



Prairie Island Nuclear Generating Plant
1717 Wakonade Drive East
Welch, MN 55089

May 24, 2016

L-PI-16-005
10 CFR 50.90
10 CFR 50.48(c)

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

Prairie Island Nuclear Generating Plant Units 1 and 2
Dockets 50-282 and 50-306
Renewed License Nos. DPR-42 and DPR-60

License Amendment Request to Adopt NFPA 805 Performance-Based Standard for Fire Protection for Light Water Reactors – Response to Request for Additional Information (TAC Nos. ME9734 and ME9735)

References:

1. NSPM letter, J.P. Sorensen to NRC Document Control Desk, *License Amendment Request to Adopt NFPA 805 Performance-Based Standard for Fire Protection for Light Water Reactors*, L-PI-12-089, dated September 28, 2012, ADAMS Accession No. ML12278A405.
2. NSPM letter, S. Sharp to NRC Document Control Desk, *Supplement to License Amendment Request to Adopt NFPA 805 Performance Based Standard for Fire Protection for Light Water Reactors*, L-PI-14-045, dated April 30, 2014 (ADAMS Nos. ML14125A106 and ML14125A149).
3. NRC email, T. Beltz to S. Chesnutt, *Prairie Island Nuclear Generating Plant, Units 1 and 2 - NFPA 805 Requests for Additional Information and Response Timeline (TAC Nos. ME9734 and ME9735)*, dated March 30, 2015 (ADAMS Accession No. ML15089A157).
4. NSPM letter, K. Davison to NRC Document Control Desk, *License Amendment Request to Adopt NFPA 805 Performance-Based Standard for Fire Protection for Light Water Reactors – Response to Request for Additional Information*, L-PI-15-041, dated May 28, 2015 (ADAMS No. ML15153A018).
5. NSPM letter, K. Davison to NRC Document Control Desk, *License Amendment Request to Adopt NFPA 805 Performance-Based Standard for Fire Protection for Light Water Reactors – Response to Request for Additional Information – 90-Day Responses*, L-PI-15-052, dated June 19, 2015 (ADAMS No. ML15174A139).

ADDL
NR

6. NSPM letter, K. Davison to NRC Document Control Desk, *License Amendment Request to Adopt NFPA 805 Performance-Based Standard for Fire Protection for Light Water Reactors – Response to Final Request for Additional Information (PRA – Second Round)*, L-PI-15-059, dated October 22, 2015 (ADAMS No. ML15296A259).
7. NRC email, T. Beltz to A. Hazelhoff, *Prairie Island Nuclear Generating Plant – Requests for Additional Information (AFPB) re: LAR to Adopt NFPA 805 (TAC Nos. ME9734 and ME9735)*, dated January 8, 2016 (ADAMS No. ML16008A109).
8. NSPM letter, K. Davison to NRC Document Control Desk, *License Amendment Request to Adopt NFPA 805 Performance-Based Standard for Fire Protection for Light Water Reactors – Response to Final Request for Additional Information*, L-PI-16-004, dated January 20, 2016 (ADAMS No. ML16020A375).

In Reference 1, the Northern States Power Company, a Minnesota Corporation (NSPM) doing business as Xcel Energy requested approval from the Nuclear Regulatory Commission (NRC) to transition the fire protection licensing basis for the Prairie Island Nuclear Generating Plant (PINGP) to 10 CFR 50.48(c), National Fire Protection Association Standard 805 (NFPA 805). Supplemental information was provided in letters dated November 8, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12314A144) and December 18, 2012 (ADAMS Accession No. ML12354A464).

In Reference 2, NSPM submitted a revised Fire Probabilistic Risk Assessment (PRA) in a supplement to the subject License Amendment Request (LAR). In Reference 3, the NRC staff provided requests for additional information (RAIs) regarding this request and also provided a timeline and due dates for submitting responses within 60, 90, or 120 days after an on-site Audit that was conducted March 23-25, 2015. NSPM letter dated May 28, 2015 (Reference 4) provided responses to the 60-day RAIs and one of the 90-day RAIs (Fire Protection Engineering RAI 03). NSPM letter dated June 19, 2015 (Reference 5) provided responses to the remaining 90-day RAIs.

NSPM letter dated October 22, 2015 (Reference 6) provided responses to second round RAIs and included an Attachment L request, "Approval Request 4 – Wiring Above Suspended Ceilings." In Reference 7, the NRC staff provided RAIs on this Attachment L request. In Reference 8, NSPM provided responses to these RAIs.

Enclosure 1 to this letter provides NSPM's response to PRA RAI 03, including the response to PRA RAI 01.h. Enclosure 2 provides licensee identified LAR changes. Enclosure 3 provides an updated Attachment M, License Condition Changes. Enclosure 4 provides an updated Attachment S, Plant Modifications and Items for Implementation. Enclosure 5 provides an updated Attachment W, Fire PRA Insights, which contains Security-Related information. Accordingly, NSPM requests that Enclosure 5 be withheld from public disclosure under 10 CFR 2.390(d)(1).

This letter is submitted in accordance with 10 CFR 50.90. The additional information provided in this letter does not impact the conclusions of the No Significant Hazards Evaluation or Environmental Considerations Evaluation presented in Reference 2.

In accordance with 10 CFR 50.91, NSPM is notifying the State of Minnesota of this additional information by transmitting a copy of this letter to the designated State Official.

If there are any questions or if additional information is needed, please contact Gene Eckholt at 651-267-1742.

Summary of Commitments

This letter contains two new commitments and makes no revisions to any existing commitments.

- NSPM will implement the items listed in Attachment S, Table S-3, "Implementation Items," at PINGP within twelve months after NRC approval, with the exception of Implementation Item 20 and 66 which are associated with modifications and will be completed 180 days after modifications are complete.
- NSPM will implement the modifications in Attachment S, Table S-2, "Plant Modifications Committed," at PINGP before the end of the second full operating cycle for each unit after approval of the LAR. NSPM will maintain appropriate compensatory measures in place until completion of these modifications.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on May 24, 2016.



Scott Northard
Acting Site Vice President – Prairie Island Nuclear Generating Plant
Northern States Power Company – Minnesota

Enclosures (5)

cc: Administrator, Region III, USNRC
NRR Project Manager, PINGP, USNRC
Resident Inspector, PINGP, USNRC
State of Minnesota

Response to Requests for Additional Information (RAIs)
Regarding the License Amendment Request to
Adopt National Fire Protection Association (NFPA) Standard 805
at Prairie Island Nuclear Generating Plant Units 1 and 2

NRC Request

PRA RAI 03 – Integrated Analysis

Section 2.4.3.3 of NFPA 805 states that the PRA approach, methods, and data shall be acceptable to the NRC. Section 2.4.4.1 of NFPA 805 further states that the change in public health risk arising from transition from the current fire protection program to an NFPA 805 based program, and all future plant changes to the program, shall be acceptable to the NRC. The RG 1.174 provides quantitative guidelines on CDF, LERF, and identifies acceptable changes to these frequencies that result from proposed changes to the plant's licensing basis and describes a general framework to determine the acceptability of risk-informed changes. The NRC staff's review of the information in the LAR identified additional information that is required to fully characterize the risk estimates.

The PRA methods currently under review in the LAR include the following:

- *PRA RAI 01.a, regarding fire-induced instrument failure*
- *PRA RAI 01.b, regarding conduits with unknown routing*
- *PRA RAI 01.c, regarding instrument air piping in the Relay Room*
- *PRA RAI 01.d, regarding cable raceways under the raised floor within the MCR*
- *PRA RAI 01.e, regarding main control board fire scenarios*
- *PRA RAI 01.f, regarding self-ignited cable fires*
- *PRA RAI 01.g, regarding detection and suppression system failure probabilities*
- *PRA RAI 02.a, regarding minimum for joint human error probabilities*
- *PRA RAI 02.b, regarding instrumentation and control modeling inconsistencies*
- *PRA RAI 02.c, regarding the loss of pump net positive suction head*
- *PRA RAI 04, regarding placement of transient fires*
- *PRA RAI 05, regarding cable fires caused by welding and cutting*
- *PRA RAI 06, regarding junction boxes*
- *PRA RAI 07, regarding sensitive electronics*
- *PRA RAI 08, regarding circuit failure probabilities*
- *PRA RAI 09, regarding Bin 15 electrical cabinets*
- *PRA RAI 10, regarding high energy arcing faults*
- *PRA RAI 11, regarding the time to delayed detection*
- *PRA RAI 12, regarding MCR abandonment*

- PRA RAI 13, regarding Δ CDF, Δ LERF and additional risk of recovery actions
- PRA RAI 16, regarding incipient detection
- PRA RAI 18, regarding deviations from acceptable methods

Please provide the following:

NRC Request (PRA RAI 03.a)

- a. Results of an aggregate analysis that provides the integrated impact on the fire risk (i.e., the total transition CDF, LERF, Δ CDF, Δ LERF and additional risk of recovery actions) of replacing specific methods identified above with alternative methods that are acceptable to the NRC. In this aggregate analysis, for those cases where the individual issues have a synergistic impact on the results, a simultaneous analysis must be performed. For those cases where no synergy exists, a one-at-a-time analysis may be done. For those cases that have a negligible impact, a qualitative evaluation may be done. It should be noted that this list may change depending on NRC's review of the responses to other RAIs in this document.

NSPM Response (PRA RAI-03.a)

- a. An updated NFPA 805 LAR Attachment W has been developed and is included as part of the response to PRA RAI 03. The updated Attachment W lists and discusses the quantification for CDF, LERF, Δ CDF, Δ LERF and additional risk of recovery actions. The results of the quantification include the effects of the comprehensive incorporation of updates associated with RAI responses. The updated Attachment W is provided in Enclosure 5.

Reference:

1. FPRA-PI-FQ-2.0, Fire PRA Quantification, Revision 2.0.

NRC Request (PRA RAI 03.b)

- b. For each method (i.e., each bullet) above, explain how the issue will be addressed in 1) the final aggregate analysis results provided in support of the LAR, and 2) the PRA that will be used at the beginning of the self-approval of post-transition changes. In addition, provide a process to ensure that all changes will be made, that a focused-scope peer review will be performed on changes that are PRA upgrades as defined in the PRA standard, and that any findings will be resolved before self-approval of post-transition changes.

NSPM Response (PRA RAI 03.b)

- b. Table 1 below summarizes how the specific issues are addressed and incorporated in the Fire PRA. This table also lists the specific RAI responses where further technical details are provided. All the updates and changes identified as part of the RAI response process have been incorporated in the Fire PRA and are part of the base model (i.e., the composite model). This integrated

model is the base Fire PRA that will be used at the beginning of the self-approval of post-transition changes. This base Fire PRA model may require updates to reflect the as-built condition of the facility modifications identified in Table S-2, as required by Implementation Item 20 in Table S-3. Consistent with the NSPM PRA Guideline for Model Maintenance and Updates procedure, a peer review will be performed on changes that are PRA upgrades as defined in the PRA standard. The scope of the peer review should be commensurate with the scope of the upgrade, (focused-scope), and any findings will be resolved before self-approval of post-transition changes as required in Table S-3 Item #25.

Reference:

1. FP-PE-PRA-02, PRA Guideline for Model Maintenance and Update
2. Table S-3 Item #25

NRC Request (PRA RAI 03.c)

- c. In the response, explain how the Regulatory Guide (RG) 1.205 risk acceptance guidelines are satisfied for the aggregate analysis. Additionally, discuss the likelihood that the risk increase in any individual fire area would exceed the acceptance guidelines, and if so, why exceeding the guidelines should be acceptable. If applicable, include a description of any new modifications or operator actions being credited to reduce delta risk as well as a discussion of the associated impacts to the fire protection program.*

NSPM Response (PRA RAI 03.c)

- c. The results described in the updated Attachment W include CDF, LERF, Δ CDF, Δ LERF and additional risk of recovery actions that satisfy the RG 1.205 risk acceptance guidelines. The quantification results indicate that the risk of all the fire areas does not exceed the risk thresholds listed in RG 1.205. An updated Attachment S is provided listing changes to the modifications originally listed in the NFPA 805 LAR Supplement. No new risk reduction modifications have been added. The updated Attachment S is provided in Enclosure 4. Changes to Attachment S are described in a table of explanation in Enclosure 2.*

Reference:

1. FPRA-PI-FQ-2.0, Fire PRA Quantification, Revision 3.0.

NRC Request (PRA RAI 03.d)

- d. If any unacceptable methods identified above will be retained in the PRA and will be used to estimate the change in risk of post-transition changes to support self-approval, explain how the quantification results for each future change will account for the use of these methods.*

NSPM Response (PRA RAI 03.d)

- d. The PINGP Fire PRA has been developed using accepted methods, with the following exception. As described in the response to PRA RAI 18, one deviation from the guidance in NUREG/CR-6850 has been identified. The apportioning of fire scenario frequencies associated with the main control board fires is not based on the guidance provided in Appendix L of NUREG/CR-6850. The PINGP approach ensures that the full main control board fire ignition frequency, including credit for severity factor and non-suppression probability, is apportioned to the different panels. The target mapping approach discussed in the response to PRA RAI 18, together with the frequency apportioning process, ensures that the resulting risk values (i.e., CDF and LERF) are bounding in the PINGP Fire PRA.

Reference:

1. FPRA-PI-MCR-3.0, Main Control Room Analysis, Revision 3.

Table 1 - Response to PRA RAI 03.b

Table 1: PRA RAI 03 Analysis Treatment Summary			
PRA RAI No.	Technical Summary	Final Composite Analysis Treatment	Post-Transition Analysis Treatment
PRA RAI 01.a, regarding fire- induced instrument failure	Every single Fire PRA HEP has specific instrumentation associated with the actions and all the HEPs were analyzed within the human reliability analysis. When mapped to a fire scenario, the quantification process fails the instrument cables that are mapped to the different fire scenarios within the plant. The response to PRA RAI 01.a offers specific technical details regarding the treatment of instrumentation in the Fire PRA.	The final composite treatment includes instrument cable mapping to fire scenarios supporting the human failure events. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.	The post transition analysis treatment includes instrument cable mapping to fire scenarios supporting the human failure events. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.
PRA RAI 01.b, regarding conduits with unknown routing	<p>To facilitate conduit mapping to fire scenarios, the cable routing information from SAFE GENESIS is manipulated to map specific cable/conduit combinations to specific fire areas. The cable routing sequence for each cable is studied to evaluate the location of the cable through different raceways (cable trays and conduits). The conduit location in the routing is established by comparing the location of the known cable trays in the route sequence to the known fire area locations of the cable itself and determining the conduit to fire area relationship based on that routing. The conduit generic identification is concatenated with the cable name.</p> <p>The approach described above provides a high level of confidence that conduits containing Fire PRA target cables are mapped to the appropriate fire compartments. For cases where additional refinement was needed for detailed fire modeling, additional walkdowns were performed to identify conduits and cable trays within the zone of influence.</p>	The final composite treatment includes the identified conduit location and its appropriate fire induced failure as identified by inspection of the cable routing sequence. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.	The post transition analysis treatment includes the conduit location as identified by inspection of the cable routing sequence. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.

Table 1: PRA RAI 03 Analysis Treatment Summary

PRA RAI No.	Technical Summary	Final Composite Analysis Treatment	Post-Transition Analysis Treatment
PRA RAI 01.c, regarding instrument air piping in the Relay Room	Instrument air is not credited in the PINGP Fire PRA.	The final composite treatment does not include credit for instrument air in the Relay Room. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.	The post transition analysis treatment does not include credit for instrument air in the Relay Room. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.
PRA RAI 01.d, regarding cable raceways under the raised floor within the MCR	The response to PRA RAI 01.d provides a detailed description of the fire scenarios described in the main control room. These scenarios include fires associated with electrical cabinets, the main control board, transient fires, transient fires due to hotwork, and junction box fires. As part of the development and analysis of these scenarios, the fire modeling results for the Main Control Room abandonment analysis suggest that electrical cabinets alone are enough to generate abandonment conditions. Since the Fire PRA cables are mapped to the applicable panels as targets, the quantified CCDPs and CLERPs include the impact of cables that may be routed through the area under the raised floor. Furthermore, given the relatively quick suppression activities in the control room (as suggested by a manual suppression curve with a constant of 0.33), the analysis assumes that transient and cabinet fires will, on average, be controlled before propagating to the area under the raised floor.	The final composite treatment includes the cable mapping to cabinets in the control room and the area under the raised floor. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.	The post transition analysis treatment includes the cable mapping to cabinets in the control room and the area under the raised floor. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.
PRA RAI 01.e, regarding main control board fire scenarios	As described in the responses to PRA RAI 01.e and PRA RAI 18, the generic frequency associated with the fire scenarios defined in the PINGP main control board has not been apportioned following the guidance in Appendix L of NUREG/CR-6850. Alternatively, the frequency has been apportioned so that its full value is accounted for as part of different damage states in the fire scenario progression. The responses to both PRA RAI 18 and PRA RAI 01.e provide: 1) a description of the methodology used in the PINGP Fire PRA, and 2) a technical justification for the methodology based on its conservative application.	The final composite treatment includes the apportioning main control board frequencies as described in the response to PRA RAI 18 and PRA RAI 01e. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.	The post transition analysis treatment includes the apportioning main control board frequencies as described in the response to PRA RAI 18 and PRA RAI 01e. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.

Table 1: PRA RAI 03 Analysis Treatment Summary

PRA RAI No.	Technical Summary	Final Composite Analysis Treatment	Post-Transition Analysis Treatment
PRA RAI 01.f, regarding self-ignited cable fires	The risk contribution of self-ignited cable fires is not included in the PINGP Fire PRA. As indicated in the response to PRA RAI 01.f, the majority of the cables at PINGP are characterized as qualified. Therefore, consistent with the guidance in Chapter 6 of NUREG/CR-6850, and FAQ-13-0005, the risk contribution of self-ignited cable fires is not included in the Fire PRA.	The final composite treatment does not include the risk contribution of self-ignited cable fires. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.	The post transition analysis treatment does not include the risk contribution of self-ignited cable fires. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.
PRA RAI 01.g, regarding detection and suppression system failure probabilities	The response to PRA RAI 01.g describes that the discrepancy regarding the inconsistent determination of total failure probabilities of credited detection and suppression systems has been corrected in the aggregate PRA analyses for NSPM's response to PRA RAI 03. The non-suppression probability has been calculated as the sum of the unreliability and the unavailability values corresponding to each credited automatic detection and suppression system. This approach has been implemented in all the scenarios analyzed with detailed fire modeling crediting automatic suppression in the Fire PRA. This treatment is integrated within the base Fire PRA model and reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.	The final composite treatment includes the consistent treatment of detection and suppression credit as the sum of the unreliability and unavailability of the corresponding systems. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.	The post transition analysis treatment includes the consistent treatment of detection and suppression credit as the sum of the unreliability and unavailability of the corresponding systems. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.
PRA RAI 02.a, regarding minimum for joint human error probabilities	As described in the response to PRA RAI 02.a, NSPM has applied the 1E-05 minimum value for joint HEPs.	The final composite treatment includes the 1E-05 minimum value for joint HEPs. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.	The post transition analysis treatment includes the 1E-05 minimum value for joint HEPs. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.

Table 1: PRA RAI 03 Analysis Treatment Summary

PRA RAI No.	Technical Summary	Final Composite Analysis Treatment	Post-Transition Analysis Treatment
PRA RAI 02.b, regarding instrumentation and control modeling inconsistencies	As described in the response to PRA RAI 02.b, the current instrumentation and control modeling in the Fire PRA is considered conservative. This conservatism is due to inclusion of individual basic events within the Fire PRA model that are already accounted for within the overall component boundary (and are therefore included in the associated failure rate) of a larger component. The result is a double-counting of failures associated with these components, which is deemed conservative.	The final composite treatment includes the explicit instrumentation modeling that is already accounted for within the overall component boundary. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.	The post transition analysis treatment includes the explicit instrumentation modeling that is already accounted for within the overall component boundary. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.
PRA RAI 02.c, regarding the loss of pump net positive suction head	PRA RAI 02.c describes that the PRA model considers potential net positive suction head (NPSH) issues related to RHR pump operability during events in which the containment sump is used as the supply source to the Reactor Coolant System (RCS). Based on pump NPSH requirements and NPSH testing and analysis, it has been concluded that: 1) the pump operability would not be impacted by debris if containment systems operate as designed (sump water is passed through filter/strainer prior to pump suction), and 2) the pump operability would also not be adversely impacted by the rising temperatures in the containment sump and does not rely on containment over pressure for NPSH requirements. Based on the above assumptions and additional thermodynamic calculations it was concluded that there is no need to model Containment Fan Coil Units and/or Containment Spray operation/failure in the accident sequence evaluations.	The final composite treatment does not model Containment Fan Coil Units and/or Containment Spray operation/failure in the accident sequence evaluations. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.	The post transition analysis treatment does not model Containment Fan Coil Units and/or Containment Spray operation/failure in the accident sequence evaluations. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.

Table 1: PRA RAI 03 Analysis Treatment Summary

PRA RAI No.	Technical Summary	Final Composite Analysis Treatment	Post-Transition Analysis Treatment
PRA RAI 04, regarding placement of transient fires	Transient fires are assumed to occur in all "open" floor areas within the fire zones. Open floor areas refer to floor locations that are not occupied by fixed plant equipment. Based on this assumption, the contribution from transient fires, including transient fires due to hotwork, is quantified for all open floor areas. The quantification includes identification of different floor areas within the fire zone where the transient fire could occur, mapping the targets to the different floor areas, and the application of the corresponding floor area ratio to the scenario.	The final composite treatment assumes transient fires are located in all open floor areas within the fire zone. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.	The post transition analysis treatment assumes transient fires are located in all open floor areas within the fire zone. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.
PRA RAI 05, regarding cable fires caused by welding and cutting	As described in the response to PRA RAI 05, the risk contribution of cable fires due to welding and cutting is included in the PINGP Fire PRA following the guidance in FAQ-13-0005.	The final composite treatment includes the risk contribution of cable fires due to welding and cutting following the guidance in FAQ-13-0005. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.	The post transition analysis treatment includes the risk contribution of cable fires due to welding and cutting following the guidance in FAQ-13-0005. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.
PRA RAI 06, regarding junction boxes	As described in the response to PRA RAI 06, the risk contribution of junction box fires is included in the PINGP Fire PRA following the guidance in FAQ-13-0006.	The final composite treatment includes the risk contribution of junction box fires following the guidance in FAQ-13-0006. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.	The post transition analysis treatment includes the risk contribution of junction box fires following the guidance in FAQ-13-0006. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.
PRA RAI 07, regarding sensitive electronics	As described in the response to PRA RAI 07, the risk contribution associated with fire induced failure of sensitive electronics is included in the PINGP Fire PRA following the guidance in FAQ-13-0004. Fire induced failures of sensitive electronics are evaluated in the Relay Room and in the Main Control Room.	The final composite treatment includes the treatment of sensitive electronics consistent with the guidance in FAQ-13-004. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.	The post transition analysis treatment includes the treatment of sensitive electronics consistent with the guidance in FAQ-13-004. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.

Table 1: PRA RAI 03 Analysis Treatment Summary

PRA RAI No.	Technical Summary	Final Composite Analysis Treatment	Post-Transition Analysis Treatment
PRA RAI 08, regarding circuit failure probabilities	The response to PRA RAI 08 describes the application of circuit failure mode probabilities in the PINGP Fire PRA. The latest circuit failure mode values and application guidance available in NUREG-7150 Volumes 1 & 2 have been used. Option #2 of NUREG/CR-6850, Task 10, Circuit Failure Mode Likelihood Analysis, was not used in the PINGP Fire PRA.	The final composite treatment includes the latest circuit failure mode probability values available in NUREG 7150 and does not utilize option #2 in NUREG/CR-6850, Chapter 10. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.	The post transition analysis treatment includes the latest circuit failure mode probability values available in NUREG 7150 and does not utilize option #2 in NUREG/CR-6850, Chapter 10. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.
PRA RAI 09, regarding Bin 15 electrical cabinets	As described in the response to PRA RAI 09, the electrical cabinets in the PINGP Fire PRA have been counted following the guidance in NUREG/CR-6850 and Supplement 1 to NUREG/CR-6850. Specifically, no cabinets containing circuits with voltages higher than 440V have been identified as "well sealed." In addition, cabinets containing circuits with voltages higher than 440V have been identified as ignition sources with fires that propagate outside the boundaries of the electrical enclosures.	The final composite treatment includes the counting and treatment as ignition sources of electrical cabinets with voltages higher than 440V. These panels have not been classified as well-sealed. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.	The post transition analysis treatment includes the counting and treatment as ignition sources of electrical cabinets with voltages higher than 440V. These panels have not been classified as well-sealed. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.
PRA RAI 10, regarding high energy arcing faults	As described in the response to PRA RAI 10, high energy arcing faults have been modeled in the PINGP Fire PRA following the guidance in Appendix M of NUREG/CR-6850. In addition, the high energy arcing fault fire scenarios are quantified using the suppression curve listed in Table 14-2 of Supplement 1 to NUREG/CR-6850 for high energy arcing fault scenarios. This suppression curve for high energy arcing faults is used for determining the non-suppression probabilities associated with the different damage states associated with each fire scenario.	The final composite treatment includes the use of the suppression curve for high energy arcing faults for the entire scenario progression where the initiating fire is a high energy arcing fault. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.	The post transition analysis treatment includes the use of the suppression curve for high energy arcing faults for the entire scenario progression where the initiating fire is a high energy arcing fault. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.
PRA RAI 11, regarding the time to delayed detection	As described in the response to PRA RAI 11, the PINGP Fire PRA no longer uses the delayed detection time of 10 minutes. The time to delayed detection has been updated to 15 minutes. The Integrated analysis reflects the use of a 15 minute delayed detection time.	The final composite treatment includes a delayed detection time of 15 minutes. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.	The post transition analysis treatment includes a delayed detection time of 15 minutes. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.

Table 1: PRA RAI 03 Analysis Treatment Summary

PRA RAI No.	Technical Summary	Final Composite Analysis Treatment	Post-Transition Analysis Treatment
PRA RAI 12, regarding MCR abandonment	The response to PRA RAI 12 provides a comprehensive description of the main control room abandonment modeling in the PINGP Fire PRA. The response is comprehensive as it describes the treatment of control room abandonment from both habitability and operability perspectives. Control room abandonment is credited and modeled in the Fire PRA in fire scenarios in the Relay Room and in the Main Control Room. The abandonment procedure has been modeled in detail so that CCDF and CLERP values can be quantified using the CAFTA and FRANX models.	The final composite treatment includes the modeling of control room abandonment reflecting both habitability and operability conditions. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.	The post transition analysis treatment includes the modeling of control room abandonment reflecting both habitability and operability conditions. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.
PRA RAI 13, regarding Δ CDF, Δ LERF and additional risk of recovery actions	As described in the response to PRA RAI 13, for a given fire area, the additional risk of recovery actions was calculated as the difference in CDF (LERF) in the variant plant (post-transition plant where the credited recovery actions take their nominal HEPs), and the CDF (LERF) of the post-transition plant where the credited recovery actions have the execution portion of their HEP set to 0 (or, for some VFDRs, the entire HEP of the associated credited recovery action conservatively set to 0). This method is applied to all fire areas, regardless of whether a fire area does or does not credit control room abandonment.	The final composite treatment calculates the additional risk of recovery actions in all fire areas, regardless of whether a fire area does or does not credit control room abandonment. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.	The post transition analysis treatment calculates the additional risk of recovery actions in all fire areas, regardless of whether a fire area does or does not credit control room abandonment. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.
PRA RAI 16, regarding incipient detection	As described in the response to PRA RAI 16, the effect of an incipient detection system has been credited in the PINGP Fire PRA for selected cabinets in the Relay Room. The incipient detection system has been modeled following the guidance in Supplement 1 to NUREG/CR 6850.	The final composite treatment includes credit for an in cabinet incipient detection system in selected panels consistent with the guidance in Supplement 1 to NUREG/CR-6850. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.	The post transition analysis treatment includes credit for an in cabinet incipient detection system in selected panels consistent with the guidance in Supplement 1 to NUREG/CR-6850. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.

