and interruptible control air systems are quality Group D and non-seismic.

The previously installed station air compressors are of a piston type and have required frequent maintenance. The new compressors are centrifugal type equivalent in capacity to the existing compressors, and will be much more reliable. The new installation meets all applicable design requirements. The new components are not safety related and will not impact any UFSAR analysis.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0023 Rev 1 **UFSAR Revision No.** 8

Reference Document: EDP 27995 **Section(s)** NA

Table(s) 6.2-2

Figure Change [x] Yes [ ] No

Title of Change: Installation of Bonnet Bypass to Prevent Pressure Locking of RHR LPCI Injection Valve, E1150F015B

SUMMARY:

The RHR LPCI Injection Valve, E1150F015B, has been identified in a Generic Letter 95-07 review as being susceptible to pressure locking conditions. The valve is a flex wedge (dual disc) design with a capped body tap located between the valve discs.

This design change precludes pressure locking by relieving the downstream pressure trapped between the discs to the downstream piping via a 3/4" diameter line routed from the body tap to an existing LLRT test connection downstream of E1150F015B. The inside diameter of this piping is larger than the RHR suction strainer mesh so no blockage of this line is postulated. This modification makes the upstream valve disc the sealing surface for Primary Containment and Pressure Isolation purposes. The valve's leak tightness is tested every 18 months. The design meets all existing piping specifications for this application and does not impact the current design from a structural standpoint.

This change ensures that RHR LPCI operability is maintained by eliminating the possibility of valve failure due to pressure locking, thus enhancing the plants capability to meet UFSAR requirements.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0024

UFSAR Revision No. 8

Reference Document: EDP 27741

Section(s) 9.2.7

Table(s) NA

Figure Change [x] **Yes** [ ] **No**

Title of Change: West Offgas Chiller Condenser Replacement

SUMMARY:

This change replaced the existing air cooled condenser on the West Offgas Chiller refrigeration unit with a water cooled condenser. Cooling water is supplied by the Turbine Building Closed Cooling Water system (TBCCW). A new 3" piping header was run from the existing TBCCW supply and return lines. The existing air cooled condensers cannot support efficient operation of the refrigeration units due to high ambient temperatures in the Turbine Building. This situation is exacerbated by the new refrigerant in use on the west unit. This modification optimized system performance by adjusting setpoints and controls of various valves. A low pressure switch was replaced with one of wider operating band to allow better control of the system.

This modification improved the West Offgas Chiller performance. No equipment important to safety or accident mitigation was affected. Existing UFSAR analyses remain bounding for off site releases from an offgas failure. Offgas system performance and reliability have been enhanced by this modification.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0028 Rev 1

Reference Document: EDP 27961

UFSAR Revision No. 8

Section(s) 1.2.2.15.15, 1.2.2.15.8.2, 9.5.1.2.1

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Installation of a Fire Protection Jockey Pump

SUMMARY:

The previous design for the fire protection system provided normal makeup water and system pressure from a normally open cross tie to the GSW system. This resulted in requirements for the GSW system to operate at an increased pressure, thus requiring additional pumps to maintain adequate system flow rates for component cooling and reducing the operating flexibility of the GSW system. As part of an overall GSW improvement project, the pressure of the GSW system was lowered to a value consistent with the design basis of the system.

Therefore, to supply makeup water to the fire protection system a jockey pump has been installed taking suction from the GSW system. As described in the UFSAR, the dedicated water supply for the fire protection system is from the existing 100% capacity electric and diesel driven fire pumps which automatically start on low system pressure and is not affected by this change. The new jockey pump runs continuously. Pressure is controlled by a back pressure control valve. Some changes to the biocide system were also required.

This system enhancement is installed on non-safety related equipment and does not impact plant safety or design margins.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0034 Rev 3

UFSAR Revision No. 8

Reference Document: EDP 28251

Section(s) Various

Table(s) 9.2-3, 9.2-4

Figure Change [x] Yes [ ] No

Title of Change: Modification to EECW Makeup Surge Tanks to Add Manual Emergency Water Makeup and Backup Nitrogen Pressurization

SUMMARY:

The EECW Division 1 and 2 Makeup Water tanks provide an expansion volume and system leakage makeup water for maintaining the EECW system operable. The tank is also pressurized with nitrogen that EECW piping will remain filled should the EECW pump remain shutdown for extended periods while RBCCW is isolated from EECW.

The EECW system along with its companion system of EESW is QA level 1 and is designed to provide essential component and system cooling water to ensure the operability of those systems required to bring the plant to and maintain safe shutdown. However, the nitrogen pressurization (T4802) and makeup water (P1100) systems boundary valves with EECW are not QA level 1 and have not been tested to credit them with maintaining system pressure integrity during and following a postulated design basis event. Without the availability of active makeup water and nitrogen pressurization support systems to the EECW makeup tanks following a design basis event, the operability of the EECW divisions cannot be assured. Therefore, configuration of EECW did not meet the requirements for Technical Specifications definition of OPERABILITY in Modes 1,2 and 3. Consequently a modification to the system was required to correct these identified deficiencies.

This modification added a dedicated qualified cylinder rack to provide backup nitrogen in case of a failure of the normal nitrogen supply for each EECW division makeup tank and added a dedicated cross tie line in each division for connection between EESW and EECW to provide emergency water makeup through manual valves. These cross tie lines are routed outside of secondary containment to allow operator access during the worst case design basis event.

Evaluation of the design in the following areas was performed:

- Ultimate Heat Sink/EESW Impact
- Material Selection
- Field Routing
- Separation Criteria
- Water Hammer
- Overpressure/Vacuum Relief

- Flooding
- ISI Impact
- Cylinder Missile Potential
- Locked Valve Program
- Bounding Accident events
- Fire Protection/Dedicated Shutdown
- Secondary Containment
- Cross Contamination
- Impact to Procedures/Training
- Security
- ALARA

This modification was found to meet the licensing and design basis requirements to maintain EECW operability in all plant modes and did not involve an unreviewed safety question.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0035 **UFSAR Revision No.** 8

Reference Document: EDP 28135 **Section(s)** NA

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Replace DAC Boards for Containment Monitoring System

SUMMARY:

The T50 system monitors drywell and torus atmosphere to detect the presence of hydrogen and oxygen in containment per Reg guide 1.97 requirements. This system utilizes Digital to Analog Converter (DAC) boards to supply 0 to 1 volt output signals to the control room recorders and the ERIS system. Due to the cable routing, signals from the DAC board to recorders/ERIS are subject to a phenomena called capacitive loading which affects the indication of the control room recorders and ERIS for short periods of time. During those periods the affected T50 system division is considered inoperable.

Based on vendor and Fermi 2 experience, the 4 to 20 madc DAC boards have not shown susceptibility to capacitive loading. This design change installed the 4 to 20 madc DAC boards in the T50 system with resistors as required to scale the recorder and ERIS indication. This change has eliminated those periods of inoperability caused by capacitive loading. This is a system improvement and does not impact any UFSAR analysis or requirement.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0037

UFSAR Revision No. 8

Reference Document: EDP 27966

Section(s) 9.2.1, 9.2.2

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Installation of Tie-in Tees for a Third RBCCW Heat Exchanger

SUMMARY:

As part of the GSW improvement project, a third RBCCW Heat Exchanger will be installed in order to restore the necessary system redundancy. To be able to install this new heat exchanger during the operating cycle without removing RBCCW from service, this design change installed tie-in tees and isolation valves on GSW and RBCCW during RF05.

Additional piping and valves on the GSW and RBCCW systems does not change the operation or function of either system. Each new valve with its respective blind flange or pipe cap serves only a pressure boundary function. The new piping and components are designed to the same standards as existing equipment. This modification does not impact any UFSAR margins or analyses.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0040 Rev 1

Reference Document: EDP 28105

UFSAR Revision No. 8

Section(s) 9.2.4, 9.4.4

Table(s) 9.4-5

Figure Change [x] Yes [ ] No

Title of Change: Installation of TBHVAC Evaporative Cooler

SUMMARY:

The installation of an evaporative cooler on the TBHVAC system helps alleviate high temperatures being experienced in the Turbine Building due to less than design flow through the TBHVAC system. The Potable Water system was used as the supply to the cooler. Compensating for the added pressure drop introduced by the cooler was accomplished by lowering the allowable pressure drop of the air intake filters. This ensures existing flow rates are maintained. As the air is heated in the building, the relative humidity drops thus reducing the possibility of condensation forming on structures or components.

The TBHVAC and Potable water systems are not safely related nor are they necessary for safe shutdown of the plant. This modification improves environmental conditions in the Turbine Building for both equipment and personnel.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0044

UFSAR Revision No. 8

Reference Document: EDP 28160

Section(s) NA

Table(s) 9.4-1

Figure Change ☐ Yes ☒ No

Title of Change: Reduce CCHVAC Fan Speeds to Reduce System Pressure

SUMMARY:

The CCHVAC Emergency Filtration system is designed to develop 22" WC gage pressure at 3000 scfm. This is greater than the 11"WC needed by the system at 3000 scfm. As such, the system is balanced by adding resistance through partial closure of dampers. This additional pressure created a qualification issue for the ductwork. As part of the requalification effort, the resistance present in the system has been reduced by reducing fan speeds and balancing flows commensurate with system demands. System flow rates have not change. Ductwork and hanger requalification is being accomplished by EDP 28147. The fan speed was reduced by changing the sheaves and belts.

The design flow rate of CCHVAC remains unchanged. Operating pressures were reduced to ensure ductwork integrity and compliance with design standards. This modification does not impact Control Room habitability in normal or emergency modes and provides assurance that the system will be operable following a design basis seismic event.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0046

Reference Document: EDP 28147
EDP 28160

UFSAR Revision No. 8

Section(s) 3.7

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Structural Modifications to SGTS and CCHVAC Ducts and Duct Supports

SUMMARY:

In the past, the NRC has raised concerns regarding previous DECo submittals describing the structural adequacy of CCHAC duct supports. They have requested revalidation of all ducts and duct supports addressed in previous submittals which included both CCHVAC and SGTS before the end of RF05. As a result of revalidation, it was determined that a limited number of structural modifications to existing ducts and duct supports and the addition of several new duct supports were required. The structural concerns are related to adequacy considering dead weight, maximum internal pressure and seismic loading. The UFSAR is being updated to describe the ductwork revalidation effort including its basis and results.

The actual plant changes are support related only and will not effect the actual performance of CCHVAC and SGTS. These changes will resolve all NRC concerns regarding the adequacy of CCHVAC and SGTS ducts and duct supports. This does not impact current design of either system with regards to meeting normal or accident requirements.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0049

UFSAR Revision No. 8

Reference Document: EDP 28347

Section(s) Fig 9.2-2

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Installation of Local RBCCW Heat Exchanger Temperature Indicators

SUMMARY:

The design of the Reactor Building Closed Cooling Water (RBCCW) system heat exchangers provides temperature indication for the common inlet and outlet piping on the shell side in the main Control Room. There is no provision to individually monitor the inlet and outlet of each heat exchanger locally. As part of the overall General Service Water Improvement Project, local bimetal temperature indicators and thermowells were installed at these locations. The addition of these thermowells and indicators will help better track heat exchanger performance and will have no impact on the RBCCW or GSW system performance. The UFSAR figure is being updated to show this new configuration.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0050 Rev 2

Reference Document: EDP 28415

UFSAR Revision No. 8

Section(s) 9A.4.2.2

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Install rated fire barrier on Div. I trays in UFSAR fire zone 1AB.

SUMMARY:

This modification installed rated fire barriers on Div. I trays in UFSAR fire zone 1AB. The new fire barrier protects Div. I cables in the vicinity of the Div. 2 CAC and will maintain Div. I CAS operable and provide adequate separation between redundant safe shutdown equipment in accordance with the requirements of 10CFR50 Appendix R such that one division will be maintained free of damage of any fire in the vicinity Div. II CAS. Therefore, there is no need for operator actions outside normally taken in the event of a fire.

In addition, protecting the Div. I cables in the vicinity of Div. II Control equipment resolves issue that Control Air equipment constitute intervening combustibles or fire hazards between unprotected Div. I and Div. II cables. The unprotected Div. II is assumed to fail in this area however, Div. I is protected in this area such that it remains free of fire damage. This modification does not change the method of achieving safe shutdown due to fire in north end and southwest corner of this zone.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0057

Reference Document: EDP 27960

UFSAR Revision No. 8

Section(s) 9.2.1

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: General Service Water (GSW) Bypass Valve Replacement

SUMMARY:

The previous GSW bypass line was a 12 inch manual gate valve followed by three orifices. The line was designed to maintain header pressure at 150 psig. Because of high vibration, this line had not been used for some time. A 12 inch test line was the alternate means to control GSW pressure.

After a jockey pump was installed (per EDP 27961) the need to maintain 150 psig in the GSW header, which supplies Fire Protection System header pressure, no longer was required. This modification installed two new 12 inch rotary ball valve in the GSW system. One valve permits manual adjustment of the test line to bypass flow and provide sufficient backpressure on the orifices downstream to permit stable operation. The other valve can be manually adjusted to bypass flow in the bypass line to permit stable system operation without induced vibration.

The bypass and test lines with the new 12 inch rotary ball valves will permit excess GSW flow to be diverted back to the sump and maintain lower header pressure when GSW temperature is less than 60 F.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0058 Rev 1

UFSAR Revision No. 8

Reference Document: EDP 27963

Section(s) 9.2.1, 9.2.7

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Removal of back pressure PCV P41F403 and replace it with a spool piece with an restricting orifice.

SUMMARY:

EDP 27961 installed a jockey pump in the fire protection system. The jockey pump maintains pressure in the fire protection header. As a result, GSW system pressure has been lowered such that temperature control valve,TCV P41F402, can be operated without the use of back pressure control valve, PCV P41F403.

This modification removed back pressure control valve P41F403 its associated controller P41K402 and both 20x10" pipe reducer on either side of the PCV from the system. A 20" spool piece section of the pipe was installed in place of the removed PCV P41F403 and reducers. A restricting orifice was installed in this 20" spool piece to maintain GSW system pressure higher than TBCCW system pressure as well as to allow proper flow to all other system users. Pipe supports were modified to support the 20" pipe spool. The deletion of the PCV and addition of the orifice did not change the operation of the GSW and the TBCCW systems.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0060

Reference Document: EDP 28456

UFSAR Revision No. 8

Section(s) 1.2, 3.1, 3.6, 3.9, 3.11, 6.3, 3.12, 7.3, 9.2, 9A.4, 15.14

Table(s) 9.2-3, 9.2-4

Figure Change [x] Yes [ ] No

Title of Change: EECW Piping will have a Capped Branch Valve Added to allow for a Future Extension for a Makeup Tank Replacement.

SUMMARY:

A capped and valved branch connection has been added to the EECW 4 inch common return lines from the Control Room air conditioner and the SBGT space cooler to allow for a future Makeup Tank modification (EDP-28377). The new branch connection has no present function except to allow for a future tie-in of the Makeup Tank. The capped and valved branch connections will allow installation of the Makeup tank to proceed without an outage. This modification did not alter the function of the EECW system.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0062

UFSAR Revision No. 8

Reference Document: EDP 28350
EDP 28331

Section(s) 9.2.1

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Turbine Generator Hydrogen Cooler Temperature Control Valve change from 2 1/2 inch to 4 inch

SUMMARY:

The GSW system has been modified to lower the system pressure. In order to pass adequate flow to the Hydrogen coolers, the temperature control valves were changed from 2 1/2 inch diameter to 4 inch. The new valves receive the same control signals and operate in the same manner. The valve replacement does not change the operating functions of the GSW System.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0063

Reference Document: EDP-28348

UFSAR Revision No. 8

Section(s) 7.6.1.14.1.2, 9.2.7

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Install thermocouples to monitor TBCCW heat exchanger performance.

SUMMARY:

As a part of overall GSW system improvement plan, local Bimetal temperature indicators and thermowells were installed in the common inlet and each outlet piping of the TBCCW heat exchanger (shell side) during RF05 outage. These new instruments will help in evaluating and monitoring the performance of the heat exchanger. This modification installed welded thermowells in the TBCCW heat exchanger shell side of the piping. A Bimetal temperature indicator was installed in each thermowell. The addition of these thermowells and indicators in the TBCCW heat exchanger piping did not change the operation or function of either the GSW system or the TBCCW system.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0065 Rev 1

UFSAR Revision No. 8

Reference Document: TSR 28476
EDP 28479
TSR 28477
TSR 28478

Section(s) 10.4

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Removal of Small Bore Valves from the Condensate, Feedwater, Heater Drains, and Extraction Steam Systems

SUMMARY:

Four systems were reviewed to determine if some small bore manual valves could be removed. The four systems evaluated are the Condensate, Feedwater, Heater Drains, and Extraction Steam Systems. The function of the valves determined to be candidates for removal are:

- Provide bypass around a large bore valve
- Testing connection (usually installed for Startup Testing)
- Temporary instrumentation connection
- Spare

The reason for removal of unnecessary valves was sparked by some valve leakage that required a Furmanite process to repair packing leaks. A reduction in unnecessary small bore manual valves will reduce maintenance.

The physical configuration of the removal will entail cutting the connection close to the header pipe and sealing the hole with a welded cap.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0066 Rev 1

UFSAR Revision No. 8

Reference Document: EDP-27894

Section(s) 4.5.2.2.2.2, 4.5.3, 7.6.1.20.3, 7.7.1.1.5.2

Table(s) 3.2-1, 3.2-2, 7.6-1, 7.5-1

Figure Change [x] Yes [ ] No

Title of Change: Position Indicator Probe Modification

SUMMARY:

The old PIPs, Whitaker hardware, and cable has proven to be unreliable. During RFO5, the PIPs were replaced with an equivalent but new style General Electric model which incorporates a LEMO connection. The Whitaker hardware has been totally eliminated which reduces the number of connections.

The cable from the Drywell penetration to the PIP has been replaced with Rockbestos RA-100 Jacket, which is a more flexible cable. The new style PIP does not change its fit, form, or function. The reliability of the new cable is improved by designing to conditions which exceed the original design criteria which includes more conservative environmental conditions. The connector reliability has also been improved.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0068

UFSAR Revision No. 8

Reference Document: TSR 28436

Section(s) 1.2, 3.2

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Install an access stairs to Radwaste Building Roof

SUMMARY:

During refueling outages, temporary trailers are installed on the Radwaste Building Roof which provide clean area break rooms. Current access to this area is through the Turbine Building thus requiring people to go through the RRA.. The new configuration provides access to the Radwaste Building Roof from grade. The roof will be declared a clean area outside the RRA. This will allow people to transport food and drink without having to go through Turbine Building, especially during refueling outages.

This modification installed prefabricated stairs on the north side of the Radwaste building to provide access to the roof from grade. The stairs were also provided with an access control fence, and locked gate to prevent unauthorized entry. Although the stairs are permanent, they are only to be used during refueling outages.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0069 Rev 2

UFSAR Revision No. 8

Reference Document: ECR-28129-2

Section(s) 7.5.2.5, 8.2.1.2, 9A.6.9
9.5, 17.2.18.5

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Combustion Turbine 11-1 Refurbishment

SUMMARY:

Combustion turbine generator CTG 11-1 was refurbished to provide continued capability as the Appendix R Alternative Shutdown unit and the Station Blackout Alternate AC power source (AAC). It also serves as a system peaker during high load demand periods. This project was designed and installed by General Electric and reviewed and documented in accordance with plant procedures to ensure that the Fermi 2 license bases are maintained. This modification included replacements of antiquated major components as well as overhaul and inspections of the other components. This modification is intended to extend the Unit lifetime for 30 years and establish a reliability of 97%. This change did not involve an unreviewed safety question.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0070

Reference Document: EDP-28180

UFSAR Revision No. 8

Section(s) 9.2.5.3.1.3

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Freeze Protection for RHR Reservoir

SUMMARY:

This modification installs various measures to monitor and reduce the possibility of freezing of the pump columns in the RHR Reservoir. It installed a freeze protection barrier around the air space under the pump room slabs, for both RHR divisions. Each RHR cold weather bypass line was extended below the reservoir water level to eliminate turbulence at the water surface. Two thermometers per division were installed to measure the air space temperature below the pump rooms. This change did not involve an unreviewed safety question.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0086

Reference Document: EDP-28556

UFSAR Revision No. NA

Section(s) NA

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: MDCT Drain Line Replacement on RHRSW Return Line

SUMMARY:

The previous 1" carbon steel RHRSW return drain lines were cut and capped using Class C pressure boundary standards. The new 1" stainless drain line piping was installed at new locations on the sides (not bottom) of the 18" RHRSW return lines. The exiting drain line supports were modified . This SE addresses safety concerns associated with the implementation of this modification and justified its implementation without entering any LCO action.

The final and complete installation of the new 1" RHRSW return drain lines did not alter the as-built function or description of the RHR Complex freeze protection provisions as described or assumed in the UFSAR. The new design only enhances the freeze protection function served by these drain lines by improving their reliability and availability and by providing a more readily visible indication of positive flow.

During the steps in the installation process when the freeze protection function of these drain lines was unavailable, they were not required to provide this function since the proposed installation was scheduled during warm weather and required only 2 to 4 days for the complete. No conditions conducive to freezing occurred during the time of drain line unavailability.

If the RHRSW/EDGSW/EESW system(s) had initiated at any point in the installation during which an open pressure boundary in the RHRSW return line exists, the deliverable flow to MDCTs is the same as that for normal operation and the RHRSW System would have been considered operable. Precautions and preparations were made such that any leak which occurs would have been immediately plugged (within 5 minutes) or, if the discharge was small enough, simply deflected to the pump room floor. Any drain line leakage into the RHR Complex pump rooms would have been directed away from vital equipment and electrical busses and collected in the large pits in the floor near the east walls of the pump rooms.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: SE 98-0093

UFSAR Revision No. 8

Reference Document: EDP-28384

Section(s) 6.2.1.2.1.10

Table(s) NA

Figure Change [ ] Yes [X] No

Title of Change: Replacement of Suppression Chamber to Drywell Vacuum Breakers Closed Limit Switches

SUMMARY:

In the past, some of the existing closed indication lights of Suppression Chamber to Drywell Vacuum Breakers failed to extinguish during testing. Technical Specification section 3.6.4.1 states that during operational conditions 1, 2, and 3, "all suppression chamber - drywell vacuum breakers shall be closed and OPERABLE". Technical Specification section 4.6.4.1 requires verification of vacuum breaker operability by verifying position indicators operable.

The root cause of the failures of existing closed switches was identified as moisture absorption, and subsequent swelling of the O-ring installed around the switch actuator shaft.. This is due to the actuator return spring not being able to completely overcome the friction introduced by the swelled O-ring. Since the existing limit switch design is obsolete, and like-for-like replacements are not available, a modification was prepared to replace the existing redundant closed indicating limit switches on each of twelve Suppression Pool to Drywell vacuum breakers with proximity type limit switches.

Each vacuum breaker is provided with one open pallet indicator, and two redundant close pallet indicators. These position indicators do not provide control functions, they only provide the Operator with position indication via Main Control Room panel lights (H11-P808 & H11-P817). The open position indicators, located near the top of the valves, are unaffected by EDP 28384. The close position indicators are QA 1, Seismic I, NUREG-0588 Electrical Category 2C. They are not required to remain operational following a design basis accident (DBA) loss of coolant accident (LOCA). The close position indicators are required to be operable during normal plant operations to alert the plant Operators of partially open vacuum breakers. The vacuum breakers are required to remain closed during normal plant operations to ensure that the bypass steam path from the Drywell to the Torus remains below the acceptable area stated in the UFSAR. The new proximity probe / switches have been seismically and environmentally qualified. This equipment enhancement will improve control room indications of vacuum breaker performance.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0094

UFSAR Revision No. 8

Reference Document: TSR 28616

Section(s) NA

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Removal of N11R421A through D from H21P438

SUMMARY:

EDPs 7265 and 7271 spared in place main steam differential pressure indicators N11R421A through D and removed their process connections from the main steam lines. Those modifications were evaluated by Safety Evaluation 87-115. This change removes the abandoned instruments from panel H21P438. UFSAR Figure 10.3-1 has been updated to reflect this change.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0095 Rev 1

UFSAR Revision No. 8

Reference Document: EDP 28550

Section(s) NA

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: RBCCW tie-in connection for future drywell cooling system

SUMMARY:

This safety evaluation justifies the installation of piping tie-ins to the RBCCW system. These connections will be used to implement the new drywell cooling system being installed by EDP 28140. The augmented drywell cooling system in needed to increase margins to the drywell temperature Technical Specification limit of 145 degree F. There is no safety impact as a result of this change.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0097

UFSAR Revision No. 8

Reference Document: EDP 27962

Section(s) NA

Table(s) 9.3-2

Figure Change [x] Yes [ ] No

Title of Change: General Service Water Modification

SUMMARY:

This safety evaluation justifies the reduction of GSW operating pressure to 100-125 psig. Due to the installation of a fire protection header jockey pump to maintain header pressure at 150 psig, GSW pressure has been lowered. Due to the lowered pressure in the GSW system, back pressure control valve P41-F402 was removed and replaced with a spool piece and a restricting orifice. The installation of the orifice maintains GSW pressure greater than RBCCW pressure and allows increased flow to the various user systems.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0107 Rev 1

UFSAR Revision No. NA

Reference Document: EDP-28180

Section(s) NA

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Freeze Protection for RHR Reservoir

SUMMARY:

EDP-28180 installed various measures to monitor and reduce the possibility of freezing of the pump columns in the RHR Reservoir. This modification provides three major changes. It installed a freeze protection barrier around the air space under the pump room slabs, for both RHR divisions. Each RHR cold weather bypass line was extended below the reservoir water level to eliminate turbulence at the water surface. Two thermometers per division were installed to measure the air space temperature below the pump room. This safety evaluation was written to discuss installation of the wind barriers from floating platforms in the RHR Complex Reservoirs and showed that this could be accomplished without impacting Ultimate Heat Sink (UHS) operability or personnel safety.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0114

UFSAR Revision No. 8

Reference Document: EDP 28769

Section(s) 6.2.4, 1.2.1.2.2.3.r, 3.1.2.5 7.6.2.12,3.8.2.1.3, 5.5.12.4,7.3.2.2.3,9.3.6.2, A.1.14.1

Table(s) 6.2-2,3.8-2,6.2-13,6.2-15,

Figure Change [x] Yes [ ] No

Title of Change: Instrument Lines do not Meet the Intent of Design Criteria

SUMMARY:

During a DER investigation it was discovered that instrument lines associated with penetrations X-47c and X-206a did not meet the design criteria as described in note 12 of UFSAR Table 6.2-2. Copper tubing was used in these instrument lines which did not meet the material requirements for the lines connected to primary containment atmosphere. The line from penetration X-47c up to valve T4800F123 was removed and the penetration X-47c was sealed with welded cap. A new line, designed as Seismic Category 1, made of stainless steel was connected from the existing tubing downstream of valve T5000F420A, penetration X-47e, to the inlet side of manual valve T4800F123. Copper tubing for penetration X-206a has been replaced by seismically qualified stainless steel tubing. This modification did not effect the function or operation of the existing instrumentation and also meets the intent of design criteria.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0115

Reference Document: TSR 28733

UFSAR Revision No. 8

Section(s) 9A.4.8.1

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Install Fire Door in the Diesel Engine Fire Pump Room in the General Service Water Pump House

SUMMARY:

An additional exit door is being provided for the diesel fire pump room. This door has been installed in a Fire Rated barrier and is a UL listed 3 hour rated fire door with frame. All hardware installed on the door is also listed for fire protection service. The current solid block wall is a 3 hour rated fire barrier and installation of a listed fire door does not degrade the rating of the barrier. Installation of this will provides a second egress point from the DFP room.

The installation of the new door does not degrade the barrier. The door is in conformance with paragraph 9A.2.2.3 since it conforms with the fire rating of the wall in which it is installed. Paragraph 9A.4.8.1 has been revised to reflect that there are now two fire doors in the DFP room. This revision is documented in LCR 96 214 UFS. There is no impact on Section 9A.5 since the design and installation of the fire door does not result in any material or construction that changes the fire rating of any barriers or adds combustible materials to the plant.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0125 **UFSAR Revision No.** NA

Reference Document: EDP-28844 **Section(s)** NA

Table(s) NA

Figure Change ☐ **Yes** ☒ **No**

Title of Change: Removal of EDG Heat Exchangers' Cathodic Protection

SUMMARY:

This modification removed the current EDG heat exchanger cathodic protection which is in the form of cylindrical zinc anodes mounted in the end plenums (waterboxes) of the tube sides of each of the EDG heat exchangers. The existing penetrations in the heat exchanger shells through which the zinc anodes are mounted will be closed with ASME III, Class 1, Q-1 SA-105 carbon steel plugs. The removal of the zinc anodes eliminates the potential for future tube plugging with zinc carbonate corrosion products originating on these anodes, but at the same time results in increased corrosion rates on the insides of the EDG heat exchanger waterboxes. This SE has been performed to show that cathodic protection is not a requirement for these heat exchangers and no unreviewed safety question results from its removal.

Since the cathodic protection provided by the zinc anodes is passive and does not play a direct role in the heat transfer mechanisms of these heat exchangers, the removal of the zinc anodes from each of the EDG heat exchangers does not change the operational characteristics or performance of the EDGs or the EDG heat exchangers. This modification, however, eliminates the potential for plugging of the EDG heat exchanger tubes with zinc carbonate sloughing from the zinc anodes. The reduction in the potential for tube plugging will improve the availability and performance of these heat exchangers.

The primary issue which this SE addresses is the expected increase in mixing plenum (or waterbox) cathodic corrosion rates that will likely result from the removal of the zinc anodes. Currently, the EDG heat exchangers are the only safety related heat exchangers serviced by RHRSW equipped with cathodic protection. In 15 years of service, none of the other safety related heat exchangers (which do not have tube side cathodic protection) have experienced failures due to cathodic corrosion of heat exchanger internals; neither have any of the non-safety related heater exchangers not equipped with cathodic protection. The requirements of the Fermi 2 PEP (Performance Evaluation Program) for conducting EDG heat exchanger performance inspections are in accordance with the NRC approved criteria outlined in GL 89-13. As long as future PEP inspections meet the GL 89-13 criteria, the impact of EDG heat exchanger corrosion will be detected and mitigated before heat exchanger performance is compromised.

In conclusion, while the removal of this form of cathodic protection is expected to increase the rates of corrosion observed in these heat exchangers, cathodic corrosion has only a long term influence on heat exchanger performance and will not appreciably degrade the performance of the heat exchangers before its impact can be detected and mitigated under the PEP program.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0135

UFSAR Revision No. 8

Reference Document: EDP-28911

Section(s) NA

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Addition of a Snubber and a Volume Chamber to the Sensing Line of a Pressure Switch in the Primary Containment Radiation Monitoring Subsystem Skid H21P284

SUMMARY:

This modification added a snubber and a volume chamber to the sensing line of suction pressure switch, T50N012, on the Primary Containment Radiation Monitoring Subsystem (PCRMS) skid H21P284. The switch sensing line is connected to the inlet of the PCRMS sample pump which subjects the instrument to pressure fluctuations resulting from sample pump cycling. T50N012 controls motor operated flow regulating valve T5000F043. Intermittent operation of T5000F043 causes an electrical transient in the sample pump logic resulting in spurious trips. The combination of the snubber and volume chamber will suppress pressure fluctuations sensed at the pressure switch and allow for a stable sample pump operation. This change does not adversely impact any UFSAR safety requirements or accident mitigation analyses.

FERMI 2

SAFETY EVALUATION SUMMARY REPORT

PROCEDURES, TESTS AND EXPERIMENTS

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 88-0040 Rev 1

Reference Document: PDC 8506

UFSAR Revision No. NA

Section(s) NA

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Removal of Drywell Equipment Hatch Shield Planks

SUMMARY:

This SE was written to evaluate the effects of the removal of the outer layer of shield planks at the drywell equipment hatch prior to refueling outages and put a Mode 4 or 5 restriction on when the inner row of planks could be removed. The planks main function was to act as a missile barrier. This change was evaluated from a structural aspect related to plank storage locations and from a radiological perspective and found acceptable.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 94-0110 Rev 1

UFSAR Revision No. NA

Reference Document: OM-093-WS

Section(s) NA

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Install Equipment in the CST/CRT Diked Area to Process Rainwater with Trace Levels of Radioactive Material

SUMMARY:

Under normal conditions, the diked area around the CST/CRT is free of radiological contamination. Any rainwater accumulating in this area can be pumped to the storm sewer following sampling and radioassay which demonstrates no detectable licensed radioactive material. Recent processing of water resulting from the Dec. 1993 turbine event resulted in low levels of contamination of the liner. This created approximately 20,000 gallons of rainwater showing detectable levels of licensed material. The chemical quality of this water did not meet the requirements for use in the plant, and it was desired to avoid a liquid radwaste release. Thus, most of this water was processed as provided by revision 0 of this SE using the reverse osmosis method and was suitable for release.

However, due to weather conditions, some remaining processed water, as well as the concentrated 'retentate' solution could not be processed as planned. The result was a tank containing approximately 5000 gallons of concentrated dissolved and suspended material which needed to be processed into a liquid that could be free released, with the solid material suitable for further processing or disposal. An evaporator system was used to process the remaining liquid. All applicable codes and regulatory requirements have been reviewed and this processing has been found to be acceptable with no impact to the UFSAR radiological analyses and safety margins.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0015

UFSAR Revision No. NA

Reference Document: FIP-OP1-02
FIP-CT1-03

Section(s) NA

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Revision to FIP-OP1-02 "Temporary Modification" and FIP-CT1-03 "Preparation and Performance of Diagnostic, Special Tests, and Infrequently Performed Tests or Evolutions" Procedures.

SUMMARY:

This evaluation justified changes to procedures FIP-OP1-02, and FIP-CT1-03 to establish a method of conducting measurements of plant parameters in accordance with requirements contained in Fermi 2 committed codes and standards. The implied controls for intrusive tests contained in FIP-OP1-02, "Temporary Modifications" have been removed. New administrative controls for measurement have been added to FIP-CT1-03, "Preparation and Performance of Diagnostic, Special Tests, and Infrequently Performed Tests or Evolutions." Definitions of terms "measurement" and "monitoring" have also been included in FIP-CT1-03. NRC Information Notice 95-013, "Potential for Data Collection Equipment to Affect Protection System Performance" has also been reviewed for incorporating the changes to procedures FIP-OP1-02 and FIP-CT1-03.

The changes to procedures FIP-OP1-02 and FIP-CT1-03 do not result in an increase in probability or consequences of an accident described in the UFSAR. The administrative controls address the criteria contained in IEEE Standard 279-1971, Criteria for Protection Systems for Nuclear Power Generating Stations. The controls also considered IEEE Standard 338-1977, Criteria for Periodic Testing of Nuclear Power Generating Station Safety Systems, and Regulatory Guide 1.118, Periodic Testing of Electric Power and Protection Systems, since these documents define the required test controls for periodic tests. Since IEEE Standard 279 criteria is met by application of new administrative controls, there is no reduction in the margin of safety provided by the design and operation of the "protection" system analyzed in the UFSAR, SER, or in Technical Specifications.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0026 Rev 3

Reference Document: 54.000.14
53.000.01

UFSAR Revision No. 8

Section(s) 15.4.9, 15.4.1.2

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Control Rod Movement Pull Sheet Changes due to Control Rod Drive Mechanism concerns and Fuel Degradation.

SUMMARY:

Revision 0
Because of concerns with scram performance of Control Rods 26-31 and 34-31, these Control Rods(CRs) have been fully inserted and disarmed during operations with Reactor power **above** the Rod Worth Minimizer(RWM) Low Power Setpoint(LPSP). Pull Sheet Change Requests are the normal method used to allow changes to the CR Pull Sheets and RWM loading(by use of bypass functions) when appropriate to respond to CR problems. Pull Sheet Change Requests may be approved providing compliance with CRDA analysis design criteria is assured, typically by assuring conformance with BPWS sequence constraints.

The Fermi 2 CRDA analysis licensing basis is maintained by CR movement sequences(CR Pull Sheets and RWM loading) that conform to BPWS sequence constraints. BPWS sequence constraints are supported both in the Technical Specifications Surveillance Requirements (4.1.4.1.d.) and Bases(3/4.1.4.), as well as in Section 9.0 and Enclosure C of SOP 23.623, "Reactor Manual Control System" and other plant procedures. GE Nuclear has performed a Cycle 5 specific CR worth analysis. This analysis shows that calculated CR worths as a result of allowing CRs 26-31 and 34-31 to be fully inserted and disarmed during operations with Reactor power below the RWM LPSP are bounded by the licensing basis BPWS analysis. The analysis specifically supports deviation from BPWS sequence constraints for two cell separation for fully inserted and disarmed CRs 26-31and 34-31 ONLY during Cycle 5.

Revision 1, 2, and 3
Because of concerns with failed fuel degradation, Control Rods(CRs) 10-47, 06-47, 10-43, 54-23, and 54-19 have been fully inserted and disarmed. At the time of the SE (Revision 3), only CR 10-47 is declared Inoperable, since scram time testing has not been performed following SSPV diaphragm changeout for this rod.

With respect to CRs 54-23 and 54-19, although they are face adjacent, the in-sequence position for CR 54-23 is 00 when below the LPSP. For this reason, CR 54-23 does not need to be included in any special analyses, and is not included in the discussions.

As stated above, CRs 10-47, 06-47, 10-43, and 54-19 have been fully inserted due to concerns with failed fuel degradation. Specifically, by inserting these rods, power in the suspected fuel is suppressed, minimizing the potential for degradation by slowing down the production of fission products that foster degradation. In addition, the inserted control rods also act as a shield for control rod movements performed in the vicinity of the suspected failure. However, since Plant operation below the RWM LPSP with face adjacent CRs 10-47, 06-47, and 10-43 fully inserted is not analyzed under generic BPWS sequence constraints, an evolution requiring a reactor shutdown would need to be terminated by a reactor scram prior to achieving the RWM LPSP. In addition, following the shutdown, the reactor could not be restarted until the situation was analyzed, and proven to meet the criteria for CRDA mitigation.

This situation results in a clearly undesirable loss of operational flexibility. Therefore, in order to restore this flexibility, it is desired to prove that implementation of a proposed strategy change allowing CRs 10-47, 06-47, 10-43, and 54-19 to be fully inserted and out of sequence when below the RWM LPSP will not violate the design criteria for which BPWS sequence constraints were designed to protect. Pull Sheet Change Requests the normal method used to allow changes to the CR Pull Sheets and RWM loading(by use of bypass functions). The Fermi 2 CRDA analysis licensing basis is maintained by CR movement sequences(CR Pull Sheets and RWM loading) that conform to BPWS sequence constraints.

Nuclear Fuel has performed a Cycle 5 specific CR worth analysis. This analysis shows that calculated CR worths as a result of allowing CRs 10-47, 06-47, 10-43, and 54-19 to be fully inserted and out of sequence during operations with Reactor power below the RWM LPSP are bounded by the licensing basis BPWS analysis. The analysis specifically supports operation with up to all four control rods 10-47, 06-47, 10-43, and 54-19 fully inserted and bypassed from the BPWS rules for the remainder of Cycle 5. Reactor Engineering will implement the proposed strategy change by use of "Pull Sheet Change Requests", valid only for Cycle 5.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0056 Rev 3

UFSAR Revision No. NA

Reference Document: EFA 95-003
EFA 95-007
EFA 95-008
EFA 95-009

Section(s) NA

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Determine the margin available for normal pump degradation over time for Fermi 2 safety related service water pumps

SUMMARY:

An NRC Inspection Team questioned the margin available for normal pump degradation over time for Fermi-2's safety related service water pumps. A computer hydraulic models were prepared and field validations of the models completed. The amount of margin was determined so low flow conditions could be predicted to justify operability in the following Engineering Functional Analyses (EFAs):

- EFA 95-003 Operability of plant equipment/components due to EECW/EESW flow
- EFA 95-004 (Canceled, superseded by EFA 95-009)
- EFA 95-007 Post Accident Control Air Compressor Room environment due to low flow
- EFA 95-008 Operability of Non-Interruptible Air System (NIAS) due to low EECW flow
- EFA 95-009 Overall operability and margin calculation of the safety related service water systems

Revision 1 was prepared to extend the effective period of the EFA's and verified that flow rates specified as operability limits in pump surveillance's were more conservative than EFA limits.

Revision 2 was due to cancellation of EFA 95-004 in that EDGSW operability is now addressed in EFA 95-009. The values of instrument error were revised and included in EFA 95-009 along with more conservative flow values for determining flow margin at the start of accident scenarios.

Revision 3 incorporated industry standard fouling factors for heat exchangers . EFA 95-003 was revised to reflect procedural changes to manually isolate the drywell from EECW when EECW reaches 90 degree F.

The EFA's demonstrate the Service water systems are all operable even if flows are lower than the design flows. The EFA's demonstrate that the testing program for the service water pumps is conservative in that the prior to reaching EFA limits the pumps would be declared inoperable.

The EFA's provide justification that excess heat removal capacity exists to account for any near term degradation for the period when the EFA's are effective. Safety related equipment that is directly or indirectly cooled by the predicted low flow conditions will still be able to perform there safety functions and have negligible impacts on the qualified life of components.

No physical change to plant configuration was made that can introduce the possibility of a malfunction; only the ability that the cooling water systems can perform their safety functions imposed by DBA-LOCA and HELB scenarios has been demonstrated.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0006 Rev 1 **UFSAR Revision No.** NA

Reference Document: SOE 96-02 **Section(s)** NA

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: On-Line Feedwater Flow Calibration Testing

SUMMARY:

SOE 96-02 was written to perform an independent measurement of feedwater flow that provides the requisite accuracy to check for degradation of feedwater flow element performance. This measurement will allow an evaluation of both feed flow venturi. Baselining of flow element differential pressure, main steam production, and other selected Balance of Plant parameters will be accomplished during this test. The test consists of the injection of a Lithium Nitrate tracer into feedwater and monitoring main steam and feedwater parameters to determine calibration accuracies. This test has been performed successfully at three other nuclear facilities.

The Safety Evaluation assessed the impact of the following:

- The tracer chemical used.
- The testing method.
- The potential problems that could occur.

The injection of the tracer was evaluated from a reactivity and chemistry standpoint as to its effect on the operating reactor. The tracer injection flow rate of 2 gpm is very low compared to nominal feedwater flow and will have negligible positive reactivity impact due to colder temperature. Lithium is also a neutron absorber, however due to the minimal injection amount of 3.4 grams there will be negligible impact as a negative reactivity addition. Reactor chemistry will be affected due to this small amount of tracer possibly increasing reactor conductivity by 0.1 microS/cm and increasing dissolved metals from approximately 2 ppb to 6.3 ppb. No Technical Specification limit will be exceeded. These increases will not pose any safety risk to the reactor or fuel materials.

The injection skid incorporates high pressure hoses with back flow prevention which minimizes the risk of rupture or leakage. Should rupture occur, it would be bounded by other UFSAR analyses. This test has been found acceptable.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0016 Rev 2

Reference Document: IPTE 96-02

UFSAR Revision No. NA

Section(s) NA

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Spent Fuel Pool Clean Out

SUMMARY:

This safety evaluation was prepared to review the sequence and controls specified by the plant to remove unnecessary materials from the spent fuel pool for shipment to a radwaste storage facility. This activity will involve various load handling and other activities that must conform to the plant procedures, design specifications and commitments. The activities include:

- Repackaging and removal of control rod blades and velocity limiters
- Cutting and removal of LPRMs
- Disposal of 20 jet pump beams
- Removal of double blade guides
- Removal of used filters and unused tools

All activities will be done in accordance with approved procedures, UFSAR commitments and IPTE requirements. Inadvertent trip of the fuel pool exhaust radiation monitor was addressed. This activity was shown to not impact adequate cooling capability of the SFP by evaluation of potential water level changes, heat capacity changes and dropped debris.

The sequence and controls for SFP clean out are adequate to ensure safe completion within the requirements and analyses described in the UFSAR and plant design documents.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0025

UFSAR Revision No. NA

Reference Document: 42.302.08
42.302.11

Section(s) NA

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Temporary Compensatory Procedural Controls During Testing of Busses 12 EB and 64C

SUMMARY:

4160V buses 64C and 65F provide power to the 480V 72CF swing bus through either 480V bus 72C or 72F. Bus 7C is the normal feed while 72F is the alternate. During the monthly functional test 42.302.11, the 4160V and 480V breaker trips from the undervoltage circuit's load shedding function are defeated. The breaker trips are similarly defeated when performing 42.302.08, the calibration and functional test of the undervoltage relays. To allow functional testing of 4160V buses 12EB and 64C, knife switches are open on the undervoltage trip string to inhibit operation of the trip string relays. On a loss of power, the disabled load shedding would cause the 72CF bus not to be reenergized. Thus during this testing, one Division of the Core Spray system as well as both LPCI subsystems would be inoperable which is outside plant design basis.

As an interim measure until permanent design modifications can be made, temporary procedural controls will be put in place during these tests to maintain operability of the swing bus, 72CF. A dedicated operator will be stationed at the control room panel to continuously monitor bus 72CF status. He will transfer power supply from 72C to 72F should conditions arise requiring that action. Limited use of manual action is allowed to substitute for automatic action to situations not involving Safety Limits. The proposed use meets this criteria. These procedure revisions will allow periodic testing of site power sources to continue. The manual actions required have been shown to accomplished within the required time period.

Thus it is acceptable to substitute compensatory manual action for automatic action to support LPCI operability while performing electrical testing on buses 12EB and 64C.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0027

UFSAR Revision No. NA

Reference Document: IPTE 96-005
SOE 96-007

Section(s) NA

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Adequate Core Cooling Evaluation for RF05 Shutdown Cooling Outage

SUMMARY:

The proposed RHR SDC outage is planned on or about day 18 of RF05. This activity will be done as an Sequence of Events (IPTE) under control of an appointed senior line manager. The plant will be in Mode 5 with the reactor cavity and spent fuel pool connected and flooded to at least 20' 6" above the flange with irradiated fuel in the vessel. Technical Specifications requires at least one RHR SDC mode loop to be operable or verify operability of at least one alternate method of decay heat removal. A GE analysis has shown that the heat load from the fuel in the SFP and the vessel is capable of being adequately cooled by RWCU and FPCCU in conjunction with existing natural circulation.

Temperatures will be monitored with SDC out of service prior to allowing maintenance to verify that assumptions made in our analysis have yielded accurate results. With expected heat load values it is not anticipated to reach boiling upon a complete loss of cooling means for 13-14 hours. Also the integrity of the SFP liner would not be challenged provided cooling can be restored within 27 hours. This SOE contains measures to restore RHR SDC within 8 hours should it be required. Thus the Technical Specification requirement will be met during this evolution.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0032

UFSAR Revision No. NA

Reference Document: 23.317, ARPs 1D92, 1D96, 2D18, 2D22

Section(s) NA

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: EECW Surge Tank Procedure Changes for Mode 4 Operability

SUMMARY:

The non QA Level 1 P1100 and T4800 systems that provide nitrogen and makeup water systems for the EECW surge tanks do not have the qualification to credit them with maintaining system pressure integrity outside the Reactor and Auxiliary Buildings during and following a postulated design basis accident (LOP, Seismic Event). However, without the availability of active makeup water and/or nitrogen repressurization support systems to the EECW surge tanks following a design postulated event, the operability of the EECW divisions cannot be assured. As a result, both divisions of EECW were declared inoperable and the plant shutdown as required by Technical Specifications. Since EECW is required is required in Mode 4 (Cold Shutdown), the plant cannot fully comply with Technical Specifications until EECW operability is restored.

Plant procedures will be revised to describe manual water and nitrogen repressurization of the EECW surge tanks. The purpose of these changes is to restore sufficient EECW operability for Mode 4 only. These are not in any way to be considered adequate for mode changes required to return the plant to an operating status. Closure of the QA 1 boundary valves is adequate to protect against loss of surge tank pressure and inventory. The administrative closure of these valves will require operator response to manually take action for low level or pressure conditions. Backup QA 1 nitrogen (T50) and water (E1151) sources with associated hoses, etc. are located in the vicinity should the unqualified sources become unavailable. System parameters have been evaluated to assure timely operator response will be adequate to maintain EECW divisions and EECW supported systems operable as required in shutdown accident scenarios.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0045 **UFSAR Revision No.** NA

Reference Document: 20.413.01 **Section(s)** NA

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Alternate means of restoring T4100F068B on loss of air.

SUMMARY:

On loss all control air, CCHVAC damper T4100F068B fails close. AOP 20.413.01 requires T4100F068B damper to be opened manually. However, this damper is inaccessible. AOP 20.413.01 will be revised to describe an alternate method of opening damper T4100F068B by isolating normal control air supply and connecting a regulated nitrogen supply downstream of supply isolation valve. Upon loss of normal control air supply, a nitrogen bottle will be staged in the immediate vicinity of the panel (H21-P296E) and adequately secured to permanent plant structure. A nitrogen bottle, regulator, flexible tubing, fittings and hand tools for connecting bottle to supply line of the damper will be permanently staged by Operations for the sole dedicated purpose of restoring the damper T4100F068B per AOP 20.413.01. The regulators will have a overpressure protection feature.

AOP 20.413.01 will direct an operator to regulate nitrogen pressure to 80 to 100 psig. This alternate method will provide an equivalent means to the previous manual method of rotating damper shaft to open position. If a leak develops and nitrogen pressure decreases to 500psig supply line will be isolated and a second bottle will be connected. In the event the leak persists operations may elect to remove the fire barrier from around the damper T4100F068B actuator and manually open the damper.

As per design calculation DC-5792, it would take approximately 38 hours before reaching UFSAR temperature limit 120 °F. Due to the fact there will be a regulator, flexible tubing, fittings and hand tools permanently staged, the time required for the restoration of the damper will be well within 38 hour duration.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0047

UFSAR Revision No. 8

Reference Document: 65.000.301

Section(s) 12.3.2.2.2

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Cancellation of 65.000.301, Operation of the Respiratory Protection Equipment Cleaning System, and change to UFSAR 12.3.2.2.2, Respiratory Equipment

SUMMARY:

Respirator cleaning is no longer performed onsite as described in UFSAR section 12.3.2.2.2 and as governed by 65.000.301. This safety evaluation shows that off site cleaning of respirators is equivalent to onsite cleaning and that safety is not compromised by this change. Procedure 65.000.301 is to be canceled, and UFSAR 12.3.2.2.2 is to be changed to allow off site cleaning and to remove references to specific detail of respirator cleaning procedures in the UFSAR.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0051

UFSAR Revision No. NA

Reference Document: 29.100.01, 29.ESP.07

Section(s) NA

Table(s) NA

Figure Change [ ] Yes [x] No

Title of Change: Changes to Primary Containment H2/O2 Control steps, PCH-2 through PCH-14, of Emergency Operating Procedure.

SUMMARY:

PC H2/O2 control steps PCH-2 to PCH-14 are performed when the minimum detectable H2 concentration, 1%, is reached in Torus or Drywell. These steps required venting and purging of unaffected volumes of the PC. Steps PCh-7 and PCH-12 do not adequately evaluate all combustible gas parameters to select proper purge source. Finally, the Drywell vent path required by Revision 4 of the Emergency Procedure Guidelines, will not always ensure flow of gas from Drywell through the Torus vent penetration.

The PCH-2 through PCH-6 of the proposed PC H2/O2 Control will replace steps PCH-2 through PCH-14 of the current procedure. PCH-6 through PCH-14 of current procedure are deleted. The purge source selection currently performed by steps PCH-7 and PCH-12 will be incorporated by sections 3.0 and 4.0 of new 29.ESP.07.

The proposed revision focuses the operator activities on the PC volume threatened by combustible gas mixture. Operating crew will enter EOPs in the same manner as the current procedure. The revised version allows venting single volume, one volume after other or both volumes at same time. The selection of purge source is based upon conditions in both volumes. Drywell vent path, directly from Drywell, is established prior to initiating Drywell purge, and vent path directly from Torus if Torus level is below the Torus penetration prior to initiating Torus purge.