Table 1: PRA RAI 03 Analysis Treatment Summary

PRA RAI No.	Technical Summary	Final Composite Analysis Treatment	Post-Transition Analysis Treatment
PRA RAI 17, regarding reactor coolant pump (RCP) seal PRA modeling	<p>As described in the response to PRA RAI 17, a focused peer review was conducted to evaluate the model changes made to address the incorporation of Flowserve N9000 Reactor Coolant Pump (RCP) seals at PINGP. The findings associated with the reactor coolant pump (RCP) seal PRA modeling were incorporated into the Fire PRA.</p> <p>The Flowserve Corporation topical report "PRA Model for Flowserve 3 Stage N-Seals with Abeyance Seal", Revision 0, dated December 20, 2013, concluded that the seals allow for an operator response time for RCP trips of up to 2 hours. The volume of water inside of the RCP above the cold leg will be purged in conservatively 60 minutes and Flowserve tests show that at least an additional 60 minutes will be available until the seals have measurable changes in leakage. The report also concluded that for Station Blackout (SBO) scenarios a failure probability of 6.83E-07 is appropriate and with no SBO and a time to trip of two hours the failure probability of 2.73E-04 is appropriate for the Fire PRA.</p>	<p>The final composite treatment includes the modeling of Flowserve N9000 Reactor Coolant Pump (RCP) seals at PINGP. This treatment is reflected in the quantification of CDF, LERF, ΔCDF, and ΔLERF.</p>	<p>The post transition analysis treatment includes NRC Approved RCP seal modeling. This treatment is reflected in the quantification of CDF, LERF, ΔCDF, and ΔLERF.</p>

Table 1: PRA RAI 03 Analysis Treatment Summary

PRA RAI No.	Technical Summary	Final Composite Analysis Treatment	Post-Transition Analysis Treatment
PRA RAI 18, Regarding deviations from acceptable methods	As described in the response to PRA RAI 18, the PINGP Fire PRA has been developed with accepted methods. One deviation from the guidance in NUREG/CR-6850 has been identified. The apportioning of the main control board generic frequency to the different fire scenarios is defined in the Fire PRA. Specifically, the generic frequency associated with the fire scenarios defined in the PINGP main control board has not been apportioned following the guidance in Appendix L of NUREG/CR-6850. Alternatively, the frequency has been apportioned so that its full value is accounted as part of different damage states in the fire scenario progression. The responses to both PRA RAI 18 as well as PRA RAI 01.e provide: 1) a description of the methodology used in the PINGP Fire PRA, and 2) a technical justification for the methodology based on its conservative implementation.	The final composite treatment includes the apportioning main control board frequencies as described in the response to PRA RAI 18 and PRA RAI 01.e. This treatment is reflected in the quantification of CDF, LERF, ΔCDF, and ΔLERF.	The post transition analysis treatment includes the apportioning main control board frequencies as described in the response to PRA RAI 18 and PRA RAI 01.e. This treatment is reflected in the quantification of CDF, LERF, ΔCDF, and ΔLERF.
FM 01.f, regarding propagating damage states from transient fires.	As described in the response to FM 01.f, for those fire scenarios where fire propagation outside the transient zone is possible, additional damage states have been added to the Fire PRA capturing the risk associated with such conditions. The target set associated with these propagating damage states includes the failure of the targets mapped to the adjacent zone of influence. The fire ignition frequency associated with these propagating damage states includes credit for the non-suppression probability at the time of fire propagation.	The final composite treatment includes the risk contribution of propagating damage states from transient fires. Damage states resulting from propagating transient fires have been included in the Fire PRA. This treatment is reflected in the quantification of CDF, LERF, ΔCDF, and ΔLERF.	The post transition analysis treatment includes the risk contribution of propagating damage states from transient fires. Damage states resulting from propagating transient fires have been included in the Fire PRA. This treatment is reflected in the quantification of CDF, LERF, ΔCDF, and ΔLERF.

Table 1: PRA RAI 03 Analysis Treatment Summary

PRA RAI No.	Technical Summary	Final Composite Analysis Treatment	Post-Transition Analysis Treatment
FM RAI-01.i.01, regarding credit for delayed detection.	As described in the response to FM RAI-01.i.01, a fifteen minute delayed detection is credited because: 1) NUREG/CR-6850, Appendix P and NRC Inspection Manual Chapter 0609, Appendix F Attachment 8 recommend the use of 15 minutes for delayed detection, 2) the twenty-one fire compartments where delayed detection is credited for the calculation of non-suppression probabilities are equipped with automatic detection systems, 3) these twenty-one fire compartments contain plant equipment and cables credited for shutdown activities that will generate alarms or indications of abnormal conditions, and 4) the twenty-one fire compartments are routinely visited by plant personnel or are nearby the regular travel path of plant operations. Therefore, there are no fire compartments in which 15 minutes for delayed detection cannot be justified. Delayed detection credit has been removed from the Unit 1 and 2 containments and containment annulus.	The final composite treatment includes credit for a 15 minute delayed detection time for 21 fire compartments, and the removal of delayed detection credit for the Unit 1 and 2 containments and containment annulus respectively. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.	The post transition analysis treatment includes credit for a 15 minute delayed detection time for 21 fire compartments, and the removal of delayed detection credit for the Unit 1 and 2 containments and containment annulus respectively. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.
PRA RAI 01.d.01 regarding transient fires in the area under the raised floor in the main control room	As described in the response to PRA RAI 01.d.01, the Core Damage Frequency (CDF) and the Large Early Release Frequency (LERF) associated with the transient fires and transient fires due to hotwork in the area under the raised floor in the main control room (MCR) has been quantified and explicitly included in the PINGP Fire PRA using the guidance in FAQ 12-0064.	The final composite treatment includes the risk contribution of transient fire scenarios in the area under the raised floor in the main control room. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.	The post transition analysis treatment includes the risk contribution of transient fire scenarios in the area under the raised floor in the main control room. This treatment is reflected in the quantification of CDF, LERF, Δ CDF, and Δ LERF.

Table 1: PRA RAI 03 Analysis Treatment Summary

PRA RAI No.	Technical Summary	Final Composite Analysis Treatment	Post-Transition Analysis Treatment
PRA RAI 01.e.01 regarding the target sets of transient fires in the main control room	<p>As described in the response to PRA RAI 01.e.01 the risk (i.e., Core Damage Frequency and Large Early Release Frequency) associated with fire scenarios generated from Sequences 1 and 2 of the main control room (MCR) event tree model has been re-quantified as follows:</p> <p>The Conditional Core Damage Probability (CCDP) and Conditional Large Early Release Probability (CLERP) for scenarios involving non main control board electrical cabinets has been quantified assuming full damage of the corresponding electrical cabinet.</p> <p>The CCDP and CLERP associated with transient fires postulated near the main control board has been quantified assuming full damage of the corresponding main control board panel.</p>	<p>The final composite treatment includes the quantification of transient fires in the main control room failing all the targets associated with an electrical cabinet or main control board panel. This treatment is reflected in the quantification of CDF, LERF, ΔCDF, and ΔLERF.</p>	<p>The post transition analysis treatment includes the quantification of transient fires in the main control room failing all the targets associated with an electrical cabinet or main control board panel. This treatment is reflected in the quantification of CDF, LERF, ΔCDF, and ΔLERF.</p>
PRA RAI 07.01 & PRA RAI 07.02 regarding the treatment of sensitive electronics	<p>As described in the response to PRA RAI 07.01 & PRA RAI 07.02, the treatment of sensitive electronics in the PINGP Fire PRA has been updated based on the guidance in NUREG/CR-6850 and FAQ 13 0004.</p>	<p>The final composite treatment includes the revised treatment of targets associated sensitive electronics damage criteria as described in the response to PRA RAI 07.01 and 07.02. This treatment is reflected in the quantification of CDF, LERF, ΔCDF, and ΔLERF.</p>	<p>The post transition analysis treatment includes the revised treatment of targets associated sensitive electronics damage criteria as described in the response to PRA RAI 07.01 and 07.02. This treatment is reflected in the quantification of CDF, LERF, ΔCDF, and ΔLERF.</p>
SSA RAI 07 regarding recovery actions to isolate RWST	<p>NSPM has re-evaluated the Refueling Water Storage Tank (RWST) to containment Sump B drain down scenario and has determined that recovery actions are no longer needed to de-energize Sump B motor operated valves and de-energize and manually operate RWST to RHR pump isolation valves.</p>	<p>The final composite treatment no longer credits recovery actions to isolate valves to isolate the RWST. This treatment is reflected in the quantification of CDF, LERF, ΔCDF, and ΔLERF.</p>	<p>The post transition analysis treatment no longer credits recovery actions to isolate valves to isolate the RWST. This treatment is reflected in the quantification of CDF, LERF, ΔCDF, and ΔLERF.</p>

NRC Request (PRA RAI 01.h)

IGN-A1-01: The disposition to this F&O appears to indicate that generic fire ignition frequencies were based upon those provided in Supplement 1 to NUREG/CR-6850. Chapter 10 of this supplement, however, states that a sensitivity analysis should be performed when using the fire ignition frequencies in the supplement instead of those provided in Table 6-1 of NUREG/CR-6850, provide the results (i.e., CDF, LERF, Δ CDF and Δ LERF) of a sensitivity analysis that evaluates the impact of using the supplement frequencies, consistent with Chapter 10 of Supplement 1 to NUREG/CR-6850 using the FPRA developed in response to RAI 03.

If RG 1.174 risk acceptance guidelines are exceeded, then please (1) discuss which are exceeded; (2) describe the fire protection, or related, measures that will be taken to provide additional defense-in-depth; and (3) discuss conservatisms in the analysis and the risk significance of these conservatisms.

NSPM Response (PRA RAI 01.h)

The PINGP Fire PRA uses the ignition frequencies from the latest guidance related to fire PRAs as given in Supplement 1 to NUREG/CR-6850. Supplement 1 to NUREG/CR-6850 (Section 10.2) addresses the use of the ignition frequencies as follows:

"The NRC accepts use of these revised fire bin ignition frequencies for fire PRAs conducted for NFPA-805 transition for best-/point-estimate calculations of fire risk (core damage frequency [CDF] and large early release frequency [LERF]), including delta-risk values from plant change evaluations, with the following provision. The fire PRA, including plant change evaluations, must also evaluate the sensitivity of the risk and delta-risk results to evaluations performed using the current fire bin ignition frequencies in EPRI 1011989, NUREG/CR-6850, Chapter 6, "Fire Ignition Frequencies," Table 6-1, "Fire Frequency Bins and Generic Frequencies," and Appendix C, "Determination of Generic Fire Frequencies," Table C-3, "Generic Fire Ignition Frequency Model for U.S. Nuclear Power Plants." For those cases where the results from this sensitivity analysis indicate a change in the potential risk significance associated with elements of the fire PRA or plant change evaluations that affects the decisions being made (e.g., what is acceptable with the new frequencies from EPRI 1016735 might not be acceptable with the current applicable set from EPRI 1011989, NUREG/CR-6850), the licensee must address this situation by considering fire protection, or related, measures that can be taken to provide additional defense in-depth."

With respect to the required sensitivity analysis, a footnote provides the following clarification:

"The sensitivity analyses should be performed for a fire ignition frequency bin using the mean of the fire ignition frequency bins contained in NUREG/CR-6850. Furthermore, sensitivity analyses only need to be performed for those bins characterized by an alpha from the EPRI 1016735 analysis that is less than or equal to 1. Note that an alpha value less than or equal to 1 is characteristic of a

reverse-J shaped probability density function, i.e., the same shape as the non-informative prior distributions used in EPRI 1016735. This reverse-J shape is indicative of the large uncertainty in the bin fire frequency due to the sparsity of data for that bin, and therefore, the potential for significant changes should the post-2000 fire event data differ significantly from the 1991-2000 data. The required sensitivity analysis is, for the purpose of this interim solution, judged to provide an adequate indication of the effects on risk and delta-risk in such a case."

An evaluation of the sensitivity results against Regulatory Guide 1.174 indicates that the delta risks by fire area in Table 3 below using the NUREG/CR-6850 ignition frequencies meet the risk acceptance guidelines defined for Region II of Figures 4 and 5 in Regulatory Guide 1.174 on an individual fire area basis. However, the total increase in risk for the overall plant exceeds the acceptance guidelines as indicated in Tables 1 and 2 below.

Table 3 below lists the contribution to delta CDF and delta LERF for each fire area when the Fire PRA model is quantified using the frequencies from NUREG/CR-6850. The results indicate that most of the contribution to delta CDF (Unit 1/Unit 2) is generated by Fire Areas 13 (59% /71%), Fire Area 18 (21%/28%), Fire Area 20 (14%/0%), Fire Area 31 (4%/0%), Fire Area 58 (1.4%/0.0%), and Fire Area 59 (0.3%/0.2%). These areas are the top contributors to LERF as well.

Consistent with the guidance in Section 10.2 of Supplement 1 to NUREG/CR-6850, fire protection, or related, measures that can be taken to provide Defense In-Depth (DID) for these top contributing fire areas have been evaluated. DID was evaluated for each fire area (i.e. 13, 18, 20, 31, 58, and 59) via the Fire Risk Evaluation (FRE) process that supports the NFPA 805 application. The FRE analysis concludes that there is an adequate balance between the DID echelons. Additional information regarding the evaluation of DID is provided in the following risk evaluations that support the NFPA 805 application:

- FRE-FA-13, NFPA 805 Fire Risk Evaluation – Control Room
- FRE-FA-18, NFPA 805 Fire Risk Evaluation – Relay and Cable Spreading Room
- FRE-FA-20, NFPA 805 Fire Risk Evaluation - Unit 1 4.16kV Safeguards Switchgear (Bus 16)
- FRE-FA-31, NFPA 805 Fire Risk Evaluation – A Train Hot Shutdown Panel & Air Compressor/Auxiliary Feedwater Room
- FRE-FA-58, NFPA 805 Fire Risk Evaluation – Auxiliary Building Ground Floor Unit 1
- FRE-FA-59, NFPA 805 Fire Risk Evaluation – Auxiliary Building Mezzanine Levels Units 1 and 2

The Fire Quantification notebook addresses conservatisms that remain in the analysis after FPRA updates and refinements. Some of the conservatisms include the assumption of conduit failures in fire scenarios, the assumption of plant trip for both units, the treatment of cable damage criteria, circuit failure mode likelihood analysis, cable selection, and instrument air failure. Specifically,

- Conduits in fire areas are conservatively failed in all fire scenarios. For cases where the quantification indicated that specific cables in conduits were risk-significant, detailed walkdowns and drawing reviews were performed to only map these conduits to the fire scenarios where the conduit could be damaged in the zone of influence of the fire, thereby removing excessive conservatism.
- Since comprehensive cable tracing for all systems that could result in a plant trip is not available, it cannot be assured that a fire in a compartment on one unit will not also affect the other unit. Consequently, a dual plant trip is assumed in the quantification.
- Thermoplastic damage criteria are used for the damage threshold for all targets of the Fire PRA. This provides an appropriate treatment of target damage for cables that are made of thermoplastic materials. For other targets, which are typically more resistant to effects of the fire, this approach is conservative.
- Instrument Air is not credited in the Fire PRA due to the wide distribution of Instrument Air piping and potential for soldered joint failures. Therefore, the uncertainty about Instrument Air was addressed by assuming that Instrument Air would be failed by fire, which is conservative.

Conclusion

The PINGP FPRA uses ignition frequencies from the latest guidance given in Supplement 1 to NUREG/CR-6850. Per section 10.2 of the Supplement, a sensitivity analysis was performed using the mean of the fire ignition frequency bins contained in NUREG/CR-6850 for alpha values less than or equal to 1. An evaluation of the sensitivity results against Regulatory Guide 1.174 indicates the total increase in risk for the overall plant exceeds the acceptance guidelines. Consistent with the guidance in Section 10.2 of Supplement 1 to NUREG/CR-6850, DID was evaluated for each fire area during the FRE process. The FRE analysis concludes that there is an adequate balance between DID echelons.

Table 1 – Sensitivity Study Results for Alpha <1 Sensitivity for PINGP Unit 1

	Unit 1 CDF (/rx-y)	Δ CDF (from Baseline) (/rx-y)	Unit 1 LERF (/rx-y)	Δ LERF (from Baseline) (/rx-y)
Baseline (Variant Plant)	6.44E-05	–	9.93E-07	–
6850 Means for Alpha <1	9.75E-05	3.31E-05	1.54E-06	5.47E-07
		Δ CDF (from Baseline Δ CDF) (/rx-y)		Δ LERF (from Baseline Δ LERF) (/rx-y)
Baseline Delta Risk	9.28E-06	–	1.80E-07	–
6850 Means for Alpha <1	1.28E-05	3.52E-06	2.60E-07	8.00E-08

Table 2 – Sensitivity Study Results for Alpha <1 Sensitivity for PINGP Unit 2

	Unit 2 CDF (/rx-y)	Δ CDF (from Baseline) (/rx-y)	Unit 2 LERF (/rx-y)	Δ LERF (from Baseline) (/rx-y)
Baseline (Variant Plant)	6.51E-05	–	9.72E-07	–
6850 Means for Alpha <1	9.89E-05	3.38E-05	1.51E-06	5.38E-07
		Δ CDF (from Baseline Δ CDF) (/rx-y)		Δ LERF (from Baseline Δ LERF) (/rx-y)
Baseline Delta Risk	5.71E-06	–	1.06E-07	–
6850 Means for Alpha <1	8.03E-06	2.32E-06	1.60E-07	5.40E-08

Table 3 – Sensitivity Study Results for Alpha <1 Sensitivity by Fire Area

Fire Area	Description	Unit 1				Unit 2			
		CDF	LERF	Delta CDF	Delta LERF	CDF	LERF	Delta CDF	Delta LERF
1	Containment Unit 1	4.1E-06	4.9E-08	ε	ε	1.6E-08	2.0E-10	N/A	N/A
2	Ventilation Fan Room Unit 1 & 2	3.7E-08	4.9E-10	N/A	N/A	3.6E-08	4.7E-10	N/A	N/A
3	Water Chiller Room	6.8E-09	8.8E-11	N/A	N/A	7.2E-09	9.4E-11	N/A	N/A
4	Fuel Handling Area	1.1E-07	1.5E-09	N/A	N/A	1.0E-07	1.4E-09	N/A	N/A
6	Old Administration Building, HVAC Equipment Area 750'	2.0E-09	2.5E-11	N/A	N/A	2.1E-09	2.7E-11	N/A	N/A
8	Turbine Building	6.5E-06	8.9E-08	N/A	N/A	4.3E-06	5.7E-08	N/A	N/A
10	Train A Event Monitoring Equipment Room	1.2E-07	1.7E-09	N/A	N/A	1.7E-08	2.2E-10	N/A	N/A
11	Unit 1 Normal Switchgear & Control Rod Drive Room	5.0E-08	6.5E-10	N/A	N/A	4.3E-08	5.7E-10	N/A	N/A
12	OSC Room	1.9E-09	2.4E-11	N/A	N/A	2.0E-09	2.6E-11	N/A	N/A
13	Control Room	1.1E-05	1.7E-07	7.4E-06	1.2E-07	1.0E-05	1.4E-07	5.6E-06	8.1E-08
15	Access Control	3.8E-08	5.1E-10	N/A	N/A	2.7E-08	3.5E-10	N/A	N/A
16	Train B Event Monitoring Equipment Room	1.3E-08	1.7E-10	N/A	N/A	1.1E-08	1.4E-10	N/A	N/A
17	Unit 2 Normal Switchgear Room & Control Rod Drive Room	3.6E-08	4.8E-10	N/A	N/A	4.6E-08	6.0E-10	N/A	N/A
18	Relay and Cable Spreading Room	2.9E-05	6.1E-07	2.6E-06	1.0E-07	2.8E-05	5.7E-07	2.2E-06	7.8E-08
20	Unit 1 4.16 KV Safeguards Swgr, (Bus 16)	6.1E-06	7.8E-08	1.8E-06	2.5E-08	8.5E-08	1.1E-09	N/A	N/A
22	480V Safeguards Switchgear (Bus 121)	8.8E-07	1.2E-08	ε	ε	5.2E-06	7.7E-08	ε	ε
25	Diesel Generator 1	2.1E-08	2.8E-10	ε	ε	2.1E-08	2.8E-10	ε	ε
26	Diesel Generator 2	1.9E-08	2.6E-10	N/A	N/A	2.1E-08	2.7E-10	N/A	N/A
28	Transformers	8.9E-08	1.2E-09	N/A	N/A	1.0E-07	1.3E-09	N/A	N/A
29	Administration Building Elect & Piping Room #1	1.4E-11	1.6E-13	ε	ε	1.4E-11	1.6E-13	ε	ε
30	Administration Building Elect & Piping Room #2	2.0E-08	2.7E-10	ε	ε	2.1E-08	2.8E-10	ε	ε

Table 3 – Sensitivity Study Results for Alpha <1 Sensitivity by Fire Area

Fire Area	Description	Unit 1				Unit 2			
		CDF	LERF	Delta CDF	Delta LERF	CDF	LERF	Delta CDF	Delta LERF
31	"A" Train Hot Shutdown Panel & Air Compressor/Aux 695' Feedwater Room	2.3E-06	3.1E-08	5.5E-07	7.6E-09	4.0E-06	5.5E-08	3.1E-09	4.0E-11
32	"B" Train Hot Shutdown Panel & Air Compressor/Aux 695' Feedwater Room	3.7E-06	5.5E-08	4.0E-09	6.7E-11	1.5E-06	2.0E-08	2.0E-08	2.7E-10
33	Battery Room 11	1.5E-06	2.0E-08	N/A	N/A	8.8E-08	1.2E-09	N/A	N/A
34	Battery Room 12	5.2E-07	7.1E-09	N/A	N/A	4.7E-08	6.5E-10	N/A	N/A
35	Battery Room 21	1.4E-08	1.9E-10	N/A	N/A	6.9E-07	9.2E-09	N/A	N/A
36	Battery Room 22	3.9E-07	5.4E-09	N/A	N/A	4.6E-08	6.0E-10	N/A	N/A
37	Unit 1 480V Normal Switchgear Room	3.5E-07	4.6E-09	9.4E-10	1.2E-11	3.4E-07	4.5E-09	ε	ε
38	Unit 2 480V Normal Switchgear Room	1.4E-08	1.7E-10	ε	ε	1.5E-08	2.0E-10	ε	ε
41	Screenhouse (General Area)	7.1E-07	9.3E-09	N/A	N/A	7.1E-07	9.3E-09	N/A	N/A
41A	Screenhouse (DDCWP Rooms)	3.7E-08	4.8E-10	ε	ε	3.9E-08	5.0E-10	ε	ε
41B	Screenhouse Basement Below Grade	1.2E-06	1.5E-08	ε	ε	1.2E-06	1.5E-08	ε	ε
46	Cooling Tower Equipment House and Transformers	6.4E-08	8.5E-10	N/A	N/A	6.3E-08	8.3E-10	N/A	N/A
58	Auxiliary Building Ground Floor Units 1 and 2	6.3E-06	8.7E-08	1.8E-07	2.3E-09	1.3E-05	1.8E-07	3.0E-10	3.5E-12
59	Auxiliary Building Mezzanine Units 1 and 2	1.9E-05	2.5E-07	3.5E-08	4.3E-10	1.2E-05	1.6E-07	1.7E-08	2.5E-10
60	Auxiliary Building Operating Level Unit 1	2.1E-08	2.8E-10	N/A	N/A	7.4E-09	9.6E-11	N/A	N/A
63	Filter Room	2.0E-09	2.6E-11	N/A	N/A	2.2E-09	2.8E-11	N/A	N/A
64	Auxiliary Building Low Level Decay Area Unit 1	1.3E-09	1.7E-11	N/A	N/A	1.2E-09	1.6E-11	N/A	N/A
66	D3 Lunch Room	0.0E+00	0.0E+00	ε	ε	0.0E+00	0.0E+00	ε	ε
71	Containment Unit 2	1.5E-08	1.8E-10	N/A	N/A	3.3E-06	4.1E-08	N/A	N/A
75	Auxiliary Building Operating Level Unit 2	9.0E-09	1.2E-10	N/A	N/A	1.1E-06	1.5E-08	N/A	N/A

Table 3 – Sensitivity Study Results for Alpha <1 Sensitivity by Fire Area

Fire Area	Description	Unit 1				Unit 2			
		CDF	LERF	Delta CDF	Delta LERF	CDF	LERF	Delta CDF	Delta LERF
77	Auxiliary Building Low Level Decay Area Unit 2	1.1E-09	1.4E-11	N/A	N/A	1.2E-09	1.5E-11	N/A	N/A
78	Waste Gas Compressor Area	5.1E-09	6.5E-11	N/A	N/A	5.4E-09	7.0E-11	N/A	N/A
79	480V Safeguard Switchgear Room (Bus 112)	9.5E-09	1.2E-10	N/A	N/A	7.8E-09	1.0E-10	N/A	N/A
80	480V Safeguard Switchgear Room (Bus 111)	5.3E-07	7.4E-09	ε	ε	5.8E-07	6.9E-09	ε	ε
81	4.16 kV Safeguard Switchgear Room (Bus 15)	8.4E-07	1.1E-08	ε	ε	9.9E-08	1.3E-09	ε	ε
82	480V Safeguard Switchgear Room (Bus 122)	1.5E-08	2.0E-10	N/A	N/A	7.8E-09	1.0E-10	N/A	N/A
83	Operators Lounge	2.1E-09	2.6E-11	N/A	N/A	2.2E-09	2.8E-11	N/A	N/A
84	Counting Room and Labs	0.0E+00	0.0E+00	N/A	N/A	0.0E+00	0.0E+00	N/A	N/A
85	Hold-up Tank Area/Demineralizer Area	2.5E-07	3.4E-09	N/A	N/A	2.3E-09	2.9E-11	N/A	N/A
86	Intake Screenhouse	8.7E-07	1.2E-08	N/A	N/A	8.7E-07	1.2E-08	N/A	N/A
92	Water Chiller Room Unit 2	6.8E-09	8.9E-11	N/A	N/A	7.2E-09	9.5E-11	N/A	N/A
94	Service Building/Computer Room	1.3E-07	1.7E-09	N/A	N/A	1.4E-07	1.8E-09	N/A	N/A
97	D5 Diesel Generator Building	1.0E-07	1.3E-09	ε	ε	1.8E-06	2.5E-08	ε	ε
98	D6 Diesel Generator Building	1.1E-07	1.4E-09	N/A	N/A	9.1E-06	1.1E-07	N/A	N/A

Note: Results shown for unscreened and non-zero fire areas only. Epsilon, ε. Represents a small positive infinitesimal quantity whose impact is too small to affect the analysis. N/A indicates that no Fire Risk Evaluation was required or no Recovery Actions were credited.