This change does not include any system modifications nor does it change system operation as described in the UFSAR, PC penetrations will continue to isolate as designed in order to protect SGTS and to ensure release rates are within 10CFR100 limits. The proposed changes incorporate changes recommended by BWROG Emergency Procedure Committee and documented under EPG Issue Number 8928. The PC vent and purge flow paths will be used to control H2 gas concentration as described in the UFSAR. The proposed revision of EOP does not change operation of the PC vent and purge flow paths. The system operation continues as described in the UFSAR.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0061

UFSAR Revision No. NA

Reference Document: 23.621

Section(s) NA

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Procedure 23.621, Main Control Room Annunciator and Sequence Recorder, is changed to allow and electrical jumper to be installed in the Drywell Cooler # 10 vibration switch.

SUMMARY:

The Drywell Cooling Fan #10 high vibration switch, T47N001J, has been causing nuisance alarms in the Control Room. DER 95-0785 contains an analysis that has reviewed the events concerning the high vibration alarms on #10 Cooler. It concludes that the alarms are caused by an over sensitive switch.

The Drywell Cooling System is designed to maintain average drywell temperature at 135 F or less. It also circulates air to prevent a hydrogen buildup in case of a LOCA. However, the system is not required to operate in the post-LOCA environment.

The Drywell Cooling System is not required for safe shutdown of the plant. Operation of the system provides for continuous, reliable operation of the plant. Failure of the system or components will result in a heat gain in the drywell that may damage equipment or instrumentation required for plant operation. The defeat of the vibration alarm eliminates the nuisance alarm in the control room but does not affect the operation of the fan. The vibration switch will not trip the fan, it only supplies indication of a potential problem. This evaluation addresses the fact that the vibration switch for #10 Drywell Cooling fan will be defeated so a high vibration condition will not be annunciated.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0074

Reference Document: 000Z964041

UFSAR Revision No. NA

Section(s) NA

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Freeze Seal for Drywell and Reactor Building Equipment Drain Sump Discharge Piping

SUMMARY:

Among the various methods for temporarily blocking pipelines for purposes of testing or maintenance operations, the "ice plug" or "freeze seal" has emerged as a convenient and economical technique. The concept involves applying heat exchangers to the pipe to be frozen, filling the pipe with water and introducing a suitable coolant (liquid nitrogen) to the heat exchanger to freeze the water.

Work request 000Z964041 proposed a freeze seal be applied to the drywell and reactor building equipment drain sump discharge piping to isolate G1100F021 for repairs. The freeze seal installation satisfies all criteria of generic freeze seal SE 93-0011 except that it will be located on piping that is not normally isolated from the secondary containment. This safety evaluation reviewed the effect of application of a freeze seal on the material properties and on system function and found it to be acceptable.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0076

UFSAR Revision No. 8

Reference Document: MRP16

Section(s) 11.7.1

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Use of On Site Storage Facility

SUMMARY:

The provision in MRP 16 that, "Packages of radioactive waste shall not be stored in the OSSF for longer than 5 years..." is replaced by administrative controls to assure the safety of greater than 5 year storage. These controls include: (1) the use of high integrity containers or equivalent packaging for the storage of potentially corrosive, processed liquid waste, (2) the specification of vented containers or periodic venting of containers for radioactive waste with the potential for gas generation, (3) a commitment to maintain current inspection requirements for containers stored in the Onsite Storage Facility, and (4) a commitment to maintain current inventory control requirements for the Onsite Storage Facility. This change has been evaluated against licensing basis documents and found not to be an unreviewed safety question.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0079

Reference Document: MRP15

UFSAR Revision No. 8

Section(s) 2.4

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Radioactive Material Storage

SUMMARY:

This Safety Evaluation revises the UFSAR to allow for the storage of radioactive material outside of Category I buildings, the radwaste building, and the onsite storage facility. Material stored within the power block was determined to be within the licensing basis of Fermi 2 without any additional administrative controls. For material stored outside of the power block, administrative controls are incorporated into the reference document to assure that this storage is within the licensing basis of Fermi 2. These controls include: container specifications to assure containment and fire safety, activity limits of 200 Ci total and 10 Ci for a package stored outdoors, containments for wet radioactive material, access control, an inventory and tracking system, and periodic surveys and inspections.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0081 **UFSAR Revision No.** 8

Reference Document: 24.207.02 Rev 25 **Section(s)** 7.1.2.1.18, 9.2.2.5

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Justification for Closing P4400F007A/B Valves Due to Indeterminate Design Basis Qualification of P44F403A/B

SUMMARY:

This Safety Evaluation was written to provide justification for changing the status of valves P4400F007A/B, EECW Pump Minimum Flow Valves, from open to closed in surveillance procedure 24.207.02. These valves were closed as a result of an operability evaluation in DER 96-0330. During the investigation of the DER it was discovered that P44F403A/B pressure control valves do not meet their design basis requirements. Therefore, these valves could fail in any position vice their assumed fail position of closed in UFSAR Table 9.2-4. This would divert flow from essential EECW loads during an accident. Until it can be determined if these pressure control valves can be qualified, P4400F007A/B will remain closed.

Since P44F403A/B were designed to fail closed during an accident, closing P4400F007A/B does not change the design basis or function of EECW. The locked valve program and valve lineup surveillance procedure ensures an operable flow path thus protecting EECW pumps and piping. UFSAR descriptions have been updated to delete reference to the pressure control function of these valves.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0102

Reference Document: Work Requests

UFSAR Revision No. NA

Section(s) NA

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Freeze Seals for CRD Piping

SUMMARY:

Among the various methods for temporarily blocking pipelines for purposes of testing or maintenance operations, the "ice plug" or "freeze seal" has emerged as a convenient and economical technique. The concept involves applying heat exchangers to the pipe to be frozen, filling the pipe with water and introducing a suitable coolant (liquid nitrogen) to the heat exchanger to freeze the water.

Under work requests 000Z957034 through 000Z957048, 000Z951271, 000Z952268 and 000Z947639 freeze seals are proposed to be used on the CRD insert and withdraw lines to isolate the RPV so that HCU isolation valves can be inspected per SIL 419. At the same time, a freeze seal will be located in the HCU outlet piping to the scram discharge volume for another SIL 419 valve inspection. This work will be done for fifteen HCUs. Three others will have freeze seals applied to the I/W lines for valve maintenance.

The freeze seal installation satisfies a generic freeze seal evaluation SE 93-0011 except that the freeze seals will be located on piping that cannot be isolated from the RPV. This safety evaluation discusses those aspects of this application and details their acceptability.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0103

Reference Document: 23.127

UFSAR Revision No. NA

Section(s) NA

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Temporary CRD Pump Cooling using a Portable Chilled Water Unit

SUMMARY:

A new section was added to the system operating procedure to connect a portable chilled water unit to one CRD pump to permit continued operation of the CRD pump when Division 2 EECW is out of service during a refueling outage. During refueling outages, it is advantageous to maintain the CRD system in service as much as possible to prevent crud buildup in CRD mechanisms. The CRD system is not required to support any safety related function during plant shutdown conditions.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0112

UFSAR Revision No. NA

Reference Document: 27.205.02

Section(s) NA

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Issue 27.205.02 to perform "VOTES" Flow testing of E1150-F007A & E1150-F024A

SUMMARY:

Issue revision 0 of 27.205.02 to perform "VOTES" Flow testing of E1150-F007A & E1150-F024A. Test equipment will be installed on the valves. LPCI Loop select will be forced to Division 2 for the test. The automatic opening function of the RHR pump min flow valve will be temporarily removed out so that maximum pump shut off head will be achieved. The system will be operated in Suppression Pool Spray mode while monitoring specific parameters. After removing test equipment, post maintenance testing of the affected valves will be performed to assure operability. The test will be performed in Modes 4 or 5. 2) when Division 2 of RHR is not required to be operable and when the containment isolation function of E1150-F007A & F024A are not required to be operable.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0117 **UFSAR Revision No.** NA

Reference Document: EFA 96-005 **Section(s)** NA

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: EECW High Energy Line Break (HELB) Analysis

SUMMARY:

Service Water System Operational Performance Inspection (SWSOPI) identified an issue in which existing EECW Design Calculations did not address a HELB scenario which would maximize heat input into EECW. The maximum safeguards scenario assumes a HELB with a loss of off site power, maximum heat transfer to individual room coolers (i.e. no fouling), no failure of a cooler where the HELB occurs, maximum EECW flow, minimum EESW flow and maximum fouling of EECW heat exchangers.

The results of this scenario yield a heat load of 13.7 E6 Btu/hr which exceeds maximum EECW heat load of 10.8 E6 Btu/hr listed in UFSAR Section 9.2.2.2. The area of concern is that excessive heat load on the HELB room cooler could decrease EECW flow and/or cause hydrodynamic loading that would exceed design limits of EECW.

An Engineering Functional Analysis was prepared which showed that even with the maximum safeguards scenario EECW would still be able to supply its components with cooling water within assumed limits and within the capability of the EECW heat exchangers without damaging hydrodynamic effects. Operability of EECW was verified by the EFA and there was no adverse impact to system accident response or plant safety.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0127

UFSAR Revision No. NA

Reference Document: 23.800.07

Section(s) NA

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Reactor Decay Heat Removal using FPCCU and RWCU with Natural Circulation

SUMMARY:

An RHR SDC outage was performed during RF05. This activity was done as an Sequence of Events (IPTE) under control of an appointed senior line manager. The plant was in Mode 5 with the reactor cavity and spent fuel pool connected and flooded to at least 20' 6" above the flange with irradiated fuel in the vessel. Technical Specifications requires at least one RHR SDC mode loop to be operable or verify operability of at least one alternate method of decay heat removal. A GE analysis had shown that the heat load from the fuel in the SFP and the vessel is capable of being adequately cooled by RWCU and FPCCU in conjunction with existing natural circulation. This analysis was validated in the SOE.

As a result, a procedure was issued to allow SDC outages during RF05 provided that heat loads were within the capacity of FPCCU and RWCU to reject and that natural circulation was established prior to the removal of SDC. This procedure was valid for RF05 only and stated such. There was no impact on plant safety or accident analyses.

FERMI 2

SAFETY EVALUATION SUMMARY REPORT

TEMPORARY MODIFICATIONS

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0022

UFSAR Revision No. NA

Reference Document: TM 95-0003

Section(s) NA

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Temporary Modification of Control Rod Drive (CRD) 22-23 Position Indication Circuits.

SUMMARY:

This evaluation justified disabling drift alarm signals associated with number '9' position for control rod drive 22-23, under the administrative control of a temporary modification. This temporary modification restored Rod Position Information System (RPIS) operability as defined in Technical Specification 3.1.3.7. The RPIS does not have any operating controls nor is it a system used to mitigate the consequences of the postulated accidents. It is used, however, to provide position and rod identification data to the plant process computer, Rod Worth Minimizer (RWM) and control room operators. This temporary modification did not interfere with the RWM functions because it does not use odd positions for the generation of rod blocks.

The temporary modification did not change the existing rod sequence control function and therefore did not result in an increase in the frequency class of the Continuous Rod Withdrawal During Startup event, the Control Rod Drop Accident or any other accident previously evaluated in the UFSAR. The RPIS is not required to perform any safety related functions. A failure of the RPIS with this temporary modification installed will not affect or prevent the operation of safety related systems. The temporary change does not increase challenges to or degrade the performance of any safety system assumed to function in the accident analysis below its design bases. The temporary modification did not reduce the margin of safety as defined in the Technical Specification, UFSAR, or SER.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0012 Rev 1

UFSAR Revision No. NA

Reference Document: TM 96-0002

Section(s) NA

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Installation of Various Temporary Monitoring Instruments on the Main Turbine for Startup Data Collection

SUMMARY:

This modification will install strain gages, accelerometers, pressure transducers and differential pressure transmitters on the turbine system for the purpose of obtaining physical data at different power levels. The instruments will be wired to a remote monitoring location using temporary cable. This cable will be secured as necessary to prevent personnel hazards and will not impact any existing turbine instruments or controls.

The strain gages and accelerometers will be welded or bolted to plant steam piping using approved methods. The pressure retaining components for the transducer and transmitter installation will be tested to approximately 1.5 times expected service pressure. All required tubing and hoses will be secured to existing plant supports. The small additional weight will have negligible impact. The worst case failure of the pressure monitoring instruments remains well within existing UFSAR analyses. This temporary installation of test equipment will meet existing design requirements and will aid in turbine startup data monitoring.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0017

UFSAR Revision No. NA

Reference Document: TM 95-0008

Section(s) NA

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Lifted Leads On Main Turbine LP Hood Temperature Switches

SUMMARY:

The LP Hood temperature trip logic which actuates a main turbine trip on high temperature operates on a one out of three taken twice scheme. Two of the six temperature switches, one on each trip string, were creating spurious half trips. This could lead to an actual turbine trip without valid temperature signals. It is appropriate to defeat the inputs to the trip logic from these two units. The remainder of the trip scheme will remain functional.

The high temperature trip circuitry is used to protect the main turbine 8th stage blading and cylinder from excessive temperatures while operating at low RPM, low loads, or degraded vacuum conditions. The 7th and 8th stage blades are removed at this time. This circuitry will be repaired during RF05 and will be available to support the new rotors installed in RF05. The hood spray system will still function to control hood temperatures.

The UFSAR states that the emergency trip of the main turbine on high hood temperature occurs at 280 degrees F. This statement is still accurate, however, the logic has been reduced from one out of three twice to one out of two twice. Operation with a reduced quantity of active channels does not place the plant at risk or violate UFSAR requirements.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0022 **UFSAR Revision No.** NA

Reference Document: TM 96-0003 **Section(s)** NA

Table(s) NA

Figure Change ☐ **Yes** ☒ **No**

Title of Change: Temporary Removal Of Input Signal To "Control Rod Overtravel" Alarm from Control Rod 34-31 Position Indication Probe

SUMMARY:

Control rod position is provided to various systems from a position indication probe (PIP) located in each control rod drive mechanism. The PIP contains magnetic reed switches that are positioned along the length of the PIP. If a control rod should be withdrawn past position 48, a switch on its PIP activates an overtravel alarm in the main control room. The generation of an alarm if no rod is selected or moving is indication of a fault in the PIP circuitry. This change will isolate a faulty rod overtravel input signal from CRD 34-31 PIP into the common alarm which is currently bringing in the alarm and preventing performance of a surveillance on other control rods to verify coupling.

Periodic surveillances to verify coupling for CRD 34-31 will still be performed using other available CRD indication such as an indicated position 48 when full out and no "Control Rod Drift" alarm when notching out from 48. This method has been discussed with and approved by General Electric. A second technically qualified individual will be present to observe coupling checks on CRD 34-31. This modification is required until repairs are made on CRD 34-31 PIP which is inaccessible at power. No reactivity controls are bypasses and no Technical Specification requirements will be adversely impacted by this change.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0029 Rev 2

UFSAR Revision No. 8

Reference Document: TM 96-0004
TSR 28129

Section(s) 9A.6.9

Table(s) 9A.6.9-1

Figure Change ☐ Yes ☒ No

Title of Change: Installation of a Temporary Standby Diesel Generator to Provide Blackstart Capability to CTG 11-4

SUMMARY:

A temporary standby diesel generator was used to provide blackstart capability for CTG 11-4. This temporary modification was implemented to provide an alternate AC power source to satisfy Technical Specification requirements during the time that SBO CTG 11-1 is out of service for refurbishment. The temporary standby diesel generator was used to start CTG 11-4 to support the dedicated shutdown system for Appendix R and to support Station Blackout (SBO) requirements. Also, Section 9A.6.9 and Table 9A.6.9-1 of the UFSAR has been revised to address that control circuits for specific Appendix R equipment need to be operable only when the Appendix R equipment is operable. This evaluation also allowed the use of CTG 11-2 and 11-3 as alternate AC power sources. Since CTG 11-4 cannot be blackstarted from the main control room or the dedicated shutdown panel, which could be done for CTG 11-1, a dedicated operator was stationed at CTG 11-4 to respond to a SBO. The temporary modification was shown to meet all UFSAR and Appendix R requirements.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0052

UFSAR Revision No. NA

Reference Document: TM 96-0011

Section(s) NA

Table(s) NA

Figure Change ☐ **Yes** ☒ **No**

Title of Change: Remove Control Center HVAC Damper T4100F054 for Repair and Install a Temporary Plate

SUMMARY:

TM 96-0011 will remove isolation damper T4100F054 for repair of the ruptured internal bladder. Upon removal of damper a gasketed blank will be used to cover the upstream side of the open duct to preclude the possibility of air from Division II Mechanical Equipment Room(MER) infiltrating the ductwork while the Division I CCHVAC is in service.

The TMOD will be redlined onto the drawing FOS M-5763-3 and P&ID M-2847 (UFSAR Fig. 9.4-2) to document the substitution of a blank-off plate for damper T4100F054. The redlining will be removed once the damper is reinstalled as part of its restoration.

The proposed modification was evaluated and found to be structurally acceptable to existing QA Level 1 and Seismic Category I design requirements. NIAS tubing that supplies air for actuation of the damper will be isolated and temporarily disconnected, this will have no impact on the remaining NIAS tubing support or any other components in Div. II MER being served by NIAS. This change did not involve an unreviewed safety question.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0054

UFSAR Revision No. NA

Reference Document: TM 96-0012

Section(s) NA

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Install Alternate Backup and Jockey Pump for EF2 Diesel Fire Pump

SUMMARY:

In order to reduce the work scope of future refueling outages, the requirement to perform the detail 18 month inspection of the diesel fire pump only during a plant outage has been changed via LCR 95-099-UFS to allow plant to perform this work during normal plant operation after having first provided a reliable backup for the diesel fire pump. With the plant operating, the backup for the diesel fire pump must be capable of meeting the conditions detailed for the existing diesel fire pump in order to protect the plant's fire suppression capability in the event of loss of off site power.

In order to meet the licerise condition an alternate engine driven pump and a jockey pump with suction from below the GSW Pump House and discharge connected directly into fire protection system is being installed. On loss of power, GSW and the Electric Fire Pump would be rendered inoperable. The loss of pressure would start replacement pumps to restore system pressure.

Both the alternate backup pump and the jockey pump are provided with individual fuel tanks which can provide approximately 8 hours of continuos operation. Additionally, the jockey pump can run in excess of 8 hours. The jockey pump will start automatically upon lowering pressure in the fire suppression chamber this is attained by built in pressure switch supplied with the pump, the self contained battery and fuel system. The main function of the jockey pump is keep the system pressurized thus limiting the actuation of the alternate pump. The ability to start the pump from Fermi 2 control room is not available, however, criteria specified in the UFSAR does not require the pumps to start from the control room.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0072 Rev 1 **UFSAR Revision No.** NA

Reference Document: TM 96-0015 **Section(s)** NA

Table(s) NA

Figure Change ☐ **Yes** ☒ **No**

Title of Change: Temporary Cooling for RBCCW and TBCCW Loads During the GSW Outage

SUMMARY:

This safety evaluation was written to evaluate the effect of providing a temporary alternate means of cooling some RBCCW and TBCCW loads which were required to ensure adequate defense in depth during the RF05 refueling outage. This alternate cooling was required because during RF05, the primary means of providing this cooling (GSW) to these components was removed from service for modifications. The temporary cooling systems were designed such that all assumptions contained in the UFSAR relative to the cooling of the selected components or portions of the RBCCW and TBCCW systems were addressed and met. This temporary change does not constitute an unreviewed safety question..

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0131

Reference Document: TM 96-0019

UFSAR Revision No. NA

Section(s) NA

Table(s) NA

Figure Change ☐ **Yes** ☒ **No**

Title of Change: Bypass of EDG #14 Inboard Bearing Temperature Alarm

SUMMARY:

A temperature indicating switch for monitoring EDG #14 inboard bearing temperature was operating erratically and providing erroneous annunciator alarms in the control room. Since the indicating switch was obsolete and immediate repair or replacement was not feasible, a temporary modification was implemented to bypass the erroneous alarm input and to provide a local readout device for monitoring the EDG inboard bearing temperature. The temporary modification entailed the following: 1) A jumper was added to bypass the open-to-alarm contact on the indicating switch, thus defeating annunciation of inboard bearing high temperature; 2) A temporary temperature indicator (Fluke meter) was connected to an installed spare thermocouple to provide a local readout for inboard bearing temperature. The temporary indicator was secured to a local electrical termination cabinet and was powered from a local 120VAC convenience receptacle. This switch is for equipment monitoring and does not impact the safety related function of the EDG.

FERMI 2

SAFETY EVALUATION SUMMARY REPORT

UFSAR

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 90-0151 Rev 1

UFSAR Revision No. 8

Reference Document: LCR 96-118UFS

Section(s) 4.5.2.1.2

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Use of Hafnium Metal in Control Rod Blades

SUMMARY:

Revision 0 of SE 90-0151 dealt with evaluating the design of 2 new control rod blade designs from GE. One hundred sixty five control rod blades were purchased from GE and installed into the plant in Refuel Outage 02. These control rod blades were of a new design and utilize hafnium metal in addition to the boron carbide to extend their service life. The SE also addressed other design improvements such as the new, redesigned velocity limiter on the Duralife-215 blades, the high purity Type 304 stainless steel absorber tubes, low cobalt alloys in the pins and rollers, and fusion welded construction. Revision 1 was prepared to correct an incorrect reference to the configuration of the hafnium in the Duralife 215 blades given in the UFSAR, and Rev 0 of this SE. Section 4.5.2.1.2 of the UFSAR and Fig. 4.5-8 depict the configuration of the hafnium metal in the wings of the Duralife-215 control rod blade to be a single hafnium strip. In reality, the hafnium metal is in the form of 3 hafnium rods. The 3 hafnium rods are equivalent to the single hafnium strip in all respects. In addition, Rev 1 of the SE clarified the reasoning for the hot reactivity worth of the Duralife-215 control rod blade being the same as in the original control rod design.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 94-0106 REV 1 **UFSAR Revision No.** 8

Reference Document: LCR 94-213UFS **Section(s)** 6.2.1, 9.4.5

Table(s) 6.2-8

Figure Change ☐ Yes ☒ No

Title of Change: Unqualified Coatings on Drywell Fan Housings

SUMMARY:

This evaluation justifies the presence of unqualified coatings on the drywell fan housings inside the drywell. These unqualified coatings have been in existence since the operating license stage. UFSAR 6.2.1.6 and Table 6.2-8 have been revised to reflect the plant as-built conditions. UFSAR 9.4.5 (Drywell Cooling System) has been revised to clarify the pertinent operation of the drywell fans and also direct operator actions which are to be taken after a LOCA would occur.

The presence of this unqualified paint in the fan enclosures will not increase the probability or consequences of any accident evaluated in the UFSAR. These pertinent analyzed accidents are contained in UFSAR Chapter 15, both for DBA-LOCA and for the other high energy line breaks. The presence of unqualified paint inside the fan housings certainly cannot increase the probability of an accident causation since there is no mechanism for this to happen. Also, even if the paint is released into the drywell and then to the torus, it would pose no threat to the ECCS system operation, and hence, to any of the UFSAR accident consequences. It has been shown that it is possible for a certain amount of paint to come loose and ultimately enter the drywell atmosphere, both from an airborne path and from a waterborne path. However, assuming reasonable yet conservative estimates of release and transport fractions, the total amount of paint carried down to the suction strainers is still within the design-basis of the ECCS system operation. In addition, all paint particles less than 1/8" will easily pass through the strainers and pose no problem. Those paint chips which do enter the torus will have undergone a thorough series of being tumbled, battered, cracked, and broken-up. Therefore, a large fraction of them should be sufficiently small to pass through the strainers.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0001

UFSAR Revision No. 8

Reference Document: LCR 95-003UFS

Section(s) 6.2.1, 6.3.2.14, 6.3.3, 7.3.1.2, A.1.1,A.1.27

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Revision of UFSAR RHR and Core Spray System Data

SUMMARY:

This change updates the UFSAR with current design information regarding Residual Heat Removal System and Core Spray System pump NPSH values as well as modes of operation. This will provide consistency between mode descriptions and Figures in the UFSAR as well as the Design Calculations. This does not make any changes to the RHR system nor does it impact RHR assumptions or requirements as specified in the UFSAR. Design information is clarified for licensing basis consistency.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0007

UFSAR Revision No. 8

Reference Document: LCR 95-010UFS

Section(s) 7.7.2

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Revision to Feedwater Control System Description in UFSAR.

SUMMARY:

This evaluation justified revision to UFSAR 7.7.2.4.2 - "Conformance to Specific Regulatory Requirements" to reflect that the Feedwater Control System contains QA Level 1 transmitters classified as NUREG-0588 Category 2B (mechanical) for pressure boundary integrity and Category 2C (electrical) and that the Feedwater Control System does interface with the Reactor Protection System which is a safety related system. This revision was necessary to describe the design basis and current as-built configuration of the Feedwater Control System.

The UFSAR change has no impact on any accident scenarios previously evaluated in the UFSAR nor is the safety related function of any component required to mitigate the consequences of an accident impacted in any way. The change in UFSAR 7.7.2.4.2 does not affect the operation of the Feedwater Control System, the Reactor Protection System or other plant systems. All design basis requirements remain unchanged. The UFSAR change does not reduce the margin of safety as defined in the basis for any Technical Specification, UFSAR, or SER.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0017

UFSAR Revision No. 8

Reference Document: LCR 95-049UFS

Section(s) 2.2.3, 2.4.2, 9.2.5, A.1.27

Table(s) 6.2-1, 9.2-7

Figure Change [x] Yes [ ] No

Title of Change: Revision to Ultimate Heat Sink Make-up Time Requirements.