References:

1. FPRA-PI-FQ Fire PRA Quantification, Rev 3.
2. FRE-FA-13, NFPA 805 Fire Risk Evaluation – Control Room
3. FRE-FA-18, NFPA 805 Fire Risk Evaluation – Relay and Cable Spreading Room
4. FRE-FA-20, NFPA 805 Fire Risk Evaluation - Unit 1 4.16kV Safeguards Switchgear (Bus 16)
5. FRE-FA-31, NFPA 805 Fire Risk Evaluation – A Train Hot Shutdown Panel & Air Compressor/Auxiliary Feedwater Room
6. FRE-FA-58, NFPA 805 Fire Risk Evaluation – Auxiliary Building Ground Floor Unit 1
7. FRE-FA-59, NFPA 805 Fire Risk Evaluation – Auxiliary Building Mezzanine Levels Units 1 and 2

Enclosure 2

Licensee Identified Changes

This Enclosure identifies changes to the LAR and includes the following:

Licensee Identified Issue	LAR Section	Change
1	PRA RAI 15.c	An update to PRA RAI 15.c is provided regarding implementation items.
2	Attachment A, Table B-1 - Transition of Fundamental Fire Protection Program & Design Elements	A summary of changes table is provided to reflect changes, clarifications, and corrections made to the information previously submitted for Attachment A, Table B-1.
3	Attachment C, Table B-3 - Fire Area Transition	A summary of changes table is provided to reflect changes due to modification reductions, modification additions, and clarifications to the information previously submitted for Attachment C, Table B-3.
4	Attachment D – Non-Power Operational Modes Transition	A summary of changes is provided to reflect changes due to modification reductions to the information previously submitted for Attachment D, NPO.
5	Attachment S – Plant Modifications and Items for Implementation	A summary of changes table is provided to reflect changes made to Attachment S. The updated Attachment S is provided in Enclosure 4.
6	PRA RAI 14.a.ii	A correction to PRA RAI.a.ii is provided regarding previously submitted information in Attachment W. The updated Attachment W is provided in Enclosure 5.

Licensee Identified Issue #1: Update to PRA RAI 15.c

As discussed with the NRC Staff during the public meeting teleconference held on March 24, 2016, NSPM is providing an updated response to PRA RAI 15.c regarding Implementation Items, as follows:

Updated NSPM Response to PRA RAI 15.c

Transition to NFPA 805 can be achieved with the following, updated implementation items as follows:

- Table S-1:
 - Remove Item 1 which conveyed RCP seal replacement on Unit 2
- Table S-2:
 - Revise Item 18 to remove reference to N-9000 RCP Seal and return to original LAR wording of low leakage RCP seals.
- Table S-3:
 - Pending Item 66 to be revised to remove reference to the Flowserve Topical Report
 - Update to Table S-3, Item 66:
 - The PINGP Fire PRA model shall be reviewed using an NRC approved RCP Seal Model, as well as any exceptions/clarifications included in the NRC approval, to determine if the internal events and Fire PRA require a revision. The Prairie Island internal events and Fire PRA will be updated, if applicable, with the latest RCP seal model information. If the updates result in a risk increase greater than RG 1.174, NSPM will take action to reduce the risk results. Compensatory measures established prior to the RCP seal replacement shall remain in place until the calculated risk increase is within RG 1.174 limits.
- Note that Item 66 implementation timing will be reflected in the introduction section of Table S-3 as follows:
 - "Item 20 and Item 66 are associated with modifications described in Table S-2 and will be completed 180 days after the modification implementation timeline"

Licensee Identified Issue #2: Summary of Changes to Attachment A, Table B-1

During internal reviews, NSPM identified a number of changes to the information provided in Attachment A, Table B-1 to account for recent Fire Protection Barrier Walkdowns and new/revised FPEEs. These changes are described in the following table:

Summary of Changes to Attachment A, Table B-1

Att. A Page #	NFPA 805 Section	Description	Summary of Change	Justification
A-124	3.8.1 Fire Alarm	Add FPEE 16-001, Rev. 0, because the FPEE explains deviations from the subject NFPA standard.	<p><u>Add to EEEE's:</u></p> <p><u>EEEE/Summary:</u> NFPA 72E Code Compliance Review.</p> <p><u>Description:</u> The purpose of this analysis is to document the review of NFPA 72E Code compliance review for Fire detectors and alarms located in beam pockets and the ceiling.</p> <p><u>Summary:</u> FPEE 16-001, Rev. 0: The Turbine Building ionization smoke detection systems were previously evaluated against the requirements of the 1974 Edition of NFPA 72E in FPP-5, "NFPA 72E Code Compliance Review." This evaluation used the results of the analysis documented in V.SMN.16.006, "PINGP Turbine Building Detection" to show that despite the non-compliances identified in FPP-5, the actuation time of these detection systems was adequate to support the fire risk calculation.</p>	This clarifies that compliance with use of FPEE 16-001 Rev. 0 with this NFPA 805 section is based on discussions in the EEEE, as cited in Plant Documentation.
A-131	3.8.2 Detection	Add FPEE 16-001, Rev. 0, because the FPEE explains deviations from the subject NFPA standard.	<p><u>Add to EEEE's:</u></p> <p><u>EEEE/Summary:</u> NFPA 72E Code Compliance Review.</p> <p><u>Description:</u> The purpose of this analysis is to document the review of NFPA 72E Code compliance review for Fire detectors and alarms located in beam pockets and the ceiling.</p> <p><u>Summary:</u> FPEE 16-001, Rev. 0: The Turbine Building ionization smoke detection systems were previously evaluated against the requirements of the 1974 Edition</p>	This clarifies that compliance with use of FPEE 16-001 Rev. 0 with this NFPA 805 section is based on discussions in the EEEE, as cited in Plant Documentation.

Summary of Changes to Attachment A, Table B-1

Att. A Page #	NFPA 805 Section	Description	Summary of Change	Justification
			of NFPA 72E in FPP-5, "NFPA 72E Code Compliance Review." This evaluation used the results of the analysis documented in V.SMN.16.006, "PINGP Turbine Building Detection" to show that despite the non-compliances identified in FPP-5, the actuation time of these detection systems was adequate to support the fire risk calculation.	
A-156	3.11.1 Building Separation	<p>Add to Compliance Statement:</p> <p>"Complies with use of Existing Engineering Equivalency Evaluations" because the FPEE explains deviations from the subject NFPA standard.</p>	<p><u>Compliance Statement:</u> Add: "Complies with use of Existing Engineering Equivalency Evaluations"</p> <p><u>EEEE/Summary:</u> FPEE 16-004 Rev. 0; This calculation reviewed the fire hazards in the yard area to determine if the external wall boundaries will withstand the hazards associated with the yard. The walls evaluated are those surrounding the main walls of the turbine building, new service building, auxiliary building, fuel handling/radwaste building, containment buildings, and D5/D6 diesel buildings.</p> <p><u>Description:</u> The purpose of this evaluation is to assess the hazards in the Yard in order to demonstrate that external walls are adequate for the hazards to comply with LAR Attachment A – NEI 04-02, Table B-1, NFPA Section 3.11.1.</p> <p><u>Summary:</u> This evaluation assessed the adequacy and acceptability of the exterior barriers to outside fire hazards in the yard.</p> <p><u>Compliance Statement:</u> Add: "Complies with Item for</p>	<p><u>FPEE 16-004, Rev. 0:</u> This clarifies that compliance with use of FPEE 16-004, Rev. 0, with this NFPA 805 section is based on discussions in the EEEE, as cited in Plant Documentation.</p>

Summary of Changes to Attachment A, Table B-1				
Att. A Page #	NFPA 805 Section	Description	Summary of Change	Justification
		<p>Add to Compliance Statement: "Complies with item for implementation" for upgrades of barriers or penetrations.</p> <p>Add to EEEEs: FPEE 16-004 and FPEE 16-009</p>	<p>Implementation"</p> <p><u>EEEE/Summary:</u> FPEE 16-009, Rev. 0; documents the review and summary of all Barrier FPEE's.</p> <p><u>Description:</u> The purpose of this evaluation is to determine if the fire area barriers and fire area barrier penetrations being added to the Prairie Island Fire Protection Program meet the requirements of NFPA 805, Section 3.11.2 and Section 3.11.3.</p> <p><u>Summary:</u> This evaluation summarized all barrier FPEE's and determined that all sections of the code have been met; deviations justified, or items for implementation identified.</p> <p><u>Item for Implementation:</u> As described in Table S-2, Item 43, required modifications have been identified and will be completed in accordance with the associated schedule.</p>	<p><u>FPEE 16-009, Rev. 0:</u> This clarifies that compliance with use of FPEE 16-009, Rev. 0, with this NFPA 805 section is based on discussions in the EEEE, or to upgrade the barriers or penetrations.</p> <p>See Table S-2 item 43 for barrier upgrades.</p>
A-157	3.11.2 Fire Barriers	<p>Add to Compliance Statement: "Complies with Item for Implementation"</p> <p>Add summaries of FPEE's because these FPEE's explain deviations</p>	<p><u>Compliance Statement:</u> Add: "Complies with Item for Implementation"</p> <p><u>Add to EEEEE's:</u></p> <p><u>EEEE/Summary:</u> FPEE 12-006, Rev. 1, FA 85, 59, 60, 65, 74, 75 & 78 Boundaries and F5 Appendix K Barriers</p> <p><u>Description:</u> The purpose of this evaluation is to assess</p>	<p>See Table S-2 item 43 for barrier upgrades.</p> <p>This clarifies that compliance with use of FPEE 12-006, Rev. 1, with</p>

Summary of Changes to Attachment A, Table B-1

Att. A Page #	NFPA 805 Section	Description	Summary of Change	Justification
		from the subject NFPA standard.	<p>the acceptability of the as-built configuration of the Fire Area 85 Boundaries in the Units 1 and 2 Auxiliary Building.</p> <p><u>Summary:</u> A fire spreading between the referenced Fire Areas in this FPEE is not likely but if it were to occur it would not prevent either Unit 1 or Unit 2 at Prairie Island Nuclear Generating Plant (PINGP) from being safely shutdown. Safe shutdown of both units is thus ensured for a fire in any of the referenced Fire Areas in this FPEE.</p> <p><u>EEEE/Summary:</u> FPEE 16-002 Rev. 0; Prairie Island Nuclear Generating Plant (PINGP) design details allow the use of a thru-bolt or threaded tie rod with a steel plate or "washer" on the back face in fire barrier walls and floors in order to facilitate mounting equipment / components. This opening between adjacent fire areas is not sealed with a qualified fire barrier detail.</p> <p><u>Description:</u> The purpose of this bounding Fire Protection Engineering Evaluation (FPEE) is to assess the acceptability of using the configuration in a 3-hour rated fire barrier.</p> <p><u>Summary:</u> The thru-bolt or threaded rod with a steel plate or "washer" on the back face configuration meets the requirements of a three hour barrier.</p> <p><u>EEEE/Summary:</u> FPEE 16-003 Rev. 0; Reviews the adequacy of rated fire barriers where installed</p>	<p>this NFPA 805 section is based on discussions in the EEEE; as cited in Plant Documentation.</p> <p>This clarifies that compliance with use of FPEE 16-002, Rev. 0, with this NFPA 805 section is based on discussions in the EEEE, as cited in Plant Documentation.</p> <p>This clarifies that compliance with use of</p>

Summary of Changes to Attachment A, Table B-1				
Att. A Page #	NFPA 805 Section	Description	Summary of Change	Justification
			<p>expansion anchors that were abandoned in place.</p> <p><u>Description:</u> The purpose of this bounding Fire Protection Engineering Evaluation (FPEE) is to assess the acceptability of using the configuration in a 3-hour rated fire barrier.</p> <p><u>Summary:</u> Fire rated barriers with installed expansion anchors abandoned in place do not prevent the fire barrier in which they are installed from providing 3 hours of protection.</p> <p><u>EEEE/Summary:</u> FPEE 16-005 Rev. 1; Reviews the acceptability of the bus duct assemblies in containing the effects of fire by providing substantial separation of the station transformers (FA 28) from the adjacent Turbine building (FA 8).</p> <p><u>Description:</u> The purpose of this evaluation is to assess the adequacy of the existing design for the bus duct wall assemblies separating FA 8 from FA 28 in containing the effects of fire by providing substantial separation from adjacent fire areas.</p> <p><u>Summary:</u> All sections of the code have been met or deviations have been justified.</p> <p><u>EEEE/Summary:</u> FPEE 16-006 Rev. 1; documents the review of the Turbine building truck aisle and Service Building Stairwell.</p> <p><u>Description:</u> The purpose of this evaluation is to assess the adequacy of the existing design for the 2-hour stairwell and fire door/stairwell in separating FA 8 from FA 94 in containing the effects of fire by providing</p>	<p>FPEE 16-003, Rev. 0, with this NFPA 805 section is based on discussions in the EEEE, as cited in Plant Documentation.</p> <p>This clarifies that compliance with use of FPEE 16-005, Rev. 1, with this NFPA 805 section is based on discussions in the EEEE, as cited in Plant Documentation.</p> <p>This clarifies that compliance with use of FPEE 16-006, Rev. 1, with this NFPA 805 section is based on discussions in the EEEE, as cited in Plant</p>

Summary of Changes to Attachment A, Table B-1				
Att. A Page #	NFPA 805 Section	Description	Summary of Change	Justification
			<p>substantial separation from adjacent fire areas.</p> <p><u>Summary:</u> The existing 3 hour wall and 2 hour stairwell boundary and the 4' x 4' pipe chase separating the Turbine Building Truck Aisle (FA 8) from the Service Building stairwell (FA 94) is considered adequate for the hazard.</p> <p><u>EEEE/Summary:</u> FPEE 16-009 Rev. 0; documents the review and summary of all Barrier FPEE's.</p> <p><u>Description:</u> The purpose of this evaluation is to determine if the fire area barriers and fire area barrier penetrations being added to the Prairie Island Fire Protection Program meet the requirements of NFPA 805, Section 3.11.2 and Section 3.11.3.</p> <p><u>Summary:</u> This evaluation summarized all barrier FPEE's and determined that all sections of the code have been met; deviations justified, or items for implementation identified.</p> <p><u>Item for Implementation:</u> As described in Table S-2, Item 43, required modifications have been identified and will be completed in accordance with the associated schedule.</p>	<p>Documentation.</p> <p><u>FPEE 16-009 Rev. 0:</u> This clarifies that compliance with use of FPEE 16-009 Rev 0 with this NFPA 805 section is based on discussions in the EEEE, or to upgrade the barriers or penetrations.</p>
A-160	3.11.3 Fire Barrier Penetrations	<p>Add to Compliance Statement: "Complies with previous approval."</p> <p>Add to Compliance</p>	<p><u>Compliance Statement:</u> Add "Previous NRC SER dated 9/6/1979 establishes the commitment to install Fire Dampers."</p> <p><u>Compliance Statement:</u> Add: "Complies with Item for</p>	<p>See FPEE 11-022, Rev. 2, below.</p> <p>See Table S-2 item 43 for</p>

Summary of Changes to Attachment A, Table B-1				
Att. A Page #	NFPA 805 Section	Description	Summary of Change	Justification
		Statement: "Complies with Item for Implementation."	<p>Implementation"</p> <p><u>Add to EEEE's:</u></p> <p><u>EEEE/Summary:</u> FPEE 11-022, Rev. 2; NFPA 90A Code Compliance Review.</p> <p><u>Description:</u> The purpose of this analysis is to document the review of NFPA 90A "Standard for the Installation of Air-Conditioning and Ventilating Systems" for compliance with applicable requirements.</p> <p><u>Summary:</u> FPEE 11-022 was revised and it has been determined that the HVAC systems are in compliance with or meet the intent of Codes of Record with one exception.</p> <p><u>EEEE/Summary:</u> FPEE 16-009 Rev. 0; documents the review and summary of all Barrier FPEE's.</p> <p><u>Description:</u> The purpose of this evaluation is to determine if the fire area barriers and fire area barrier penetrations being added to the Prairie Island Fire Protection Program meet the requirements of NFPA 805, Section 3.11.2 and Section 3.11.3.</p> <p><u>Summary:</u> This evaluation summarized all barrier FPEE's and determined that all sections of the code have been met; deviations justified, or items for</p>	<p>barrier upgrades.</p> <p><u>FPEE 11-022 Rev. 2:</u> Based on the evaluations documented in the revision to this FPEE All identified code compliance deviations have been determined to 1) meet the intent of the code, 2) meet commitments to the NRC, or 3) are adequate for the hazard as documented in an Fire Protection Engineering Evaluation, 4) Upgrades to fire barrier between Fire Area 15 and 59 (unprotected HVAC penetration).</p> <p><u>FPEE 16-009 Rev. 0:</u> If the fire area barriers and fire area penetrations did not meet the requirements of NFPA 805, Section 3.11.2 and Section 3.11.3, an engineering equivalency evaluation was performed or</p>

Summary of Changes to Attachment A, Table B-1

Att. A Page #	NFPA 805 Section	Description	Summary of Change	Justification
			<p>implementation identified.</p> <p><u>Item for Implementation:</u> As described in Table S-2, Item 43, required modifications have been identified and will be completed in accordance with the associated schedule.</p> <p><u>EEEE/Summary:</u> FPEE 16-007 Rev. 0; Documents the review of the unprotected ceiling penetrations in the barriers credited to meet the NFPA 805 Performance Criteria and the fire effects across unsealed penetrations and stairwells.</p> <p><u>Description:</u> The purpose of this evaluation is to assess the effect of unprotected ceiling penetrations and open stairwells located in the Auxiliary Building in meeting the NFPA 805 performance criteria.</p> <p><u>Summary:</u> Results of the analysis show that the open penetrations and stairwells do not result in any change in the Fire CDF and LERF results.</p>	<p>recommendations to upgrade the barriers or penetrations were made.</p> <p>See Table S-2 item 43 for barrier upgrades.</p> <p><u>FPEE 16-007 Rev. 0:</u> This clarifies that compliance with use of FPEE 16-007 Rev. 0 with this NFPA 805 section is based on discussions in the EEEE, as cited in Plant Documentation.</p>

Licensee Identified Issue #3: Summary of Changes to Attachment C, Table B-3

During internal reviews, NSPM identified a number of changes to the information provided in Attachment C, Table B-3, to account for the modification reductions. These changes are described as follows:

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
4	Fire Areas included	N/A	Fire Area 4 includes Fire Area(s): 39 Radwaste Building 40 Maintenance Storage Shed/CAF 61 Aux Building Anti "C" Clothing Area 61A Aux Building Hatch Area 62 Spent Fuel Pool Area 67 Resin Disposal Building 93 Drum Storage/Low Level Rad Waste.	Added Fire Area 61.	The NSCA model has been evaluated with Fire Areas 4 and 61 combined and no VFDRs are created as a result of merging the fire areas. The combined fire area meets the deterministic requirements of, section 4.2.3.2, NFPA 805.
4	EEEE	N/A	EEEE Title: AR 1266236-01, Class B (1.5 hour) fire doors in Appendix R-required fire barriers Summary: This evaluation demonstrates that the Class B doors are compliant to the requirements of the 9/6/1979 SER. The maximum fire exposure duration to a 1.5 hour fire door protecting an Appendix R area, as bound by this evaluation, is 31 minutes. Applying a "one-half barrier rating" acceptance criteria, the 1.5 hour doors in Appendix R barriers are acceptable due to the maximum exposure being less than one-half of the 1.5 hour rating.	Added AR 1266236-01	EEEE Title: AR 1266236-01, Class B (1.5 hour) fire doors in Appendix R-required fire barriers was previously identified for Fire Area 61, and has been added to FA 4 as a result of combining the areas.
4	Required Fire Protection Systems and Features	N/A	Required Systems for FA 61 include: Detection – 28, Ionization Suppression- WPS 27, 28, Wet Pipe SLERD Column entries are all "N" for the above systems	Added Required Systems and Features for FA 61	This change reflects the combination of Fire Areas 4 and 61.

Summary of Changes to Attachment C, Table B-3

Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
8	Performance Goal Table	N/A	<p>Decay Heat Removal (HSB) Hot: Unit 1 - 12 MDAFW Pump to 11 SG Unit 2 - 21 MDAFW Pump to 21 SG</p> <p>Process Monitoring RCS Pressure (LOOP 1P-709) U1 Loop A RCS Wide Range Press (LOOP 2P-709) U2 Loop A RCS Wide Range Press</p> <p>Pressurizer Level (LOOP 1L-426-RP) Pressurizer Level Red Channel (LOOP 2L-427) Pressurizer Level</p> <p>Ex-core Neutron Monitoring (Source Range) (LOOP 1N51) U1 Excore Detection Train A 1N51 (LOOP 2N51) U2 Excore Detection Train A 2N51</p> <p>RCS Temperature (LOOP 1T-450A) U1 RCS Loop A Hot Leg Temp (LOOP 1T-450B) U1 RCS Loop A Cold Leg Temp (LOOP 2T-450A) U2 RCS Loop A Hot Leg Temp (LOOP 2T-450B) U2 RCS Loop A Cold Leg Temp</p> <p>Steam Gen. Wide Range Level (LOOP 1L-487) 11 SG Wide Range Level (LOOP 2L-487) 21 SG Wide Range Level</p>	<p>Revised the Performance Goal Table as follows:</p> <p>Decay Heat Removal (HSB) – changed Unit 1 AFW Pump</p> <p>Process Monitoring – changed Pressurizer Level instruments</p> <p>Vital Auxiliaries – changed power source, CC and CL trains</p>	<p>The Performance Goal Table is revised due to a strategy change and plant modifications identified in Table S-2, Items #10 and #24, which allow for crediting the 12 MDAFW Pump as well as removal of a modification identified in Table S-2, Item #11.</p> <p>A re-evaluation of the NSCA model has determined Pressurizer Level instrument, 1L-433, is not available. Pressurize Level Red Channel, 1L-426-RP, has been determined to remain available and is credited in lieu of Pressurizer Level instrument, 1L-433.</p> <p>The modifications identified in Table S-2, Item #10 and #24, allow BUS 15 and BUS 16 to remain available from the CT source. Therefore, Trains 'A' and 'B' Component Cooling will not fail due to a loss of power and either train of Component Cooling can be credited.</p> <p>Note: The strategy change employed to credit the 12 MDAFW Pump allowing removal of the modification identified in S-2 Table, Item #11, was employed exclusively for Fire Area 8.</p>

Summary of Changes to Attachment C, Table B-3

Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>Inventory and Pressure Control</p> <p>Unit 1 - Charging System (Train A)</p> <p>Unit 2 - Charging System (Train A)</p> <p>Reactivity Control</p> <p>Unit 1 - Trip reactor from the Control Room. Use Charging Pump (Train A) to inject borated water from the RWST</p> <p>Unit 2 - Trip reactor from the Control Room. Use Charging Pump (Train A) to inject borated water from the RWST</p> <p>Vital Auxiliaries</p> <p>Unit 1 - Offsite Power (CT11) supplying Electrical Distribution Train A and B</p> <p>Unit 2 - Offsite Power (CT12) supplying Electrical Distribution Train A</p> <p>Unit 1 - CC Train A or B</p> <p>Unit 2 - CC Train A</p> <p>CL Train A and B</p>		
8	VFDR	VFDR-008-1-01	<p>This Variance From Deterministic Requirements is due to fire damage to cable(s) that could cause spurious closure of the steam supply valve (CV-31998) to 11 Turbine Driven Aux Feedwater Pump or spurious closure of CV-31153, 11 TDAFWP recirculation and lube oil cooling. 12 MDAFWP is failed due to loss of power to</p>	<p>Revised Components and Disposition as follows:</p> <p>Components and Cables – added:</p> <p>BKR-16-10, Bustie between Buses 16 and 26</p> <p>BKR-16-12, Bus 16 Feed to 22A</p>	<p>VFDR-008-1-01 is revised due to a strategy change and plant modifications identified in Table S-2, Items #10 and #24, which allow for crediting the 12 MDAFW Pump. Crediting the 12 MDAFW Pump allows for the removal of modification identified in Table S-2, Item #11 to re-wire and re-route cables allowing for the 11 TDAFW Pump to remain available.</p> <p>Note: The strategy change employed to credit the 12</p>

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>BUS-16. This could prevent the 11 TDAFWP from providing AFW flow to the Steam Generators to support Decay Heat Removal.</p> <p>The Nuclear Safety Performance Criteria is not met for Decay Heat.</p> <p>This represents a variance from the deterministic requirements of NFPA 805 Section 4.2.3, lack of separation between redundant trains of Decay Heat Removal.</p> <p>Components and Cables:</p> <p>11 Turbine Driven AFW Pump Main Steam Supply, CV-31998, (1CA-1109, 1CA-1111, 1CA-1248)</p> <p>11 Turbine Driven AFW Pump Recirc. Lube Oil CLG Control Valve, CV-31153, (1CA-1111, 1CA-1248)</p> <p>Bustie Bus 16 and Bus 26, BKR-16-10, (1CB-697, 26401-1, 26401-2,)</p> <p>Bus 16 Feed to 22A XFMR, BKR-16-12, (16412-1, 2CB-697)</p> <p>Bus CT11 Feed to Bus 15 and Bus 16, BKR-CT11-6, (1CS-3, 1CS-4)</p> <p>Compliant Case:</p> <p>The 11 TDAFWP (CV-31998 and CV-31153) should remain unaffected by a fire to provide AFW to 11 Steam Generator.</p> <p>Recovery Action(s):</p>	<p>XFMR</p> <p>BKR-CT11-6, Bus CT11 Feed to Bus 15 and Bus 16</p> <p>Disposition –</p> <p>Deleted modification S-2 #11</p> <p>Added modifications S-2 #10 and #24</p>	<p>MDAFW Pump allowing removal of the modification identified in S-2 Table, Item #11, was employed exclusively for Fire Area 8.</p>

Summary of Changes to Attachment C, Table B-3

Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>No recovery actions credited.</p> <p>Modification identified in Table S-2, Item #24 will re-route cables 1CS-3 and 1CS-4 out of Fire Area 8, Turbine Building so the CT11 transformer source remains available to power BUS 16.</p> <p>Modification identified in Table S-2, Item #10 will ensure that fire damage in FA 8 does not cause a loss of coordination and lockout of BUS 16.</p> <p>This VFDR has been evaluated and it was determined that the risk, safety margin and defense-in-depth meet the acceptance criteria of NFPA 805 Section 4.2.3 with a plant modification credited.</p>		
13	VFDR	VFDR-013-1-01	<p>This Variance From Deterministic Requirements is due to fire damage to cable(s) that could cause loss of equipment required to maintain Reactivity Control. This could cause a loss of Reactivity Control.</p> <p>The Nuclear Safety Performance Criteria is not met for Reactivity Control.</p> <p>This represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3, due to lack of separation between redundant equipment required to perform the Nuclear Safety</p>	<p>Revised Disposition / Recovery Actions as follows:</p> <p>Added credit for the modification identified in Table S-2, Item #41</p> <p>Revised resolution statement to include recovery actions and a plant modification.</p>	<p>VFDR-013-1-01 is revised and is now resolved with a plant modification as well as recovery actions credited. Table S-2, Item #41 will rewire the torque and limit switches for MV-32006 and MV-32010 to address IN 92-18 concerns and ensure the valves can be manually operated per LER 50-282-2016-001-00, Unanalyzed Condition Due to Non-Compliant Fire Protection Manual Operator Actions, L-PI-16-012, dated February 18, 2016 (ADAMS No. ML16049A514).</p>