SUMMARY:

This evaluation justified revision to the UFSAR to reduce the period of time that the Ultimate Heat Sink (UHS) can operate without water make-up from 30 days to 7 days. Reduced water make-up time requirements (from 30 days to 7 days) resolves concerns with reservoir capacity considering larger evaporating losses and a below ground structural failure. The 7 day make-up provisions for residual heat removal reservoir is consistent with the 7 day make-up provisions allowed for replenishment of diesel generator fuel supply. If installed plant equipment is unavailable, portable pumps and hoses can be procured and installed in a one week time frame. Siphon of the reservoir is prevented by ensuring that hoses are not placed into the reservoir.

The guidelines of Regulatory Guide 1.27 continue to be satisfied and a 7 day make-up will not impact the ability of the UHS to mitigate the consequences of an accident. The calculated 7 days supply is very conservative since it assumes a crack in a Seismic Category 1 reservoir, does not account for higher than normal operating reservoir levels and uses more accurate usage rates than previously considered. Since the UHS continues to satisfy the guidelines of Regulatory Guide 1.27, there is no impact on the margin of safety as defined in the bases for any Technical Specification or in the UFSAR or SER.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0021 **UFSAR Revision No.** 8

Reference Document: LCR 95-054UFS **Section(s)** 7.6.1

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Clarification of Low-Low Set (LLS) Safety Relief Valve (SRV) Function.

SUMMARY:

This evaluation justified a revision to UFSAR 7.6.1.19.9 to clarify the LLS - SRV function description. The low-low set logic is capable of performing its function (i.e., preventing multiple actuations of the SRVs) even if both pressure switches associated with one SRV tail pipe become inoperable. Should failure of two pressure switches associated with one SRV tail pipe occur concurrently with the actuation of the SRV, the SRV discharge line temperature sensors would detect that SRV has lifted and suppression pool temperature sensors would indicate higher suppression pool temperature.

The margin of safety for the LLS system is implicitly defined in the basis for Technical Specification 3.4.2.2. The LLS relief mode ensures that a potentially high thrust load on the SRV discharge lines is eliminated during subsequent SRV actuation's. The proposed revision of the UFSAR text will not change any feature of the LLS relief mode design. The LLS system is single failure proof, that is sufficient redundancy is provided for the LLS logic such that failure of two pressure switches would not violate the design basis. That is for any single failure of the instrumentation or logic a backup channel is available for LLS relief function. The change in the UFSAR will not reduce the margin of safety as defined in the bases for any Technical Specification, UFSAR or Safety Evaluation Report (SER) sections.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0031 Rev 1

UFSAR Revision No. 8

Reference Document: LCR 95-068UFS
LCR 96-243UFS

Section(s) 1.2.2.15.11, 2.4.1.2.3.2
9.2.4, 3.1.2.6.1

Table(s) 1.6-2, 9.2-5

Figure Change [x] Yes [ ] No

Title of Change: Installation of Potable Water Supply from Frenchtown Township

SUMMARY:

The former Fermi 2 potable water supply was from an elevated tank which is supplied water from Lake Erie that had been processed from the Potable Water Treatment Plant. The Potable Water Treatment Plant had been in use since Fermi 1 was operated. The new installation consists of a supply line from the Frenchtown Township Water System to the Potable Water Treatment Plant where lift pumps transfer the water to the elevated tank. The distribution of potable water remains he same.

Additionally, this evaluation documents a UFSAR configuration discrepancy regarding cross contamination prevention of demineralized makeup water. The formerly used Makeup Demineralizer utilized an Air Break while the currently installed Reverse Osmosis Unit uses a Reduced Pressure Principle Backflow Preventer which has been evaluated and found acceptable. This suitability evaluation was inadvertently missed during the RO unit's installation. This UFSAR change does not impact plant safety and is made to update UFSAR described plant configuration only.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0036

UFSAR Revision No. 8

Reference Document: LCR 95-084UFS

Section(s) 6.3.2, 9.2.2

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Augmentation of Reactor Building Closed Cooling Water (RBCCW) Cooling Capacity.

SUMMARY:

This evaluation justified a revision to UFSAR 6.3.2.2.6 and 9.2.2 to identify that one or both divisions of the emergency equipment cooling water/emergency equipment service water (EECW/EESW) systems may be used to augment the RBCCW cooling capacity to maintain drywell temperature within Technical Specification limits and at other times where it is necessary to substitute EECW for RBCCW cooling. The use of EECW and EESW as multi-role systems is consistent with the plant design philosophy and the design basis of these systems. The design of EECW and EESW systems provides adequate capacity and protection to assure the safety related function of each division would be performed, even if a division is being operated in manually initiated mode just prior to the event.

The use of EECW/EESW divisions to augment RBCCW equipment cooling capacity in summer seasonal conditions supports maintaining the drywell parameters within the Technical Specification limits. The RHR Reservoir limits are also observed by existing procedural controls during this mode of EECW/EESW operation to maintain required ultimate heat sink capacity in accordance with the Technical Specification limits. The use of EECW and EESW divisions in the RBCCW augmentation role does not reduce the operability of any of these systems, or inhibit the automatic safety functions from being performed when required. Both the General Design Criteria and the Technical Specification Bases include the operation of service water systems in normal and accident conditions to provide required plant structure, system and component cooling. Operation of EECW/EESW divisions in an RBCCW augmentation role does remain within conformance to 10 CFR 50 Appendix A, General Design Criteria 44, 45, and 46, as evaluated in the Fermi 2 SER. EECW and EESW divisions remain fully capable of performing their required safety-related functions in the event of a postulated accident. Thus, operation for EECW and EESW divisions for the purpose of augmenting RBCCW cooling capability does not reduce the margin of safety as defined in the bases of the Technical Specifications, the UFSAR and the SER.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0038 Rev 1

UFSAR Revision No. 8

Reference Document: DC 5702
LCR 95-89A UFS

Section(s) 9A various

Table(s) NA

Figure Change [ ] Yes [x] No

Title of Change: Plant Area Combustible Loading As Built Information

SUMMARY:

This change to Section 9A of the UFSAR will provide up to date combustible loading data for all fire areas based on conservative assumptions and revise the UFSAR Fire Hazards Analysis methodology. Design Calculation 5702 will provide the plant with current fire loading information to envelop future plant modifications. The combustible loading information is an approximation of the quantity of combustible materials and hazards within each fire zone. This loading, along with the postulated fire duration is used to verify the adequacy of existing fire protection (barriers, detection, suppression, etc.) for a given area of the plant. The basis for the original fire loading was not well documented and no calculation or formal report existed outside of the UFSAR itself.

This new calculation is based on a combination of drawing reviews and field walkdowns with various applied conservative assumptions. This updated combustible loading will facilitate effective fire protection reviews of the plant. This new analysis has been performed in accordance with current codes and standards. The change to the combustible loading information does not adversely effect any plant systems or equipment including the fire protection system and the resistance rating of existing fire barriers. The level of protection for the plant is not adversely affected and the ability to achieve and maintain safe shutdown in the event of a fire is not adversely affected. This change will ensure proper fire loading analysis for future plant changes.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0039 Rev 1

UFSAR Revision No. 8

Reference Document: TSR 27683
DC 5318-1A

Section(s) 9.1

Table(s) NA

Figure Change [ ] Yes [x] No

Title of Change: Decay Heat Load Impact on FPCCU due to Power Uprate

SUMMARY:

This safety evaluation asseses the impact of increased decay heat load on the Fuel Pool Cooling and Cleanup System (FPCCU) heat removal capability due to power uprate and incorporates changes reflecting the updated approach for managing decay heat removal. The original design calculation used an incorrect value for the design capacity of the FPCCU heat exchangers and underestimated the impact of power uprate on decay heat removal and spent fuel pool (SFP) temperature at design conditions. The revised calculation determines average bulk temperature at 21 days of cooling after shutdown with 95 °F service water is about 130 °F. This is a three degree increase over the original estimate.

The NRC has defined for Fermi 2 the acceptable limit for normal fuel pool temperature to be 125 °F during normal plant operations and up to 150 °F during refueling outage core discharges, periods when FPCCU capacity is reduced (e.g. one train out of service for maintenance), or when FPCCU is used for other than SFP cooling (e.g. reactor cavity draining). The acceptable consequences of a loss of normal SFP cooling is to initiate backup cooling prior to the onset of pool boiling; sufficient time must be available to allow the backup cooling system to be placed in service.

The proposed changes do not impact the above limits. The capacity of FPCCU remains adequate for the anticipated heat loading of the SFP within the storage capacity for three cores. The time available to initiate backup cooling remains at least 18 hours which was the value accepted in the SER. The FPCCU system is adequate to support refueling mode operations. FPCCU is not a safety related system and is not required for safe shutdown of the plant. The safety related backup to FPCCU is provided by a cross tie to the RHR system and is not impacted by this change.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0040 **UFSAR Revision No.** 8

Reference Document: LCR 95-095-UFS **Section(s)** 12.2.1

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Turbine Building Pressure Requirement Clarification

SUMMARY:

This evaluation clarified the change in UFSAR 12.2 that the turbine building pressure is maintained at a pressure below outside atmospheric pressure rather than approximately 0.25 inches WC below outside atmospheric pressure. The existing turbine building high pressure alarm will remain and annunciate when the setpoint is reached. The current setpoint for high pressure alarm of (-) 0.125 inches WC may be changed to avoid nuisance alarms. However, the high pressure alarm will not be increased above 0.0 inches WC. The fan trip setpoint of 1.0 inches WC is not changed. This evaluation also allows to open exterior non-shielded doors on the east, west, and south walls of the turbine building to assist in ventilating the turbine building. Administrative controls will be implemented to assure that, in the event of a turbine building high pressure alarm, or in the event the ventilation system is shutdown, routine radiological monitoring will be performed to assure no airborne radioactivity is near the open doors. To minimize a release through an open door in the event of turbine building airborne contamination, administrative controls will be implemented to assure that, if the turbine building effluent monitor alarms as a result of high radioactivity, any open doors to the turbine building would be closed.

TBHVAC system is not taken credit for any accidents analyzed in UFSAR 15. The system does not restart on loss of off site power and trips if a high radiation level is detected in the exhaust. Radwaste building, radwaste control room and chemistry laboratory, and main control room ventilation/air conditioning systems operation remain unchanged with this change in UFSAR. The Reactor /Auxiliary Building, which houses safety related equipment, has a ventilation system independent of TBHVAC therefore, the equipment in this building is not affected by this change.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0045

UFSAR Revision No. 8

Reference Document: LCR 95-099UFS

Section(s) 9A.6.2.2.2

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Revise Description of Diesel Fire Pump 18 Month Inspection

SUMMARY:

The UFSAR requires a Diesel Fire Pump detailed maintenance inspection every 18 months while the plant is shutdown. This requirement was transferred verbatim from Technical Specifications during implementation of GL 86-10 recommendations. The requirement for shutdown was specified such that in the event of a fire and a loss of off site power which would result in a loss of General Service Water (GSW) and the Electric Fire Pump, the plant would still have fire water suppression capability. The UFSAR requires that with one inoperable, it must be restored within 7 days or an alternate backup pump provided and if the fire suppression water system is inoperable, an alternate fire suppression water system be established within 24 hours.

It was found acceptable to perform the 18 month Diesel Fire Pump inspection while the plant was operating, with an alternate backup diesel fire pump connected to the fire suppression system. The temporary pump met all the design requirements of the original pump and did not impact any UFSAR safety or accident analysis.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0047

UFSAR Revision No. 8

Reference Document: LCR 95-108UFS

Section(s) 6.2.4.4.3

Table(s) 6.2-2

Figure Change ☐ Yes ☒ No

Title of Change: Elimination of 10CFR50 Appendix J Type C Water Test

SUMMARY:

This Safety Evaluation justifies the elimination of 10CFR50 Appendix J Type C Water Tests for Containment Isolation Valves on lines which penetrate the Torus and terminate below the torus water level. This change does not represent an exemption the 10CFR50 Appendix J requirements, but rather these valves do not require 10CFR50 Appendix J Type C testing. The valve summary is as follows: 16 RHR valves, 12 CSS valves, 4 RCIC valves, and 4 HPCI valves.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0050

UFSAR Revision No. 8

Reference Document: DC-5003

Section(s) NA

Table(s) 8.3-3, 8.3-4
8.3-6, 8.3-7

Figure Change ☐ Yes ☒ No

Title of Change: Correction of EDG-11 Total Loading for EDG Auxiliaries

SUMMARY:

During the incorporation of open change Design Change Documents in Design Calculation DC-5003 Rev D, it was observed that total loading of EDG #11 Auxiliaries should have been 129.5Kw instead of existing 125.1KW, due to an arithmetic error. DC-5003 Rev D corrects this error and updates UFSAR tables.

As per UFSAR the total load on each EDG for all conditions should be less than short time rating of the diesel generator (3135KW). All open design documents against DC-5003 were evaluated and it was found that the highest load for EDG -11 (2908KW) is within the short time rating of the EDG (3135KW).

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0053

Reference Document: LCR95-113-UFS

UFSAR Revision No. 8

Section(s) 7.2.1, 7.3.1, 7.3.2

Table(s) 7.2-4, 7.3-11, 7.3-12

Figure Change ☐ Yes ☒ No

Title of Change: Elimination of selected response time testing from the UFSAR

SUMMARY:

This Safety Evaluation justifies the elimination of selected response time testing. Specifically, this includes the response time testing of sensors for selected channels of the Reactor Protection System, Isolation Actuation System Instrumentation, and ECCS actuation instrumentation. The evaluation is supported by BWROG document, NEDO-32291A "System Analyses for the Elimination of selected Response Time Testing" and has been accepted by the NRC.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0057

UFSAR Revision No. 8

Reference Document: LCR 95-008UFS

Section(s) NA

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Revise UFSAR Figure 7.8-8 "Emergency Communications Telephone Network"

SUMMARY:

UFSAR figure 7.8-8 "Emergency Communications Telephone Network" was revised to reflect installation of the new microwave tower, rerouting of RERP communications circuits and the upgrade of the associated communication equipment.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0062

Reference Document: LCR 95-135UFS

UFSAR Revision No. 8

Section(s) 7.2.1.1.5.2, 7.6.1.11

Table(s) 7.6-2

Figure Change [ ] Yes [x] No

Title of Change: Correct UFSAR Discrepancies Related to the Sequence of Events Recorder

SUMMARY:

The sequence of events recorder installed at Fermi 2 provides a log of alarm contact operations identifying the time and date of alarms. General Electric typically specified that the SOE recorder be part of the process computer with a limited number of inputs. Detroit Edison requested an exemption from this design to allow the use of a dedicated system independent of the process computer. This request was granted with the stipulation that NSSS parameters be tied to their own NSSS recorder. Thus two recorders , NSSS and NSSS/BOP were installed and tested during startup. After making design improvements to the NSSS/BOP recorder to make it very reliable and capable of recording many inputs during transients, the NSSS recorder was not required to backup the NSSS/BOP recorder and it was abandoned in place. The UFSAR was never revised to reflect this. The SOER is not safety related and has no impact on safe plant operation.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 95-0063

UFSAR Revision No. 8

Reference Document: LCR 95-094UFS

Section(s) 5.5.6.2.2

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Correct UFSAR Discrepancies Related to the Description of RCIC Valves

SUMMARY:

UFSAR section 5.5.6.2.2 describes the valve operating requirements for RCIC valves E5150F045, F013, F007, F008, F062 and F084. The valve operating requirements i.e., opening/closing differential pressures are not consistent with the current revision of the RCIC design specification and design calculations for the GL 89.10 program. The opening/closing rate for the E5150F084 is not consistent with RCIC design specification and UFSAR section 6.2.2.

The UFSAR was revised to refer to "Maximum Expected Pressure Differential" for the E5150F045, F013, F007, F008 and F062. The opening/closing rate for the E5150F084 is being removed from section 5.5.6.2.2.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0002

UFSAR Revision No. 8

Reference Document: LCR 95-132UFS

Section(s) NA

Table(s) 6.2-2

Figure Change ☐ Yes ☒ No

Title of Change: UFSAR Errors in Power Failure Valve Position

SUMMARY:

The following four valves were found to have incorrect power failure valve position information in UFSAR Table 6.2-2 for the Station Blackout analysis which discusses their ability to maintain appropriate containment integrity as required by Regulatory Guide 1.55 as part of the Station Blackout Rule, 10CFR50.63.

Valve No.	Description	Type	Current	Revised
E11F610A	RHR Injection Check Valve Bypass Valve	Solenoid	As-is	Closed
E11F610B	RHR Injection Check Valve Bypass Valve	Solenoid	As-is	Closed
T4901F468	Drywell N_2 Supply Valve	Air Op	Open	Closed
T5000F420A	Drywell Pressure Source Valve	Air Op	Open	Closed

These valves all fail closed which is conservative with respect to the existing SBO analysis for containment. Thus updating UFSAR Table 6.2-2 is appropriate.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0005 **UFSAR Revision No.** 8

Reference Document: TSR 28146 **Section(s)** 9A.6.8.2.1

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Deferral of UFSAR Required Surveillances for Visual Inspections on Fire Dampers and Penetration Seals until RF05

SUMMARY:

TSR 28146 and this Safety Evaluation document the review of the acceptability of delaying the required performance of surveillance procedures 28.507.04 and 28.507.05 on fire damper and penetration seals visual inspection until RF05. These surveillances are required by UFSAR Sections 9A.6.8.2.1.b and 9A.6.8.2.1.c and had critical complete dates of May 23, 1996 and April 10, 1996, respectively. RF05 is scheduled to begin September 27, 1996. No commitments exist that would be negated by this change.

The following is a synopsis of the justification used:

- Penetration seals time exposure to elevated temperature is equivalent to the 18 month time period plus 25% grace allowed.
- Past penetration seal inspections have not detected failures.
- This relief will not impact the commitment to inspect all seals each 15 year period.
- Past fire damper inspections have not detected excessive failures.

Extension of the surveillances required due dates to RF05 is deemed acceptable.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0009

UFSAR Revision No. 8

Reference Document: LCR 96-028UFS
LCR 96-029TRM

Section(s) NA

Table(s) 6.2-2

Figure Change ☐ Yes ☒ No

Title of Change: Add Note On Automatic Function Of RHR Warm-up Valve, E1150F026B

SUMMARY:

Missing information was identified in the UFSAR and the Technical Requirements Manual concerning valve E1150F026B automatic seal-in signal. Currently this valve is listed as having only a remote-manual function. As installed, the valve will close and remain closed when a low reactor water level, (Level 1) or high drywell pressure signal is present.

The existing valve meets the General Design Criteria for Primary Containment Isolation vales (GDC 56). Although not required, this interlock provides additiona! assurance that remote-manual operation of the valve will not be possible until the sequence of automatic functions of RHR LPCI mode has been completed and the initiating condition corrected. Therefore, the updating of the UFSAR and the TRM to describe E1150F026B operation is prudent to provide a similar level of detail that exists for other valves listed.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0014 Rev 1

UFSAR Revision No. 8

Reference Document: LCR 96-031UFS

Section(s) Various

Table(s) 9.1-1

Figure Change ☐ Yes ☒ No

Title of Change: Revise UFSAR to Clarify Spent Fuel Pool Requirements for a Full Core Off-load

SUMMARY:

The changes described in this LCR are made to reflect existing design bases and use consistent terminology among UFSAR sections regarding decay heat loads and fuel pool design limitations. The fuel pool storage design will be more clearly described in terms of the means by which the licensing and design bases are met. This document further supports the acceptability of full core off loads up to and including 2295 bundles. Decay heat loads are discussed including maximum expected values as compared to worst case temperatures and heat exchanger performance to verify all design and licensing requirements are met. Other small editorial changes are made here for clarification purposes. This change to the UFSAR will better document numerous engineering reviews related to spent fuel pool and plant specific refueling issues.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0018 Rev 2

UFSAR Revision No. 8

Reference Document: LCR 96-009UFS

Section(s) 7.6.1.14, 9.2.2.5

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Correct Discrepancies in RBCCW Description in the UFSAR .

SUMMARY:

Issue #1. UFSAR Section 7.6.1.14.1.1 described primary function of the RBCCW system as follows, "The RBCCW System contains three 50% capacity water pumps, two 100% capacity heat exchangers...", and " one pump and one heat exchanger are retained in standby during normal operation". This has been changed to " The RBCCW System contains three 50% water pumps, two 50% capacity heat exchangers..." and "during normal operation, two heat exchangers and two pumps are in service and one pump is retained in standby". Changing the capacity of the RBCCW heat exchanger from two 100% capacity heat exchanger to two 50% capacity heat exchanger does not pose a safety issue as RBCCW is not a safety related system and not required for safe shutdown of the reactor. During accident RBCCW system is augmented by two full-capacity EECW loops to cool equipment needed for safe reactor shutdown.

Issue #2. UFSAR section 7.6.1.14.5.2 described the operator information as follows "Attention of the operator is secured when the need arises for an increase or decrease of pumping capacity in the RBCCW or TBCCW by lamps..."and "Readout instruments provided in the main control room, display the condensate level in the makeup tanks, gas pressure in those tanks, process outlet temperature of the heat exchanger and suction pressure of the pumps...". These statements are changed to "Attention of the operator is secured when the need arises for an increase or decrease of pumping capacity in the RBCCW or TBCCW by control room annunciators..."and "Readout instruments provided locally , display the condensate level in the makeup tanks and pump's discharge pressure. Control room annunciator also alerts operator to abnormal condensate level and gas pressure in makeup tanks. Readout instruments provided in the main control room display process outlet temperature of the heat exchanger and supply/return header pressure...". Separating out UFSAR section 7.6.1.14.5.2 is in compliance with regulatory and design requirements.

Issue #3. UFSAR Section 9.2.2.5 described "... low suction pressure and/or low makeup tank level are alarmed only on the EECW pumps...", this is changed to "...Hi/Low pump differential pressure and Hi/Low makeup tank level are alarmed for the RBCCW and EECW systems. Low suction pressure is alarmed only on the EECW pumps...". This change of description is in compliance with regulatory and design requirements.

The proposed change does not effect functional capability of the plant safety related structures, systems or components nor will it result in any relaxation of the plant existing licensing bases. The proposed change does not affect any Operating limit and does not involve Technical Specification either directly or indirectly.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0030

UFSAR Revision No. 8

Reference Document: LCR 96-051UFS

Section(s) 8.2.1.1, 8.2.2.2

Table(s) 8.2-1, 8.2-2

Figure Change ☐ Yes ☒ No

Title of Change: UFSAR Update for New Edison Substation

SUMMARY:

The Fermi 120kv switchyard is fed from three outside power sources, one of them supplies power from the Brownstown substation via transmission lines from Brownstown to Swan Creek substation and from Swan Creek to Fermi. Due to load growth in the area, a new Berlin substation has been installed in the 120kv transmission system between Swan Creek and Brownstown substations. Information in the UFSAR relating to Fermi-Swan Creek and Swan Creek-Brownstown lines is affected by this change. Also updated information on line lengths and outage rates have been added here.

Potential impacts reviewed were:

- Transmission outage rates and restoration times.
- Relaying schemes at the 120kv switchyard.
- Available short circuit MVA
- Per unit voltage available at Fermi switchyard.

Review of the above items found no significant impact to plant analysis or margins related to off-site power sources.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0031

UFSAR Revision No. 8

Reference Document: LCR 95-067UFS

Section(s) 6.2.1.2.1.1, 6.2.1.3

Table(s) 6.2-1

Figure Change [x] Yes [ ] No

Title of Change: Update of UFSAR Containment Design Conditions

SUMMARY:

Primary containment design pressure and temperature limits are discussed in the UFSAR. Although implied in the description, these conditions do not occur concurrently during the transients evaluated in the UFSAR. Therefore, clarifying information is required to adequately describe design basis containment pressure and temperature combinations. No existing analyses are impacted by this change.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0036

UFSAR Revision No. 8

Reference Document: LCR 96-062UFS

Section(s) 9A.2.3.5.1

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: RHR Complex CO2 Activation Logic

SUMMARY:

A Class A circuit is a circuit which is capable of transmitting an alarm signal during a single open or non simultaneous single ground fault on a circuit conductor. A Class B circuit is not capable of transmitting an alarm beyond the location of the fault described previously. Both Class A and B circuits provide for a trouble condition in the event of a fault. The fire detection system which activates the CO2 system in the RHR Complex is wired as a Class B circuit and not as a Class A circuit as the UFSAR states.

Due to the installation configuration, a single circuit fault will not prevent the CO2 system from operating automatically except in the specific compartment where the fault exists and then only if the fault is before the first detector. It will not prevent manual initiation. Only a single EDG in one division will be affected by a fault. Therefore, all unaffected CO2 systems will automatically initiate in the event of a fire. A trouble alarm will be received in the main control room when a fault occurs and the appropriate actions will be implemented (i.e. a one hour fire watch will be initiated).

Since other CO2 systems remain operable and actions per UFSAR 9A.6 would be taken for the faulted system, the lack of a Class A circuit does not pose a reduction in the level of fire protection or affect the ability of the plant to achieve and maintain safe shutdown.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0041 Rev 1

UFSAR Revision No. 8

Reference Document: LCR 96-072UFS

Section(s) 7.5.1.4.2.3.c.4

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Revise Core Spray Control Room Indications

SUMMARY:

This section of the UFSAR described ECCS instrumentation that can be observed to verify proper operation of ECCS equipment following a LOCA. The subsection on the Core Spray system stated that Core Spray has loop flow indicators and loop flow recorders as well as other instrumentation. This was incorrect. There have never been Core Spray loop flow recorders installed in the plant. This was an original FSAR error which had never been discovered and corrected. There is no requirement or necessity for flow recorders nor does the GE Design Specification call for one. The existing instruments provide ample information that the pumps are running properly. If necessary, historical data on Core Spray loop flow is available from the ERIS system. This UFSAR change has no impact to plant design or licensing basis evaluations.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0042

UFSAR Revision No. 8

Reference Document: LCR 96-073UFS

Section(s) 9.2.2.2

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Revise Description of EECW Pressure Control

SUMMARY:

The original design of the EECW system provided pressure control via PCVs P44F403A and B which relieved back to the pump suction. Later it was discovered that in order to provide design flows to related equipment it was necessary to operate the EECW pumps at maximum discharge pressure of 80.1 psid. This corresponds to bypass valves full closed. As a result, the bypass valves are locked closed with a setpoint of 80 psid to ensure they remain closed. Additionally, the UFSAR refers to EECW head tank nitrogen blanket as being required for pump NPSH. Actually, the required NPSH for the EECW pumps is only 10 feet. The NPSH available with the head tanks at atmospheric pressure is 34 feet. The statement regarding nitrogen pressure on the head tank being required for EECW pump NPSH has been deleted.

The as designed EECW system meets all design requirements to support operation of safety related components. These changes to the UFSAR description do not compromise this ability nor impact plant design basis margins.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0048

UFSAR Revision No. 8

Reference Document: LCR 96-082UFS

Section(s) 9.2.1.2, 9.2.7.2, 11.4.3.9.2.2, A.1.70

Table(s) 1.6-2

Figure Change [x] Yes [ ] No

Title of Change: Added Drawings to UFSAR

SUMMARY:

The purpose of this change is add 4 drawings, UFSAR Figure 9.2-1, Sheets 1 and 2; and UFSAR Figure 9.2-12, Sheets 1 and 2 on the GSW and TBCCW systems. This change will ensure appropriate level of evaluation is performed for future modifications pertaining to GSW and TBCCW systems. These 4 drawings were removed in Revision 7 of the UFSAR by LCR - 95-035-UFS.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0053

UFSAR Revision No. 8

Reference Document: LCR 96-088UFS

Section(s) 9.1.2

Table(s) None

Figure Change ☐ Yes ☒ No

Title of Change: Editorial Change to the UFSAR to Define the Uncertainty of the k_{eff} Analysis

SUMMARY:

The Spent Fuel Racks are required to have a k_{eff} of 0.95 or less when flooded with unborated water. This includes a conservative allowance of 1.9 percent $\Delta k/k$. The UFSAR did not explicitly state the uncertainty but refers to other source documents. This UFSAR change reflects the current uncertainty for the k_{eff} analyses in the text in addition to the references.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0055 ____ **UFSAR Revision No.** 8

Reference Document: LCR 96-015UFS **Section(s)** 7.1.2.1.18, 9.2.2.1
7.1.2.1.28,6.3.2.2.6
Table(s) 9.2-2, 7.6-2

Figure Change ☐ Yes ☒ No

Title of Change: Revise RBCCW Makeup Tank Pressure

SUMMARY:

During UFSAR review discrepancies were noted in the descriptions of the RBCCW makeup tank pressure. The UFSAR stated that makeup tank pressure is maintained at 8 psig while it has been controlled at 45 psig since adjustments made in 1985 during preoperational testing. Additionally, Section 9.2.2.1 omits Auxiliary Building equipment from the description of equipment cooled by RBCCW during normal operation. This is considered an editorial change only.

Prior to adjustment of RBCCW head tank pressure, i.e. with a head tank pressure of 8 psig the higher elevations of RBCCW were below atmospheric pressure when filling the system. Consequently, makeup tank pressure was increased. RBCCW system is not safety related. Raising makeup tank pressure ensures cooling function during normal modes and does not impact accident mitigation or plant safety.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0056

UFSAR Revision No. 8

Reference Document: LCR 96-061UFS

Section(s) 7.5.1.5.3.f
7.5.1.5.c, d, h, l, m, & q

Table(s) None

Figure Change ☐ Yes ☒ No

Title of Change: Correct Discrepancies Description of Shutdown From Outside the Main Control Room as described in the UFSAR

SUMMARY:

The assumptions and procedure as written in the UFSAR for Shutdown From Outside the Control Room contained some inaccuracies. The UFSAR required actions to be taken that make the event more challenging to the operators and safety systems than would actually be necessary or desirable for an event of this type. LCR 96-0061-UFS changes Section 7.5.1.5.3 & 5 to permit flexibility in the plant procedures.

Section 7.5.1.5.3.f specified the reactor to be scrammed by deenergizing the RPS power supplies. This has been changed to allow different methods.

Section 7.5.1.5.c required the RPS output breakers to be opened to scram the plant or a backup method by closing the MSIVs. New procedure guidance has been incorporated to allow different methods based on plant conditions.

Section 7.5.1.5.d identified one success path for the worse case scenario. It has been clarified to acknowledge that less challenging situations may be included in the plant procedure.

Section 7.5.1.5.h failed to correctly describe the Low-Low-Set function of the SRV's. Corrections have been made to the section.

Section 7.5.1.5.l referenced core level from the bottom of the vessel. Since all references used by an operator are based on the top of active fuel, the UFSAR has been changed to reflect a TAF reference point.

Manual cycling of the SRVs is described in the UFSAR without regard for the indications found at the remote shutdown panel. Section 7.5.1.5.m has been clarified so that the operation of the SRVs to cooldown the plant is correctly described for both the control room and remote shutdown panel locations.

Section 7.5.1.5.q described the shutdown cooling loop warm-up by pumping water from the reactor to the suppression pool. The first correction is that the water is pushed through the loop

by reactor pressure. The RHR pump is not utilized. The second correction is that a prewarming is not possible at the remote shutdown panel because adequate control switches do not exist for the evolution. The plant is analyzed for the thermal transient that the RHR system will undergo without a slow warming process.

The changes made to the UFSAR are not the result of changes to the plant but is a matter of clarification and correction of UFSAR statements.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0067

UFSAR Revision No. NA

Reference Document: LCR 96-127TRM

Section(s) NA

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Editorial Clarifications to TRM table 3.6.3-1 to Replace Truncated PIS Numbers with Full Length PIS Numbers

SUMMARY:

In order to remove any ambiguity, truncated PIS numbers in TRM tables 3.6.3-1 and 3.8.4.3-1 are replaced by full length PIS numbers. This will minimize any potential confusion which could result due to PIS numbers. In addition a note will be applied to the term "MAXIMUM ISOLATION TIME" indicating that only valve stroke time is included in order to prevent confusion during use of the times listed in the table.

All the changes are editorial in nature and do not constitute any changes to the facility or to the procedures. There is no special test associated with these changes. However, the affected TRM tables impact surveillance procedures but these changes are intended to have no impact on surveillance procedure.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0073 Rev 1

UFSAR Revision No. 8

Reference Document: LCR 96-003UFS

Section(s) 10.2.2.4

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Revise UFSAR Stator Water Coolant Discrepancies

SUMMARY:

The UFSAR description of stator water coolant was not updated correctly after implementation of EDPs 3575 and 26367. The UFSAR states the turbine will trip with " Prolonged low flow of generator stator or rectifier coolant at loads in excess of a predetermined value (643 gpm or less at 3 percent power or more after a time delay of 60 sec)". There no longer is a minimum power requirement and also the plant has installed a new air cooled rectifier. Stator water cooling low flow trip is enabled whenever an LP stop valve is open or turbine speed is above 200 RPM and its setpoint is 600 gpm. Stator water cooling is only needed while synchronized. Prior to sychronization, no heat is added to the generator. These changes have no safety impact.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0078

UFSAR Revision No. 8

Reference Document: LCR 96-154UFS

Section(s) 9.2.5.2.2

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: RHR Complex Mechanical Draft Cooling Tower Missile Protection

SUMMARY:

DER 96-0266 discusses inconsistencies in the UFSAR and SER (NUREG 0798) descriptions of the unlikely event of damage to MDCT fans by tornado missiles. The SER scenario involves damage to all four fans with repair to two fans in four hours. The UFSAR 9.2.5.2.2 scenario damages all four fans and notes that fan blades are available for replacement. Also, the UFSAR states the other division could be operated and would be fully capable of supporting a shutdown.

It is estimated that twelve hours would be required to change a set of fan blades not four as described in the SER. Two sets of fan blades (four blades total) are stored in the RHR complex. Blades are supplied by the manufacturer in two blade sets. The UFSAR description states that two spare sets of blades are stored in the RHR complex which could be misinterpreted to mean sixteen blades (enough to replace all blades on two fans). Clarification of this is necessary. The UFSAR also states that one fan is sufficient to shutdown the plant. One fan is sufficient only to maintain hot standby under design environmental conditions and only under the tornado scenario (e.g. not LOCA or HELB). Clarification of this is necessary.

In order to resolve these discrepancies, the UHS heat load and water loss calculation for tornado scenarios was prepared assuming a loss of all four MDCT fans for twelve hours. Maximum reservoir temperature was approximately 109 degrees F. All equipment cooled by the UHS remained capable of performing its safety function during this time. If two fans are recovered , the plant can immediately proceed to cold shutdown. If only one is recovered, hot standby can be maintained until the other becomes available. Since the calculations demonstrated that safe shutdown can be achieved given tornado damage to all four cooling tower fans, the requirements of the SER continue to be met and the margin of safety is not reduced. The UFSAR will be updated to reflect this new analysis.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0088

UFSAR Revision No. 8

Reference Document: LCR 96-168UFS

Section(s) 7.5.2.5.4

Figure 7.5-10

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Appendix R, Alternative Shutdown System, Revised Transient Analysis

SUMMARY:

Revise UFSAR Figure 7.5-10 which shows the operator time available to restore reactor water level and containment cooling using the dedicated shutdown panel. This revised figure shows the results of a new analysis performed by GE, using GE methods approved for use in safety-related applications. The existing UFSAR figure was based on a previously performed RETRAN analysis. RETRAN is not currently classified Critical A and therefore its use is being restricted to non-safety-related applications.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0089

UFSAR Revision No. 8

Reference Document: LCR 96-133UFS

Section(s) 9.1.4.2.9

Table(s) Table 9.1-5

Figure Change ☐ Yes ☒ No

Title of Change: Remove UFSAR Reference to CRD Undervessel Facile Tool

SUMMARY:

The UFSAR describes the use of an undervessel CRD facile to catch the reactor water that is expelled when a CRD mechanism is removed from the RPV. The facile serves to direct water to the nearest drain. Fermi maintenance procedures do not call for use of this device as a drain is conveniently located in the undervessel area. Personnel are adequately protected from contamination by the use of waterproof gear and bubble hoods as well as other Radiation Protection controls. The discontinued use of the CRD facile has no safety significance and the proposed change to the UFSAR has no effect on any design criteria or license requirements.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0090

UFSAR Revision No. 8

Reference Document: LCR 96-172UFS

Section(s) 4.5.2.2.4.5

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Control Rod Drive maintenance

SUMMARY:

UFSAR Section 4.5.2.2.4.5 describes surveillance tests performed on Control Rod Drives. One paragraph discusses a dye penetrant examination that must be performed on any CRD removed from the vessel for maintenance. The intent of this paragraph from UFSAR Section 4.5.2.2.4.5 and the intent of SIL 139 (from which the requirement is derived) do not match. The LCR will clarify when dye penetrant examinations are necessary as recommended by SIL 139. Another paragraph of 4.5.2.2.4.5 commits Fermi to exchanging and rebuilding any CRDM experiencing high temperature during the next refueling outage. Since there are many reasons for high temperature and since control rod thermal cycling is administratively controlled, the need to exchange and rebuild a CRDM merely due to high temperature is not reasonable. This practice is expensive, dose absorbing, and unnecessary based on monitoring methods and performance criteria currently in place at Fermi. The changes to UFSAR Section 4.5.2.2.4.5 will allow for CRDM performance based criteria to determine if an exchange is necessary. Compliance with the Technical Specifications for CRD is adequate to determine if the extremely unlikely 360 degree circumferential crack of a collet retainer tube has occurred. The affects of high temperature have been severely curtailed by reducing thermal cycling and supplying CRD water from the condensate system (low oxygen level) rather than the Condensate Storage Tank.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0092

Reference Document: LCR 96-092UFS

UFSAR Revision No. 8

Section(s) Appendix A

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Add Section A.1.160 on Maintenance Rule Compliance

SUMMARY:

This Safety Evaluation is written to revise the UFSAR Appendix A to include a section which discusses Fermi 2 compliance with Reg. Guide 1.160, "Monitoring the Effectiveness of Maintenance at Nuclear Power Plants. There has been no physical change to plant equipment or procedures. This change is editorial in nature to add detail to the UFSAR.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0096

Reference Document: LCR 96-185UFS

UFSAR Revision No. 8

Section(s) 9.1.2.2, 9.1.2.3

Table(s) 9.1-5

Figure Change [x] Yes [ ] No

Title of Change: Safety Curtain Not Installed Between Adjacent Aluminum Fuel Storage Racks in Spent Fuel Pool As Required By The UFSAR

SUMMARY:

The above stated UFSAR Sections state that Safety Curtains are installed between adjacent aluminum fuel storage racks in the fuel pool. The purpose of these Safety Curtains would be to prevent accidental insertion of fuel assemblies between the adjacent racks. There is only 1 location in the fuel pool where the aluminum racks are configured such that a Safety Curtain could be installed, however, no Safety Curtain is installed. A review of the appropriate drawings establishes the nominal distance between the racks to be 5.415 inches. When manufacturing tolerances are considered, this distance could range from 4.515 inches to 6.075 inches. The dimension of the lower tie plate on a fuel bundle is 5.47 inches. A review of these numbers indicates that the possibility of inserting a fuel assembly between the adjacent racks existed. A demonstration was conducted using the dummy fuel assembly to see if it could physically be inserted between these adjacent racks. The result was that it could not fit. The dummy fuel assembly is dimensionally equivalent to a real fuel assembly. Since Fermi 2 no longer possesses any of these Safety Curtains, none were readily available from other domestic BWRs, and the demonstration showed that a fuel assembly could not physically fit between the 2 adjacent racks, this Safety Evaluation was prepared to justify removing the statements in the UFSAR requiring their use.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0099

UFSAR Revision No. 8

Reference Document: LCR 96-188UFS

Section(s) 9.2.5.2.6
15.14.1

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: RHRSW, EESW, and DGSW Pump Minimum Flow Protection

SUMMARY:

DER 96-0502 discusses two problems with RHRSW, EESW and DGSW systems:

1. Minimum flow protection for RHRSW, EESW and DGSW is provided by an air-operated pressure control valve which operates with interruptible air and fail closed upon loss of air. Therefore, minimum flow protection is not considered safety related. The UFASR describes the pumps minimum flow protection which could be interpreted to mean that it is safety related.

2. UFSAR 15.14.1 states in part, " The RHRSW system uses a manually controlled normally open globe valve for flow control". The term "normally open" is not true since E1150F068A/B valves are closed when the system is in standby.

The UFSAR is being revised to reflect that RHRSW, EESW, and DGSW minimum flow protection is not safety related and to clarify the description of RHRSW flow control valve. There is no auto signal that closes the discharge path and leaves the pumps running. The manual valves in the normal flow path are locked open and control valves without position indication are blocked from being fully closed. Therefore, a single failure is required in order to cause pump damage. Two independent divisions are provided so that these systems can perform their function in the event of a single failure.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0104

UFSAR Revision No. 8

Reference Document: LCR 96-195UFS

Section(s) 7.5.2.5.4

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Revise UFSAR 7.5.2.5.4 to Initiate DC Stripping Step if SRV Spuriously Operates

SUMMARY:

The UFSAR 7.5.2.5.3 presently indicates that one of the steps in the Dedicated Shutdown procedure is to strip the Class 1E DC. The UFSAR 7.5.2.5.4 also indicates that if a SRV spuriously operates that the SRV will be deenergized at a local panel. The UFSAR is being revised to indicate that the Class 1E DC stripping will be initiated if a SRV spuriously opens, rather than stripping the SRV feeds at a local panel. This SE evaluates the impact of stripping the DC at the normal DC distribution panels 2PA-2 and 2PB-2 rather than the Relay room panels 2PA2-5, 2PA2-6, 2PB2-5, or 2PB2-6. This revision does not increase the probability of an accident previously evaluated in the UFSAR because the Class 1E DC stripping is a previously evaluated and approved UFSAR action, this LCR revises the location of where the action is performed.

No reliance is made in the Dedicated Shutdown procedure on the equipment being stripped, therefore there is no increase in the consequences of an accident or increase in the probability of a malfunction of equipment important to safety. Spurious operation of a SRV is one of the entry conditions for the Dedicated Shutdown procedure indicated in the UFSAR, therefore initiating the Class 1E stripping upon spurious SRV operation is already accounted for in the UFSAR and there is no increase in the consequences of a malfunction of equipment important to safety nor the possibility of an accident or an equipment malfunction of a different type. This LCR does not decrease the margin of safety in the Tech Spec Bases or NRC SER in SSER 5 of NUREG 0798 on Dedicated Shutdown.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0105

UFSAR Revision No. 8

Reference Document: LCR 96-197UFS

Section(s) 3.6.2.2.5

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Elimination of Pipe Break Postulated in RWCU Suction Line Near the Outboard Primary Containment Isolation Valve G3352F004

SUMMARY:

Review of the pipe break location criteria in UFSAR Section 3.6.2.1.2.2 indicates no need to postulate a break immediately downstream of the RWCU suction line outboard containment isolation valve; therefore, LCR 96-197-UFS is prepared to revise Section 3.6.2.2.5 and Figure 3.6-43 to eliminate the postulation of pipe break point "J" (in Figure 3.6-43) and revise the text accordingly. A wrong reference to Figure 3.6.43 in UFSAR Section 3.6.2.2.5.2.5 is also deleted. Although this pipe break is no longer postulated, all pipe break analysis and evaluations (e.g. Blowdown analysis, Jet Impingement evaluation, Pipe Whip evaluation, Environmental analysis, etc.) associated with this break are maintained. This pipe break represents a controlling case that bounds many other postulated breaks in the RWCU suction and discharge lines. This break was also a bounding case for other breaks in the Reactor Building for controlling the environmental profile in the building.

Evaluation was not originally performed for each break on an individual basis. Instead, only bounding cases, such as the break downstream of G3352F004, were evaluated. Therefore, the only change involved is in eliminating a conservatively postulated pipe break location; however, all consequences of the break, with the exception of the Maximum Expected Differential Pressure (MEDP) at G3352F001 and G3352F004, are maintained as bounding cases for other pipe breaks.

This change is being performed to support a revised analysis for the G3352F004 motor operated valve. The installed motor is unable to trip the operator torque switch at the "as-left" torque switch setting (TSS) under degraded voltage conditions. Eliminating the postulated pipe break near the valve will result in a lower design MEDP for closing the valve and lower operator Minimum Required Target Thrust (MRTT) which will enable lowering the TSS such that the installed motor would be capable of tripping it under degraded voltage conditions.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0109

Reference Document: LCR 96-202UFS

UFSAR Revision No. 8

Section(s) NA

Table(s) 8.3-15

Figure Change ☐ Yes ☒ No

Title of Change: Revise UFSAR table 8.3-15 by Removing Horsepower Data for DC Motors

SUMMARY:

UFSAR table 8.3-15 lists horsepower for the motors fed from the DC power system. The horsepower column is misleading, incomplete and does not serve any purpose. The description of power and control loads are also listed in this table of the UFSAR for both division I and division II. LCR-96-202-UFS is being initiated to revise UFSAR table 8.3-15. The column does not indicate the load sizes for the other described loads. The horse power for all DC motors are shown in CECO and power load impact on the DC battery is demonstrated in design calculation DC-0213 Vol. I. The control load impact on the DC battery is demonstrated in DC-0213 Vol. I. Verification of the operability of DC powered motors are covered in DC-4943 Vol. I. The horsepower column in table 8.3-15 of the UFSAR does not reflect the total amount of the load on the DC battery.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0110

UFSAR Revision No. 8

Reference Document: LCR 96-176UFS

Section(s) 17.1

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Revise UFSAR to Allow for Off Site Storage of Completed QA Records.

SUMMARY:

The UFSAR sections that imply that completed Quality Assurance Records are only maintained on the site need to be changed to reflect off site storage. The storage of records by Plant Support can be accomplished in compliance with all regulatory requirements onsite or off site. The off site storage is needed to provide additional space beyond what is available on site. The off site storage of records does not impede the timely retrieval of information and is economically advantageous.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0111

UFSAR Revision No. 8

Reference Document: LCR 96-203UFS

Section(s) 9.2.5.2.3

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Revise UFSAR 9.2.5.2.3 to Properly Describe the EDG Air Cooler

SUMMARY:

During the UFSAR Overview review, it was noted that the description in UFSAR 9.2.5.2.3 about the EDG combustion air was not consistent with the as built plant design. The combustion air from the turbocharger is cooled in an air cooler which is cooled by the air coolant in the service water heat exchanger. The UFSAR description implies the combustion air is directly cooled in the service water heat exchanger. DER 96-0827 was written, the corrective action was to revise the UFSAR description. LCR 96-203-UFS was written to revise the UFSAR, SE 96-0111 is prepared to evaluate this LCR. The safety evaluation determined there is no unreviewed safety issue. The EDGs will perform as described in the UFSAR and Tech Spec Bases and there is therefore no increase in the consequences of an accident described in the UFSAR and no reduction of the margin of safety as defined in the Tech Spec Bases.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0118

UFSAR Revision No. 8

Reference Document: LCR 96-066UFS

Section(s) 7.8, 13.3, 3.6.15

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: RERP Emergency Response Facility UFSAR Discrepancies

SUMMARY:

This change corrects discrepancies in the UFSAR descriptions of the RERP plan and emergency response facilities. The following changes are being made:

- Existing descriptions of the RERP communications equipment is being deleted from the UFSAR. The UFSAR refers to the RERP plan which adequately describes communications. This precludes conflicting information.

- The Alternate OSC location has been changed. The UFSAR is updated with the new location. The new location meets all applicable criteria.

- Other editorial changes to the RERP plan description.

This change has no impact on plant safety or emergency response.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0119

Reference Document: LCR 96-201UFS

UFSAR Revision No. 8

Section(s) 9.5.1.2, 12.2.2.1

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Correct the Description of the Fire Dampers

SUMMARY:

Various sections of the UFSAR refer to fire dampers as being spring loaded. Not all fire dampers use spring assistance for closure. Therefore, the statements that the dampers are spring loaded need to be corrected. In addition the statements that fire dampers can be closed from the control room using a push-button also need to be corrected. The UFSAR states in sections 9.5.1.2.2 and 9.5.1.2.3.7 that all fire dampers are spring loaded. There are fire dampers in the plant that are not spring loaded. Section 12.2.2.1 states that after an alarm is sounded the appropriate smoke/fire dampers are manually closed by push-button from the main control room. This cannot be done since no fire dampers can be manually closed from the control room.

The existing plant configuration contains fire dampers that are not spring loaded to assist in closing, as described in the UFSAR. These dampers are vertical fire dampers which are installed either in compliance with the manufacturers recommendations, or have been accepted as being installed in accordance with the tests performed at Omega Point Laboratories. Since one or both of the previous conditions have been met, there is no requirement to modify these dampers. The fact that the fire dampers cannot be manually closed, from the main control room has no adverse impact on the fire protection program. The fire dampers in the ductwork will close in the event of a fire due to the fusible links operating. The concern for isolating the main control room is to maintain habitability. This capability is maintained by the closure of the isolation or smoke/halon dampers located in the same ductwork as the fire dampers.
The current installations meet the requirements of 10CFR50 Appendix R and do not adversely affect the ability to achieve and maintain safe shutdown as determined by the Fire Hazards Analysis.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0124

UFSAR Revision No. 8

Reference Document: LCR 96-220UFS

Section(s) 8.3

Table(s) NA

Figure Change [x] **Yes** [ ] **No**

Title of Change: Corrections to UFSAR Figure to Show Spare Cable and Battery Charging System

SUMMARY:

This safety evaluation examines those discrepancies identified in DERs 96-0527 and 96-0722, which were determined to be a change to the facility as described in the UFSAR. The following provides a description of the changes:

DER 96-0527 proposes to correct the discrepancy identified in UFSAR Figure 8.3-11 (as shown on the attached mark-up to LCR 96-220-UFS) by deleting breaker test device R3200S082 and 15 amp fuse at DC Distribution Panel 2PC-13 position 3. Field cable 204646-OC is coiled (not terminated) at Fire Pump Control Panel H21P458, which is the "To End" of the cable; therefore, add panel designation H21P458 to the figure also show cable 204646-OC as "SPARE". This figure is incorrect since breaker test device R3200S082 was never installed.

DER 96-0722 proposes to correct a discrepancy in the second paragraph of Section 8.3.2.2.1, which incorrectly describes the dc system layout for the 345-kV and 120-kV switchyards. This paragraph states, "The existing 345-kV switchyard is provided with two separate control batteries that also have normal and standby chargers. The 120-kV switchyard has its own battery and charger.". This statement is inaccurate because the 345-kV switchyard control batteries have separate chargers, they do not have standby chargers and the 120-kV switchyard battery has both a normal and spare battery charger. The description of the two switchyards appear to be reversed. This paragraph is revised to state, "The existing 345-kV switchyard is provided with two separate control batteries that also have separate chargers. The 120-kV switchyard has its own battery, normal charger, and spare charger.". DER 96-0722 also proposes to correct a discrepancy identified in the first paragraph, last sentence of Section 8.3.2.2.2 by removing the words "but the time interval was 1 and ½ hr" in the sentence "The same method was used for sizing the BOP battery, but the time interval was 1 and ½ hr.". The discrepancy being, this sentence implies that the BOP battery is sized for 1½ hours, when in fact, the BOP battery is sized for four hours as determined by Design Calculation DC-0213 Vol I, Section III.

None of the changes evaluated, resulted in an increase in the consequences (including radiological consequences) of an accident described in the UFSAR and no reduction of the margin of safety as defined in the Technical Specification Bases.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0126

UFSAR Revision No. 8

Reference Document: LCR 96-221UFS

Section(s) NA

Table(s) 9.4-1

Figure Change ☐ Yes ☒ No

Title of Change: Control Center HVAC Emergency Makeup Air Filter and Recirculation Air Filter Unit HEPA Filter Clean Pressure Drop Change

SUMMARY:

Control Center HVAC Emergency Makeup Air Filter (T4100D011) and Recirculation Air Filter Unit (T4100D016) HEPA filters have been changed to a new model type. The original filters have a clean pressure drop of 1.0 inch of water at 1500 CFM. However, the replacement filters have a clean pressure drop of 1.1 inch of water. The increase in pressure drop is due to redesign of the filter. The UFSAR table will be updated with this information. There is no impact to CCHVAC system operation or reliability.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0128

UFSAR Revision No. 8

Reference Document: COLR 6

Section(s) Various

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

Figure Change [x] Yes [ ] No

Title of Change: Core Operating Limits Report Cycle 6 Revision 0

SUMMARY:

This evaluation justifies changes to the COLR for fuel cycle 6. 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 for each bundle type and the MCPR Safety Limits applicable to the Cycle 6 core have been updated based on the results of the reload licensing analysis. Maximum Average Planer Linear Heat Generation Rate (MAPLHGR) limits have been added for the Cycle 6 fresh fuel, and limits for bundles no longer in the core have been deleted. A Linear Heat Generation Rate (LHGR) limit for the fresh fuel has also been added.