Summary of Changes to Attachment C, Table B-3

Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>Performance Criteria for Reactivity Control.</p> <p>Components and Cables:</p> <p>Many</p> <p>Compliant Case:</p> <p>The ability to maintain Reactivity Control should remain available from the Control Room.</p> <p>Recovery Action(s):</p> <p>Evaluate risk of recovery actions performed in procedure F5 Appendix B (Attachment B and C) to manually trip Unit 1 Turbine at the Front Standard, and close steam valves MV-32006 and MV-32010.</p> <p>Modification identified in Table S-2, Item #41 will re-wire MOV torque and limit switches to prevent fire induced hot shorts, for cables routed in FA 13 and 18, from bypassing the torque and limit switches preventing an over-torque condition.</p> <p>This VFDR has been evaluated and it was determined that the risk, safety margin and defense-in-depth meet the acceptance criteria of NFPA 805 Section 4.2.4 with recovery actions and a plant modification credited.</p>		

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
13	VFDR	VFDR-013-1-02	<p>This Variance From Deterministic Requirements is due to fire damage to cable(s) that could cause loss of equipment required to maintain RCS Inventory Control. This could cause a loss of Inventory and Pressure Control.</p> <p>The Nuclear Safety Performance Criteria is not met for Inventory and Pressure Control.</p> <p>This represents a variation from the deterministic requirements of NFPA 805 Section 4.2.3 due to a lack of separation between redundant equipment required to perform the Nuclear Safety Performance Criteria for Inventory and Pressure Control.</p> <p>Components and Cables:</p> <p>Many</p> <p>Compliant Case:</p> <p>The ability to maintain RCS Inventory and Pressure Control should remain available from the Control Room.</p> <p>Recovery Action(s):</p> <p>Evaluate Recovery Actions performed in procedure F5 Appendix B [Reference 15] (Attachments A, B, C, E, and F) to de-energize Pressurizer Heaters, de-energize the Containment</p>	<p>Revised description to include loss of Pressure Control, in addition to loss of Inventory Control</p> <p>Revised Disposition / Recovery Actions-by removing the following Recovery Actions: isolate Letdown, Excess Letdown, Head vents, Pressurizer vents, de-energize Sump B valves, de-energize MV-32084, manually operate MV-32084, de-energize MV-32085, and manually operate MV-32085.</p> <p>Revised resolution statement to include recovery actions, fire risk evaluation, and a plant modification.</p>	<p>VFDR-013-1-02 is revised due to a re-evaluation of the Reactor Water Storage Tank (RWST) drain down scenario, and is now resolved by a fire risk evaluation as well as recovery actions and a plant modification credited. Re-evaluation of the Refueling Water Storage Tank (RWST) to Containment Sump drain down scenario has determined recovery actions to de-energize MV-32084 and MV-32085 are no longer needed per the response to RAI SSA 07.a, License Amendment Request to Adopt NFPA 805 Performance-Based Standard for Fire Protection for Light Water Reactors – Response to Request for Additional Information - 90-Day Responses, L-PI-15-052, dated June 19, 2015 (ADAMS No. ML15174A139). The revised delta-risk values were calculated in a sensitivity study and meet the acceptance criteria defined in Regulatory Guide 1.174.</p> <p>Additionally, a re-evaluation of the Recovery Actions has determined it is not required to: isolate Letdown, Excess Letdown, Head vents, Pressurizer vents, and de-energize Sump B valves. The revised delta-risk values were calculated in a fire risk evaluation and meet the acceptance criteria defined in Regulatory Guide 1.174.</p>

Summary of Changes to Attachment C, Table B-3

Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>Spray Pumps, locally trip the Reactor Coolant Pumps, and actions to re-align 12 Charging Pump suction to the RWST and restart a charging pump.</p> <p>Fire Risk Evaluation has determined it is not required to credit recovery actions to isolate Letdown, Excess Letdown, Head vents, the RWST to the RHR system, Pressurizer vents, and de-energize Sump B valves.</p> <p>Modification identified in Table S-2, Item #15 will provide suction protection to the charging pumps so the charging pump can be restarted after suction from the RWST is restored to inject borated water into the RCS.</p> <p>This VFDR has been evaluated and it was determined that the risk, safety margin and defense-in-depth meet the acceptance criteria of NFPA 805 Section 4.2.4 with recovery actions, fire risk evaluation, and a plant modification credited.</p>		
13	VFDR	VFDR-013-1-03	<p>This Variance From Deterministic Requirements is due to fire damage to cable(s) that could cause loss of equipment required to maintain Decay Heat Removal. This could cause a loss of Decay Heat Removal.</p> <p>The Nuclear Safety Performance Criteria is not met for Decay Heat</p>	<p>Revised Disposition / Recovery Actions as follows:</p> <p>Add the modification identified in Table S-2, Item #41</p> <p>Revise resolution statement to include recovery actions, fire risk evaluation, and a plant modification credited.</p>	<p>VFDR-013-1-03 is revised and is now resolved with a plant modification, fire risk evaluation, and recovery actions credited. Table S-2, Item #41 will rewire the torque and limit switches for MV-32238 to address IN 92-18 concerns and ensure the valve can be manually operated per LER 50-282-2016-001-00, Unanalyzed Condition Due to Non-Compliant Fire Protection Manual Operator Actions, L-PI-16-012, dated February 18, 2016 (ADAMS No. ML16049A514).</p>

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>Removal.</p> <p>This represents a variation from the deterministic requirements of NFPA 805 Section 4.2.3 due to a lack of separation between redundant equipment required to perform the Nuclear Safety Performance Criteria for Decay Heat Removal.</p> <p>Components and Cables:</p> <p>Many</p> <p>Compliant Case:</p> <p>The ability to maintain Decay Heat Removal should remain available from the Control Room.</p> <p>Recovery Action(s):</p> <p>Evaluate risk of recovery actions performed in procedure F5 Appendix B (Attachment I) to manually start the 11 TDAFWP and align to 11 SG.</p> <p>Modification identified in Table S-2, Item #41 will re-wire MOV torque and limit switches to prevent fire induced hot shorts, for cables routed in FA 13 and 18, from bypassing the torque and limit switches preventing an over-torque condition.</p> <p>This VFDR has been evaluated and it was determined that the risk, safety margin and defense-</p>		

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			in-depth meet the acceptance criteria of NFPA 805 Section 4.2.4 with recovery actions, fire risk evaluation, and a plant modification credited.		
13	VFDR	VFDR-013-2-01	<p>This Variance From Deterministic Requirements is due to fire damage to cable(s) that could cause loss of equipment required to maintain Reactivity Control. This could cause a loss of Reactivity Control.</p> <p>The Nuclear Safety Performance Criteria is not met for Reactivity Control.</p> <p>This represents a variation from the deterministic requirements of NFPA 805 Section 4.2.3 due to a lack of separation between redundant equipment required to perform the Nuclear Safety Performance Criteria for Reactivity Control.</p> <p>Components and Cables:</p> <p>Many</p> <p>Compliant Case:</p> <p>The ability to maintain Reactivity Control should remain available from the Control Room.</p> <p>Recovery Action(s):</p> <p>Evaluate risk of recovery actions performed in procedure F5</p>	<p>Revised Disposition / Recovery Actions as follows:</p> <p>Added the modification identified in Table S-2, Item #41</p> <p>Revised resolution statement to include recovery actions and a plant modification.</p>	<p>VFDR-013-2-01 is revised and is now resolved with a plant modification as well as recovery actions credited. Table S-2, Item #41 will rewire the torque and limit switches for MV-32021 and MV-32022 to address IN 92-18 concerns and ensure the valves can be manually operated per LER 50-282-2016-001-00, Unanalyzed Condition Due to Non-Compliant Fire Protection Manual Operator Actions, L-PI-16-012, dated February 18, 2016 (ADAMS No. ML16049A514).</p>

Summary of Changes to Attachment C, Table B-3

Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>Appendix B (Attachment B and C) to manually trip Unit 2 Turbine at the Front Standard, and close steam valves MV-32021 and MV-32022.</p> <p>Modification identified in Table S-2, Item #41 will re-wire MOV torque and limit switches to prevent fire induced hot shorts, for cables routed in FA 13 and 18, from bypassing the torque and limit switches preventing an over-torque condition.</p> <p>This VFDR has been evaluated and it was determined that the risk, safety margin and defense-in-depth meet the acceptance criteria of NFPA 805 Section 4.2.4 with recovery actions and a plant modification credited.</p>		
13	VFDR	VFDR-013-2-02	<p>This Variance From Deterministic Requirements is due to fire damage to cable(s) that could cause loss of equipment required to maintain RCS Inventory Control. This could cause a loss of Inventory and Pressure Control.</p> <p>The Nuclear Safety Performance Criteria is not met for Inventory and Pressure Control.</p> <p>This represents a variation from the deterministic requirements of NFPA 805 Section 4.2.3 due to a lack of separation between redundant equipment required to</p>	<p>Revised description to include loss of Pressure Control, in addition to loss of Inventory Control.</p> <p>Revised Disposition / Recovery Actions by removing the following Recovery Actions: isolate Letdown, Excess Letdown, Head vents, Pressurizer vents, de-energize Sump B valves, de-energize MV-32187, manually operate MV-32187, de-energize MV-32188, and manually operate MV-32188.</p> <p>Revised resolution statement to include recovery actions, fire risk</p>	<p>VFDR-013-2-02 is revised due to a re-evaluation of the Reactor Water Storage Tank (RWST) drain down scenario, and is now resolved by a fire risk evaluation as well as recovery actions and a plant modification credited. Re-evaluation of the Refueling Water Storage Tank (RWST) to Containment Sump drain down-scenario has determined-recovery actions to de-energize MV-32178 and MV-32179 are no longer needed per the response to RAI SSA 07.a, License Amendment Request to Adopt NFPA 805 Performance-Based Standard for Fire Protection for Light Water Reactors – Response to Request for Additional Information - 90-Day Responses, L-PI-15-052, dated June 19, 2015 (ADAMS No. ML15174A139). The revised delta-risk values were calculated in a sensitivity study, and meet the acceptance criteria defined in Regulatory Guide 1.174.</p>

Summary of Changes to Attachment C, Table B-3

Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>perform the Nuclear Safety Performance Criteria for Inventory and Pressure Control.</p> <p>Components and Cables:</p> <p>Many</p> <p>Compliant Case:</p> <p>The ability to maintain RCS Inventory and Pressure Control should remain available from the Control Room.</p> <p>Recovery Action(s):</p> <p>Evaluate Recovery Actions performed in procedure F5 Appendix B [Reference 15] (Attachments A, B, D, and G) to de-energize Pressurizer Heaters, de-energize the Containment Spray Pumps, locally trip the Reactor Coolant Pumps, and actions to re-align 22 Charging Pump suction to the RWST and restart a charging pump.</p> <p>Fire Risk Evaluation has determined it is not required to credit recovery actions to isolate Letdown, Excess Letdown, Head vents, the RWST to the RHR system, Pressurizer vents, and de-energize the Sump B valves.</p> <p>Modification identified in Table S-2, Item #15 will provide suction protection to the charging pumps so the charging pump can be</p>	<p>evaluation, and a plant modification.</p>	<p>Additionally, a re-evaluation of the Recovery Actions has determined it is not required to: isolate Letdown, Excess Letdown, Head vents, Pressurizer vents, and de-energize Sump B valves. The revised delta-risk values were calculated in a fire risk evaluation and meet the acceptance criteria defined in Regulatory Guide 1.174.</p>

Summary of Changes to Attachment C, Table B-3

Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>restarted after suction from the RWST is restored to inject borated water into the RCS.</p> <p>This VFDR has been evaluated and it was determined that the risk, safety margin and defense-in-depth meet the acceptance criteria of NFPA 805 Section 4.2.4 with recovery actions, fire risk evaluation, and a plant modification credited.</p>		
13	VFDR	VFDR-013-2-03	<p>This Variance From Deterministic Requirements is due to fire damage to cable(s) that could cause loss of equipment required to maintain Decay Heat Removal. This could cause a loss of Decay Heat Removal.</p> <p>The Nuclear Safety Performance Criteria is not met for Decay Heat Removal.</p> <p>This represents a variation from the deterministic requirements of NFPA 805 Section 4.2.3 due to a Lack of separation between redundant equipment required to perform the Nuclear Safety Performance Criteria for Decay Heat Removal.</p> <p>Components and Cables:</p> <p>Many</p> <p>Compliant Case:</p>	<p>Revised Disposition / Recovery Actions to:</p> <p>Add the modification identified in Table S-2, Item #41</p> <p>Revise resolution statement to include recovery actions and a plant modification credited.</p>	<p>VFDR-013-2-03 is revised and is now resolved with a plant modification, fire risk evaluation, and recovery actions credited. Table S-2, Item #41 will rewire the torque and limit switches for MV-32246 to address IN 92-18 concerns and ensure the valve can be manually operated per LER 50-282-2016-001-00, Unanalyzed Condition Due to Non-Compliant Fire Protection Manual Operator Actions, L-PI-16-012, dated February 18, 2016 (ADAMS No. ML16049A514).</p>

Added to the table 2/17/16

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>The ability to maintain Decay Heat Removal should remain available from the Control Room.</p> <p>Recovery Action(s):</p> <p>Evaluate Recovery Actions performed in procedure F5 Appendix B (Attachment I) to manually start the 22 TDAFWP and align to 21 Steam Generator.</p> <p>Modification identified in Table S-2, Item #41 will re-wire MOV torque and limit switches to prevent fire induced hot shorts, for cables routed in FA 13 and 18, from bypassing the torque and limit switches preventing an over-torque condition.</p> <p>This VFDR has been evaluated and it was determined that the risk, safety margin and defense-in-depth meet the acceptance criteria of NFPA 805 Section 4.2.4 with recovery actions, fire risk evaluation, and a plant modification credited.</p>		
13	VFDR	VFDR-013-2-07	<p>This Variance From Deterministic Requirements is due to fire damage to cable(s) that could cause loss of the 21 and 22 Component Cooling Water Pumps.</p> <p>The Nuclear Safety Performance Criteria is not met for Vital Auxiliaries.</p>	<p>Revised VFDR description to:</p> <p>Add 22 Component Cooling Water Pump</p> <p>Revised Disposition / Recovery Actions to:</p> <p>Delete the modification in S-1, Item #1</p>	<p>VFDR-013-2-07 is revised and is now resolved by the modification identified in Table S-2, Item #18.</p> <p>Additionally, the VFDR description was revised to indicate a loss of both the 21 and 22 Component Cooling Water Pumps is necessary for the VFDR scenario to occur.</p>

Summary of Changes to Attachment C, Table B-3

Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>This represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3, due to lack of separation between redundant equipment required to perform the Nuclear Safety Performance Criteria for Vital Auxiliaries.</p> <p>Components and Cables:</p> <p>None</p> <p>Compliant Case:</p> <p>Cooling to the RCP seals should remain unaffected by a fire in this area.</p> <p>Recovery Action(s):</p> <p>No Recovery Actions credited.</p> <p>Modification identified in Table S-2, Item #18 will install new Reactor Coolant Pump (RCP) seals that are not subject to excessive leakage upon loss of all seal cooling.</p> <p>This VFDR has been evaluated and it has been determined to meet the acceptance criteria of NFPA 805 Section 4.2.4 with a plant modification credited.</p>	<p>Add the modification identified in Table S-2, Item #18</p>	
18	VFDR	VFDR-018-1-01	<p>This Variance From Deterministic Requirements is due to fire damage to cable(s) that could cause loss of equipment required</p>	<p>Revised Disposition / Recovery Actions as follows:</p> <p>Added credit for the modification</p>	<p>VFDR-018-1-01 is revised and is now resolved with a plant modification as well as recovery actions credited. Table S-2, Item #41 will rewire the torque and limit switches for MV-32006 and MV-32010 to</p>

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>to maintain Reactivity Control. This could cause a loss of Reactivity Control.</p> <p>The Nuclear Safety Performance Criteria is not met for Reactivity Control.</p> <p>This represents a variation from the deterministic requirements of NFPA 805 Section 4.2.3, due to a lack of separation between redundant equipment to perform the Nuclear Safety Performance Criteria for Reactivity Control.</p> <p>Components and Cables:</p> <p>Many</p> <p>Compliant Case:</p> <p>The ability to maintain Reactivity Control should remain available from the Control Room.</p> <p>Recovery Action(s):</p> <p>Evaluate risk of recovery actions performed in procedure F5 Appendix B (Attachment B and C) to manually trip Unit 1 Turbine at the Front Standard and close steam valves MV-32006 and MV-32010.</p> <p>Modification identified in Table S-2, Item #41 will re-wire MOV torque and limit switches to prevent fire induced hot shorts, for cables routed in FA 13 and 18,</p>	<p>identified in Table S-2, Item #41</p> <p>Revised resolution statement to include recovery actions and a plant modification.</p>	<p>address IN 92-18 concerns and ensure the valves can be manually operated per LER 50-282-2016-001-00, Unanalyzed Condition Due to Non-Compliant Fire Protection Manual Operator Actions, L-PI-16-012, dated February 18, 2016 (ADAMS No. ML16049A514).</p>

Summary of Changes to Attachment C, Table B-3

Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>from bypassing the torque and limit switches preventing an over-torque condition.</p> <p>This VFDR has been evaluated and it was determined that the risk, safety margin and defense-in-depth meet the acceptance criteria of NFPA 805 Section 4.2.4 with recovery actions and a plant modification credited.</p>		
18	VFDR	VFDR-018-1-02	<p>This Variance From Deterministic Requirements is due to fire damage to cable(s) that could cause loss of equipment required to maintain RCS Inventory Control. This could cause a loss of Inventory and Pressure Control.</p> <p>The Nuclear Safety Performance Criteria is not met for Inventory and Pressure Control.</p> <p>This represents a variation from the deterministic requirements of NFPA 805 Section 4.2.3 due to a lack of separation between redundant equipment required to perform the Nuclear Safety Performance Criteria for Inventory and Pressure Control.</p> <p>Components and Cables:</p> <p>Many</p> <p>Compliant Case:</p>	<p>Revised description to include loss of Pressure Control, in addition to loss of Inventory Control</p> <p>Revised Disposition / Recovery Actions by removing the following Recovery Actions: isolate Letdown, Excess Letdown, Head vents, Pressurizer vents, de-energize Sump B valves, de-energize MV-32084, manually operate MV-32084, de-energize MV-32085, and manually operate MV-32085.</p> <p>Revised modification identified in Table S-2, Item #27 to exclude isolation of Excess Letdown, Head vents, and Pressurizer vents.</p> <p>Revised resolution statement to include recovery actions, fire risk evaluation, and a plant modification.</p>	<p>VFDR-018-1-02 is revised due to a re-evaluation of the Reactor Water Storage Tank (RWST) drain down scenario, and is now resolved by a fire risk evaluation as well as recovery actions and a plant modification credited. Re-evaluation of the Refueling Water Storage Tank (RWST) to Containment Sump drain down scenario has determined recovery actions to de-energize MV-32084 and MV-32085 are no longer needed per the response to RAI SSA 07.a, License Amendment Request to Adopt NFPA 805 Performance-Based Standard for Fire Protection for Light Water Reactors – Response to Request for Additional Information - 90-Day Responses, L-PI-15-052, dated June 19, 2015 (ADAMS No. ML15174A139). The revised delta-risk values were calculated in a sensitivity study and meet the acceptance criteria defined in Regulatory Guide 1.174.</p> <p>Additionally, a re-evaluation of the Recovery Actions has determined it is not required to: isolate Letdown, Excess Letdown, Head vents, Pressurizer vents, and de-energize Sump B valves. The revised delta-risk values were calculated in a fire risk evaluation and meet the acceptance criteria defined in Regulatory Guide 1.174.</p> <p>Table S-2, Item #27 is re-scoped due to a re-</p>

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>The ability to maintain RCS Inventory and Pressure Control should remain available from the Control Room.</p> <p>Recovery Action(s):</p> <p>Evaluate Recovery Actions performed in procedure F5 Appendix B [Reference 15] (Attachments A, B, E, and F) to de-energize Pressurizer Heaters, de-energize the Containment Spray Pumps, locally trip the Reactor Coolant Pumps, and actions to re-align 12 Charging Pump suction to the RWST and restart a charging pump.</p> <p>Fire Risk Evaluation has determined it is not required to credit recovery actions to isolate Letdown, Excess Letdown, Head vents, the RWST to the RHR system, Pressurizer vents, and de-energize the Sump B valves.</p> <p>Modification identified in Table S-2, Item #15 will provide suction protection to the charging pumps so the charging pump can be restarted after suction from the RWST is restored to inject borated water into the RCS.</p> <p>Modification identified in Table S-2, Item #27 will provide an additional means to isolate Pressurizer PORVs and Pressurizer Heaters prior to control room evacuation.</p>		<p>evaluation of Recovery Actions and now excludes actions to: isolate Excess letdown, Head vents, and Pressurizer vents. The revised delta-risk values were calculated in a fire risk evaluation and meet the acceptance criteria defined in Regulatory Guide 1.174.</p>

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			This VFDR has been evaluated and it was determined that the risk, safety margin and defense-in-depth meet the acceptance criteria of NFPA 805 Section 4.2.4 with recovery actions, fire risk evaluation, and a plant modification credited.		
18	VFDR	VFDR-018-1-03	<p>This Variance From Deterministic Requirements is due to fire damage to cable(s) that could cause loss of equipment required to maintain Decay Heat Removal. This could cause a loss of Decay Heat Removal.</p> <p>The Nuclear Safety Performance Criteria is not met for Decay Heat Removal.</p> <p>This represents a variation from the deterministic requirements of NFPA 805 Section 4.2.3 due to a lack of separation between redundant equipment required to perform the Nuclear Safety Performance Criteria for Decay Heat Removal.</p> <p>Components and Cables:</p> <p>Many</p> <p>Compliant Case:</p> <p>The ability to maintain Decay Heat Removal should remain available from the Control Room.</p>	<p>Revised Disposition / Recovery Actions as follows:</p> <p>Add the modification identified in Table S-2, Item #41</p> <p>Revise resolution statement to include recovery actions, fire risk evaluation, and a plant modification credited.</p>	VFDR-018-1-03 is revised and is now resolved with a plant modification, fire risk evaluation, and recovery actions credited. Table S-2, Item #41 will rewire the torque and limit switches for MV-32238 to address IN 92-18 concerns and ensure the valve can be manually operated per LER 50-282-2016-001-00, Unanalyzed Condition Due to Non-Compliant Fire Protection Manual Operator Actions, L-PI-16-012, dated February 18, 2016 (ADAMS No. ML16049A514).

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>Recovery Action(s):</p> <p>Evaluate risk of recovery actions performed in procedure F5 Appendix B (Attachment I) to manually start the 11 TDAFWP and align to 11 SG.</p> <p>Modification identified in Table S-2, Item #41 will re-wire MOV torque and limit switches to prevent fire induced hot shorts, for cables routed in FA 13 and 18, from bypassing the torque and limit switches preventing an over-torque condition.</p> <p>This VFDR has been evaluated and it was determined that the risk, safety margin and defense-in-depth meet the acceptance criteria of NFPA 805 Section 4.2.4 with recovery actions, fire risk evaluation, and a plant modification credited.</p>		
18	VFDR	VFDR-018-2-01	<p>This Variance From Deterministic Requirements is due to fire damage to cable(s) that could cause loss of equipment required to maintain Reactivity Control. This could cause a loss of Reactivity Control.</p> <p>The Nuclear Safety Performance Criteria is not met for Reactivity Control.</p> <p>This represents a variation from the deterministic requirements of NFPA 805 Section 4.2.3 due to a</p>	<p>Revised Disposition / Recovery Actions as follows:</p> <p>Added credit for the modification identified in Table S-2, Item #41</p> <p>Revised resolution statement to include recovery actions and a plant modification.</p>	<p>VFDR-018-2-01 is revised and is now resolved with a plant modification as well as recovery actions credited. Table S-2, Item #41 will rewire the torque and limit switches for MV-32021 and MV-32022 to address IN 92-18 concerns and ensure the valves can be manually operated per LER 50-282-2016-001-00, Unanalyzed Condition Due to Non-Compliant Fire Protection Manual Operator Actions, L-PI-16-012, dated February 18, 2016 (ADAMS No. ML16049A514).</p>

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>lack of separation between redundant equipment required to perform the Nuclear Safety Performance Criteria for Reactivity Control.</p> <p>Components and Cables:</p> <p>Many</p> <p>Compliant Case:</p> <p>The ability to maintain Reactivity Control should remain available from the Control Room.</p> <p>Recovery Action(s):</p> <p>Evaluate risk of recovery actions performed in procedure F5 Appendix B (Attachment B and C) to manually trip Unit 2 Turbine at the Front Standard, and close steam valves MV-32021 and MV-32022.</p> <p>Modification identified in Table S-2, Item #41 will re-wire MOV torque and limit switches to prevent fire induced hot shorts, for cables routed in FA 13 and 18, from bypassing the torque and limit switches preventing an over-torque condition.</p> <p>This VFDR has been evaluated and it was determined that the risk, safety margin and defense-in-depth meet the acceptance criteria of NFPA 805 Section 4.2.4 with recovery actions and a plant</p>		

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			modification credited.		
18	VFDR	VFDR-018-2-02	<p>This Variance From Deterministic Requirements is due to fire damage to cable(s) that could cause loss of equipment required to maintain RCS Inventory Control. This could cause a loss of Inventory and Pressure Control.</p> <p>The Nuclear Safety Performance Criteria is not met for Inventory and Pressure Control.</p> <p>This represents a variation from the deterministic requirements of NFPA 805 Section 4.2.3 due to a lack of separation between redundant equipment required to perform the Nuclear Safety Performance Criteria for Inventory Control.</p> <p>Components and Cables:</p> <p>Many</p> <p>Compliant Case:</p> <p>The ability to maintain RCS Inventory and Pressure Control should remain available from the Control Room.</p> <p>Recovery Action(s):</p> <p>Evaluate Recovery Actions performed in procedure F5 Appendix B [Reference 15] (Attachments A, B, D, and G) to</p>	<p>Revised description to include loss of Pressure Control, in addition to loss of Inventory Control.</p> <p>Revised Disposition / Recovery Actions by removing the following Recovery Actions: isolate Letdown, Excess Letdown, Head vents, Pressurizer vents, de-energize Sump B valves, de-energize MV-32187, manually operate MV-32187, de-energize MV-32188, and manually operate MV-32188.</p> <p>Revised modification identified in Table S-2, Item #27 to exclude isolation of Excess Letdown, Head vents, and Pressurizer vents.</p> <p>Revised resolution statement to include recovery actions, fire risk evaluation, and a plant modification.</p>	<p>VFDR-018-2-02 is revised due to a re-evaluation of the Reactor Water Storage Tank (RWST) drain down scenario, and is now resolved by a fire risk evaluation as well as recovery actions and a plant modification credited. Re-evaluation of the Refueling Water Storage Tank (RWST) to Containment Sump drain down scenario has determined recovery actions to de-energize MV-32178 and MV-32179 are no longer needed per the response to RAI SSA 07.a, License Amendment Request to Adopt NFPA 805 Performance-Based Standard for Fire Protection for Light Water Reactors – Response to Request for Additional Information - 90-Day Responses, L-PI-15-052, dated June 19, 2015 (ADAMS No. ML15174A139). The revised delta-risk values were calculated in a sensitivity study, meet the acceptance criteria defined in Regulatory Guide 1.174.</p> <p>Additionally, a re-evaluation of the Recovery Actions has determined it is not required to: isolate Letdown, Excess Letdown, Head vents, Pressurizer vents, and de-energize Sump B valves. The revised delta-risk values were calculated in a fire risk evaluation and meet the acceptance criteria defined in Regulatory Guide 1.174.</p> <p>Table S-2, Item #27 is re-scoped due to a re-evaluation of Recovery Actions and now excludes actions to: isolate Excess letdown, Head vents, and Pressurizer vents. The revised delta-risk values were calculated in a fire risk evaluation and meet the acceptance criteria defined in Regulatory Guide 1.174.</p>