During the fifth refueling outage, all remaining GE8 fuel bundles (32) were discharged, along with 179 GE9 bundles, 4 SVEA-96 Lead Fuel Assemblies, 92 GE6 bundles, and 1 twice burned GE11 bundle which suffered a fuel pin leak during Cycle 5. These bundles were replaced with 176 fresh GE11 fuel bundles, 40 once burned GE11 bundles that were prematurely discharged at the end of Cycle 4, and 92 reinserted GE6 fuel bundles.

The Rod Block Monitor setpoints remain unchanged for Cycle 6, however an additional RBM applicability requirement was added to the Cycle 6 COLR to require that at least one RBM channel be operable when moving control rods with reactor power greater than or equal to 30%, regardless of the available MCPR margin, in order to protect the fuel for mechanical overpower limits.

The cycle 6 UFSAR revision was made to update the UFSAR to reflect the results of the Cycle 6 reload licensing analysis, including the plant specific, cycle specific calculation of the MCPR Safety Limit (approved by the NRC in TAC No. M96373), and to incorporate the change in the Inadvertent HPCI Injection analysis methodology that is contained in Revision 13 of GESTAR II. Also, other minor changes which have no safety significant effect on structures, systems, or components have been made in the UFSAR to provide clarification or correct typographical errors.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0129

UFSAR Revision No. 8

Reference Document: LCR 96-223UFS

Section(s) 6.2, 6.3, 6.4, 7.1, 7.3

Table(s) 6.2-2, 6.2-11, 6.2-13, 6.2-15, 6.2-16, 6.3-9

Figure Change [x] Yes [ ] No

Title of Change: Update Description of the Traversing In-core Probe (TIP) System

SUMMARY:

This safety evaluation examines those discrepancies identified in DER 96-0277, which were determined to be a change to the facility as described in the UFSAR.

System Operating Procedure (SOP) 23.606 states that during the operation of the Traversing In-core Probe (TIP), the Manual Valve Control Switch is OPEN, This is in conflict with UFSAR section 6.2.4.2.2.1 "General Design Criterion 54" for Traversing In-core Probe (TIP) System (Penetrations X-35A, B, C, D, E, F), which states that "the ball valve remains closed at all times except when the associated TIP system cable is inserted, at which time a proximity switch signals the ball valve to open . On TIP system cable retraction, the proximity switch signals the ball valve to close." This statement is also in conflict with UFSAR Table 6.2-2, note 17 and UFSAR section 7.6.1.13.8.1 which both state that "The guide tube ball valve opens only when the TIP is being inserted". The preferred/actual method of operation per SOP 23.606 is to manually open the ball valve, as this prevents accidental closure of the ball valve on the TIP cable if the TIP machine is turned off. This change was instituted per DER 87-515 and incorporated into SOP 23.606 Rev. 10, however no SE was performed at that time.

SOP 23.606 also allows all 5 TIP machines to be operated simultaneously, also in conflict with the UFSAR 6.2.4.2.2.1 which states "Only a limited number of ball valves may be opened at any one time". The preferred/actual method of operation per SOP 23.606 is to allow the option to operate all five TIP machines simultaneously. This change was also instituted per DER 87-515 and incorporated into SOP 23.606 Rev. 10, however no SE was performed at that time.

The in service TIP will automatically retract and all ball valves will close upon receipt of an isolation signal. Shear valves are available for emergency isolation. There is no impact to plant safety margins or accident response as a result of this change. The UFSAR is being changed to reflect the desired procedure of operation.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0132 **UFSAR Revision No.** 8

Reference Document: LCR 96-226UFS **Section(s)** Various

Table(s) Various

Figure Change [x] Yes [ ] No

Title of Change: Balance of Plant Systems Minor UFSAR Changes

SUMMARY:

The following minor clarifications are being made to the UFSAR descriptions of Balance of Plant Systems:

a. Reactor Building Crane Remote Control System - DER 96-0543

UFSAR Section 9.1.4 titled "Fuel Handling System" includes a discussion of the Reactor Building Crane and its functions. Subsection 9.1.4.2.2 includes the following paragraph:

"The crane control system is protected from actuation by signals from an outside source. This system operates on a 200-400 kHz frequency. Since there are no mobile radio stations allowed in this band, there is no possibility of a radio transmitter suddenly interfering with it. Only other low-powered devices may be used in this band, and their signals are too weak to interfere with the system."

The Fermi 2 reactor building crane is a P&H Harnischfeger Corp. overhead crane with a Telemotive remote radio control unit utilizing modulating multi-frequency complex signals. The transmitter signals include carrier frequencies in the 460 Mhz to 470 Mhz (megahertz) range. The subject descriptive paragraph in the UFSAR does not correctly describe the remote radio control devices, including the operating frequency range and the provisions for preventing interference (actuation) from other devices.

b. TBCCW System - DER 96-0766 and DER 96-1022

UFSAR Table 9.2-10 lists design parameters for the TBCCW System, including the two TBCCW Heat Exchangers (P4300B001 and P4300B002). The TBCCW fluid on the shell side is listed with an inlet temperature of 110°F and an outlet temperature of 95°F, while the general service lake water used for cooling on the tube side is listed with an inlet temperature of 85°F and an outlet temperature of 100°F. The listed 100°F tube side outlet temperature conflicts with the manufacturer's design specification of 95°F and is an error which has existed for the life of the FSAR.

UFSAR subsection 9.2.7.4 contains the following discussion on testing of the TBCCW pumps:

"Periodic testing of the TBCCW pumps is done during normal plant operation. The standby pump is started and run, and its performance compared to the operating pumps."

At Fermi 2, the TBCCW pumps (P4300C001, P4300C002, and P4300C003) are not tested for performance periodically.

c. GSW System - DER 96-0916

The UFSAR Section 9.2.1 discussion includes several design details that differ from the existing as-built condition of the system. These differences include the statement in subsection 9.2.1.1 which designates the system as nonseismic which does not correctly designate all portions of the system, and the statement in subsection 9.2.1.4 that flow taps are provided to verify design flow rates throughout the systems, but such flow taps do not exist. Also included is a discussion in subsection 9.2.1.5 of a pilot operated throttling valve on the discharge of each GSW pump to maintain manifold pressure, but such valves do not exist on the pump discharges. In addition, there is concern that pump (and drive motor) design information in UFSAR Table 9.2-1 may be mistakenly considered as required system operating conditions or limits, and therefore, should be clarified.

d. CCHVAC System - DER 96-1010 and 96-1017

UFSAR Section 9.4.1 contains statements on damper location which can be misinterpreted contrary to as-built design of the CCHVAC System, and also contains a statement on damper testing which does not correctly represent the existing plant practice. In addition, UFSAR Sections 9.4.1, 6.4.1, 6.4.2, 3.11.4, and Table 3.11-4 contain statements on control center space temperature being maintained at 75°F, but this does not correctly describe the temperature for the mechanical equipment room and the standby gas treatment system (SGTS) room which are served by the CCHVAC system.

e. Reactor Vessel Servicing Equipment - DER 96-0958

UFSAR Section 9.1.4 does not correctly describe the tools presently utilized in removing and installing the LPRM detectors, as controlled by procedure 82.000.09. Specifically, a special GE supplied servicing tool, called a "spring reel" is considered obsolete and is not utilized at Fermi and is not identified for use in the controlling procedure.

f. Condensate Storage and Transfer System - DER 96-1041

UFSAR Subsection 9.2.6 and its subsections do not correctly describe the capabilities of the condensate return tank (CRT) and also the heating provisions on the condensate storage tank (CST). Specifically, subsection 9.2.6.1 states that the condensate storage and return tanks are arranged to permit gravity feed to hotwell and condensate supply pumps and to the HPCI, RCIC, CRD, standby feedwater (SBFW), and core spray systems. The as-built existing plant condition does not provide the CRT with the capability to gravity feed the HPCI, RCIC, CRD, standby feedwater (SBFW), and core spray systems. Subsection 9.2.6.2 also states that the CRT is the same size as the CST in order to provide operational flexibility so that one tank may be substituted for another. This would infer that the tanks can provide the same functions, but this is not correct as discussed above.

In addition, subsection 9.2.6.5 states that the storage tank temperature is controlled from the main control room by actuating the motor-operated valve on the condensate return line from the recirculating heat exchanger, or by continuously circulating stored condensate through the condenser hotwell. The as-built existing condition of the plant includes a motor-operated valve on the steam heating condensate (P1100F615, CST Heater Condensate Return Isolation Valve) return from the recirculating heat exchanger (P1100B001) that is automatically operated by a temperature switch (Dwg. 8SD721V-3 and System Oper. Procedure 23.104). The subject motor-operated valve is not controlled from the control room. In addition, because of maintenance problems on the recirculating heat exchanger, the CST is normally heated by continuously circulating the stored condensate through the hotwell as also described in the UFSAR.

Subsection 1.2.2.15.17 also incorrectly describes the gravity feed arrangement from the CRT similar to 9.2.6.1 discussed above, and also fails to credit the CST in gravity feeding the standby feedwater system.

g. New Fuel Storage Vault - DER 96-0850

A previous Detroit Edison letter to the NRC (EF2-61,906) contained commitments on wording criticality concerns but it is not referenced in the UFSAR, Section 9.1.1 and all commitments in it are also not contained in Section 9.1.1 of the UFSAR. In addition, Figure 9.1-3, Sheet 1 of the UFSAR shows the new fuel storage vault area and shows a traveling boom located over the subject vault. No traveling boom was built in this area, and the drawing (Figure) does not show the correct as-built condition of the plant.

h. Reactor/Auxiliary Building Ventilation and Cooling System - DER 96-1011

UFSAR Table 9.4-3 contains some incorrect information including descriptive designation of equipment, drive type description, and horsepower rating of the fan-coil units.

i. Equipment and Floor Drain System T45 discrepancies

A previous plant change (PDC 9363) revised the setpoint of the recirculating bypass temperature sensor (G11N600) from 117°F to 135°F, but failed to identify it as a UFSAR change and completely evaluate it as such. Therefore, the UFSAR Section 9.3.3.2 description does not correctly address the as-built condition of the plant.

These revisions are minor in nature and effect non-safety related equipment and systems. Therefore, this change did not result in an unreviewed safety question.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0133

UFSAR Revision No. 8

Reference Document: LCR 96-141UFS

Section(s) NA

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: As-Built Configuration of Defective Fuel Storage Rack

SUMMARY:

The defective fuel storage rack is located in the spent fuel storage pool on the fifth floor Reactor Building. The rack is shown in UFSAR Figures 9.1-7, 9.1-18, 9.1-19, 9.1-20, and 9.1-21. Numerous rack details, as shown in the UFSAR figures, are different from the Joseph Oat Corporation vendor drawings D-7008 (R6-252) and D-6938 (R6-248) for the rack. The UFSAR figures are based on earlier revisions of the vendor drawings. The UFSAR figures are revised in LCR 96-141-UFS. Safety Evaluation 96-0133 was prepared to evaluate the impact and safety implications of revising the rack details to show the as-built configuration. It was concluded in the SE that there is not an unreviewed safety question as a result of the UFSAR changes.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0139

Reference Document: TSR 28923

UFSAR Revision No. 8

Section(s) 4.5.2.4, 5.5.8, 7.4.1.2
7.6.1.7

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Resolving discrepancy between Schematic and Logic diagram for Standby Liquid Control (SLCS) System

SUMMARY:

The Schematic diagram I-2131-01 shows the SLCS pumps and injection valves control circuit. The current Logic diagram I-2130-01 which is the UFSAR Figure 7.4-3 implies that both Squib 1 and Squib 2 of both the explosive actuated injection valves C4104F004A&B will be fired when either SLC pump is switched to RUN. The Schematic diagram shows Squib 1 for both the injected valves will be actuated with SLC pump A and Squib 2 for both the injection valves will be actuated with SLC pump B. Also, Note 3 is missing from Logic diagram I-2260-13 (UFSAR Fig. 7.6-1).

The Logic diagram will be revised to reflect the SLC system function as shown on the Schematic diagram. A note will be added to Logic diagram I-2260-13 which was deleted in error per EDP 26310. The changes are administrative in nature. These changes have no impact on the intended function or operation of SLC system. Therefore, the changes do not increase the probability of any accident, malfunction previously evaluated in the UFSAR. The revision will not in any way reduce the margin of safety as defined in the bases for any Technical Specifications in the UFSAR or in the SER.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0140

UFSAR Revision No. 8

Reference Document: LCR 96-228UFS

Section(s) 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.8

Table(s) 7.6-2

Figure Change [x] Yes [ ] No

Title of Change: Reactor Vessel Level and Pressure Recorder and CST Control Panel

SUMMARY:

This safety evaluation updates the descriptions of the Reactor Vessel Level and Pressure Recorders, B21R623A/B, and the Condensate Storage Tank Control Panel, H21P492, as described in the UFSAR. The existing design configuration for B21R623A/B and H21P492 are:

B21R623A/B - are redundant reactor level/pressure recorders used to record post-accident reactor pressure and wide range reactor water level. The recorders are installed in panels H11P601/P602 and automatically change speed on an accident signal to provide better resolution of transient events. The recorders have the capability to change speed from 2 in/hr to 120 in/hr. [Reference 9.1]

H21P492 - is a control panel installed on the condensate storage tank wall, which encloses the tank instrumentation (level and temperature), source connections, instrument valves, and is equipped with a thermostatically controlled strip heater to prevent winter freezing. The control panel door must be kept closed to prevent freezing [Reference 9.2]. There was a commitment to maintain a lock on the door as a means of keeping the door closed. The heater thermostat setpoint is 50°F±5°F [Reference 9.3]. The strip heater within the panel is 1000 watts [Reference 9.4].

This evaluation did not involve any unreviewed safety question.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0143

UFSAR Revision No. 8

Reference Document: LCR 96-251UFS

Section(s) 12.3

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Revisions to UFSAR Section 12.3, Radiation Protection

SUMMARY:

UFSAR Section 12.3 is being revised to change specifics of the UFSAR description of the Radiation Protection Program. These specifics include changes to counting and dosimetry equipment, and to practices such as evaluating the need for respirator use and the frequency of TLD changeout. The basic reason for these changes is that these specifics of the Radiation Protection Program reflect the equipment, technology, and practices which were current at the time the FSAR was written. Since then new equipment, such as electronic dosimeters, and new practices, such as those indicated by a major revision of 10 CFR 20, have been introduced. This SE shows that the program objectives listed in Section 12.3 are not violated by these changes, that they are consistent with current regulations, and that the probability and consequences of accidents and equipment malfunctions are not affected.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0148

UFSAR Revision No. 8

Reference Document: LCR 96-258UFS

Section(s) 6.3.3.7

Table(s) 6.3-4, 6.3-8

Figure Change ☐ Yes ☒ No

Title of Change: Licensing Basis Peak Clad Temperature Increase Due to Fuel Vendor LOCA Analysis Errors

SUMMARY:

As a result of investigation in DER 96-0071 " OTH:96-021: RPV Bottom Drain Flow Impact on LOCA Analysis", General Electric (GE) has provided an assessment of the cumulative impact of errors identified in the SAFER/GESTR-LOCA analysis methodology. The errors resulted in a cumulative impact of 65 degrees F increase in Fermi 2's Licensing Basis Peak Clad Temperature (PCT) and Upper Bound PCT. Both PCT values remain below applicable acceptance criteria. GE notification of the impact of these errors was added as a reference to UFSAR section 6.3. The UFSAR licensing basis PCT values in section 6.3 have been revised to reflect this impact. A note was added to the table which provides an index to SAFER/GESTR results to caution that the curves should be used as trends only. In addition, one cosmetic comment to re-align columns in a table was made.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0150

Reference Document: LCR 96-265UFS
LCR 97-018UFS

UFSAR Revision No. 8

Section(s) 15.0

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Revise UFSAR Chapter 15 Discrepancies

SUMMARY:

This safety evaluation evaluates eighteen changes made to Chapter 15 of the UFSAR. The changes fall into three categories, each of which contain about one third of the changes. The need for these changes was identified during the UFSAR overview project.

The first category encompasses changes that are consistent with previously issued NRC safety evaluation reports. These changes are the result of previous modifications to the plant (primarily power uprate) and should have been included in previous UFSAR revisions, but were inadvertently omitted. Examples of these types of changes include: citing MSIV closure with flux scram, rather than turbine generator trip, as the limiting overpressure transient; and updating the description of the rod block monitor system, which had been replaced.

The second category of changes corrects typographical errors.

The final category includes changes designed to eliminate confusing or misleading statements. This typically required rewriting or reorganizing the current text and in some cases enhancing the text with additional information. Adding a footnote to the sequence of events table for a single recirculation pump trip to note that the stated sequence is a worst case scenario is a typical example of this type of change.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 96-0152

UFSAR Revision No. 8

Reference Document: LCR 96-268UFS

Section(s) 7.3.2.2.2, 7.3.2.2.5

Table(s) NA

Figure Change [x] **Yes** [ ] **No**

Title of Change: Revise UFSAR to Resolve Discrepancies Identified During UFSAR Overview as Documented by DER 96-0358.

SUMMARY:

During the UFSAR Overview project activities, discrepancies were noted in the UFSAR, in particular, Section 7.3.2. DER 96-0858 identified these discrepancies as follows:

- Incorrect description of the Primary Containment Isolation Valves'(PCIV) position indicating lights on page 7.3-37.
- The group indication notation is not shown for all PCIV pos. indicating lights in Fig. 7.3-1.
- Incorrect description of the HPCI and RCIC logic power supply on page 7.3-35.

To resolve these discrepancies, TSR 29004 was prepared to update the HPCI ISO Mimic Display shown on P&ID M-2035 (UFSAR Fig. 7.3-1). This TSR also documents the new means of monitoring plant isolation and that HPCI and RCIC systems use the 130 VDC system as primary and alternate power. LCR 96-268-UFS was also prepared to document the required changes to UFSAR Fig. 7.3-1 and the description in UFSAR pages 7.3-35 and 7.3-37. To support the changes required by TSR-29004, Safety Evaluation SE 96-0152 was issued to provide the 10CFR50.59 review of the changes to UFSAR Sections 7.3.2.2.2 and 7.3.2.2.5 and UFSAR Figure 7.3-1. Based on this safety evaluation, no unreviewed or unresolved safety question is associated with LCR 96-268-UFS.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0001

UFSAR Revision No. 8

Reference Document: LCR-96-267UFS

Section(s) 2.3

Table(s) 2.3-25

Figure Change [x] Yes [ ] No

Title of Change: Improve Meteorological Description in UFSAR Section 2.3

SUMMARY:

This safety evaluation examines changes to Section 2.3.3.2.1, UFSAR Table 2.3-25 and Figure 2.3-47, which were identified as discrepancies by DER 96-0823. These changes were determined to be a change to the facility as described in the UFSAR. The following is a description of the changes:

Section 2.3.3.2.1 states in part "Each leg of the tower is grounded and . . .", referring to the 60-meter tower. As noted by DER 96-0823, this statement is incorrect in that a walkdown performed (August 1, 1996) to verify as-built conditions revealed that only two of the three legs were grounded. As described in TSR-28606, the design change that installed the present grounding did not include an update to the UFSAR to reflect the current configuration and that the existing grounding is acceptable. It is proposed that the UFSAR statement be changed to "Two of the three tower legs are grounded and . . ." reflecting the conclusions of TSR-28606.

DER 96-0823 identified a discrepancy with information describing the Primary Monitoring System "Dewpoint" Sensing Technique in Table 2.3-25. The discrepancy being, the table presently states that the sensing technique is "Cooled mirror"; the sensing technique is actually "Lithium Chloride type". The dewpoint sensor plant identification is PIS# D40N007. It was due to maintenance concerns that the cooled mirror type sensor was replaced with an upgraded and more reliable lithium chloride type sensor. The UFSAR table was never updated to reflect the change. Table 2.3-25 is therefore revised to correct the primary monitoring dewpoint sensing technique from "Cooled mirror" to "Lithium chloride type".

DER 96-0823 also identified discrepancies in Figure 2.3-47. This figure does not reflect changes made to the Meteorological Data Acquisition System (MDAS) during implementation of EDP-12865 [Reference 9.1]. The EDP added a barometric pressure sensor and associated hardware onto the meteorological system, and provided hardwire connection changes for meteorological data input to the process computer. See Page 5 of LCR 96-267-UFS for a detailed mark-up of the changes to Figure 2.3-47.

Preliminary Evaluation for EDP 12865 evaluated the change for adding the barometric pressure sensor, hardware, and making hardwire connection changes onto the meteorological system and determined that the EDP did not involve a change to the facility, including

assumptions, as described in the UFSAR. It appears as though Figure 2.3-47 was overlooked during the evaluation. This safety evaluation will address those changes necessary to update UFSAR Figure 2.3-47 with the changes made by EDP 12865.

None of the changes evaluated, resulted in an increase in the consequences (including radiological consequences) of an accident described in the UFSAR and no reduction of the margin of safety as defined in the Technical Specification Bases

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0005

Reference Document: LCR 96-229UFS
LCR 96-224UFS

UFSAR Revision No. 8

Section(s) 4.5.2.2.4.5, 5.2.3.2.1.5

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Changes To The Description Of The CRD System

SUMMARY:

This safety evaluation addresses one discrepancy identified in DER 96-0856, which was determined to be a change to the facility as described in the UFSAR. The following provides a description of the change:

The UFSAR Section 4.5.2.2.4.5 page 4.5-52, item b and Section 5.2.3.2.1.5 page 5.2-29 item c states that "A CRD with a high temperature alarm will not be cooled by giving it repeated drive signals. The CRD will be scheduled for maintenance during the next refuel outage." The second sentence that requires maintenance during the next refuel outage is being removed, since it is contrary to CRD maintenance criteria as outlined in GE's Service Information Letter (SIL) No. 173 and GE's System Manual GEK-45721B (which is incorporated into the Detroit Edison system via DSN VMR1-28.7). All of these items require an investigation to determine the cause of the high temperature alarm, so that a CRDM exchange is not required for superficial problems, creating a waste of resources. Should the investigation reveal a more serious problem such as a leaking scram discharge valve, maintenance is scheduled. If the alarm is caused by a plugged CRD cooling orifice a recommended flushing technique can be implemented. An alarm due to low cooling water flow can easily be remedied by adjustments to the cooling water pressure regulator, and if a defective thermocouple circuit is the cause of a high temperature alarm, the drive may not actually be running hot. Suspect circuits may be verified by following standard plant procedures. The UFSAR is being changed so that it is consistent with the current maintenance practices for this system.

The change evaluated did not result in an increase in the consequences (including radiological consequences) of an accident described in the UFSAR and there is no reduction of the margin of safety as defined in the Technical Specification Bases.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0007

UFSAR Revision No. 8

Reference Document: LCR 96-266UFS

Section(s) 13.7

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Revision of UFSAR Section 13.7 "Industrial Security"

SUMMARY:

Made editorial, terminology corrections, and appropriate additions and deletions to the description of the security program. This revision is a result of the UFSAR overview project. The review revealed that changes were needed to section 13.7 in three categories: 1) text that did not utilize the correct terminology consistent with 10CFR73.55 and the Fermi 2 Physical Security Plan, 2) text that was vague and could lead to misinterpretation if not clarified, and 3) actions were detailed in the UFSAR that are not required by the 10CFR73.55 or the Physical Security Plan and should be deleted.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0010

UFSAR Revision No. 8

Reference Document: LCR 97-012UFS

Section(s) 6.2.1.2.1.10

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Clarification of Drywell Negative Pressure Analysis Scenarios

SUMMARY:

The minimum calculated drywell pressures for the two design basis cases (small steam leak and DBA) evaluated in early design calculations were well within the design limit. The UFSAR identifies the inadvertent drywell spray scenario as the limiting plant transient for drywell negative pressure. As this evaluation assumes an error, there is no requirement to assume failure of any vacuum breakers. Therefore, this change has clarified the analysis assumption of having both reactor building to suppression chamber vacuum breakers operable for the inadvertent drywell spray scenario. Events characterized by multiple errors, such as the Inadvertent Drywell Spray case, are outside the plant design basis. This point has been clearly stated. LCR 97-012-UFS also identified the small break accident case as the most severe of the three bounding cases considered. The resulting drywell pressure of -1.85 psid is bounded by the drywell design pressure of -2.00 psid. No impact UFSAR safety margin exists.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0011

UFSAR Revision No. 8

Reference Document: LCR 96-165UFS

Section(s) NA

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Revise UFSAR Figure 9.2-5 to correct the orientation of the backflow preventer, strainer, and valve symbols on the potable water supply line to the portable demineralizers

SUMMARY:

UFSAR Figure 9.2-5 shows several components on the 2" potable water supply piping to the portable demineralizers drawn incorrectly. The incorrect configuration shows (starting from up-stream to down-stream) four components (minus PIS numbers) in this order; valve, back flow preventer, valve, then strainer. Also, the symbols for the backflow preventer and strainer are drawn backwards. This represent and exact reversal of the intended operation of these components. It appears that the flow was considered in the wrong direction when the drawing was under revision. The correct orientation of the components should appear thus: starting from up-stream, the components should appear (now with PIS numbers) in this order: strainer (P2100D001), followed by valve (P2100F038), backflow preventer (P2100F133) and valve (P2100F037). Correcting the components in the above order have no impact on the intended design of this supply line.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0012

Reference Document: LCR 96-245UFS

UFSAR Revision No. 8

Section(s) 11.3, 11.4, 11.5, 11.6, 12.3

Table(s) 11.3-4, 11.4-4, 11.4-5, 11.4-6

Figure Change ☐ Yes ☒ No

Title of Change: Steam-Jet Air Ejector Offgas System Components

SUMMARY:

The title of UFSAR Table 11.3-4 currently reads as "DESIGN PARAMETERS FOR STEAM-JET AIR EJECTOR OFFGAS SYSTEM COMPONENTS". The words "DESIGN PARAMETERS" will be revised as "DESIGN PARAMETERS†..." The footnote will be located at the bottom of the table and will read as:
"† This table contains both design parameters and expected process operating parameters. Design parameters are explicitly designated as such by the word "design". (e.g. "design temperature", "design pressure")"

The shell and tube-side process parameters (e.g. flow, temperature, pressure, etc.) given in Table 11.3-4 were included in the 10/09/86 final draft of the UFSAR. These numbers are clearly pre-startup, expected operating parameters that were included under the Standard Review Plan (SRP) guidance that such numbers should be reported if available. Since the Table 11.3-4 process parameters are pre-startup expected operating parameters and not design values, they should be designated as such in the licensing basis so that future changes in this process values or instruments setpoints do not constitute unwarranted changes to the Fermi 2 licensing basis. This discrepancy between the licensing basis and the as-built condition of the plant was documented in DER 96-0709 as a result of a Chapter 11 examination performed as part of the UFSAR Overview Project. DER 96-0709 was closed-to-process by transferal to Licensing DER-0382.