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>de-energize Pressurizer Heaters, de-energize the Containment Spray Pumps, locally trip the Reactor Coolant Pumps, and actions to re-align 22 Charging Pump suction to the RWST and restart a charging pump.</p> <p>Fire Risk Evaluation has determined it is not required to credit recovery actions to isolate Letdown, Excess Letdown, Head vents, the RWST to the RHR system, Pressurizer vents, and de-energize the Sump B valves.</p> <p>Modification identified in Table S-2, Item #15 will provide suction protection to the charging pumps so the charging pump can be restarted after suction from the RWST is restored to inject borated water into the RCS.</p> <p>Modification identified in Table S-2, Item #27 will provide an additional means to isolate Pressurizer PORVs and Pressurizer Heaters prior to control room evacuation.</p> <p>This VFDR has been evaluated and it was determined that the risk, safety margin and defense-in-depth meet the acceptance criteria of NFPA 805 Section 4.2.4 with recovery actions, fire risk evaluation, and a plant modification credited.</p>		
18	VFDR	VFDR-018-2-03	This Variance From Deterministic	Revised Disposition / Recovery	VFDR-018-2-03 is revised and is now resolved with

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>Requirements is due to fire damage to cable(s) that could cause loss of equipment required to maintain Decay Heat Removal. This could cause a loss of Decay Heat Removal.</p> <p>The Nuclear Safety Performance Criteria is not met for Decay Heat Removal.</p> <p>This represents a variation from the deterministic requirements of NFPA 805 Section 4.2.3 due to a Lack of separation between redundant equipment required to perform the Nuclear Safety Performance Criteria for Decay Heat Removal.</p> <p>Components and Cables:</p> <p>Many</p> <p>Compliant Case:</p> <p>The ability to maintain Decay Heat Removal should remain available from the Control Room.</p> <p>Recovery Action(s):</p> <p>Evaluate Recovery Actions performed in procedure F5 Appendix B (Attachment I) to manually start the 22 TDAFWP and align to 21 Steam Generator.</p> <p>Modification identified in Table S-2, Item #41 will re-wire MOV torque and limit switches to</p>	<p>Actions as follows:</p> <p>Add the modification identified in Table S-2, Item #41</p> <p>Revise resolution statement to include recovery actions, fire risk evaluation, and a plant modification credited.</p>	<p>a plant modification, fire risk evaluation, and recovery actions credited. Table S-2, Item #41 will rewire the torque and limit switches for MV-32246 to address IN 92-18 concerns and ensure the valve can be manually operated per LER 50-282-2016-001-00, Unanalyzed Condition Due to Non-Compliant Fire Protection Manual Operator Actions, L-PI-16-012, dated February 18, 2016 (ADAMS No. ML16049A514).</p>

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>prevent fire induced hot shorts, for cables routed in FA 13 and 18, from bypassing the torque and limit switches preventing an over-torque condition.</p> <p>This VFDR has been evaluated and it was determined that the risk, safety margin and defense-in-depth meet the acceptance criteria of NFPA 805 Section 4.2.4 with recovery actions, fire risk evaluation, and a plant modification credited.</p>		
18	VFDR	VFDR-018-2-07	<p>This Variance From Deterministic Requirements is due to fire damage to cable(s) that could cause loss of the 21 and 22 Component Cooling Water Pumps.</p> <p>The Nuclear Safety Performance Criteria is not met for Vital Auxiliaries.</p> <p>This represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3, due to lack of separation between redundant equipment required to perform the Nuclear Safety Performance Criteria for Vital Auxiliaries.</p> <p>Components and Cables:</p> <p>None</p> <p>Compliant Case:</p>	<p>Revised VFDR description to:</p> <p>Add 22 Component Cooling Water Pump</p> <p>Revised Disposition / Recovery Actions to:</p> <p>Delete the modification in S-1, Item #1</p> <p>Add the modification identified in Table S-2, Item #18</p>	<p>VFDR-018-2-07 is revised and is now resolved by the modification identified in Table S-2, Item #18.</p> <p>Additionally, the VFDR description was revised to indicate a loss of both the 21 and 22 Component Cooling Water Pumps is necessary for the VFDR scenario to occur.</p>

Summary of Changes to Attachment C, Table B-3

Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>Cooling to the RCP seals should remain unaffected by a fire in this area.</p> <p>Recovery Action:</p> <p>No Recovery Actions credited.</p> <p>Modification identified in Table S-2, Item #18 will install new Reactor Coolant Pump (RCP) seals that are not subject to excessive leakage upon loss of all seal cooling.</p> <p>This VFDR has been evaluated and it has been determined to meet the acceptance criteria of NFPA 805 Section 4.2.4 with a plant modification credited.</p>		
31	VFDR	VFDR-031-1-03	<p>This Variance From Deterministic Requirements is due to fire damage to cable(s) that could cause a loss of DC control power to BUS 16 and damage to power cables that could over-heat and cause secondary fires. If the fire damaged DC control power, and then damaged 4kV power cables, the excessive current could cause load power cables to over-heat and develop secondary fires in other fire areas which violates common enclosure requirements.</p> <p>The Nuclear Safety Performance Criteria is not met for Vital Auxiliaries.</p> <p>This represents a VFDR of NFPA</p>	<p>Revised Disposition / Recovery Actions to:</p> <p>Delete the modification in S-2, Item #10</p> <p>Add credit for a fire risk evaluation to resolve potential loss of over-current trip capability for BKR-16-3</p> <p>Revised resolution statement to remove a plant modification and include a fire risk evaluation credited.</p>	<p>VFDR-031-1-03 is revised and is now resolved with a fire risk evaluation credited. The revised delta-risk values are calculated in a fire risk evaluation and meet the acceptance criteria defined in Regulatory Guide 1.174.</p>

Summary of Changes to Attachment C, Table B-3

Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>805 Section 4.2.3, due to lack of separation between redundant trains of Vital Auxiliaries.</p> <p>Components and Cables:</p> <p>12 MDAFW Pump Breaker, BKR-16-3 (16403-1, 16403-C, 1CB-30, 1CB-920)</p> <p>Compliant Case:</p> <p>Cable over-current protection should be maintained to protect cables from over-heating and causing secondary fires to meet common enclosure requirements.</p> <p>Recovery Action(s):</p> <p>No recovery actions credited.</p> <p>The impact of BKR-16-3 losing over-current trip capability has been modeled in the Fire PRA and the risk is acceptable.</p> <p>This VFDR has been evaluated and it was determined that the risk, safety margin and defense-in-depth meet the acceptance criteria of NFPA 805 Section 4.2.4 with a fire risk evaluation credited.</p>		
31	VFDR	VFDR-031-2-03	<p>This Variance From Deterministic Requirements is due to fire damage to cable(s) that could cause a loss of DC control power to Bus 24 and damage to power cables that could over-heat and cause secondary fires. If the fire</p>	<p>Revised Disposition / Recovery Actions to:</p> <p>Delete the modification in S-2, Item #10</p> <p>Add credit for a fire risk</p>	<p>VFDR-031-2-03 is revised and is now resolved with a fire risk evaluation credited. The revised delta-risk values are calculated in a fire risk evaluation and meet the acceptance criteria defined in Regulatory Guide 1.174.</p>

Summary of Changes to Attachment C, Table B-3

Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>damaged DC control power, and then damaged 4kV power cables, the excessive current could cause load power cables to over-heat and develop secondary fires in other fire areas which violates common enclosure requirements.</p> <p>The Nuclear Safety Performance Criteria is not met for Vital Auxiliaries.</p> <p>This represents a VFDR of NFPA 805 Section 4.2.3, due to lack of separation between redundant trains of Vital Auxiliaries.</p> <p>Components and Cables:</p> <p>Bus 24 Feed Breaker to 204-206-209-402 Transformer, BKR-24-6 (24406-3, 24403-F, 24404-F, 2C-2552, 2C-866, 2DC-5)</p> <p>Compliant Case:</p> <p>Cable over-current protection should be maintained to protect cables from over-heating and causing secondary fires to meet common enclosure requirements.</p> <p>Recovery Action(s):</p> <p>No recovery actions credited.</p> <p>The impact of BKR-24-6 losing over-current trip capability and causing secondary fire damage has been modeled in the Fire</p>	<p>evaluation to resolve potential loss of over-current trip capability for BKR-24-6</p> <p>Revised resolution statement to remove a plant modification and include a fire risk evaluation credited.</p>	

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>PRA and the risk is acceptable.</p> <p>This VFDR has been evaluated and it was determined that the risk, safety margin and defense-in-depth meet the acceptance criteria of NFPA 805 Section 4.2.4 with a fire risk evaluation credited.</p>		
32	VFDR	VFDR-032-1-02	<p>This Variance From Deterministic Requirements is due to fire damage to cable(s) that could cause loss of power to BUS-15 and BUS-16 from the offsite power sources 1R, CT11 and D1 to BUS-15 and D2 to BUS-16. Loss of power to BUS-15 and BUS-16 could cause a station black-out on Unit 1 and would not meet Vital Auxiliaries Performance Criteria of NFPA 805.</p> <p>The Nuclear Safety Performance Criteria is not met for Vital AC Power.</p> <p>This represents a VFDR of NFPA 805 Section 4.2.3, due to lack of separation between redundant trains of safeguard power.</p> <p>Components and Cables:</p> <p>Bus 16 4.16KV Switchgear, BUS 16 (1DCB-1) Bus 16 Source from 1R XFMR, BKR 16-2 (1C-332, 1C-333) Bus 16 Source from Bus CT 11, BKR 16-8 (15407-1, 15407-2, 16408-1)</p>	<p>Revised Disposition / Recovery Actions to:</p> <p>Add the modification in S-2, Item #35</p>	<p>VFDR-032-1-02 is revised to credit the modification identified in Table S-2, Item #35 to re-route cable 1C-332 out of Fire Area 32 as well as the modification identified in Table S-2, Item #6. A re-evaluation of the NSCA model determined modifications identified in Table S-2, Items #6 and #35, need to be credited for the 1RY source to remain available to supply BUS-16.</p>

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>D2 Diesel Generator, 034-021 (1DCB-2, 1DCB-95) Bus 15 4.16KV Switchgear, BUS 15 (15406-B, 1DCA-1) Bus 15 Source from D1 Diesel Generator, BKR 15-2 (15402-G, 15402-K, 15402-1) Bus 15 Source from 1R XFMR, BKR 15-3 (1C-332, 1C-333, 15403-B) Bus 15 Source from Bus CT 11, BKR 15-7 (15407-1, 15407-2, 15407-A, 16408-1)</p> <p>Compliant Case: BUS-16 should remain energized from 1RY (BKR-16-2) or D2 (BKR-16-9) to provide vital AC power to support safe shutdown.</p> <p>Recovery Action(s): No recovery actions credited.</p> <p>Modification identified in Table S-2, Item #6 and #35 will respectively re-route cables 1C-333 and 1C-332 out of Fire Area 32 so that the 1RY source will remain available to BUS-16.</p> <p>Modification identified in Table S-2, Item #10 will protect cable 1DCB-1 to ensure BUS-16 control power remains available.</p> <p>This VFDR has been evaluated and it was determined that the risk, safety margin and defense-in-depth meet the acceptance criteria of NFPA 805 Section 4.2.4</p>		

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
32	VFDR	VFDR-032-1-03	<p>with plant modifications credited.</p> <p>This Variance From Deterministic Requirements is due to fire damage to cable(s) that could cause loss of DC control power to BUS-13, 14, 15, and 16, which would preclude operation of the over-current trip relay protection on the following 4 kV breakers: BKR-13-3, BKR-14-3, BKR-15-1, BKR-15-4, BKR-15-5, BKR-15-9, and BKR-16-3. If the fire damaged DC control power, and then damaged 4kV power cables, the excessive current could cause load power cables to over-heat and develop secondary fires in other fire areas which violates common enclosure requirements.</p> <p>The Nuclear Safety Performance Criteria is not met for Vital AC Power.</p> <p>This represents a VFDR of NFPA 805 Section 4.2.3, due to lack of separation between redundant trains of Vital and Non-Vital AC power.</p> <p>Components and Cables:</p> <p>Bus 13 Feed Breaker to 103-105-109-301 Transformer, BKR-13-3 (13403-3, 13408-B, 1C-1293, 1C-1295, 1C-4637, 1DC-3) 12 Heater Drain Pump Breaker, BKR-14-3 (14403-1, 14403-D, 1C-1294, 1C-4637, 1DC-4) 11 SI Pump Breaker, BKR-15-1 (15401-1, 15401-B, 15401-C,</p>	<p>Revised Disposition / Recovery Actions to:</p> <p>Add credit for a fire risk evaluation to resolve potential loss of over-current trip capability for BKR-13-3, BKR-14-3, and BKR-16-3</p> <p>Revised resolution statement to include a plant modification and a fire risk evaluation credited.</p>	<p>VFDR-032-1-03 is revised and is now resolved with a fire risk evaluation as well as a plant modification credited. The revised delta-risk values are calculated in a fire risk evaluation and meet the acceptance criteria defined in Regulatory Guide 1.174.</p>

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>15401-E, 15406-B, 1DCA-1) 11 RHR Pump Breaker, BKR-15-4 (15404-1, 15404-C, 15404-E, 15404-B, 15406-B, 1DCA-1) 11 CC Pump Breaker, BKR-15-5 (15405-1, 15405-A, 15405-G, 15406-B, 1DCA-1) 11 CS Pump Breaker, BKR-15-9 (15406-B, 15409-1, 15409-B, 15409-C, 1DCA-1) 12 MDAFW Pump Breaker, BKR-16-3 (16403-1, 16403-C, 1DCB-1)</p> <p>Compliant Case:</p> <p>Cable over-current protection should be maintained to protect cables from over-heating and causing secondary fires to meet common enclosure requirements.</p> <p>Recovery Action(s):</p> <p>No recovery actions credited.</p> <p>The impact of BKR-13-3, BKR-14-3, and BKR-16-3 losing over-current trip capability and causing secondary fire damage has been modeled in the Fire PRA and the risk is acceptable.</p> <p>Modification identified in Table S-2, Item #10 will ensure over-current protection is provided for BKR-15-1, BKR-15-4, BKR-15-5, and BKR-15-9.</p> <p>This VFDR has been evaluated and it was determined that the risk, safety margin and defense-</p>		

Summary of Changes to Attachment C, Table B-3

Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			in-depth meet the acceptance criteria of NFPA 805 Section 4.2.4 with a fire risk evaluation and plant modification credited.		
32	VFDR	VFDR-032-2-03	<p>This Variance From Deterministic Requirements is due to fire damage to cable(s) that could cause a loss of DC control power to BKR-25-10 which would preclude operation of the over-current trip relay protection on 4 kV breaker BKR-25-10. If the fire damaged DC control power, and then damaged 4kV power cables, the excessive current could cause load power cables to over-heat and develop secondary fires in other fire areas which violates common enclosure requirements. The Nuclear Safety Performance Criteria is not met for Vital Auxiliaries.</p> <p>This represents a VFDR of NFPA 805 Section 4.2.3, due to lack of separation between redundant trains of Vital and Non-Vital AC power.</p> <p>Components and Cables:</p> <p>21 MDAFW Pump Breaker, BKR-25-10 (25410-1, 25410-E, 2CA-525, 2CA-778)</p> <p>Compliant Case:</p> <p>Cable over-current protection should be maintained to protect cables from over-heating and causing secondary fires to meet</p>	Revised Description to indicate control power to BKR-25-10 is lost and not control power to BUS-25.	A re-evaluation of the NSCA model has determined control power to BUS-25 remains available; however, control power to breaker cubicle, BKR-25-10, is lost.

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>common enclosure requirements.</p> <p>Recovery Action(s):</p> <p>No recovery actions credited.</p> <p>Modification identified in Table S-2, Item #10 will ensure protection of the over-current trip function of 4kV breakers and preclude secondary ignition of cables in other fire areas.</p> <p>This VFDR has been evaluated and it was determined that the risk, safety margin and defense-in-depth meet the acceptance criteria of NFPA 805 Section 4.2.4 with a plant modification credited.</p>		
37	VFDR	VFDR-037-1-01	<p>This Variance from Deterministic Requirements (VFDR) is due to fire damage to cable(s) that could cause a loss of DC control power to BUS-13 which would preclude operation of the over-current trip relay protection on the 4KkV breakers. If the fire damaged DC control power, and then damaged 4kV power cables, the excessive current could cause load power cables to over-heat and develop secondary fires in other fire areas which violates common enclosure requirements.</p> <p>The Nuclear Safety Performance Criteria is not met for Vital Auxiliaries.</p> <p>This represents a VFDR of NFPA 805 Section 4.2.3, due to lack of</p>	<p>Revised Disposition / Recovery Actions to:</p> <p>Delete the modification in S-2, Item #10</p> <p>Add credit for a fire risk evaluation to resolve potential loss of over-current trip capability for BKR-13-3, BKR-13-7, and BKR-13-8</p> <p>Revised resolution statement to remove a plant modification and include a fire risk evaluation credited.</p>	VFDR-037-1-01 is revised and is now resolved with a fire risk evaluation credited. The revised delta-risk values are calculated in a fire risk evaluation and meet the acceptance criteria defined in Regulatory Guide 1.174.

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>separation between redundant trains of Vital Auxiliaries.</p> <p>Components and Cables:</p> <p>Bus 13 Feed Breaker to 103-105-109-301 Transformer, BKR-13-3 (13403-2, 13403-3, 13403-4, 13404-B, 13405-B, 13408-B, 1DC-3)</p> <p>11 Condensate Pump Breaker, BKR-13-7 (13407-1, 13404-B, 13405-B, 13408-B, 1DC-3)</p> <p>11 Cooling Water Pump Breaker, BKR-13-8 (13408-1, 13404-B, 13405-B, 13408-B, 1DC-3)</p> <p>Compliant Case:</p> <p>Cable over-current protection should be maintained to protect cables from over-heating and causing secondary fires to meet common enclosure requirements.</p> <p>Recovery Action(s):</p> <p>No recovery actions credited.</p> <p>The impact of these breakers losing over-current trip capability and causing secondary fire damage has been modeled in the Fire PRA and the risk is acceptable.</p> <p>This VFDR has been evaluated and it was determined that the risk, safety margin and defense-in-depth meet the acceptance criteria of NFPA 805 Section 4.2.4</p>		

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
38	VFDR	VFDR-038-2-01	<p>with a fire risk evaluation credited.</p> <p>This Variance from Deterministic Requirements (VFDR) is due to fire damage to cable(s) that could cause a loss of DC control power to BUS-23 and BUS-24 which would preclude operation of the over-current trip relay protection on the 4kV breakers. If the fire damaged DC control power, and then damaged 4kV power cables, the excessive current could cause load power cables to over-heat and develop secondary fires in other fire areas which violates common enclosure requirements.</p> <p>The Nuclear Safety Performance Criteria is not met for Vital Auxiliaries.</p> <p>This represents a VFDR of NFPA 805 Section 4.2.3, due to lack of separation between redundant trains of Vital Auxiliaries.</p> <p>Components and Cables:</p> <p>121 Screenwash Pump Breaker, BKR-23-1 (23401-1, 23401-A, 23401-B, 23405-F, 23406-C, 23407-B, 2DC-4)</p> <p>21 Cooling Water Pump Breaker, BKR-23-4 (23404-1, 23401-A, 23401-B, 23405-F, 23406-C, 23407-B, 2DC-4)</p> <p>21 Condensate Pump Breaker, BKR-23-5 (23405-1, 23401-A, 23401-B, 23405-F, 23406-C, 23407-B, 2DC-4)</p> <p>22 Circ. Water Pump Breaker,</p>	<p>Revised Disposition / Recovery Actions to:</p> <p>Delete the modification in S-2, Item #10</p> <p>Add credit for a fire risk evaluation to resolve potential loss of over-current trip capability for BKR-23-1, BKR-23-4, BKR-23-5, BKR-24-2, BKR-24-5, and BKR-24-6</p> <p>Revised resolution statement to remove a plant modification and include a fire risk evaluation credited.</p>	VFDR-038-2-01 is revised and is now resolved with a fire risk evaluation credited. The revised delta-risk values are calculated in a fire risk evaluation and meet the acceptance criteria defined in Regulatory Guide 1.174.

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>BKR-24-2 (24402-1, 24403-F, 24404-F, 24405-E, 2DC-5) 22 heater Drain Pump breaker, BKR-24-5 (24405-1, 24403-F, 24404-F, 24405-E, 2DC-5) Bus 24 Feed Breaker to 204-206-209-402 Transformer, BKR-24-6 (24406-2, 24406-3, 24403-F, 24404-F, 24405-E, 2DC-5)</p> <p>Compliant Case:</p> <p>Cable over-current protection should be maintained to protect cables from over-heating and causing secondary fires to meet common enclosure requirements.</p> <p>Recovery Action(s):</p> <p>No recovery actions credited.</p> <p>The impact of these breakers losing over-current trip capability and causing secondary fire damage has been modeled in the Fire PRA and the risk is acceptable.</p> <p>This VFDR has been evaluated and it was determined that the risk, safety margin and defense-in-depth meet the acceptance criteria of NFPA 805 Section 4.2.4 with a fire risk evaluation credited.</p>		
41B	VFDR	VFDR-041B-0-2	This Variance From Deterministic Requirements is due to fire damage to cable(s) that could cause a loss of automatic cooling	<p>Revised Components and Cables as follows:</p> <p>Removed MCC-1AB2 and its</p>	221C-4 is protected by a one-hour rated barrier in 41B with detection and suppression provided throughout the fire area. MCC-1AB2 is not subject to failure for the deterministic requirements of NFPA

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>water strainer backwash function for 11, 12, 21, and 22 Cooling Water Strainers. Loss of the cooling water strainer backwash function could eventually lead to reduced cooling water flow and additional pressure loss across the strainers which would affect the function of cooling water to provide cooling to credited loads and backup supply to Aux Feedwater Pumps.</p> <p>This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3, due to lack of separation between redundant trains of cooling water cables. This condition would challenge the Nuclear Safety Performance Criteria for Vital Auxiliaries.</p> <p>Components and Cables:</p> <p>11 Cooling Water Strainer Backwash Valve, CV-31652, (1CA-529, 1CB-370) 22 Cooling Water Strainer Backwash Valve, CV-31655 (1CA-529, 1CB-370) 12 Cooling Water Strainer Backwash Valve, CV-31653 (1CA-529, 1CB-370) 21 Cooling Water Strainer Backwash Valve, CV-31654 (1CA-529, 1CB-370) 11 Cooling Water Strainer Motor, MTR-111C-21 (1CA-529, 1CB-370) 22 Cooling Water Strainer Motor,</p>	associated cable 221C-4	805, section 4.2.3.3 (c), have been met for its associated cable 221C-4.

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>MTR-121C-22 (1CA-529, 1CB-370) 12 CL Strainer Motor, MTR-121C-21 (1CA-529, 1CB-370) 21 CL Strainer Motor, MTR-111C-22 (1CA-529, 1CB-370) AC Distribution Panel 136, PNL-136 (1CA-529, 1CB-370) AC Distribution Panel 137, PNL-137 (1CB-370) Motor Control Center 1AB Bus 1, MCC-1AB1 (111C-5)</p> <p>Compliant Case:</p> <p>Train A or Train B Cooling Water Strainers should remain unaffected by a fire in this area.</p> <p>Recovery Action(s):</p> <p>Evaluate risk of recovery actions to manually backwash the cooling water strainers described in procedure F5 Appendix D, Zone 74.</p> <p>Modification identified in Table S-2, Item #20 will correct fuse/breaker coordination for PNL-136 and PNL-137.</p> <p>This VFDR has been evaluated and it was determined that the risk, safety margin and defense-in-depth meet the acceptance criteria of NFPA 805 Section 4.2.4 with recovery actions and a plant modification credited.</p>		
41B	VFDR	VFDR-041B-0-03	This Variance From Deterministic Requirements is due to fire	Revised Disposition / Recovery Actions to:	VFDR-041B-0-03 is revised and is now resolved with a fire risk evaluation credited. The revised

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>damage to cable(s) that could cause a loss of DC control power to Bus 23 and damage to power cables that could over-heat and cause secondary fires. If the fire damaged DC control power, and then damaged 4kV power cables, the excessive current could cause load power cables to over-heat and develop secondary fires in other fire areas which violates common enclosure requirements.</p> <p>The Nuclear Safety Performance Criteria is not met for Vital Auxiliaries.</p> <p>This represents a variation from the deterministic requirements of NFPA 805 Section 4.2.3.4.b due to a lack of OCT protection for the Power and Control cables for the Screenwash pump.</p> <p>Components and Cables:</p> <p>121 Screenwash Pump MTR 23-1 (23401-2, 1C-1550, 1C-1552, 1C-2280, 1C-2285, 1C-4661, 2C-1359)</p> <p>21 Cooling Water Pump, BKR-23-4 (1C-2285, 2C-1359, 23404-2)</p> <p>Compliant Case:</p> <p>Cable over-current protection should be maintained to protect cables from over-heating and causing secondary fires to meet common enclosure requirements.</p>	<p>Delete the modification in S-2, Item #10</p> <p>Add credit for a fire risk evaluation to resolve potential loss of over-current trip capability for BKR-23-1 and BKR-23-4</p> <p>Revised resolution statement to remove a plant modification and include a fire risk evaluation credited.</p>	<p>delta-risk values are calculated in a fire risk evaluation and meet the acceptance criteria defined in Regulatory Guide 1.174.</p>

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>Recovery Action(s):</p> <p>No recovery actions credited.</p> <p>The impact of BKR-23-1 and BKR 23-4 losing over-current trip capability and causing secondary fire damage has been modeled in the Fire PRA and the risk is acceptable.</p> <p>This VFDR has been evaluated and it was determined that the risk, safety margin and defense-in-depth meet the acceptance criteria of NFPA 805 Section 4.2.4 with a fire risk evaluation credited.</p>		
58	VFDR	VFDR-058-1-04	<p>This Variance From Deterministic Requirements is due to fire damage to cable(s) that could cause loss of DC control power for and damage to power cables for the following 4kV motor breakers: BKR-13-3, BKR-15-1, BKR-15-4, BKR-15-5, BKR-15-9, BKR-16-1, BKR-16-5, BKR-16-6, and BKR-16-7. If the fire damaged DC control power, and then damaged 4kV power cables, the excessive current could cause load power cables to over-heat and develop secondary fires in other fire areas which violates common enclosure requirements.</p> <p>The Nuclear Safety Performance Criteria is not met for Vital AC Power.</p> <p>This represents a variation from</p>	<p>Revised Disposition / Recovery Actions to:</p> <p>Add credit for a fire risk evaluation to resolve potential loss of over-current trip capability for BKR-13-3</p> <p>Revised resolution statement to include a plant modification and a fire risk evaluation credited.</p>	<p>VFDR-058-1-04 is revised and is now resolved with a fire risk evaluation as well as a plant modification credited. The revised delta-risk values are calculated in a fire risk evaluation and meet the acceptance criteria defined in Regulatory Guide 1.174.</p>