A 50.59 review is required since removing these numbers' implied designation as design parameters constitutes a change to the facility as assumed in the UFSAR. This change does not affect any existing procedure or program nor does it constitute a special test since the current offgas process values have been determined to be within the design operating parameters of this system. This change did not involve an unreviewed safety question.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0013

Reference Document: LCR 96-245UFS

UFSAR Revision No. 8

Section(s) 11.5, 12.3

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Dry Cleaning Facilities

SUMMARY:

DCR 92-2396 (issued on 12/20/94) revised procedure 65.000.401 which had previously governed on-site dry-cleaning (of radworker clothing) to describe instead the procedures involved in the shipment of radworker clothing for off-site cleaning by a vendor. The procedures for the packaging and transport of contaminated radworker clothing satisfy the requirements of 10CFR71 and 49CFR1-199. Offsite laundering of radworker clothing was initiated because it was more cost efficient and because the contaminated freon constituted a "mixed-waste" which placed an additional burden on the Fermi 2 radwaste system. Currently, the laundry facility is no longer in use and the contaminated filters and freon have been removed from the dry-cleaning equipment.

The Fermi 2 UFSAR was not updated to reflect the non-use of the dry-cleaning facility either by stating its non-use or by deteting its description. There is no requirement (in Regulatory Guide 1.70) to describe a non-safety facility which is not in use; thus, removal of this discription is permitted and will serve to make the Fermi 2 licensing basis consistent with the existing condition of the plant.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0014

Reference Document: LCR 96-245UFS

UFSAR Revision No. 8

Section(s) 11.4.3.8

Table(s) NA

Figure Change [x] Yes [x] No

Title of Change: HVAC Systems

SUMMARY:

This safety evaluation discussed many minor changes to UFSAR descriptions of HVAC and related equipment.

Proposed Changes (DER 96-0869)

Sections 11.4.3.8.2.6(7,8,9,10,15,16) state that for each Eberline SPING or AXM the second (spared) G-M tube embedded in the shield exterior is used to provide continuous background compensation. The UFSAR description will be revised to reflect the fact that fixed background subtraction is employed on the SPINGs and the second G-M tube serves only in the capacity as a spare.

Sections 11.4.3.8.2.6(7,8,9,10,15) state that for each Eberline SPING the second (spared) G-M tube embedded in the shield serves as an area radiation detector that provides a measure of the gamma field strength at the location of the detector. Statements to this effect in these sections will be deleted.

Section 11.4.3.8.2.15 indicates that Onsite Storage Facility SPING monitors the particulate filter (via organic scintillator (beta) and a solid state detector (alpna)) and the charcoal (iodine) filter (via a NaI[T1] scintillator). The mention of these spared detectors in Section 11.4.3.8.2.15 will be eliminated in a manner consistent with Sections 11.4.3.8.2.6(7,8,9,10,16) and the UFSAR will be revised to reflect the practice of periodically replacing these filters and measuring filtered particulate and iodine activities using certified counting equipment (not necessarily located in the chemistry lab).

Sections 11.4.3.8.2.6(7,8,9,10,16) indicate that the particulate and iodine filters contained in each Eberline SPING and AXM are periodically changed out and that filtered particulate and iodine activities are measured using certified counting equipment in the chemistry lab. This is not necessarily true as this task is most often performed in the RP laboratory. These sections of the UFSAR will be revised to reflect the fact that this counting practice is performed using certified counting equipment (not specifically located in the chemistry lab).

Proposed Changes (PKG 369)

11.4.3.8.2.2 fifth paragraph, classification of the 2.2 minute delay piping logarithmic radiation monitor instrument channels reads as"...Quality Level III..." but should read as "...Quality Level 1M..." All available design basis documentation (DBD and CECO) specifies the more stringent quality classification.

11.4.3.8.2.4 fourth paragraph, classification Reactor Building Ventilation Exhaust Radiation Monitor System reads as"...Quality Level III and nonseismic" but should read as "...Quality Level 1M and seismic II/I." These changes in quality level and seismic classification are corrections intended to maintain consistency with current Fermi design basis documentation (DBD and CECO). Each of these changes correctly represent the design of this system to more stringent class of quality assurance requirements.

11.4.3.8.2.5 fourth paragraph, classification of the Offgas Vent Pipe Radiation Monitor System (installed spare) reads as"...Quality Level III and nonseismic..." but should read as "...Quality Level NQ and seismic II/I..." The change in quality level is an editorial clarification intended to maintain consistency with current Fermi design basis documentation (DBD and CECO). Since this system is located in the reactor building, it is designed to stricter seismic requirements, the change in seismic classification has been effected to represent the current Fermi 2 design basis requirement and is consistent with the current design basis documentation (DBD and CECO).

11.4.3.8.2.9 fifth paragraph, classification of the Standby Gas Treatment Radiation Monitor System reads as"...Quality Level II and nonseismic..." but should read as "...Quality Level 1M and seismic II/I..." The change in quality level is an editorial clarification intended to maintain consistency with current Fermi design basis documentation (DBD and CECO). The change in seismic classification specifies the more stringent quality classification and has been effected to maintain consistency with current Fermi design basis documentation (DBD and CECO).

11.4.3.8.2.10 fifth paragraph, classification of the Reactor Building Exhaust Plenum Radiation Monitor System reads as"...Quality Level II and nonseismic..." but should read as "...Quality Level 1M and seismic II/I..." The change in quality level is an editorial clarification intended to maintain consistency with current Fermi design basis documentation (DBD and CECO). The change in seismic classification specifies the more stringent quality classification and has been effected to maintain consistency with current Fermi design basis documentation (DBD and CECO).

11.4.3.8.2.12 fifth paragraph, classification of the Control Center Makeup Air Radiation Monitor System reads as"...Quality Level III and nonseismic..." but should read as "...Quality Level 1M and seismic II/I..." (note: not contained in PKG 369 but discovered during its review) These changes in quality level and seismic classification are corrections intended to maintain consistency with current Fermi design basis documentation (DBD and CECO). Each of these changes correctly represent the design of this system to a more stringent class of quality assurance requirements.

11.4.3.8.2.16 ninth paragraph, classification of the Standby Gas Treatment Post-Accident Radiation Monitor System reads as"...Quality Level II and nonseismic..." but should read as "...Quality Level 1M and seismic II/I..." The change in quality level is an editorial clarification intended to maintain consistency with the notation used in the current Fermi design basis documentation (DBD and CECO). The change in seismic classification specifies the more

stringent quality classification and has been effected to maintain consistency with current Fermi design basis documentation (DBD and CECO).

11.4.3.9.2.1 and 11.4.3.9.2.6 classifications of the Radwaste Effluent and Circulating Water Reservoir Decant Line Radiation Monitor Systems read as"...Quality Level III..." but should read as "...Quality Level 1M ..." The change in quality level is an editorial clarification intended to maintain consistency with the notation of the current Fermi 2 design basis documentation (DBD and CECO). All available design basis documentation (DBD and CECO) specifies the more stringent quality classification.

11.4.3.9.2.3(4 and 5) classifications of the RBCCW, EECW, and RHRSW Radiation Monitor Systems read as "...Quality Level III and nonseismic...", but should read as "...Quality Level NQ and seismic II/I..." The change in quality level is an editorial clarification intended to maintain consistency with the notation of the current Fermi 2 design basis documentation (DBD and CECO). The change in seismic classification specifies the more stringent quality classification to which these systems have actually been designed and has been effected to maintain consistency with current Fermi design basis documentation (DBD and CECO).

11.4.3.11.1 sixth paragraph, reads as:
"The Sping and AXM monitors are powered by local battery supplies that are part of the instrument system. These batteries are continuously maintained in a state of full charge by self- contained chargers. The battery has a capacity of 8 hr of operation without recharge...."
shall be revised to read as:

"The Sping and AXM monitors have backup local battery power supplies that are part of the instrument system. These batteries are continuously maintained in a state of full charge by self- contained chargers. The battery has a capacity of 8 hr of operation without recharge. ..."

The designation of the local batteries as a backup power supply is an editorial clarification since the power supplies for these monitors are described in their respective subsections in Section 11.4.3.8.2. Also, common sense says that these cannot be the primary power supply if they only last eight hours.

The upper ranges for the Radwaste, Turbine, and Service Building SPINGs reported in UFSAR Table 11.4-4 will be revised to read as 10^3 $\mu Ci/cm^3$.

Section 11.3.5, second paragraph, second sentence, which states "Radiation monitors in both locations are redundant, thus, providing a continuous on-line check and verification of instrumentation performance." will be deleted.

These changes are required to make the Fermi 2 licensing basis consistent with the Fermi 2 design basis. A 50.59 review is required since these corrections constitute changes to the facility as described in the UFSAR. These changes do not affect any existing procedure or program nor do they constitute a special test since there is no change in the operation of any plant structure, component, or system outside of any normal or required design parameters.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0016

Reference Document: LCR 96-046UFS

UFSAR Revision No. 8

Section(s) NA

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Delete Valve T4100F321 from UFSAR Figure 9.4-3

SUMMARY:

UFSAR Figure 9.4-3 shows valve T4100F321 as a manual isolation valve on the Demineralized Service Water (DSW) make-up line to the Division 1 and 2 CCHVAC cooling water expansion tanks. This valve was discovered not to exist. There is another manual isolation valve, P1100F088, further upstream on the same line. This valve along with the individual expansion tanks' isolation valves is more than adequate to support system operations and maintenance activities. As a valve in the location shown for T4100F321 would have no purpose, this will be left as is. The UFSAR figure will be updated to reflect field conditions. There is no safety impact of this change.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0017

UFSAR Revision No. 8

Reference Document: TSR 29081

Section(s) 9.2.5

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: RHR Complex Flood Protection Make-up Valves Lineup Change

SUMMARY:

This safety evaluation is prepared to close the RHR Complex Flood Protection Make-up valves E1100F156 A/B and F158 A/B, which were normally open. TSR 29081 Rev 0 revised the configuration of this valves and as a result they became normally closed. The safety evaluation discusses the design basis flood and the buoyancy forces of the RHR Complex. It concludes that, based on a new design calculation which demonstrates that in case of a site flood the RHR complex will not float, regardless of the reservoir water level. Therefore, these valves are not required to be opened. The closed valves will help reduce drafts and heat loss from the air volume under the RHR pump room enclosure, thus further protecting safety related service water pump suction lines from freezing.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0021

UFSAR Revision No. 8

Reference Document: LCR 97-025UFS

Section(s) 5.2.3.4

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: UFSAR Section 5.2.3.4 Chemistry of Reactor Coolant Changes for Conformance with Technical Specifications

SUMMARY:

The revision involves the following aspects to Section 5.2.3.4 of UFSAR:

- page 5.2-32 . Delete "d. Zinc - 3 to 10 ppb (when injecting zinc)" This item was added in revision 7. Section 5.2.3.4 presents and discusses reactor chemistry limits that are in place to limit exposure of reactor pressure boundary materials to detrimental environments. Zinc was added to the discussion since it has a impact, however minimal, on the conductivity of the reactor water. The beneficial additive of Zinc to reactor water has no limits that are adverse to pressure boundary materials. Removal of Zinc from this list allows for addition of text describing the application of the limits which restrict reactor operation.

- page 5.2-32. Rewrite paragraph between limit lists to give clear meaning as to how the limits are applied to reactor operation with chemistry adverse to plant materials.

- page 5.2-32a. Change "c. Chloride (as Cl-) - 1.0 ppm" to 0.5 ppm Tech. Spec 3/4.4.4 and all other references cite 0.5 ppm as the maximum limit for chlorides in reactor coolant.

- page 5.2-32a. Delete paragraph "if the above quality....." That paragraph came from GE documents. Regulatory Guide 1.56 does not include pH extreme limits because conductivity and chloride measurements bound those extremes and provide reliable easy measurement. The acceptability of the relationship among conductivity, pH, and chlorides is presented in Regulatory Guide 1.56. Technical Specification 3/4.4.4 accurately enacts the requirements of Reg. Guide 1.56.

- page 5.2-32a. Split the listed maximum limits and time above operating limits into two lists so that actions statements can be accurately applied.

There is no safety impact from this change to the UFSAR.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0023

Reference Document: LCR 97-028UFS

UFSAR Revision No. 8

Section(s) 9.2.1

Table(s) 9.2-1

Figure Change ☐ Yes ☒ No

Title of Change: Update UFSAR Descriptions of the GSW System

SUMMARY:

The following minor revisions to the UFSAR descriptions of the GSW system:

- Existing text states GSW is non-seismic, however, GSW piping is Seismic II/I for piping in the Reactor Building and Auxiliary Buildings. This detail has been added.
- Updated title of the pump design table.
- Deleted reference to auxiliary flow taps used to verify system flow rates. These taps do not exist.
- Deleted descriptions to throttle valves on the discharge of the GSW pumps to control system pressure. Back pressure control valves and orifices are used for this purpose. GSW discharge valves are isolation valves only.

These minor changes do not impact any plant safety margins.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0024

UFSAR Revision No. 8

Reference Document: LCR 97-019UFS

Section(s) 5.2.8

Table(s) 5.2-15

Figure Change [x] **Yes** [ ] **No**

Title of Change: Revise UFASR Descriptions of Ultrasonic Examination Equipment

SUMMARY:

UFSAR Section 5.2.8 provides unnecessary details of automated RPV ultrasonic examination systems used in the In Service Inspection (ISI) Program which do not reflect advances in technology. This change provides a general description of equipment that will accommodate changes with improved technology to optimize examination techniques. A clarification was made to Table 5.2-15 for valve description consistency. This change does not involve an unreviewed safety question.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0025

Reference Document: LCR 97-029UFS

UFSAR Revision No. 8

Section(s) 9.2.8

Table(s) 6.2-2

Figure Change ☐ Yes ☒ No

Title of Change: Update UFSAR Description of Torus Water Management System

SUMMARY:

DER 96-0857 identified discrepancies in the UFSAR discussions regarding the Torus Water Management System. The following changes were evaluated:

- Changed location of TWMS piping from Radwaste Building to Auxiliary Building. No TWMS piping is located in the Radwaste Building.
- Deleted references to use of TWMS to control torus water temperature during periods of HPCI, RCIC, and SRV testing. Plant procedures use the RHR system for this purpose.
- Updated the text to reflect eight condensate demineralizers. The eighth demineralizer was installed in 1994.
- Updated TWMS primary containment isolation from "high level" to "high-high level" for the drywell and torus room floor drain sumps.
- Corrected reference to the torus water conductivity meter indication implying that it is located in the control room. It is located in the Reactor Building sub-basement.

These changes do not impact plant safety or any accident analyses.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0027

UFSAR Revision No. 8

Reference Document: LCR 96-253UFS

Section(s) NA

Table(s) 7.6-2

Figure Change [x] Yes [ ] No

Title of Change: Primary Containment Oxygen Analyzer

SUMMARY:

The discrepancies identified in DERs 96-0746 and 96-0840 are essentially the same. As described below, both DERs identified discrepancies with the Primary Containment Oxygen Analyzer - Alarm setpoint and Instrument accuracy:

- DER 96-0746: identified incorrect alarm setpoints on Figures 6.2-22 and 6.2-25.
- DERs 96-0746 and 96-0840: identified the same alarm setpoint and instrument accuracy discrepancies on Table 7.6-2. [Note: For other discrepancies identified by DER 96-0840, refer to LCR 96-228-UFS].

The following is a description of the changes to UFSAR Figures 6.2-22 and 6.2-25, and Table 7.6-2.

Figures 6.2-22 and 6.2-25

Figure 6.2-22 incorrectly shows the primary containment oxygen analyzer high alarm setpoint at 3.75 volume percent oxygen. This setpoint is a 'left-over' from the old Comsip-Delphi system for monitoring hydrogen/oxygen. In 1985, EDP 1422 replaced this system with a new environmentally qualified system, manufactured by Exo-Sensor Inc. In accordance with References 9.2 and 9.3 this setpoint was calculated from the Technical Specification limit of 4 volume percent oxygen (for normal operation) by taking into account instrument accuracy, calibration, and drift uncertainties. Besides this, it is simply good engineering practice to select an alarm setpoint at midrange as opposed to close to the Technical Specification limit. The high oxygen alarm setpoint is therefore reduced from 3.75 to 3.5 volume percent oxygen.

Figures 6.2-22 and 6.2-25 incorrectly shows the primary containment oxygen analyzer high-high alarm setpoint at 4.0 volume percent oxygen. This setpoint is also a 'left-over' from the old Comsip-Delphi system for monitoring hydrogen/oxygen. In accordance with References 9.2, 9.3 and UFSAR Table 7.6-2, the high-high oxygen alarm setpoint is 4.5 volume percent oxygen. This alarm is provided to alert the operator that the Technical Specification limit of 4.0 volume percent oxygen has been exceeded and presents the need for the operator to perform the necessary corrective actions. An oxygen alarm

setpoint at 4% by volume could be misleading to the operator and too early to warn the operator that the T.S. limit has been missed. The high-high oxygen alarm setpoint on Figures 6.2-22 and 6.2-25 are therefore corrected from 4.0 to 4.5 volume percent oxygen.

Table 7.6-2

Two changes are made to Table 7.6-2, they are:

1. Table 7.6-2 is revised to correct the primary containment oxygen analyzer high alarm setpoint from 3.75 to 3.5 volume percent oxygen. For a detailed description, refer to the above change described against Figure 6.2-22 for reducing the high oxygen alarm setpoint from 3.75 to 3.5 volume percent oxygen.
2. Table 7.6-2 is also revised to correct the primary containment oxygen analyzer instrument accuracy from ±2.0 to ±3 percent full scale of oxygen [Reference 9.1].

In summary, three changes will be examined in this safety evaluation. They include improving the UFSAR description of the Primary Containment Oxygen Analyzer by:

- Lowering the high oxygen alarm setpoint shown on Figure 6.2-22 and Table 7.6-2 to provide additional margin to safety and operator response time and to match References 9.2 and 9.3,
- Raising the high-high oxygen alarm setpoint shown on Figures 6.2-22 and 6.2-25, to match References 9.2 and 9.3, and UFSAR Table 7.6-2, and
- Correcting instrument accuracy shown on Table 7.6-2 to agree with manufacturers specifications [Reference 9.1].

These changes did not involve an unreviewed safety question.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0029

UFSAR Revision No. 8

Reference Document: LCR 96-228UFS

Section(s) 7.3.1.2.3.5

Table(s) 7.6-2

Figure Change ☐ Yes ☒ No

Title of Change: Core Spray System Valve Stroke Time Revision

SUMMARY:

The E2150F005A(B) valves are the loop A and B inboard pump discharge isolation valves located just outside the containment. The E2150F004A(B) are the loop A and B outboard pump discharge isolation valves. The purpose of these valves is to isolate the CSS from the RPV, and separate the high and low pressure CSS piping; thus, protecting the low pressure piping from overpressure. The outboard valves (F004A(B)) are normally open and the inboard valves (F005A(B)) are normally shut when CSS is in STANDBY. During manual operation of the valves, the F004A(B) will not open unless the F005A(B) is closed. The F004A(B) is designed to be a block valve and not a throttle valve. Both valves receive a signal to open when CSS starts automatically and reactor pressure is below the valve open permissive setpoint. The F005A(B) can be opened if reactor pressure is less than 461psig or if the F004A(B) is closed. To allow the operator control of CSS flow, the F005A(B) can be throttled closed.

UFSAR Section 7.3.1.2.3.5 currently states:
"The full-stroke operating times of the motor-operated valves are selected to be rapid enough to ensure proper delivery of water to the RPV in a design-basis accident (DBA). The full stroke operation times are as follows:

a. Test bypass valve - 150 sec
b. Pump suction valve - 80 sec
c. Pump discharge valves - 12 sec

The phrase *"pump discharge valves"* is non-specific and, therefore, implies that this is the stroke time for all four CS pump discharge isolation valves. In reality, the design basis documentation (E2100 DBD, CECO, vendor design specification data sheet) as well as the surveillance procedures (24.203.02 and 24.203.03) establish that only the inboard isolation valves have a maximum stroke time of 12 seconds; the outboard (F004A(B)) discharge isolation valves have a maximum stroke time of 13 seconds.

Revision 5 of the GE Design Specification Data Sheet (22A1478AC, DECo File No. R1-3636) specified the stroke time of the F004A(B) valves as also being 12 seconds. The spec sheet was subsequently revised and the new F004A(B) stroke time became 13 seconds. Field deviation disposition requests KHI 1501 and KHI 1528 were issued to authorize the change in stoke time and TSR-ABN 7117-1 was issued to update the design basis documentation; this information was never incorporated into the Fermi 2 UFSAR. These design change documents evaluated the safety impact due to the new, longer F004A(B) stroke times as negligible since the valves passed the rated flow at 30% to 40% open. Therefore, this change does not involve an unreviewed safety question.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0030 **UFSAR Revision No.** 8

Reference Document: LCR 97-033UFS **Section(s)** 4.4, 4.5

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Revise UFSAR Discrepancies

SUMMARY:

This Safety Evaluation corrects several statements in UFSAR Sections 4.4 and 4.5 which are inconsistent with the "as built" plant, or current plant procedure. Specifically changed is the description of minimum recirculation pump speed which is 20 percent of rated pump speed. Previously, the text had had been incorrectly revised to state that minimum speed was 30 percent. Removed from the text was that statement that the plant has the ability to automatically load follow. While the original plant design did have this feature, it was removed prior to the initial plant startup. Finally, a statement that implies that scram time testing is performed as an initial condition for friction testing was removed. Scram time testing and friction testing are completely independent test. The need for each of these changes was identified during the UFSAR overview project.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0031

UFSAR Revision No. 8

Reference Document: LCR 97-043UFS

Section(s) 10.4

Table(s) 10.4-3, 10.4-4

Figure Change ☐ **Yes** ☒ **No**

Title of Change: Water Chemistry Detail Revision

SUMMARY:

This Safety Evaluation is being written for LCR 97-043-UFS which was initiated to correct discrepancies in Chapter 10 of the UFSAR. In response to NRC Information Notice 96-17, a special UFSAR Review was performed at Fermi 2 by both Plant Support and System Engineering to identify discrepancies in the UFSAR. This Safety Evaluation consists of a number of proposed changes identified by DER 96-0851, and one change identified in DER 96-0829 whose common characteristic is their impact on Chapter 10 of the UFSAR. As a result, each change is described separately.

Description of Changes

A. DER 96-0851 Section 10.4.7.1.2, third paragraph, first sentence

This sentence is inaccurate (shown underlined), "The limit for the conductivity of purified condensate to the reactor vessel is 0.1 µmho/cm." The current operating practices limit the conductivity of feedwater to 0.07 µmho/cm during power operation, therefore 0.1 is being replaced with 0.07.

B. DER 96-0851 Section 10.4.7.1.2, table

This table is introduced by the sentence "The control program for dissolved and suspended solids is as follows." The table lists "limits" in ppb for various suspended, dissolved, and total metals. The table is being removed since the numbers are inaccurate and the actual basis limitations are being added. The introductory sentence is being moved to the top of the next section, which provides a description of the sampling methods used in the control program for dissolved and suspended solids.

C. DER 96-0851 Section 10.4.7.1.2 fourth, fifth and sixth paragraphs

These three paragraphs state:

"Suspended solids samples are acquired by application of integrated on-line sampling. The on-line filters are checked routinely for flow rate. Grab sampling, for qualitative analysis by filter color comparison is also available."

"Filters collected during the sampling interval are analyzed individually to determine the average weekly suspended solids. These filters are analyzed for total metals, which are typically iron (Fe), copper (Cu), nickel (Ni), chromium (Cr), and zinc (Zn)."

"Dissolved solids samples are acquired once per week by grab sampling or cation exchange. An integrated composite sample is collected by concentrating filterable species on filtering membranes and on cation and anion resin impregnated membranes and analyzed for total metals (Fe, Cu, Ni, Cr, and Zn)".

The sixth paragraph is being deleted and the description combined with paragraph number four, since suspended and dissolved solids are both collected via integrated on-line sampling. The new fourth paragraph (with text underlined where changes have been made) will read:

"Suspended and dissolved-solids samples are part of the integrated on-line sample collection, which consists of collecting both filterable and dissolved species in one filter housing that contains a membrane filter and ion exchange filter. The on-line filters are checked routinely for flow rate. Integrated on-line samples for feedwater are collected continuously during operation. There are routinely three sample collection intervals weekly."

The fifth paragraph is being revised to read:

"Filters collected during the sampling interval are analyzed for certain metals necessary to conform to fuel warranty specifications. Metal species of interest are typically iron (Fe), copper (Cu), nickel (Ni), chromium (Cr), and Zinc (Zn)."