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>the deterministic requirements of NFPA 805 Section 4.2.3 due to a lack of separation between redundant trains of vital buses.</p> <p>Components and Cables:</p> <p>Bus 13 Feed Breaker to 103-105-109-301 Transformer, BKR 13-3 (13403-3, 13403-B, 1C-1293, 1C-1295, 1C-4637)</p> <p>11 SI Pump, MTR 15-1 (15401-1, 15401-B, 15401-C, 15401-E)</p> <p>11RHR Pump, MTR 15-4, (15404-1, 15404-C, 15404-E, 1CA-753, 1CA-98)</p> <p>11 CC Pump, MTR 15-5 (15405-1, 15405-A,, 15405-G, 1CA-184)</p> <p>11 CS Pump, MTR 15-9 (15409-1, 15409-B, 1CA-97)</p> <p>12 RHR Pump, MTR 16-6 (16406-1, 1CB-36, 1CB-564)</p> <p>12 CS Pump, MTR 16-1 (16401-1, 16401-B, 1CB-29)</p> <p>12 SI, MTR 16-7 (16407-1, 16407-B)</p> <p>12 CC Pump, MTR 16-5 (16405-1, 16405-A,, 1CB-71)</p> <p>Compliant Case:</p> <p>Cable over-current protection should be maintained to protect cables from over-heating and causing secondary fires to meet common enclosure requirements.</p> <p>Recovery Action(s):</p> <p>No recovery actions credited.</p>		

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>The impact of BKR-13-3 losing over-current trip capability and causing secondary fire damage has been modeled in the Fire PRA and the risk is acceptable. Modification #10 will ensure the remaining breakers, associated with this VFDR, will not cause secondary fire damage.</p> <p>This VFDR has been evaluated and it was determined that the risk, safety margin and defense-in-depth meet the acceptance criteria of NFPA 805 Section 4.2.4 with a fire risk evaluation and plant modification credited.</p>		
58	VFDR	VFDR-058-1-11	<p>This Variance From Deterministic Requirements is due to fire damage to cable(s) that could cause loss of CT11 and 1R source to BUS-15 and BUS-16 and the D1 source (034-011) to BUS-15 and the D2 source (034-021) to BUS-16. The power sources to safeguards BUS-15 and BUS-16 could be impacted by a fire in this area. BUS-15 and/or BUS-16 are required to power safe shutdown equipment.</p> <p>The Nuclear Safety Performance Criteria is not met for Vital AC Power.</p> <p>This represents a variance from the deterministic requirements of NFPA 805 Section 4.2.3 due to a lack of suppression with a one hour barrier and detection in the</p>	<p>Revised Disposition / Recovery Actions to:</p> <p>Add the modification in S-2, Item #35</p>	<p>VFDR-058-1-11 is revised to credit the modification identified in Table S-2, Item #35 to re-route cable 1C-332 out of Fire Area 32 as well as the modification identified in Table S-2, Item #6. A re-evaluation of the NSCA model determined modifications identified in Table S-2, Items #6 and #35, need to be credited for the 1RY source to remain available to supply BUS-16.</p>

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>area.</p> <p>Components and Cables:</p> <p>Bus 15 Source from D1 Diesel Generator, BKR-15-2 (15402-1, 15402-G, 15402-K, 1CA-1140)</p> <p>Bus 15 Source from 1R XFMR, BKR-15-3 (1C-332, 1C-333, 15403-B)</p> <p>Bus 15 Source from CT 11, BKR-15-7 (15407-3, 15407-A, 16408-1)</p> <p>Bus 16 Source from 1R XFMR, BKR-16-2 (1C-332, 1C-333)</p> <p>Bus 16 Source from CT 11, BKR-16-8 (15407-3, 16408-1)</p> <p>Bus 16 Source from D2 Diesel Generator, BKR-16-9 (16409-1, 1CB-135)</p> <p>D2 Diesel Generator, 034-021 (1CB-116, 1CB-117, 1CB-121, 1CB-130, 1CB-133, 1CB-135, 1CB-140, 1CB-526, 1DCB-2)</p> <p>CT-11 4.16KV CLG TWR Switchgear, BUS-CT11 (1CT-1)</p> <p>Compliant Case:</p> <p>BUS-16 should remain powered from either the 1RY or D2 source. BUS-15 should remain powered from the 1RY source for fire scenarios that impact Train B safe shutdown equipment in this area.</p> <p>Recovery Action(s):</p> <p>No recovery actions credited.</p> <p>Modifications identified in Table</p>		

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>S-2, Items #6 and # 35 will ensure BUS-16 will remain powered from either the 1RY or D2 source.</p> <p>This VFDR has been evaluated and it was determined that the risk, safety margin and defense-in-depth meet the acceptance criteria of NFPA 805 Section 4.2.4 with a plant modification credited.</p>		
58	VFDR	VFDR-058-2-04	<p>This Variance From Deterministic Requirements is due to fire damage to cable(s) that could cause loss of DC control power for and damage to power cables for the following 4kV breakers: BKR-24-6, BKR-25-7, BKR-25-8, BKR-25-9, BKR-25-10, BKR-25-13, BKR-26-5, BKR-26-9, BKR-26-10, and BKR-26-11. If the fire damaged DC control power, and then damaged 4kV power cables, the excessive current could cause load power cables to over-heat and develop secondary fires in other fire areas which violates common enclosure requirements.</p> <p>The Nuclear Safety Performance Criteria is not met for Vital Auxiliaries.</p> <p>This represents a variance from the deterministic requirements of NFPA 805 Section 4.2.3 due to a lack of separation between redundant trains of Vital Auxiliaries.</p> <p>Components and Cables:</p>	<p>Revised Disposition / Recovery Actions to:</p> <p>Add credit for a fire risk evaluation to resolve potential loss of over-current trip capability for BKR-24-6 and BKR-26-10</p> <p>Revised resolution statement to include a plant modification and a fire risk evaluation credited.</p>	VFDR-058-2-04 is revised and is now resolved with a fire risk evaluation as well as a plant modification credited. The revised delta-risk values are calculated in a fire risk evaluation and meet the acceptance criteria defined in Regulatory Guide 1.174.

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>Bus 24 Feed Breaker to 204-206-209-402 Transformer, BKR-24-6 (24403-F, 24404-F, 24406-3, 2C-2552, 2C-866)</p> <p>21 RHR Pump, MTR 25-7 (25407-1, 25407-C, 2CA-8, 25410-E)</p> <p>21 SI Pump, MTR 25-8 (25408-1, 25408-B, 25408-C, 25410-E)</p> <p>21 CS Pump, MTR 25-9 (25409-1, 25409-D, 2CA-7, 25410-E)</p> <p>21 AFW Pump, MTR 25-10 (25410-1, 25410-E, 2CA-778)</p> <p>21 CC Pump, MTR 25-13 (25413-1, 25413-D, 25413-E, 2CA-4, 25410-E)</p> <p>22 CC Pmp, MTR 26-5 (26405-1, 26405-D, 2CB-7)</p> <p>22 CS, MTR 26-9 (26409-1, 26409-E, 2CB-315)</p> <p>22 SI Pump, MTR 26-10 (26410-1, 26410-C)</p> <p>22 RHR Pump, MTR 26-11 (26411-1, 2CB-9)</p> <p>Compliant Case:</p> <p>Cable over-current protection should be maintained to protect cables from over-heating and causing secondary fires to meet common enclosure requirements.</p> <p>Recovery Action(s):</p> <p>No recovery actions credited.</p> <p>The impact of BKR-24-6 and BKR-26-10 losing over-current trip capability and causing secondary fire damage has been</p>		

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>modeled in the Fire PRA and the risk is acceptable. Modification #10 will ensure the remaining breakers, associated with this VFDR, will not cause secondary fire damage.</p> <p>This VFDR has been evaluated and it was determined that the risk, safety margin and defense-in-depth meet the acceptance criteria of NFPA 805 Section 4.2.4 with a fire risk evaluation and plant modification credited.</p>		
59	VFDR	VFDR-059-2-01	<p>This Variance From Deterministic Requirements is due to fire damage to cable(s) that could cause spurious closure of CV-31248 (22 RCP TBHX) and CV-31427 (22 RCP Seal Injection). This could cause a loss of all RCP seal cooling to 22 RCP, which could result in increased leakage through the RCP seals.</p> <p>The Nuclear Safety Performance Criteria is not met for RCS Inventory Control.</p> <p>This represents a VFDR of NFPA 805 Section 4.2.3 due to lack of separation between redundant trains of RCP seal cooling.</p> <p>Components and Cables:</p> <p>22 RCP TBHX, CV-31248 (2C-2556) 22 RCP Seal Injection, CV-31427 (2C-1455)</p>	<p>Revised Disposition / Recovery Actions to:</p> <p>Delete the modification in S-1, Item #1</p> <p>Add the modification identified in Table S-2, Item #18</p>	VFDR-059-2-01 is revised and is now resolved by the modification identified in Table S-2, Item #18.

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>Compliant Case:</p> <p>CV-31248 or CV-31427 should remain free of fire damage to provide cooling to the RCP seals.</p> <p>Recovery Action(s):</p> <p>No recovery actions credited.</p> <p>Modification identified in Table S-2, Item #18 will install new Reactor Coolant Pump Seals that will not be susceptible to excessive leakage upon loss of all seal cooling.</p> <p>This VFDR has been evaluated and it was determined that the risk, safety margin and defense-in-depth meet the acceptance criteria of NFPA 805 Section 4.2.4 with a plant modification credited.</p>		
59	VFDR	VFDR-059-2-12	<p>This Variance From Deterministic Requirements is due to fire damage to cable(s) that could cause damage to DC control power to Bus 26 tripping circuits and subsequent damage to AC power cables resulting and could fail Bus 26. If the fire damaged DC control power, and then damaged 4kV power cables, the excessive current could cause load power cables to over-heat and develop secondary fires in other fire areas which violates common enclosure requirements.</p>	<p>Revised Disposition / Recovery Actions to:</p> <p>Add credit for a fire risk evaluation to resolve potential loss of over-current trip capability for BKR-26-10</p> <p>Revised resolution statement to include a plant modification and a fire risk evaluation credited.</p>	<p>VFDR-059-2-12 is revised and is now resolved with a fire risk evaluation as well as a plant modification credited. The revised delta-risk values are calculated in a fire risk evaluation and meet the acceptance criteria defined in Regulatory Guide 1.174.</p>

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>The Nuclear Safety Performance Criteria is not met for Vital AC Power.</p> <p>This represents a variation from the deterministic requirements of NFPA 805 Section 4.2.3 due to a lack of separation between 4KV Breakers.</p> <p>Components and Cables:</p> <p>22 CC, MTR 26-5 (26405-1, 26405-D) 22 CS, MTR 26-9 (26409-1, 26409-E) 22 SI, MTR 26-10 (26410-1, 26410-B, 26410-C) 22 RHR, MTR 26-11 (26411-1, 26411-C)</p> <p>Compliant Case:</p> <p>Cable over-current protection should be maintained to protect cables from over-heating and causing secondary fires to meet common enclosure requirements. Coordination of BUS-26 should remain unaffected by a fire in this area.</p> <p>Recovery Action(s):</p> <p>No Recovery Actions credited.</p> <p>The impact of BKR-26-10 losing over-current trip capability and causing secondary fire damage has been modeled in the Fire PRA and the risk is acceptable.</p>		

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>Modification #10 will ensure BKR-26-5, BKR-26-9, and BKR-26-11 will not cause secondary fire damage.</p> <p>This VFDR has been evaluated and it was determined that the risk, safety margin and defense-in-depth meet the acceptance criteria of NFPA 805 Section 4.2.4 with a fire risk evaluation and plant modification credited.</p>		
59	VFDR	VFDR-059-2-13	<p>This Variance From Deterministic Requirements is due to fire damage to cable(s) that could cause spurious closure of CV-31247 (21 RCP TBHX) and CV-31426 (21 RCP Seal Injection) which could cause a loss of all seal cooling to the Reactor Coolant Pump. This could cause a loss of all RCP seal cooling to 21 RCP, which could result in increased leakage through the RCP seals.</p> <p>The Nuclear Safety Performance Criteria is not met for Inventory and Pressure Control.</p> <p>This represents a variance from the deterministic requirements of NFPA 805 Section 4.2.3, due to lack of separation between redundant trains of RCP seal cooling.</p> <p>Components and Cables: 21 RCP TBHX, CV-31247 (2C-</p>	<p>Revised Disposition / Recovery Actions to:</p> <p>Delete the modification in S-1, Item #1</p> <p>Add the modification identified in Table S-2, Item #18</p>	VFDR-059-2-13 is revised and is now resolved by the modification identified in Table S-2, Item #18.

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>2553) 21 RCP Seal Injection, CV-31426 (2C-1455)</p> <p>Compliant Case:</p> <p>RCP seal cooling from either seal injection or TBHX should remain unaffected by a fire in this fire area.</p> <p>Recovery Action(s):</p> <p>No recovery actions credited.</p> <p>Modification identified in Table S-2, Item #18 will install new Reactor Coolant Pump Seals that will not be susceptible to excessive leakage upon loss of all seal cooling.</p> <p>This VFDR has been evaluated and it was determined that the risk, safety margin and defense-in-depth meet the acceptance criteria of NFPA 805 Section 4.2.4 with a plant modification credited.</p>		
61	Fire Area 61	N/A	Note: Fire Area 61 is now combined into Fire Area 4	Removed information about FA 61	The NSCA model has been evaluated with Fire Areas 4 and 61 combined and no VFDRs are created as a result of merging the fire areas. Information about FA 61 was moved to FA 4.
97	VFDR	VFDR-097-0-01	This Variance From Deterministic Requirements is due to fire damage to cable(s) that could cause damage to Bus 25 and cables that could cause a	<p>Revised Components and Cables as follows:</p> <p>Added BKR-15-12 and its associated cables (2CA-748,</p>	A re-evaluation of the NSCA model has determined BKR-15-12 and its associated cables as well as the cable associated with BKR-15-8 may fault BUS-15 leading to loss of the 11, 12, 21, and 22 CL strainers.

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>spurious closure of BKR-25-17 and BKR-15-8 which could fault Bus 15 and cause a loss of power to PNL 136 which powers the CL strainer backwash control panel for 11, 12, 21, and 22 CL Strainers.</p> <p>The Nuclear Safety Performance Criteria is not met for Vital Auxiliaries.</p> <p>This represents a variance from the deterministic requirements of NFPA 805 Section 4.2.3 due to a lack of separation between redundant trains of cooling water strainers.</p> <p>Components and Cables:</p> <p>BKR-15-8 (2CA-749, 25417-1, 25417-2, 25417-D) BKR-15-12 (2CA-748, 2CA-749, 212A-1, 212A-2, 211A-1, 211A-2, 211A-3, 15412-1) 22 CL Strainer Backwash CB, CV-31655 (none) 22 CL Strainer Motor, MTR-121C-22 (none) Motor Control Center 2A Bus 1, MCC-2A1 (211E-1)</p> <p>Compliant Case:</p> <p>Train B, 22 Cooling Water Strainer (CV-31655 and MTR-121C-22) should remain unaffected by a fire in this area.</p> <p>Recovery Action(s):</p>	<p>2CA-749, 212A-1, 212A-2, 211A-1, 211A-2, 211A-3, 15412-1)</p> <p>Added cable 25417-D to component BKR-15-8</p>	

Summary of Changes to Attachment C, Table B-3					
Fire Area	Revision to	VFDR	Revised Version	Summary of Change	Justification
			<p>Evaluate risk of recovery actions to manually backwash the cooling water strainers described in procedure F5 Appendix D, Zone 97.</p> <p>This VFDR has been evaluated and it was determined that the risk, safety margin and defense-in-depth meet the acceptance criteria of NFPA 805 Section 4.2.4 with recovery actions credited.</p>		

Changes to Required Fire Protection Systems and Features

The following changes are made to the required fire protection systems and features in the indicated fire areas of LAR Attachment C, Revision 1. The following fire areas have updated required systems and features based on further refinements in the Fire PRA. These changes are justified based on the result of the Single Compartment Analysis and Multi-Compartment Analysis Notebooks that have been made since the submittal of LAR Supplement 1. In addition, fire risk evaluations have been performed to evaluate systems required for defense in depth and those have been updated as appropriate.

1. Fire Area 69 (within Fire Area 8 Group), Change Detection ID 107 entry for "R" from "Y" to "N".
2. Fire Area 69 (within Fire Area 8 Group), Change Suppression ID PA-14 entry for "R" from "N" to "Y".
3. Fire Area 69 (within Fire Area 8 Group), Change Suppression ID SWP-3 entry for "R" from "Y" to "N".
4. Fire Area 70 (within Fire Area 8 Group), Change Suppression ID PA-15 entry for "R" from "N" to "Y".
5. Fire Area 18, Add Detection ID "HADs for CO2 System", Type – Thermal, with entries as follows: "S"="N", "L"="N", "E"="N", "R"="Y", "D"="N"
6. Fire Area 26, Add Suppression ID "PA-9", Type = Pre-Action, with entries as follows: "S"="N", "L"="N", "E"="N", "R"="Y", "D"="N"
7. Fire Area 97, Change Detection ID 97 entry for "R" from "Y" to "N".
8. Fire Area 97, Change Suppression ID PA-12 entry for "R" from "Y" to "N".

Licensee Identified Issue #4: Changes to Attachment D

The NPO model has been updated to reflect modification reductions and combining Fire Areas 4 and 61, which are areas with previously identified pinch points. This resulted in the reduction of the total number of fire areas.

Section F.3 is revised as follows:

F.3 - Perform Fire Area Assessments (Identify pinch points)

There is a total of fifty-seven (57) fire areas at the PINGP.

- Twenty-eight (28) fire areas were found to have an adequate number of KSF success paths to survive the entire contents loss of the fire area.
- Twenty-nine (29) fire areas were found to have pinch points resulting in the potential loss of one or more KSF success paths.

In addition, the Reference Documents section is revised to include the following additional reference:

EC 26988, "Attachment D Summary of Change"

Licensee Identified Issue #5: Summary of Revisions for Attachment S

Attachment S has been updated to reflect revisions to the Fire PRA and to incorporate revisions due to RAI responses. The following table provides an itemized list of the changes and the reason for each change. Enclosure 4 provides the complete revised Attachment S, which supersedes the Attachment S provided in the NFPA 805 LAR Supplement, dated April 30, 2015.

Summary of Revisions for Attachment S		
Item	Attachment S Revision	Reason for Change
1	Page S-2 - The statement regarding implementing Code Conformance modifications 8, 9 and 15 has been deleted.	Code Conformance Modifications 9 and 15 have been completed. Regarding Code Conformance Modification 8, the code conformance detection aspect of the modification is complete; however, the CO2 fire suppression system aspect of the modification is not yet complete, and therefore, Item 8 remains in Table S-2. All remaining modifications will be completed per the implementation timing specified.
2	Page S-2 - The implementation timing statement was revised in the introduction section of Attachment S to align with Licensee Identified Issue #1 in the 60-DAY RAI Response, dated May 28, 2015.	Aligns with submittal dated May 28, 2015.
3	Page S-2 – The statement regarding interim compensatory measures has been deleted.	Table S-2 lists the required compensatory measures per modification.
4	Page S-2 - The following statement was added: The Proposed Modification statements in Table S-2 provide a conceptual design to address the Problem Statement. The final design and installation to resolve the Problem Statement will be developed and approved in accordance with Xcel Engineering processes, hence implementation details may vary.	To allow future design flexibility with the NFPA 805 modifications because they are conceptual at this stage.
5	Item S1-1 was removed from Table S-1.	This modification is incomplete and remains in Table S-2, Item S2-18 and includes both Unit 1 and Unit 2. In addition, reference to the Flowserve N-9000 RCP Seal package has been removed. See Licensee Identified Issue #1 for further details.

Summary of Revisions for Attachment S		
Item	Attachment S Revision	Reason for Change
6	Item S1-9 was added because the modification was completed and moved from Table S-2, Item 9, to Table S-1.	The modification was completed and moved from Table S-2, Item 9, to Table S-1.
7	Item S1-12 was added because the modification was completed and moved from Table S-2, Item 12, to Table S-1.	The modification was completed and moved from Table S-2, Item 12, to Table S-1.
8	Item S1-13 was added because the modification was completed and moved from Table S-2, Item 13, to Table S-1.	The modification was completed and moved from Table S-2, Item 13, to Table S-1.
9	Item S1-16 was added because the modification was completed and moved from Table S-2, Item 16, to Table S-1.	The modification was completed and moved from Table S-2, Item 16, to Table S-1.
10	Items S2-1 – S2-4 under "Problem Statement" were revised to remove the lists of Cables of Concern.	These modifications are conceptual and this level of detail was determined unnecessary.
11	Item S2-2 under 'Proposed Modification' – Fire Area 3 was corrected to Fire Area 31. Other minor editorial changes.	Editorial corrections
12	Item S2-3 under 'Proposed Modification' – Fire Area 3 was corrected to Fire Area 32. Other minor editorial changes.	Editorial corrections
13	Item S2-9 has been completed and moved to Table S-1, Item 9.	Modification was completed per EC21578.
14	Item S2-10 scope was reduced.	The Fire PRA was updated to model the impact of loss of DC control power and determined the change in risk was low and therefore, breaker scope could be reduced. Fire damage to medium voltage (4.16KV) switchgear breaker 125 DC control cables could cause a loss of power to the over-current relay protection for these breakers. If the fire also faulted the medium voltage AC power cable, the cable could over-heat causing secondary damage to other cables located in the common enclosure (cable tray) due to the loss of over-current protection for that load cable. Variances from Deterministic Requirements (VFDR) of NFPA 805 were identified in several fire areas. The Fire PRA was refined to model the impact of these VFDRs. There are three items to consider; (1) loss of coordination for the upstream bus, (2)

Summary of Revisions for Attachment S		
Item	Attachment S Revision	Reason for Change
		secondary damage to cable in the common enclosure, and (3) High Energy Arcing Fault 5' vertical and 3' horizontal Zone of Influence at the fault location. The Fire PRA model incorporated the impact of loss of coordination in these scenarios by modeling the upstream electrical bus as failed in scenarios where the over-current DC control circuit and AC power cable are damaged. The Fire PRA also includes failure of all the other cables (and their associated components) that is in the common enclosure or common raceway with the affected AC cable from the point of the fault back to the upstream electrical bus.
15	Item S2-11 was removed as the modification was determined to no longer be required.	Limited scope fire modeling, consistent with already used fire modeling methods was performed in Fire Area 8, Turbine Building to better characterize the risk impact of this modification. No new fire modeling methods were utilized. The fire scenarios that impact the cables for the 11 Turbine Driven Aux Feedwater Pump (TDAFWP) were not risk significant and there was very little risk benefit to Modification 11. Item 11 was credited in the NFPA 805 LAR Attachment C for Fire Area 8 to meet Deterministic Requirements. To ensure that Fire Area 8 still meets Deterministic Requirements of NFPA 805, Section 4.2, modification Item #24 will ensure the CT11 offsite power transformer remains available to power Bus 16 which powers the 12 Motor Driven Aux Feedwater Pump, and Fire Area 8 will still meet Deterministic Requirements. Therefore Item 11 to modify the 11 TDAFWP control circuit was deleted.
16	Item S2-12 has been completed and moved to Table S-1, Item 12.	Modification was completed per EC21574.
17	Item S2-13 has been completed and moved to Table S-1, Item 13.	Modification was completed per EC18746.
18	Item S2-14 was revised under 'Problem Statement' to delete the second paragraph, "A fire that results in..." In addition, CV-31505 was removed as this valve was addressed under Item S2-13.	This modification is conceptual and this level of detail was determined unnecessary. In addition, CV-31505 was addressed under Item S2-13.
19	Item S2-15 was revised under 'Proposed Modification' for clarity. In addition, Item S2-15 was revised to include specific information on the positive displacement charging pumps (11, 12, 13, 21, 22 and 23 positive displacement charging pumps)	The modification as written was not clear.

Summary of Revisions for Attachment S		
Item	Attachment S Revision	Reason for Change
20	Item S2-16 has been completed and moved to Table S-1, Item 16.	Modification was completed per EC21572.
21	Item S2-18 has been revised to include Unit 2 and remove reference to the Flowserve N-9000 RCP Seal package. In addition, the sentence regarding 13 minutes under 'Problem Statement' has been deleted.	As discussed with the NRC Staff during the public meeting teleconference held on March 24, 2016, this modification is incomplete and remains in Table S-2, Item S2-18 and includes both Unit 1 and Unit 2. In addition, reference to the Flowserve N-9000 RCP Seal package has been removed. See Licensee Identified Issue #1 for further details. Enclosure 4 provides the Updated Attachment S. The sentence regarding 13 minutes was deleted as this level of detail was determined unnecessary.
22	Item S2-20 was revised from High rank to Low Rank. In addition, panels 136, 137 and 217 were added for clarity.	There were several electrical panels originally credited in the Fire PRA model that lacked electrical coordination and originally required modification to resolve. The Fire PRA model was updated to account for the lack of electrical coordination on these electrical panels by following the guidance in NUREG/CR-6850. For the cables on load breakers that are not properly coordinated, include these load cables as affecting the upstream power supply (source breaker to the electrical panel). These changes were made and the CDF and LERF did not increase for many of these electrical panels. This is because these load cables were in the same fire scenarios where the source cables were already affected, so there were no new fire scenarios where the electrical panels were affected due to loss of coordination, and therefore no increase in risk for these panels. Three panels remain on the list because they support equipment credited to be available in certain fire scenarios.
23	Item S2-24 was revised to add more detail and expand scope of the mod.	Additional detail was added to Item 24 to describe 4 cables to be re-routed outside Fire Area 8, Turbine Building to support deleting Item 11. Item 24 was also clarified to address the same issue for Unit 1 and Unit 2.
24	Item S2-27 was revised to remove isolation of excess letdown, head vents, and pressurizer vents under 'Proposed Modification'.	The Fire PRA model was refined to credit hot short duration for letdown, excess letdown, head vents, and pressurizer vents. The letdown and excess letdown isolation valves are air operated valves with a solenoid valve that fails closed upon loss of power and loss of air to these valves causes them to fail closed. The head vents and pressurizer vents are solenoid operated valves that fail closed upon loss of power to the solenoid. If a hot short caused these valves to spuriously energize and open the flow diversion pathway the flow path is restricted to limit the flow rate. The risk of the hot short being maintained long enough to cause a significant enough flow diversion is low and the risk benefit of providing isolation switches in the control room was no longer significant for letdown, excess letdown, head vents, and pressurizer vents. Item #27 will still provide isolation switches for Pressurizer Heaters and Pressurizer PORVs.