The new sixth paragraph expands on the last sentence of the old fourth paragraph. The wording on this sentence is changed to provide a clarification.

"Suspended-solids samples are also acquired by grab sampling for qualitative analysis by filter color comparison during periods when corrosion product concentrations are expected to be higher than normal."

D. DER 96-0851 Section 10.4.7.1.2 ninth paragraph, second sentence
DER 96-0829 Section 10.4.6.1.1

These two sections of the UFSAR describe the process sampling that is taking place on the pumped forward heater drains. Sections 10.4.6.1.1 and 10.4.7.1.2 both state that they are continuously monitored for turbidity. Although this provides an accurate description of the existing configuration for the instrumentation installed, the turbidity function is not currently used as it provides only qualitative evaluation that is of limited value during power operation, only oxygen and conductivity is monitored continuously, turbidity is monitored on an as-needed basis by local grab, during periods when corrosion product concentrations are expected to be higher than normal. Therefore this paragraph is being revised to reflect that turbidity is monitored as-needed.

No unreviewed safety question was identified in this change.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0033

UFSAR Revision No. 8

Reference Document: LCR 97-030UFS

Section(s) 5.2.2.2.3

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Revision of UFSAR Section 5.2 for Clarification of ADS-SRVs Pneumatic Supply Requirements

SUMMARY:

In response to DERs 96-01027 and 97-0368, LCR 97-030-UFS was generated to revise UFSAR Section 5.2.2.2.3 for the pneumatic supplies to the SRVs. SE 97-0033 addresses the changes being made in this LCR. It includes the deletion of the nonconservative statement on assumed leakage rate of the ADS-SRV accumulators. It justifies the change in the assumptions used for the ADS-SRV accumulator sizing criteria in UFSAR Section 5.2.2.2.3. It clarified the terms "immediately available and full qualified supply." It also elaborates on the differences between Div. I & Div. II primary containment pneumatic supply system when it comes to SRV pneumatic requirements. In addition it discusses the use of NIAS as backup to Div. I primary containment pneumatic supply system and the fact that bottled nitrogen can be connected to either division to provide a backup pneumatic supply. These changes do not result in any unreviewed safety questions.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0034

UFSAR Revision No. 8

Reference Document: TSR 28560

Section(s) 7.3.1.2.1.3

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Provide Clarification Regarding Credit Taken For HPCI Valve E41F011 Closing Against the Maximum Expected Differential Pressure (MEDP)

SUMMARY:

The Safety Evaluation was written to support LCR 96-208-UFS. The LCR was written to provide additional information in the UFSAR regarding the use of the two HPCI test return valves. Modifications were made to E41F011, increasing its stroke time and greatly increasing its ability to close against the maximum DP developed in the test mode. This allowed Engineering to lower the MEDP calculated value across the HPCI upstream test return valve, E4150F008. Lowering the MEDP across the F008 valve reduces unnecessary high torque conditions, and provides adequate design and operating valve margins. Although not a required change to the UFSAR, the change was made to accurately reflect the main functions of the two valves.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0035

UFSAR Revision No. 8

Reference Document: LCR 96-229UFS
LCR 96-244UFS
LCR 96-228UFS
LCR 97-003UFS
LCR 94-043UFS
LCR 96-220UFS
LCR 96-223UFS

Section(s) Various

Table(s) Various

Figure Change [x] Yes [ ] No

Title of Change: Various Minor Changes Resulting from the UFSAR Overview Project

SUMMARY:

As a result of the UFSAR Overview Project, hundreds of minor changes to the UFSAR were identified as necessary to either correct minor errors or improve the information. The majority of these changes clearly fell under the category of changes that were exempt from a safety evaluation as defined in Revision 3 of MLS07. Changes that were determined to be of significant technical substance were addressed separately in new or existing safety evaluations associated with the Overview Project LCRs. Revision 4 of Procedure MLS07 resulted in a situation where meeting the procedure requires a safety evaluation for the minor changes as well.

The purpose of this safety evaluation is to document the types of minor changes (by category) that are being made as a result of the UFSAR Overview Project and to document the basis for determining that they do not represent an unreviewed safety question. Most of these are changes that by direct inspection could not result in meeting any of the criteria to be considered an unreviewed safety question. Therefore, by documenting the basis for the categories and providing examples, this safety evaluation may be applied to the UFSAR Overview Project LCRs without addressing every minor change individually.

None of the changes evaluated, resulted in an increase in the consequences (including radiological consequences) of an accident described in the UFSAR and no reduction of the margin of safety as defined in the Technical Specification Bases.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0037

UFSAR Revision No. 8

Reference Document: LCR 97-087UFS

Section(s) NA

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Add Vent Valve N2000F261 To UFSAR Figure 10.4-7(2)

SUMMARY:

In response to changes per TSR-26975, rev. Ø, resulting from a walkdown of the Condensate Polishing Demineralizer System piping which found that vent valve N2000F261 was not shown on the P & ID drawing (6M721-2011-1), LCR 97-087-UFS was generated to revise UFSAR Figure 10.4-7(2) to add the vent valve N2000F261.

Safety Evaluation 97-0037 addresses the addition of this vent valve N2000F261 per LCR 97-087-UFS as a change to the facility (UFSAR Figure). The valve added is for the purpose of providing a vent to the atmosphere during the filling of the pipe, or providing a path to prevent / break any vacuum and enable the efficient draining of the pipe. This vent valve has no function in the Condensate Polishing Demineralizer operating system. Subsequent safe shutdown of the reactor does not require the Condensate Polishing Demineralizers or the associated piping upstream of the Feedwater system. The various conditions that could be detrimental to the proper operation of the system resulting from trapped air will be eliminated. Therefore, this vent valve's addition is an improvement to the system and does not reduce the Margin of Safety as defined in the Bases of any Technical Specification, UFSAR or SER section.

The conclusion of this Safety Evaluation is that the addition of this valve, added for air displacement during filling and venting of this particular system does not result in an unreviewed safety question.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0038

UFSAR Revision No. 8

Reference Document: LCR 96-220UFS

Section(s) 8.3

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Changes to the Description of the AC Power System

SUMMARY:

This safety evaluation evaluates changes to the Standby AC Power System description and emergency diesel-generator control system as described in the UFSAR. These are changes to UFSAR Sections 8.3.1.1.8.1 and 8.3.1.1.8.7 respectively. With respect to the changes, the existing design configuration(s) of the standby ac power system are:

The emergency diesel generators insulation system have a Class 'F' temperature rating as shown on the emergency diesel generator nameplate. The UFSAR has an incorrect description of the equipment insulation.

The EDG tachometer relay 'TR' is installed within the EDG skid mounted gauge panel and is critical to the operation of the EDG. The UFSAR has an incorrect statement regarding the gauge panel.

None of the changes evaluated, resulted in an increase in the consequences (including radiological consequences) of an accident described in the UFSAR and no reduction of the margin of safety as defined in the Technical Specification Bases.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0040

UFSAR Revision No. 8

Reference Document: LCR 96-245UFS

Section(s) 11.4

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Primary Containment Monitoring System

SUMMARY:

The Primary Containment Monitoring System (PCMS) is comprised of five subsystems which provide continuous control room indication of the pressure, temperature, hydrogen concentration, oxygen concentration, radiation (Noble gas activity), and suppression chamber level in the primary containment. PCMS is an "information only" system and provides no control functions. The purpose of the Primary Containment Radiation Monitor Subsystem (PCRMS) Sample Skid is to monitor the gaseous radioactivity present in the atmosphere and provide additional information related to primary coolant leak detection. This subsystem provides no control function and is isolated from the primary containment on actuation of the LOCA logic.

The PCRMS is incorporated into the Division I H_2/O_2 Monitoring Subsystem. Whatever sampling point is selected for Div. I H_2/O_2 Monitoring will be the path used by PCRMS. Piping to the PCRMS Sample Skid taps off the inlet to the Div. I H_2/O_2 Analyzer Cabinet and then returns to the piping downstream of the Div. I H_2/O_2 Analyzer Cabinet to the Suppression Chamber. The 4 isolation valves (2 inlet and 2 outlet at skid H21P284) in the PCRMS loop receive isolation signals from Primary Containment Isolation System (PCIS) upon receipt of a high drywell pressure or reactor water level trip signal (L2). This isolates the unqualified portion of the PCRMS piping from the primary containment atmosphere in the Post-LOCA condition. With the exception of the PCRMS, the PCMS is intended to be in operation following a LOCA; thus, no PCIS isolation signals are provided for the valves in the other containment monitoring subsystems of the PCMS.

A particulate and iodine filter, T5001-D002, is installed in the sample flow path to remove particulate and gaseous iodine activities that could in false high readings of the Noble gas concentrations by the PCRMS. A beta scintillator coupled to a photomultiplier tube monitors the sample stream as it passes through the gaseous detector chamber. Associated with the beta scintillation detector is a logarithmic count rate circuit, power supply unit, and meter readout.

The PCRMS was originally designed to provide monitoring indication of the filtered particulate and iodine activities in addition to the Noble gas activity; however, Fermi 2 revised compliance with the regulatory guidance (RG 1.45) suggesting continuous monitoring of filtered activities

and the particulate and iodine detectors were spared [EDP 1786]. This left the beta scintillator for Noble gas monitoring as the sole PCRMS detector channel. UFSAR Section 11.4.3.8.2.1 implies that there are multiple detector channels associated with the PCRMS.

PCRMS has provisions in the main control room for indicating the radiation count rate per unit volume of sample, for checking the setpoint at which the high radiation alarm is actuated, and for alarming low sample flow rate. By the actuation of an alarm and annunciation, the operator is informed of high radiation level (8D52), instrument failure as evidenced by loss of normal background reading, or loss of sample flow (8D64). Recorder R809 provides output on control room panel H11-P812 of the radiation level in the sample stream from the Primary Containment. The red pen on this recorder is non-functional and should always read zero. The blue pen displays the current gaseous radiation level in the process sample stream. The red pen was once associated with the PCRMS filtered particulate and iodine activities, but was "spared" under EDP 1786.

The PCRMS Sample Skid contains the necessary controls to allow startup, adjustment, and operation of the PCRMS. The Sample Pump Controls, as well as manual and automatic flow controls, are available to allow the operator a full range of control over system operation. The PCRMS Sample Skid, H21-P284, is located next to the Division I Primary Containment H_2/O_2 Monitoring Analyzer Cabinet (RB2-B12).

UFSAR Section 11.4.3.1 (item c) implies that indications from all process radiation monitors (including the PCRMS) are located in the relay room; however, indication from the PCRMS is located on RB-2 on skid H21P284 next to the PCMS/H_2O_2 monitoring components Discussions with Plant Support Engineering (I&C) confirm the fact that this skid was never located in the relay room. The 5th & 7th paragraphs UFSAR Section 11.4.3.8.2.1 also incorrectly state that the PCRMS skid is located in the relay room.

[UFSAR Section 11.4.3.8.2.1, 5th & 7th paragraphs]
The description of the PCRMS contained in paragraph 5 is inconsistent with the fact that only a single instrument channel associated with the Primary Containment Radiation Monitoring System (PCRMS) and it is located in the second floor of the Reactor Building at skid H21P284; not in the relay room. Also, paragraphs 5 and 7 state incorrectly that indication from the PCRMS is located in the relay room.

These changes did not involve unreviewed safety questions.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0041 **UFSAR Revision No.** 8

Reference Document: LCR 97-037UFS
TSR 29167
EDP 27596

Section(s) NA

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Add a Clarifying Note to UFSAR Figure 9.5-1,Sheet 2

SUMMARY:

Piping and Instrument Drawings (M-2135 and M-2135- 1) were developed to document the configuration of the piping and components for both the Fermi I and Fermi 2 fire protection systems. Additionally, because these drawings provide the configuration of the entire site's fire protection system, they are utilized as UFSAR Figures 9.5-1, Sheets I and 2 respectively. As shown on drawings M-2135 and M213 5- 1, the unit I and unit 2 fire protection systems are cross-connected by a 12 inch diameter line. This cross-tie is controlled by a normally locked closed isolation valve (P800OF073). The fire protection system itself is not a safety related system, however, it is classified as QA Level IM because certain portions of the fire protection system are relied upon to protect safety related systems and structures.

The Fermi I fire protection system supply piping to those sprinkler systems and fire hydrants provided for several warehouses and structures located outside the fenced-in "protected area" of the plant site is actually part of the Fermi 2 fire protection piping system. UFSAR Figure 9.5-1, Sheet 2 (Drawing M2135-1) shows the layout/configuration of the Fermi I fire system piping. At this time it should be noted that the fire protection systems and components supplied by the Fermi I fire protection system are non safety related because they do not provide protection for any safety related plant systems or components.

UFSAR Section 9.5. and Appendix 9A of the UFSAR provide detailed descriptions of the Fermi 2 fire protection system and program. However, these portions of the UFSAR do not specifically describe the fire protection features (fire hydrants and sprinkler systems) that are provided for the warehouses and structures located outside the "protected area" of the site. The basis for this exclusion is that a fire in any of these outer non safety related structures would not have any direct impact on the operation or safe shutdown of the Fermi 2 plant.

The purpose of TSR 29167 and LCR 97-037-UFS is to add a note (Note 2) to UFSAR Figure 9.5-1, Sheet 2, which will clarify the UFSAR figure by stating that the Fermi I fire protection water supplies for the sprinkler systems and fire hydrants provided to protect the warehouses, and other buildings located outside the fenced-in "protected area" are not specifically addressed in the Updated Final Safety Analysis Report, but are shown on UFSAR Figure 9.5-1, Sheet 2 for configuration purposes only.

The addition of this note does not conflict with the text of the UFSAR. Rather, this new drawing note provides the drawing reviewer with information he/she would previously have had to review Section 9.5.1 and Appendix 9A of the UFSAR to acquire. Additionally, the subject note does not have any impact on the configuration, operation or function of either the Fermi I or Fermi 2 fire protection systems.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0042

UFSAR Revision No. 8

Reference Document: LCR-96-047UFS

Section(s) NA

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Revision of UFSAR Figures7.6-11 and 11.4-1

SUMMARY:

The proposed LCR 96-047-UFS revises the Primary Containment Atmospheric Monitoring System (PCAMS) P&ID 61721-2679-01 (UFSAR figures 7.6-11 & 11.4-1), FOS 6M721-5741,and ISI Boundary Drawing 6M721-5831. These documents are revised to add "LO" (locked open) symbol to valve T5001F202, to show valves T5001F072A, B as "normally closed", and to delete duplicate loop presentation for level transmitter C36N405. The P&ID, FOS, and ISI drawings are already revised and issued to Information System per LCR-96-047UFS and associated Preliminary Evaluation (PE) dated 4-26-96. Safety Evaluation SE-97-0042 Rev 0 was written to provide justification for the revision of UFSAR figures 7.6-1 1 and 1 1.4-1 per above changes and to verify that the changes do not create any unreviewed safety questions.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0050

Reference Document: LCR 96-223UFS
TSR 29172

UFSAR Revision No. 8

Section(s) 6.2.4.2.5

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Excess Flow Check Valve

SUMMARY:

Revise UFSAR Section 6.2.4.2.5 description of excess flow check valve (EFCV) reset function. The UFSAR states that EFCV may be reopened by actuation of a solenoid valve, which is operated from the control room. However, the current design has no provision for opening the EFCVs from the control room. The EFCV reset is accomplished from the local panels such as H21P402A,B, C, D, E, F, G, H, J, K, L, and M. This discrepancy was identified in DER 96-0715. The purpose of this safety evaluation is to perform a 10CFR50.59 review of the proposed correction of the UFSAR Section 6.2.4.2.5 text regarding the EFCV reset function location. This did not result in an unreviewed safety question.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0051

UFSAR Revision No. 8

Reference Document: LCR 96-067UFS
LCR 96-098UFS
LCR 96-142UFS
LCR 96-149UFS
LCR 96-189UFS

Section(s) Various

Table(s) Various

Figure Change [x] Yes [ ] No

Title of Change: Resolve Multiple Minor Discrepancies Between As Built Physical Condition and Plant Documentation

SUMMARY:

The LCRs were prepared to resolve Plant Labeling Program configuration concern that documented multiple minor labeling and configuration control discrepancies between plant as built physical condition and plant documentation (BCDDs and CECO database).

The four system affected by scope of the design change documents considered in this safety evaluation are Radwaste HVAC (V4100); Drain Coolers, Low Pressure Feedwater Heaters (N2003), Radwaste (G1100) and EECW (P4400). The scope of change is to correct the documented labeling and configuration discrepancies and bring plant documentation in agreement with the plant as built condition.

These changes do not alter/modify the function or operation of the affected systems. Minor equipment, such as vent valves, which was originally omitted on UFSAR drawings, has been added. Corrections on piping connection locations were made. Incorrect symbols, such as gate vs. globe valve, were updated. These changes are minor and do not impact system function. This equipment involved does not adversely impact any safety related system or the safe shutdown of the plant. Therefore, these changes do not involve an unreviewed safety question.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0053

UFSAR Revision No. 8

Reference Document: LCR 97-048UFS

Section(s) NA

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Revision of UFSAR Figures 1.2-32, 1.5-1a, and 1.5-1b

SUMMARY:

Recently, certain non-conservatisms were discovered in the reactor heat balance calculations among BWRs which could result in plants exceeding their licensed power limits. At Fermi, Reactor Recirculation Rump Seal Purge flow was originally included in the heat balance calculation. This discrepancy has been corrected. As a result, UFSAR Figures 1.2-32, 1.5-1a, and 1.5-1b are being revised to include parameters for Reactor Recirculation Rump Seal Purge flow in the heat balance and to add a clarifying note indicating that the main steam flow parameters on each figure represent conditions before the turbine stop valves.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0054

Reference Document: LCR 96-228UFS
TSR 29172

UFSAR Revision No. 8

Section(s) 7.1.2.1.4.4

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Average Power Range Monitoring Description Change

SUMMARY:

This safety evaluation evaluates a change to the description of the Average Power Range Monitoring (APRM) System power generation design bases as described in the UFSAR. UFSAR Section 7.1.2.1.4.4.e lists one of the bases to be, "A reference power level for controlling reactor recirculation system (RRS) flow." This statement is unclear because it could be interpreted to imply that the reactor power level can be controlled automatically by reactor recirculation flow control. In reality, flow control is a manually controlled function in the recirculation flow control system.

The automatic flow control mode for controlling recirculation flow through the core has never been used at Fermi. The automatic flow control mode for controlling reactor power is not possible at Fermi since it was disconnected from the turbine generator control mechanism prior to plant startup. Recirculation flow through the core is adjusted manually, utilizing the variable speed recirculation pumps, which provides a means for changing reactor power level. This change did not impact any UFSAR safety margin.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0057

UFSAR Revision No. 8

Reference Document: LCR 96-038UFS
TSR 28165

Section(s) NA

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Revision of UFSAR Fig. 4.5-15 (Sht. 1) for clarification of HCUs (Nitrogen Supply), level switch and vents from (HCU) Drive Water Filter Units

SUMMARY:

In response to DERs 95-0945 and 96-0116, LCR 96-038-UFS was generated to revise UFSAR Fig. 4.5-15 (Sht. 1) for discrepancies for the nitrogen supply to the HCUs, level switch LDS129 for HCUs and the vent line from the CRD hydraulic control unit drive water filter units. SE 97-0057 addresses the changes being made in the LCR. It justifies the removal of PIS #'s for nitrogen charging supply bottles and their isolation valves. It also justifies the relocation of flexible hose from the nitrogen supply bottles to the HCUs nitrogen charging supply connection and the relocation of level switch LDS129 in the instrument block manifold. In addition, it discusses the fact that the two vent lines from C1152DO03A & D003B connecting together into a common header before going to the floor drain has no impact on their ability to vent the units. The conclusion was that these changes do not result in any unreviewed safety questions.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0058

Reference Document: LCR 96-209UFS
TSR 28743A

UFSAR Revision No. 8

Section(s) 4.5.2.2, 7.6.1.17, 7.7, 9.3

Table(s) NA

Figure Change [x] Yes [ ] No

Title of Change: Changing set point for P50F409 from 75psig without tolerance to 72psig with tolerance of +/-2.

SUMMARY:

As per C11-00 Design Basis Document (DBD) for the CRD Hydraulic System the normal scram air header pressure and supply air pressure to the drive water flow control valves is 70 to 75 psig. This pressure is maintained by pressure regulator P50F409. Also, UFSAR Figure 4.5-15(2) for the CRD Hydraulic System shows normal operating range of 70 to 75 psig for the scram air header pressure, which is downstream of P50F409. However, UFSAR Figure 4.5-15(1) shows a value of 75 psig downstream of P50F409 which supplies IAS to the drive water flow control valves C11F002A&B. The existing CECO set point of 75 psig for P50F409 is too close to the high pressure alarm of 78 psig increasing as evaluated in TSR 27162. This set point was changed per TSR 28743 Rev A from 75 psig without tolerance, to 72 psig with tolerance of +/-2. This new set point is midrange of the normal operating range (70 to 75 psig) for the scram air header and supply air pressure to C11F002A&B.

The failure of the valves, C11F002A&B, do not effect the scram function or any analysis in the UFSAR on the scram function or associated accidents. Therefore this change, not being an initiator of any accident, does not increase the probability of an accident previously evaluated in the UFSAR. These valves are not required for scram function nor are they required for safe shutdown of the plant. This change does not reduce the margin of safety as defined in the bases for any technical specifications, UFSAR or SER section.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0062 ____ **UFSAR Revision No.** 8

Reference Document: LCR 97-039UFS **Section(s)** 7.4.1.2.2, 8.3.1.1.9,

Table(s) 8.3-14

Figure Change [x] **Yes** [ ] **No**

Title of Change: Minor Changes to Panel Descriptions as Found in UFSAR Table 8.3-14.

SUMMARY:

As per existing configuration MPU 1 and MPU 2 provides Class 1E instrumentation and control power to safety related and essential loads, these loads are identified in UFSAR on Table 8.3-14. This table contains minor errors, inconsistencies and information which needs to be updated in regards to panel description. The new configuration will reflect actual design document and field configuration for the safety related MPUs.

Panels P50P402A&B were missing from UFSAR Table 8.3-14. The panel were added to affected BCDDs, but the UFSAR was never revised for the affected changes. Loads for 120 VAC distribution Panels H21-P559/P560 were redefined. The loading was evaluated for impact on the applicable distribution panels per engineering change documents, therefore changes identified by the LCR for loads will not affect the panel loads.

The changes are non-technical, administrative in nature and identified for the sole purpose of clarifying Table 8.3-14. The changes will not decrease the required capability or performance of the plant equipment, and will not increase probability of an accident or malfunction of the equipment previously evaluated in the UFSAR. The changes implemented by this LCR were made to clarify the panel titles that were not correct and will not reduce the margin of safety as defined in the bases for any technical specification.

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0065

UFSAR Revision No. 8

Reference Document: LCR-97-068UFS

Section(s) 7.6.2.13.1.1

Table(s) NA

Figure Change ☐ Yes ☒ No

Title of Change: Revise UFSAR Section 7.6.2.13.1.1 to Delete the Sentences Requiring a Control Rod to be Withdrawn Next to Each SRM Prior to Achieving Criticality

SUMMARY:

The UFSAR discrepancy was discovered during the overview project. The UFSAR currently states that "During the startup withdrawal, one of four control rods adjacent to each SRM chamber is withdrawn before the reactor is critical. This procedure reduces detector shadowing and ensures increases in the detector signals as the core average neutron multiplication increases." Fermi does not follow this procedure. Fermi does not subscribe to the current UFSAR methodology because the point of reactor criticality is dependent on numerous factors such as the core design, core operating history, fuel bundle design, desired shutdown margin and the energy requirements for the cycle. It is not a requirement of the core design process to ensure that a control rod will be withdrawn next to each SRM prior to reaching criticality. The NRC approved core design process is governed by GESTAR II. This change has no impact on plant safety margins or operation

SAFETY EVALUATION SUMMARY

Safety Evaluation No: 97-0070

UFSAR Revision No. 8

Reference Document: LCR 95-127UFS
EDP 2417B
TSR 28229

Section(s) NA

Table(s) 8.3-10, 8.3-12

Figure Change ☐ Yes ☒ No

Title of Change: Add Detail to UFSAR Tables on the EDG Exciter Bypass And Exciter Emergency Shutdown Pushbuttons

SUMMARY:

DER 95-0730 identified the need to revise the EDG Design Basis Document (DBD) to describe the functions of the EDG Exciter Bypass And Exciter Emergency Shutdown Pushbuttons. During work on the DBD, it was discovered that UFSAR tables should also be revised. In 1985 following approval of a Technical Specification Amendment to allow slow starts of the EDGs for surveillance purposes, these controls were installed to allow the exciter to be bypassed during slow speed operation when it would normally be attempting to satisfy its normal 4160 V setpoint. This will prevent potential mechanical damage or field failure trips of the EDG during the test.

The addition of the EDG Exciter Bypass And Exciter Emergency Shutdown Pushbutton switches were evaluated at the time of installation. However, the impact to the UFSAR tables was not recognized at the time. This Safety Evaluation discusses the purpose of the controls and the acceptability of revising the UFSAR tables. There was no unreviewed safety question.

The following Technical Specification Amendments were incorporated into Revision 8 of the UFSAR. The NRC Safety Evaluations (which is based on the Detroit Edison evaluation supporting the change) that accompanies each amendment provides the basis and justification for the UFSAR revision.

T. S. Amendment	Description	UFSAR Section/Table
107	Emergency Diesel Generator Surveillance Requirements and Reports, where EDG accelerated testing frequency and reporting requirements were deleted in accordance with Generic Letter 94-01.	8.3.1 A.1.108
108	Appendix J Option B, where 10CFR50 Appendix J Option B was reimplemented.	3.1.2 6.2.1 6.2.4 A.1.163
110	Standby Gas Treatment System Surveillance Requirements for Charcoal Adsorber, where ASTM Standard D 3803-1989 is the test methodology.	6.2-11 A.1.52

END OF SAFETY EVALUATION SUMMARY REPORT