Summary of Revisions for Attachment S		
Item	Attachment S Revision	Reason for Change
25	Item S2-28 was removed as the modification was determined to no longer be required.	The Fire PRA model was refined to locate some risk significant cables and conduits that were conservatively assumed to be within the Zone of Influence of all fire ignition sources in the fire compartment. After the conduit locations were refined to specific fire scenarios, the risk benefit of these cable protection modifications was no longer needed to meet Regulatory Guide 1.174 criteria. The Fire PRA model no longer credits these cables being protected from fire damage in their applicable scenarios.
26	Item S2-29 was removed as the modification was determined to no longer be required.	The Fire PRA model was refined to locate some risk significant cables and conduits that were conservatively assumed to be within the Zone of Influence of all fire ignition sources in the fire compartment. After the conduit locations were refined to specific fire scenarios, the risk benefit of these cable protection modifications was no longer needed to meet Regulatory Guide 1.174 criteria. The Fire PRA model no longer credits these cables being protected from fire damage in their applicable scenarios.
27	Item S2-30 scope was reduced to remove Fire Area 32 and cables 2DCA-105, 2DCA-87.	The Fire PRA model was refined to locate some risk significant cables and conduits that were conservatively assumed to be within the Zone of Influence of all fire ignition sources in the fire compartment. After the conduit locations were refined to specific fire scenarios, the risk benefit of these cable protection modifications was no longer needed to meet Regulatory Guide 1.174 criteria. The Fire PRA model no longer credits these cables being protected from fire damage in their applicable scenarios.
28	Item S2-31 was removed as the modification was determined to no longer be required.	The Fire PRA model was refined to locate some risk significant cables and conduits that were conservatively assumed to be within the Zone of Influence of all fire ignition sources in the fire compartment. After the conduit locations were refined to specific fire scenarios, the risk benefit of these cable protection modifications was no longer needed to meet Regulatory Guide 1.174 criteria. The Fire PRA model no longer credits these cables being protected from fire damage in their applicable scenarios.
29	Item S2-32 was revised to remove 'Bus 23' and add in '21 Motor Driven Cooling Water Pump' under 'Proposed Modification'	This item was revised to clarify the modification statement.
30	Item S2-34 was revised for clarity under 'Problem Statement' and 'Proposed Modification'	SSA RAI 10 provided clarification on this modification. After further review, this modification was further revised for clarity and to remove unnecessary level of detail.
31	Item S2-36 was removed as the modification was determined to no longer be required.	SSA RAI 07 indicated that the Fire PRA model was changed to no longer credit recovery action to manually operate MV-32085 and MV-32188. Since the Fire PRA no longer credits these recovery actions to locally operate the MOV, it is no longer required to modify these MOV to allow local operation.

Summary of Revisions for Attachment S		
Item	Attachment S Revision	Reason for Change
32	Item S2-37 was deleted.	This modification has been deleted as it is not needed for Fire PRA or for Deterministic reasons.
33	Item S2-38 was added	It was identified that some control cables for the main turbine emergency oil pump lacked appropriate over-current protection and require smaller control power fuses to protect the cables from over-current conditions.
34	Item S2-39 was added	It was identified that the 121 Motor Driven Fire Pump loss of power alarm is local to the pump and does not meet NFPA 20 code requirements for the loss of power alarm to alarm in the main control room.
35	Item S2-40 was added	It was identified that fire hose station WF-9 has insufficient pipe hangers/bracing and does not meet NFPA 14, Section 651.
36	Item S2-41 was added	After updating the Motor Operated Valve (MOV) weak link calculation, it was identified that some MOVs credited to be locally operated after a fire could be damaged if the fire induced cable failure bypassed the torque and limit switches, therefore a modification was required.
37	Item S2-42 was added per response to FPE RAI 07.c.	This modification was determined necessary per response FPE RAI 07.c.
38	Item S2-43 was added	Revised/New FPEEs determined need for upgraded Fire Protection Barriers.
39	Page S-27 – Table S-3 Introduction - Implementation timing was changed from 6 months to 12 months.	NSPM requested a change to the implementation period for the Implementation Items listed in Table S-3 from 6 months to 12 months per letter dated June 19, 2015.
40	Page S-27 - Table S-3 Introduction – Item 66 was added to the last sentence.	Item S3-66 is tied to the modification timeline.
41	Item S3-7, Item S3-8, Item S3-9 were revised to remove the specific identifiers for the Fire Brigade Lesson Plans.	This level of detail is not necessary.
42	Item S3-19 was deleted.	This item is no longer required in Table B-2.
43	Item S3-20 was revised to include more specific detail per PRA RAI 15.a.	Revised per response to PRA RAI 15.a submitted per letter dated May 28, 2015.
44	Item S3-25 was revised to include peer reviews for PRA Upgrades.	Revised per response to PRA RAI 03.b.

Summary of Revisions for Attachment S		
Item	Attachment S Revision	Reason for Change
45	Item S3-30 was deleted.	Deleted per License Identified Issue #2 submitted per letter dated May 28, 2015.
46	Item S3-32 was deleted.	Deleted per License Identified Issue #1 submitted per letter dated June 19, 2015.
47	S3-41 was deleted.	This item is no longer required to support NPO.
48	S3-42 was deleted.	This item is no longer required to support NPO.
49	S3-51 was revised.	Revised per response to SSA RAI 03 submitted per letter dated May 28, 2015.
50	S3-53 was reinstated and revised.	Reinstated and revised per response to SSA RAI 02 & SSA RAI 04.f.
51	S3-57 was revised.	NSPM determined that additional changes were needed to F5, App B.
52	S3-61 was revised.	Attachment L was added under 'LAR Section/Source'.
53	S3-63 was revised.	Revised per response to SSA RAI 04.
54	S3-64 was added.	S3-64 was added per FPE RAI 06.
55	S3-65 was added.	S3-65 was added per RR RAI 02. This item has been further clarified to include 'Develop procedural guidance'.
56	S3-66 was added.	S3-66 was added per PRA RAI 15.c and further clarified in Licensee Identified Issue #1.
57	S3-67 was added per letter dated October 6, 2015, however, NSPM is deleting S3-67.	S3-67 was added per letter dated October 6, 2015 in Licensee Identified Issue #1, Addition of Attachment L Request #2. NSPM plans to implement the EPRI Technical Report TR-1006756 separate from the NFPA 805 implementation timeline.
58	S3-68 was added.	S3-68 was added per FPE RAI 07.
59	S3-69 was added.	S3-69 was added after determining that a formal Internal Seal Program was needed.
60	Editorial corrections made throughout Attachment S.	Editorial corrections.

Licensee Identified Issue #6: Correction to PRA RAI 14.a.ii

During internal reviews of the revised Attachment W, NSPM identified the need to correct the response to PRA RAI 14.a.ii, submitted per letter dated May 28, 2015.

NRC Request (PRA RAI 14.a.ii)

- (ii) *In Table W-7, Unit 2 Fire Areas 1 and 20 are indicated as having no VFDRs (i.e. there is a "No" under the "VFDR" column); however, there is an "ε," or epsilon in the column for $\Delta CDF/\Delta LERF$.*

CORRECTED NSPM Response (PRA RAI 14.a.ii):

- (ii) This is a typo; VFDRs exist for Fire Areas 1 and 20 in Unit 1 (Table W-6), but not Unit 2 (Table W-7). Attachment W has been updated to include "N/A" in the columns for $\Delta CDF/\Delta LERF$ in Table W-7 for Fire Areas 1 and 20; the "No" in the VFDR column for these fire areas is correct. A revision to Attachment W is provided In Enclosure 5.

Enclosure 3

Revised Insert A for License Condition 2.C.(4) for both Units 1 and 2

Insert A for License Condition 2.C.(4) for both Units 1 and 2:

Fire Protection

Northern States Power Company, shall implement and maintain in effect all provisions of the approved fire protection program that comply with 10 CFR 50.48(a) and 10 CFR 50.48(c), as specified in the licensee amendment request dated September 28, 2012 (and supplements dated November 8, 2012, December 18, 2012, May 3, 2013, October 17, 2013, April 30, 2014, May 28, 2015, June 19, 2015, October 6, 2015, October 22, 2015, January 20, 2016, and _____), and as approved in the safety evaluation dated _____. Except where NRC approval for changes or deviations is required by 10 CFR 50.48(c), and provided no other regulation, technical specification, license condition or requirement would require prior NRC approval, the licensee may make changes to the fire protection program without prior approval of the Commission if those changes satisfy the provisions set forth in 10 CFR 50.48(a) and 10 CFR 50.48(c), the change does not require a change to a technical specification or a license condition, and the criteria listed below are satisfied.

(a) Risk-Informed Changes that May Be Made Without Prior NRC Approval

A risk assessment of the change must demonstrate that the acceptance criteria below are met. The risk assessment approach, methods, and data shall be acceptable to the NRC and shall be appropriate for the nature and scope of the change being evaluated; be based on the as-built, as-operated, and maintained plant; and reflect the operating experience at the plant. Acceptable methods to assess the risk of the change may include methods that have been used in the peer-reviewed fire PRA model, methods that have been approved by NRC through a plant-specific license amendment or NRC approval of generic methods specifically for use in NFPA 805 risk assessments, or methods that have been demonstrated to bound the risk impact.

1. Prior NRC review and approval is not required for changes that clearly result in a decrease in risk. The proposed change must also be consistent with the defense-in-depth philosophy and must maintain sufficient safety margins. The change may be implemented following completion of the plant change evaluation.
2. Prior NRC review and approval is not required for individual changes that result in a risk increase less than 1×10^{-7} /year (yr) for CDF and less than 1×10^{-8} /yr for LERF. The proposed change must also be consistent with the defense-in-depth philosophy and must maintain sufficient safety margins. The change may be implemented following completion of the plant change evaluation.

(b) Other Changes that May be Made Without Prior NRC Approval

1. Changes to NFPA 805, Chapter 3, Fundamental Fire Protection Program

Prior NRC review and approval are not required for changes to the NFPA 805, Chapter 3, fundamental fire protection program elements and design requirements for which an engineering evaluation demonstrates that the alternative to the Chapter 3 element is functionally equivalent or adequate

for the hazard. The licensee may use an engineering evaluation to demonstrate that a change to an NFPA 805, Chapter 3, element is functionally equivalent to the corresponding technical requirement. A qualified fire protection engineer shall perform the engineering evaluation and conclude that the change has not affected the functionality of the component, system, procedure, or physical arrangement, using a relevant technical requirement or standard.

The licensee may use an engineering evaluation to demonstrate that changes to certain NFPA 805, Chapter 3, elements are acceptable because the alternative is "adequate for the hazard." Prior NRC review and approval would not be required for alternatives to four specific sections of NFPA 805, Chapter 3, for which an engineering evaluation demonstrates that the alternative to the Chapter 3 element is adequate for the hazard. A qualified fire protection engineer shall perform the engineering evaluation and conclude that the change has not affected the functionality of the component, system, procedure, or physical arrangement, using a relevant technical requirement or standard. The four specific sections of NFPA 805, Chapter 3, are as follows:

- "Fire Alarm and Detection Systems" (Section 3.8);
- "Automatic and Manual Water-Based Fire Suppression Systems" (Section 3.9);
- "Gaseous Fire Suppression Systems" (Section 3.10); and
- "Passive Fire Protection Features" (Section 3.11).

This License Condition does not apply to any demonstration of equivalency under Section 1.7 of NFPA 805.

2. Fire Protection Program Changes that Have No More than Minimal Risk Impact

Prior NRC review and approval are not required for changes to the licensee's fire protection program that have been demonstrated to have no more than a minimal risk impact. The licensee may use its screening process as approved in the NRC safety evaluation dated _____, to determine that certain fire protection program changes meet the minimal criterion. The licensee shall ensure that fire protection defense-in-depth and safety margins are maintained when changes are made to the fire protection program.

(c) Transition License Conditions

1. Before achieving full compliance with 10 CFR 50.48(c), as specified by 2. and 3. below, risk-informed changes to the licensee's fire protection program may not be made without prior NRC review and approval unless the change has been demonstrated to have no more than a minimal risk impact, as described in 2. above.

2. The licensee shall implement the modifications to its facility, as described in Attachment S, Table S-2, "Plant Modifications Committed," in Northern States Power - Minnesota letter L-PI-16-XXX, dated _____, to complete the transition to full compliance with 10 CFR 50.48(c), before the end of the second full operating cycle for each unit after approval of the LAR. The licensee shall maintain appropriate compensatory measures in place until completion of these modifications.
3. The licensee shall implement the items listed in Attachment S, Table S-3, "Implementation Items," of Northern States Power - Minnesota letter L-PI-16-XXX, dated _____, within twelve months after NRC approval, with the exception of Implementation Item 20 and 66 which are associated with modifications and will be completed 180 days after modifications are complete.

Enclosure 4

**Attachment S – Plant Modifications and Implementation Items,
Revision 3**

S. Modifications and Implementation Items

32 Pages Attached

**Attachment S, Revision 2, supersedes Attachment S, Revision 1,
provided in the NFPA 805 LAR Supplement dated April 30, 2015**

Tables S-1, Plant Modifications Completed, and S-2, Plant Modifications Committed, provided below, include a description of the modifications along with the following information:

- A problem statement,
- Risk ranking of the modification,
- An indication if the modification is currently included in the FPRA,
- Compensatory Measure in place if non-compliant with the Current Licensing Basis, and
- A risk-informed characterization of the modification and compensatory measure.
- The following legend should be used when reviewing the Risk Rank in Tables S-1 and S-2:
 - **High** = Modification would have an appreciable impact on reducing overall fire CDF.
 - **Medium** = Modification would have a measurable impact on reducing overall fire CDF.
 - **Low** = Modification would have either an insignificant or no impact on reducing overall fire CDF.
 - **N/A** = Not modeled in the FPRA, therefore a risk ranking is not provided.

NSPM is requesting two full refueling cycles beyond SE issuance to fully implement modifications. This is, in part, due to the outage strategies implemented at PINGP where only one train is removed from service per outage, per unit. Due to the significant modifications required to transition PINGP to NFPA 805, additional time is necessary to fully implement modifications described in Table S-2.

The *Proposed Modification* statements in Table S-2 provide a conceptual design to address the *Problem Statement*. The final design and installation to resolve the *Problem Statement* will be developed and approved in accordance with Xcel Engineering processes, hence implementation details may vary.

Table S-1 Plant Modifications Completed

Item	Rank	Unit	Problem Statement	Modification	In FPRA	Comp Measure	Risk Informed Characterization
9	Low	1,2	Fire Suppression required for the Fire PRA was not code compliant, as required by NFPA 805, for the following Fire Areas: FA 18, 41B, 31, & 32.	<p>Modified fire suppression systems in the following fire areas to resolve NFPA Suppression code deviations as follows:</p> <p>FA 18: Installed an odorizer for the Cardox System.</p> <p>FA 31: Resolved non-compliances with pendant sprinkler heads.</p> <p>FA 32: Resolved non-compliances with pendant sprinkler heads.</p> <p>FA 41B: Installed missing Sprinkler #229.</p> <p>FA 41B: Installed Heat Activated Detector (HAD) in the enclosure for the 121 Motor Driven Fire Pump.</p> <p>FA 41B: Installed a sprinkler head above the Diesel Driven Fire Pump because of a large obstruction.</p> <p>(Ref: EC 21578)</p> <p>From Table S-2, Item 9</p>	No	N/A	The proposed modification reduced risk by allowing the Fire PRA to credit fire suppression systems in the listed Fire Areas. Per the 2009 ASME PRA Standard, fire suppression systems must be code compliant if they are credited in the Fire PRA.

Table S-1 Plant Modifications Completed

Item	Rank	Unit	Problem Statement	Modification	In FPRA	Comp Measure	Risk Informed Characterization
12	Medium	1,2	<p>A fire in Fire Area 29 could damage cables required for operation of Train A Cooling Water Pumps which supply cooling water to D1 Emergency Diesel Generator which powers Train A safeguards Bus 15.</p> <p>A fire in Fire Area 69 could damage cables that supply power to ventilation fans for D2 Emergency Diesel Generator supply to Train B safeguards Bus 16. A fire in Fire Area 69 could also damage cables required for offsite power to Bus 15 and Bus 16.</p> <p>Fire Area 29 and 69 were defined as separate areas in the 1977 Fire Hazards Analysis that was submitted to the NRC and accepted. There is an open pathway between Fire Area 29 and 69; therefore the Fire PRA Plant Partitioning combined Fire Area 29 and 69 (along with 8, 14, 27, and 70) into Fire Compartment 8GRP. Risk for Fire Compartment 8GRP was high when all of these areas were combined.</p>	<p>Installed a rated fire barrier between Fire Area 29 and Fire Area 69.</p> <p>(Ref: EC 21574)</p> <p>From Table S-2, Item 12</p>	Yes	N/A	This modification reduced fire risk by providing a rated fire barrier between risk significant cables and fire initiators.

Table S-1 Plant Modifications Completed

Item	Rank	Unit	Problem Statement	Modification	In FPRA	Comp Measure	Risk Informed Characterization
13	Medium	1	A fire in the control room or relay room could have caused hot shorts on cables that could spuriously start D1 and close the cooling water supply valve. This condition resulted in unrecoverable damage to the credited Emergency Diesel Generator during a fire induced control room evacuation.	Wired additional relay contacts from the low speed relay in series with indicating light in the control room so that once D1 speed was greater than 250 RPM, the potential hot short on the indicating light in the control room is cleared. (Ref: EC 18746) From Table S-2, Item 13	Yes	N/A	This modification reduced risk by eliminating the possibility that a hot short on a cable in the Control and Relay Room could isolate cooling water to D1 Emergency Diesel Generator
16	N/A	1,2	The supply ventilation duct between Fire Areas 32 and 37 did not have a fire damper and was not code compliant for the Fire PRA, as required by NFPA 805.	Installed a fire damper in the supply ventilation duct between FA 32 and 37. (Ref: EC 21572) From Table S-2, Item 16	No	N/A	Not modeled in the FPRA, therefore a risk ranking was not provided.

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
1	High	1	A fire in Fire Area 31 could damage Train B 12 Motor Driven Auxiliary Feedwater Pump (MDAFWP) and the control switches for the 11 Turbine Driven Auxiliary Feedwater Pump (TDAFWP) discharge valves (MV-32238 & MV-32239). Fire damage to CS-51003 could cause spurious closure of MV-32238 which would isolate the 11 TDAFWP flow to the credited 11 Steam Generator. Fire damage to control switch CS-51005 could prevent closing MV-32239 which could divert the 11 TDAFWP flow to the non-credited 12 Steam Generator. The NFPA 805 Nuclear Safety Performance Goal Criteria is not met for Decay Heat Removal.	Modify equipment in FA 31 to ensure that Train "A" equipment is available for fire safe shutdown. The controls and associated cables for the Unit 1 Train "A" AFWP discharge valves will be moved to Fire Area 32 so they are not damaged by a fire in Fire Area 31.	Yes	Yes	<p>The modifications proposed by Items 1-4 will reduce risk by modifying FAs 31 and 32 to ensure that each FA has either A-train or B-train related equipment unaffected by a fire. This will limit the number of fire scenarios that could damage both trains of equipment.</p> <p>Compensatory measures in accordance with the Current Fire Protection Licensing Basis are being maintained.</p> <p>Compensatory measures will continue to remain in effect after the NFPA 805 fire protection program becomes effective until this modification is complete.</p>

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
2	High	2	A fire in FA 31 could damage the 22 TDAFWP (Train B) and damage the circuits for the Train A 21 MDAFWP (MV-32383 & MV-32384). Fire damage at the Train A Hot Shutdown Panel or MCC 2A1 could affect MV-32383 (21 MDAFWP to 21 SG) or MV-32384 (21 MDAFWP to 22 SG). A fire at MCC 2A1 could affect MV-32026 (21 MDAFWP suction from Cooling Water), MV-32336 (21 MDAFWP suction from CST), MV-32383 (21 MDAFWP to 21 SG) and MV-32384 (21 MDAFWP to 22 SG). The NFPA 805 Nuclear Safety Performance Goal Criteria is not met for Decay Heat Removal.	Modify equipment in FA 31 to ensure that Train "A" equipment is available for fire safe shutdown. The controls, MCC power supply, and associated cables for the Unit 2 Train "A" AFWP discharge and suction valves will be moved out of Fire Area 31 so they are not damaged by a fire in Fire Area 31. The cables going to Unit 2 Train "A" AFW discharge valves (MV-32383 and MV-32384) will be modified so that MOV will not spuriously close due to a fire in Fire Area 31.	Yes	Yes	<p>The modifications proposed by Items 1-4 will reduce risk by modifying FAs 31 and 32 to ensure that each FA has either A-train or B-train related equipment unaffected by a fire. This will limit the number of fire scenarios that could damage both trains of equipment.</p> <p>Compensatory measures in accordance with the Current Fire Protection Licensing Basis are being maintained.</p> <p>Compensatory measures will continue to remain in effect after the NFPA-805 fire protection program becomes effective until this modification is complete.</p>

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
3	High	1	A fire in Fire Area 32 could damage the 11 TDAFWP (Train A) and the control switches for the 12 MDAFWP discharge valves (MV-32381 & MV-32382). Fire damage at the Train B Hot Shutdown Panel or MCC 1A2 could affect MV-32381 (12 MDAFWP to 11 SG) or MV-32382 (12 MDAFWP to 12 SG). A fire at MCC 1A2 could affect MV-32027 (12 MDAFWP suction from Cooling Water), MV-32335 (12 MDAFWP suction from CST), MV-32381 (12 MDAFWP to 11 SG) and MV-32382 (12 MDAFWP to 12 SG). The NFPA 805 Nuclear Safety Performance Goal Criteria is not met for Decay Heat Removal.	Modify equipment in FA 32 to ensure that Train "B" equipment is available for fire safe shutdown. The controls, MCC power supply, and associated cables for the Unit 1 "B" AFWP discharge and suction valves will be moved out of Fire Area 32 so they are not damaged by a fire in Fire Area 32. The cables going to Unit 1 Train "B" AFW discharge valves (MV-32381 and MV-32382) will be modified so that the MOV will not spuriously close due to a fire in Fire Area 32.	Yes	Yes	<p>The modifications proposed by Items 1-4 will reduce risk by modifying FAs 31 and 32 to ensure that each FA has either A-train or B-train related equipment unaffected by a fire. This will limit the number of fire scenarios that could damage both trains of equipment.</p> <p>Compensatory measures in accordance with the Current Fire Protection Licensing Basis are being maintained.</p> <p>Compensatory measures will continue to remain in effect after the NFPA 805 fire protection program becomes effective until this modification is complete.</p>

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
4	High	2	A fire in Fire Area 32 could damage the 21 MDAFWP (Train A) and the control switches for the 22 TDAFWP discharge valves. Fire damage to CS-51605 could cause spurious closure of MV-32247 which would isolate the 22 TDAFWP flow to the credited 22 Steam Generator. Fire damage to control switch CS-51603 could prevent closing MV-32246 which could divert the 22 TDAFWP flow to the non-credited 21 Steam Generator. The NFPA 805 Nuclear Safety Performance Goal Criteria is not met for Decay Heat Removal.	Modify equipment in FA 32 to ensure that Train "B" equipment is available for fire safe shutdown. The controls and associated cables for the Unit 2 Train "B" AFWP discharge valves will be moved to Fire Area 31 so they are not damaged by a fire in Fire Area 32.	Yes	Yes	<p>The modifications proposed by Items 1-4 will reduce risk by modifying FAs 31 and 32 to ensure that each FA has either A-train or B-train related equipment unaffected by a fire. This will limit the number of fire scenarios that could damage both trains of equipment.</p> <p>Compensatory measures in accordance with the Current Fire Protection Licensing Basis are being maintained.</p> <p>Compensatory measures will continue to remain in effect after the NFPA 805 fire protection program becomes effective until this modification is complete.</p>

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
5	High	1,2	A fire in FA 18, Relay Room could damage both trains of safe shutdown. Since the risk of Recovery Actions taken in procedure F5 App B, Control Room Evacuation (Fire) are high, installing a Very Early Warning Fire Detection System (VEWFDS) or Incipient Detection is needed to reduce risk in the relay room.	Install Incipient Detection System in the Relay Room that will continuously sample the Relay Room air inside the risk significant cabinets to identify fires based on the detection of the presence of small amounts of products of combustion and, if detected, will sound an alarm in the MCR.	Yes	Yes	<p>The proposed modification will reduce risk by installing an incipient detection system that will notify operators of fires in their incipient state. This reduces the significance of the fire scenarios that could lead to control room abandonment.</p> <p>Compensatory measures in accordance with the Current Fire Protection Licensing Basis are being maintained.</p> <p>Compensatory measures will continue to remain in effect after the NFPA 805 fire protection program becomes effective until this modification is complete.</p>

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
6	Medium	1, 2	<p>Fire damage to cable 1CX-99 in FA 20 could cause a loss of the normal power feed from 13 Inverter to 120VAC Panel 113. Loss of Panel 113 causes CV-31198 (Charging Line to 11 Regenerative Heat Exchanger CV) to fail open causing diversion of flow from RCP seal injection to charging. Loss of Panel 113 causes loss of Control Room indication for instrument Loops 1N51 (Unit 1 Excore Detection Train A), 1T-450A (Unit 1 RCS Loop A Hot Leg Temperature) and 1T-450B (Unit 1 RCS Loop A Cold Leg Temperature).</p> <p>Modification is needed to protect 1CX-99 from fire damage in Fire Area 20 to maintain Process Monitoring indication in the control room.</p>	<p>Reroute the following cables through FA 58 along the "G" line between 8 and 9 and out of FA 20:</p> <ul style="list-style-type: none"> - 1CX-99 (Instrument Bus III (Blue) Panel 113 Normal Power Feed) - 1CW-99 (Instrument Bus II (White) Panel 111 Normal Power Feed) <p>Install cable</p> <ul style="list-style-type: none"> - 1DCA-133 (DC Power supply to BUS 15 Load Sequencer) from PNL-11 in FA 33 to BUS-15 Load Sequencer in FA 81 that is not routed through Fire Area 20. 	Yes	Yes	<p>The proposed modification will reduce risk because it will reroute cables associated with the opposite train of equipment to another FA. This will limit the number of fire scenarios that could damage both trains of equipment.</p> <p>Compensatory measures in accordance with the Current Fire Protection Licensing Basis being maintained.</p> <p>Compensatory measures will continue to remain in effect after the NFPA 805 fire protection program becomes effective until this modification is complete.</p>

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
6 Cont			Fire damage to cable 1CW-99 in FA 20 could cause a loss of the normal power feed from 11 Inverter to Panel 111. Loss of Panel 111 results in the loss of Control Room indication for instrument Loop 1L-487 (11 SG Wide Range Level) displayed on Level Recorder 1LR-470. Modification is needed to protect 1CW-99 (Instrument Bus II (White) Panel 111 Normal Power Feed).				
			Fire damage to cable 1CF-35 in FA 20 could cause a loss of Control Room indication for Loop 1L-433 (Unit 1 Pressurizer Level). Modification to protect cable 1CW-99 from fire damage in FA 20 will ensure Pressurizer Level Indication LOOP 1L-427 remains available in the control room.				

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
6 Cont			<p>A fire in FA 20 could damage cable 1C-419 which could affect the ability of BKR 15-3, 1RY source to Bus 15, to clear from the potentially faulted 1RY source to Bus 15. Local manual action is required to open BKR 15-3 so that Bus 15 can be repowered from the D1 Emergency Diesel Generator.</p> <p>A fire in FA 32 or 58 could damage cable 1C-333 affecting the 1RY source to Bus 16, and could damage cable 16408-1, CT11 source to Bus 16, and cables 1DCB-2 and 1DCB-95 which support the D2 source to Bus 16. A modification to route affected conductors of cable 1C-333 out of fire area 32 and 58 is needed to protect the 1RY source to Bus 16 in fire area 32.</p>	<p>Re-route conductors from 1C-419 (Breaker 15-3, Bus 15 Offsite Source from 1R Transformer) to cable 15403-B which is not routed in Fire Area 20.</p> <p>Re-route affected conductors of cable 1C-333 out of FA 32 and FA 58 so the 1RY offsite power supply will be available in FA 32 and FA 58.</p>			

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
6 Cont			A fire in FA 058/073; 695' elevation of the Aux Building could damage cable 2DCA-105 which provides DC control power to PNL 27 which provides DC control power to Bus 25 to trip 4 KV breakers.	Modify cable 2DCA-105 (DC Power Cable from 21 Battery 125V DC Panel 27 Train A) from fire induced failure in Fire Area 058/073.			
7			DELETED	DELETED			DELETED

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
8	Low	1, 2	Fire Detection required for the Fire PRA is not code compliant, as required by NFPA 805, for the following Fire Areas: FA-18, 41B, 58/73, 59/74	<p>Install New Fire Detectors per NFPA 72 (Detection) to resolve NFPA 72 code deviations in the following areas:</p> <p>FA 18: Modify the Ionization Fire Detection system to provide two zones of coverage in the Relay Room and P250 Computer Room. Modify the CO2 fire suppression system to actuate if both Ionization zones detect a fire in lieu of heat detectors.</p> <p>FA 41B: Relocate detector from the exhaust stream of a ventilation duct.</p> <p>FA 58/73: Resolve various detector code issues based on S&L Fire Detector Study, Rev 0, PINGP, Project No: 111973-055, 12/20/2008</p> <p>FA 59/74: Resolve various detector code issues based on S&L Fire Detector Study., Rev 0, PINGP, Project No: 111973-055, 12/20/2008.</p>	Yes	Yes	<p>The proposed modification reduces risk by allowing the Fire PRA to credit fire detection systems in the listed Fire Areas. Per the 2009 ASME PRA Standard, fire detection systems must be code compliant if they are credited in the Fire PRA.</p> <p>Compensatory measures in accordance with the Current Fire Protection Licensing Basis are being maintained.</p> <p>Compensatory measures will continue to remain in effect after the NFPA 805 fire protection program becomes effective until this modification is complete.</p>
9			COMPLETED	COMPLETED			COMPLETED

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
10	High	1,2	A fire could damage DC control cables for 4 KV breakers which could cause the tripping control power fuses to clear which would prevent the breaker from tripping on over-current. The fire could then damage the 4 KV power cable, but since the breaker can't trip, the cable would be subjected to an over-current condition up to the full fault current available to the bus. If the cable is not sized large enough to carry this amount of current, the cable could be damaged and start a fire in other fire areas where it is routed.	Modify 4160 volt switchgear control circuits so that faults on the control cables will not prevent the over-current trip relay from protecting the cable from over-current conditions that could lead to cable damage and secondary fires or loss of bus coordination.	Yes	Yes	<p>The FPRA assumes coordination of credited buses.</p> <p>This modification ensures there are no secondary fires.</p> <p>Compensatory measures in accordance with the Current Fire Protection Licensing Basis are being maintained.</p> <p>Compensatory measures will continue to remain in effect after the NFPA 805 fire protection program becomes effective until this modification is complete.</p>
			Affected Breakers: BKR 15-1, BKR 15-4, BKR 15-5, BKR 15-9, BKR 16-1, BKR 16-5, BKR 16-6, BKR 16-7, BKR 16-10, BKR 16-12, BKR 25-7, BKR 25-8, BKR 25-9, BKR 25-10, BKR 25-13, BKR 26-5, BKR 26-9, BKR 26-11				
11			DELETED	DELETED			DELETED
12			COMPLETED	COMPLETED			COMPLETED
13			COMPLETED	COMPLETED			COMPLETED

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
14	Medium	1,2	A fire in FA 13/18 could damage cables causing multiple spurious operations that could damage D1 Emergency Diesel Generator. If fire induced cable damage caused multiple spurious operations that caused D1 (034-011) to spuriously start with no cooling water (11 MDCLP MTR 13-8, 12 DDCLP 145-392, 21 MDCLP MTR 23-4, 22 DDCLP 245-392) then the EDG could be damaged.	Modify control circuits for the Diesel Driven Cooling Water Pump to eliminate the current required recovery action of sending an operator to the D1 Room and Screenhouse.	Yes	No	This modification will reduce risk by simplifying restoration of Cooling Water to provide cooling to D1 Emergency Diesel Generator and a backup water supply to the Aux Feedwater Pumps.

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
15	Medium	1, 2	Fire-induced damage that could damage cables causing multiple spurious operations resulting in damage to the charging pumps. If fire induced cable damage caused spurious isolation of letdown to the VCT (CV-31226 and CV-31255) and failure to open the RWST supply (MV-32060) and failure to trip the charging pumps, the 11, 12, 13, 21, 22 and 23 positive displacement charging pumps (MTR 111J-1) and MTR 211J-1 could be damaged due to lack of Net Positive Suction Head (NPSH). Need to prevent unrecoverable damage to credited charging pump due to fire in FA 13/18 to resolve MSO issue.	Install suction pressure protection for all the charging pumps to ensure adequate Net Positive Suction Head (NPSH) exists to prevent damage to the charging pumps.	Yes	Yes	<p>The proposed modification will reduce risk by installing suction pressure protection that will protect the charging pumps against fires that involve spurious valve closure and other failures that impact NPSH for the charging pumps.</p> <p>Compensatory measures in accordance with the Current Fire Protection Licensing Basis are being maintained.</p> <p>Compensatory measures will continue to remain in effect after the NFPA 805 fire protection program becomes effective until this modification is complete.</p>
16			COMPLETED	COMPLETED			COMPLETED
17			DELETED	DELETED			DELETED

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
18	High	1, 2	A fire in Fire Area 1, 13, 18, 59, and 71 could cause a loss of all Reactor Coolant Pump (RCP) seal cooling by damaging RCP seal injection from charging and Component Cooling (CC) water to the Thermal Barrier Heat Exchanger (TBHX).	Install new RCP seals that would not be subject to excessive leakage if all seal cooling is lost.	Yes	Yes	<p>The proposed modification will reduce risk by installing a shutdown RCP Seal package. The new seal will have the ability to preclude larger seal leakage rates during loss of seal cooling scenarios.</p> <p>Compensatory measures in accordance with the Current Fire Protection Licensing Basis are being maintained.</p> <p>Compensatory measures will continue to remain in effect after the NFPA 805 fire protection program becomes effective until this modification is complete.</p>
19			DELETED	DELETED			DELETED
20	Low	1,2	The current Fire PRA Model assumes proper coordination exists for all credited power supplies. Per Fire PRA credited power supplies lack selective coordination.	Install the appropriate fuses and/or breakers to establish proper selective coordination for panels 136, 137, and 217 credited to be coordinated	Yes	No	The Fire PRA assumes proper coordination of these power supplies
21			DELETED	DELETED			DELETED
22			DELETED	DELETED			DELETED

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
23	Medium	2	A fire in Bus 27 room (Fire Area 127) could damage DC control power to Bus 25 or Bus 26.	Install fuses to provide coordination so that a fire in the Bus 27 room will not affect DC control power to Bus 25 or Bus 26.	Yes	Yes	The Fire PRA assumes proper coordination of these power supplies
24	High	1, 2	<p>A fire in the Bus 15 (Fire Area 81) or Bus 16 (Fire Area 20) room could damage the cables and bus duct that supply off-site power (CT11 and 1R transformers) to Bus 15 and Bus 16 due to common power supply. The redundant diesel generator remains unaffected by a fire to re-power the unaffected 4 kv safeguards bus (Bus 15 or Bus 16), but risk is higher than desired.</p> <p>Unit 2 is similar to Unit 1. A fire in Fire Area 117, BUS 25 or Fire Area 118, BUS 26, could damage cables for both off-site power sources (2RY and CT12 transformer). The redundant Emergency Diesel Generator (D5/D6) remains unaffected by a fire, but the risk is higher than desired.</p>	<p>Provide fuse/breaker coordination for the CT11 supply to Bus 15 and Bus 16 so that the CT11 source remains available to Bus 15 if a fire damages Bus 16 or to Bus 16 if a fire damages Bus 15.</p> <p>Provide fuse/breaker coordination for the CT12 supply to Bus 25 and Bus 26 so that the CT12 source remains available to Bus 25 if a fire damages Bus 26 or to Bus 26 if a fire damages Bus 25. Modify associated control cables (1CS-1, 1CS-2, 1CS-3, and 1CS-4) so the CT11/CT12 source remains available for the opposite Bus room.</p>	Yes	No	The proposed modification will reduce risk by ensuring one off-site power source to the safeguards 4 kV Bus remains unaffected by a fire in the event of a fire in the opposite train safeguards 4 kV Bus room.

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
25	Medium	1	A fire in Fire Area 32 could damage cables required to open MV-32077 and MV-32078 to provide recirculation from Sump B.	Re-power MV-32078 from an MCC that is not located in Fire Area 32 to re-gain the ability to recirculate water from Sump B.	Yes	No	This will reduce risk by ensuring a fire in FA 32 does not damage the ability to recirculate water from Sump B.
26	Medium	2	A fire in Fire Area 31 could damage cables required to open MV-32180 and MV-32181 to provide recirculation from Sump B.	Re-power MV-32180 from an MCC that is not located in Fire Area 31 to re-gain the ability to recirculate water from Sump B.	Yes	No	This will reduce risk by ensuring a fire in FA 31 does not damage the ability to recirculate water from Sump B.
27	High	1, 2	A fire in the Control Room (Fire Area 13) or the Relay and Cable Spreading Room (Fire Area 18) could cause spurious opening of valves that could lead to a loss of inventory.	Install switches in the Control Room to isolate Pressurizer PORV, and Pressurizer Heaters.	Yes	No	This will reduce risk by providing an additional way to isolate Pressurizer PORV, and isolating Pressurizer Heaters from the control room.
28			DELETED	DELETED			DELETED
29			DELETED	DELETED			DELETED
30	Medium	2	A fire in Fire Area 31 could damage cables that provide DC power to vital auxiliaries which impacts risk.	Modify risk significant cable (2DCA-10) from risk significant fire initiators in Fire Areas 31.	Yes	No	This will reduce risk by ensuring DC power remains available for control and instrumentation for fire in FA 31.
31			DELETED	DELETED			DELETED
32	Medium	2	A fire in Fire Area 32 could damage cable 1C-2278 which could affect control for BKR-23-4 which powers the 21 Motor Driven Cooling Water Pump (21 MDCLP).	Modify cable 1C-2278 from failing 21 Motor Driven Cooling Water Pump in Fire Area 32.	Yes	No	This will reduce risk by ensuring the availability of the 21 MDCLP for a fire in FA 32.

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
33	Medium	1	A fire in Fire Area 32 could damage the cable that provides DC control power to PNL-16 which supports Instrumentation.	Modify cable 1DCB-18 from fire damage in Fire Area 32.	Yes	No	This will reduce risk by ensuring the availability of DC power to PNL-16 to provide vital instrumentation.
34	Medium	1, 2	A fire in FA 13, 18, 32 or 58 could damage cables and cause spurious closure of the Emergency Diesel Generator output breaker. This could cause a lockout of the 4kv safeguards Bus which powers one train of safeguards equipment.	Modify cables to prevent spurious closure from risk significant fire initiators.	Yes	No	This will reduce risk by making modifications to reduce the number of fire scenarios that could cause fire damage to a 4kV safeguards bus.

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
35	Medium	1	A fire in Fire Area 32 or 58 could damage cables which support operation of the 1RY offsite power sources to BUS 15 (BKR-15-3) and BUS 16 (BKR-16-2).	Modify cable 1C-332 from fire damage in Fire Area 32 and 58 to ensure BUS 16 can be powered from the 1RY transformer.	Yes	Yes	<p>The proposed modification will reduce risk because it will reroute cables associated with the opposite train of equipment to another FA. This will limit the number of fire scenarios that could damage both trains of equipment.</p> <p>Compensatory measures in accordance with the Current Fire Protection Licensing Basis are being maintained.</p> <p>Compensatory measures will continue to remain in effect after the NFPA 805 fire protection program becomes effective until this modification is complete.</p>
36			DELETED	DELETED			DELETED
37			DELETED	DELETED			DELETED

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
38	N/A	1, 2	A fire in Fire Areas 31, 32, 58/73, 18, or 13 could damage control cables for the 11 or 21 DC Emergency Turbine Bearing Oil Pump that are not adequately fused to protect from over-current conditions. The control cables could over-heat due to excessive current flow. Since the cables are routed in multiple fire areas, this is a common enclosure concern.	Install control power fuses for the control circuits to provide over-current protection for the DC Emergency Turbine Bearing Oil Pumps.	No	Yes	This modification does not have a significant impact on the Fire PRA model because the 11 and 21 Emergency Oil Pumps are not credited. The Fire PRA model does not directly model common enclosure concerns.
39	N/A	1, 2	The 121 Motor Driven Fire Pump (MDFP) loss of power alarm is local at the pump in the screen house and does not currently alarm to the control room. This does not meet NFPA 20 requirements.	Modify the Fire Pump alarm in the control room to include the loss of power alarm.	No	No	This modification does not have an impact on the Fire PRA because the loss of power alarm does not affect functionality of the 121 MDFP. It is an NFPA 805 code compliance concern.
40	N/A	1, 2	There is a fire protection hose station with insufficient pipe hangers that does not meet the requirements of NFPA 14, Standpipes and Hose Systems.	Add a restraint for fire protection hose station WF-9 where the pipe comes through the floor of the Turbine Building.	No	No	This modification does not have an impact on the Fire PRA because the hose station is still functional.

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
41	Medium	1, 2	A fire in Fire Area 13 or 18 could damage cables that could over-torque motor operated valves; MV-32006, MV-32010, MV-32021, MV-32022, MV-32238, and MV-32246 which are credited in the Fire PRA to be locally operated to perform Recovery Actions.	Re-wire the torque and limit switches so fire induced damage to cables in FA 13 and 18 cannot bypass the torque and limit switches and subsequently over-torque the MOV.	Yes	Yes	<p>The proposed modification will allow the valve to be locally operated to credit this recovery action in the PRA.</p> <p>Compensatory measures in accordance with the current Fire Protection Licensing Basis are being maintained.</p> <p>Compensatory measures will continue to remain in effect after the NFPA 805 fire protection program becomes effective until this modification is complete.</p>
42	N/A	1	Wiring above suspended ceilings in Fire Area 8 Locker Room, Unit 1, 715' in the southeast corner is not in compliance with the requirements of NFPA 805.	Bring Fire Area 8 Locker Room, Unit 1, 715' in the southeast corner into compliance with NFPA 805, Section 3.3.5.1.	No	Yes	<p>This modification will restore compliance with NFPA 805 requirements. It is not modeled in the Fire PRA for risk significance.</p> <p>Compensatory measures in accordance with the fire protection licensing basis will be maintained until the modification is complete.</p>

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
43	N/A	1, 2	Fire Protection Barriers required by NFPA 805 not in compliance with the requirements of NFPA 805.	Upgrade Fire Protection Barriers required by NFPA 805 to meet the requirements of NFPA 805, Section 3.11.	No	Yes	<p>This modification will restore compliance with NFPA 805 requirements. It is not modeled in the Fire PRA for risk significance.</p> <p>Compensatory measures in accordance with the fire protection licensing basis will be maintained until the modification is complete.</p>

Table S-3, Implementation Items provided below are those items (procedure changes, process updates, and training to affected plant personnel) that will be completed prior to implementation of the new NFPA 805 fire protection program. This will occur within the later of twelve (12) months after NRC approval, or twelve months after a refueling outage if one is in progress at the time of approval. Note that Item 20 and Item 66 are associated with modifications described in Table S-2 and will be completed as part of the modification process in accordance with the timetable provided in Section 5.5.

Table S-3 Implementation Items			
Item	Unit	Description	LAR Section / Source
1	1, 2	Implement monitoring program required by NFPA 805 Section 2.6 in accordance with NFPA 805 FAQ 10-0059, including a process that reviews the FPP performance and trends in performance.	4.6.2, Attachment A Section 3.2.3(3)
2	1, 2	Revise plant procedure 5AWI 3.13.3, "Hot Work," to address the following: - Address the requirements for hot tapping. (NFPA 51B–1999, Section 3-5) - Address the requirements for a fire watch where torch-applied roofing hot work operations are in effect. (NFPA 241–1999, Section 5.1.3.2) -Address the requirement that open flames or combustion-generated smoke shall not be permitted for leak or air flow testing. - Consider delaying hot work in the vicinity of risk significant components during High Risk Evolutions	Attachment A Section 3.3.1.3.1 Attachment A Section 3.3.1.3.3 Attachment D
3	1, 2	Revise procedure F5 App J, "Fire Drills," to require that fire brigade drills be conducted in various plant areas.	Attachment A, Section 3.4.3 (C)(3)
4	1,2	Perform a calculation to demonstrate that the fire water supply is capable of delivering the largest design demand with the hydraulically least demanding portion of fire main loop out of service in accordance with NFPA 805 requirements.	Attachment A Section 3.5.1
5	N/A	DELETED	N/A
6	1, 2	Revise procedure F5, "Firefighting," Section 7, to include a Section 7.5, Control of Spread of Contamination, to address ventilation, floor drains, opening walkways or stairs between areas, and salvage/overhaul activities.	Attachment E

Table S-3 Implementation Items

Item	Unit	Description	LAR Section / Source
7	1, 2	Revise Fire Brigade Training Lesson Plans to address the spread of contamination during firefighting activities.	Attachment E
8	1, 2	Revise Fire Brigade Training Lesson Plans to identify the responsibilities of each brigade member relative to limiting the spread of cross contamination when fighting fires in radiologically controlled areas.	Attachment E
9	1, 2	Revise Fire Brigade Training Lesson Plans to provide sufficient details on the impact of fire fighting activities on the potential spread of contamination, and the methods available for mitigating such cross contamination via ventilation and drainage control.	Attachment E
10	1, 2	Revise procedure F5 App A, "Fire Strategies", to include information on potential cross-contamination for each fire area.	Attachment E
11	1, 2	Revise procedure F5, "Firefighting", Section 2.7 to address potential access requirements for the Duty RP Tech or Chemist.	Attachment E
12	1, 2	Revise Radiation Protection Continuing Training to address control of contamination during firefighting activities.	Attachment E
13	1, 2	Revise procedure F5, App A, "Fire Strategies" to address the ability to utilize the Auxiliary Building Special Ventilation, Containment Internal Cleanup Subsystem, Containment Purge, Containment In-Service Purge, and Shield Building Ventilation System for the removal of potentially contaminated smoke in fire areas identified in Attachment E.	Attachment E
14	N/A	DELETED	N/A
15	1, 2	Provide a container with booms, portable filtered ventilation, and other appropriate equipment for the containment of water in the Low Level Rad Waste Enclosure.	Attachment E
16	1, 2	Provide procedures to utilize a combination of containerization and administrative controls to ensure that exposed contaminated waste in the Low Level Rad Waste Enclosure are kept as low as reasonably achievable.	Attachment E
17	1, 2	Revise F5 App F, "Fire Hazards Analysis" to align with the fire area descriptions listed in Attachment I.	Attachment I

Table S-3 Implementation Items

Item	Unit	Description	LAR Section / Source
18	N/A	DELETED	N/A
19	N/A	DELETED	N/A
20	1, 2	Update the Fire PRA Model, as necessary, after all modifications, procedure changes, and other risk-relevant items identified in Tables S-1, S-2, and S-3 are complete and as-built. If the revised Fire PRA indicates an increase in risk metrics such that the RG 1.205 acceptance guidelines are not met, changes will be made such that the Fire PRA results will fall within the acceptance guidelines. These changes may include additional analysis, procedure enhancements, plant modifications, or other changes determined necessary to reduce the overall risk metrics to within the acceptance guidelines.	4.8.2 PRA RAI 15.a
21	N/A	DELETED	N/A
22	1, 2	Create new Fire Protection Design Basis Document to reflect content requirements of NFPA 805.	4.7.1
23	N/A	DELETED	N/A
24	N/A	DELETED	N/A
25	1, 2	Provide a Change Evaluation Process procedure in accordance with the requirements of NFPA 805. Ensure the process includes peer reviews to be performed on changes that are PRA upgrades, as defined in the PRA standard.	4.7.2 PRA RAI 03.b
26	1, 2	Develop qualification requirements and position-specific training for personnel involved with the Fire PRA.	4.7.3
27	1, 2	Revise procedure 5AWI 3.13.0, "Fire Protection Program," to add Non Power Operations (NPO) overview, definitions; road map; and risk reduction requirements for all NPO, and High Risk Evolutions (HRE).	4.3.2 and Attachment D

Table S-3 Implementation Items

Item	Unit	Description	LAR Section / Source
28	1, 2	Revise GEN-PI-059, "10CFR50, App R, Safe Shutdown Database Data Verification" and other configuration control procedures which govern the various PINGP documents and databases that currently exist (or develop new procedures/processes) to reflect the new NFPA 805 licensing bases requirements.	4.7.2
29	1, 2	Revise system level design basis documents to reflect NFPA 805 requirements and superseding of the old fire protection licensing basis.	4.7.2
30	N/A	DELETED	N/A
31	N/A	DELETED	N/A
32	N/A	DELETED	N/A
33	N/A	DELETED	N/A
34	1, 2	Revise Design Calculations ENG-EE-177, 194401-2.3-008, 12911.6214-E-01 and ENG-EE-013 to support the Fire PRA credited power supply breaker – fuse coordination. Additionally, revise Design Calculation ENG-EE-177 per AR 01342798-02 to support the Loss of DC Control Power Analysis.	4.5 and Attachment B
35	1, 2	Revise FP-OP-ROM-01, "Refueling Outage Management" procedure for inclusion of NPO requirements.	4.3.2 and Attachment D
36	N/A	DELETED	N/A
37	N/A	Revise 5AWI 3.13.3, Hot Work to avoid hot work in certain areas during high risk evolutions.	N/A
38	1,2	Revise F5 App K, "Fire Protection Systems Functional Requirements" to contain the compensatory actions to be implemented should a fire protection system required to be operable during HRE periods be found to be impaired.	4.3.2 and Attachment D
39	1,2	Revise EM 3.4.1, "Review of Proposed Changes to the Fire Protection Program" to contain guidance to ensure that changes to the fire protection program are reviewed for impact to the NPO requirements and risk reduction actions.	4.3.2 and Attachment D

Table S-3 Implementation Items

Item	Unit	Description	LAR Section / Source
40	1,2	Revise 5AWI 15.6.1, "Shutdown Safety Assessment" to contain discussion on HRE, risk due to fire, NFPA 805 and the NPO requirements as part of risk management.	4.3.2 and Attachment D
41	N/A	DELETED	N/A
42	N/A	DELETED	N/A
43	N/A	DELETED	N/A
44	N/A	DELETED	N/A
45	1	Revise 1C1.6, "Shutdown Operations – Unit 1" to contain a requirement to maintain a continuous action to monitor T-Boil until the HRE can be exited then an HRE Risk Reduction Actions exit check list is provided.	4.3.2 and Attachment D
46	2	Revise 2C1.6, "Shutdown Operations – Unit 2" to contain a requirement to maintain a continuous action to monitor T-Boil until the HRE can be exited then an HRE Risk Reduction Actions exit check list is provided.	4.3.2 and Attachment D
47	1	Revise 1C4.1, "RCS Inventory Control Pre-refueling" to contain a requirement to maintain a continuous action to monitor T-Boil until the HRE can be exited then an HRE Risk Reduction Actions exit check list is provided.	4.3.2 and Attachment D
48	2	Revise 2C4.1, "RCS Inventory Control Pre-refueling" to contain a requirement to maintain a continuous action to monitor T-Boil until the HRE can be exited then an HRE Risk Reduction Actions exit check list is provided.	4.3.2 and Attachment D
49	1	Revise 1C4.2, "RCS Inventory Control – Post Refueling" to contain a requirement to maintain a continuous action to monitor T-Boil until the HRE can be exited then an HRE Risk Reduction Actions exit check list is provided.	4.3.2 and Attachment D
50	2	Revise 2C4.2, "RCS Inventory Control – Post Refueling" to contain a requirement to maintain a continuous action to monitor T-Boil until the HRE can be exited then an HRE Risk Reduction Actions exit check list is provided.	4.3.2 and Attachment D

Table S-3 Implementation Items

Item	Unit	Description	LAR Section / Source
51	1, 2	Revise EM 3.4.3, "Safe Shutdown Circuit Analysis" to incorporate applicable details of vendor document EPM-DP-EP-004, as well as the methodology for analyzing twisted pair instrumentation and controls circuits as referenced in EC 20612, "PINGP Non-Power/NSCA Operations Review for NFPA 805."	4.3.2 and Attachment B SSA RAI 03
52	1, 2	Develop a calculation titled "Nuclear Safety Capability Assessment (NSCA) Analysis for Compliance with NFPA 805," to establish a design basis for the NSCA model and supporting analyses.	Attachment B
53	1, 2	Update GEN-PI-055, "10CFR50 Appendix R Manual Action Feasibility Study," to reflect PINGP's transition to NFPA 805, including addition of new recovery actions, actions to maintain safe and stable conditions, and to document how the criteria, as defined by FAQ 07-0030, are met.	4.2.1.2 and Attachment T SSA RAI 02 & SSA RAI 04.f
54	N/A	DELETED	N/A
55	N/A	DELETED	N/A
56	N/A	DELETED	N/A
57	1, 2	Revise procedure F5 App B "Control Room Evacuation (Fire)" to direct the isolation of containment prior to leaving the control room, add an optional attachment cross-tie power from opposite Unit if one Unit is in a Station Blackout, and to incorporate credited Recovery Actions.	Attachment G Attachment W
58	1, 2	Revise F5 App D, "Impact of Fire Outside Control/Relay Room" as required to include fire response HFEs in the Fire PRA Model and credited recovery actions from Attachment G.	Attachment G and W
59	N/A	DELETED	N/A
60	1, 2	Revise ENG-ME-353, "Mechanical MOV Analysis to Support IN 92-18 Response" to incorporate updated vendor information as identified in AR 01422482.	Attachment B
61	1, 2	Verify that site procedures and compensatory measures for control of combustibles agree with assumptions in the Fire PRA.	Generic RAI 32, Attachment L

Table S-3 Implementation Items

Item	Unit	Description	LAR Section / Source
62	1, 2	Perform an Evaluation for PNL 117 and PNL 217 to confirm the loading capacity to supply more than one Instrument Bus.	Attachment D and G
63	1, 2	Provide procedural guidance to connect a diesel powered portable generator located outside the power block to power a temporary fan for the Main Control Room to maintain safe and stable conditions. Additionally, procedural guidance shall be provided for the operation, maintenance, storage, and refueling of the portable generator and for training and drills.	4.2.1.2 SSA RAI 04
64	1,2	Update code compliance reviews to document resolution of identified open items.	FPE RAI-06
65	1,2	Develop procedural guidance to provide portable HEPA filters strategically located in the Radiological Controlled Area (RCA) that will be available for use based on radiological conditions as monitored by radiation protection personnel and as communicated to the fire brigade leader during fire events.	RR RAI-02
66	1,2	The PINGP Fire PRA model shall be reviewed using an NRC approved RCP seal model, as well as any exceptions/clarifications included in the NRC approval, to determine if the internal events and Fire PRA require a revision. The Prairie Island internal events and Fire PRA will be updated, if applicable, with the latest RCP seal information. If the updates result in a risk increase greater than RG 1.174, NSPM will take action to reduce the risk results. Compensatory measures established prior to the RCP seal replacement shall remain in place until the calculated risk increase is within RG 1.174 limits.	Updated PRA RAI-15
67	N/A	DELETED	N/A
68	1, 2	Revise plant procedures to ensure that future wiring installation above suspended ceilings in Power Block Areas will conform to NFPA 805 Section 3.3.5.1.	Attachment L FPE RAI 07
69	1, 2	Enhance the Internal Penetration Seal Program	Attachment A