Attachment 3

R.E. Ginna Nuclear Power Plant Response to Request for Additional Information (Redacted Version)

PRA RAI 44.01.b

Provide the results of a composite analysis that shows the integrated impact on the fire risk (CDF, LERF, ΔCDF, ΔLERF) after replacing identified methods and weaknesses. As the review process is concluded, additional changes to replace any method or weakness still under review may be required. In this composite 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. If the impact on the change in risk from transition is negligible, a quantitative evaluation is unnecessary.

Response:

Ginna has provided a response to PRA RAI 44.01.b on 9/24/14, and in that response stated an approach, agreed upon with the NRC staff, to provide a response to PRA RAI 44.01.b after the NRC had notified Ginna that the responses to 44.01.a are acceptable and that there are no other PRA RAIs forthcoming. Ginna responded to further PRA RAIs on 12/4/14 and 3/18/15. On 4/1/15, the NRC staff provided notification that the responses to the RAIs were acceptable and to prepare the aggregate analysis for submission.

Attached are the revised LAR Attachments which provide the results of the composite analysis requested, reflect changes to the attachments as the result of prior RAI responses or which reflect other changes and updates since the March 28, 2013 submittal of the LAR.

The following Revision 1 LAR Attachments are provided:

- Attachment A – this revision reflects RAI responses and updates the references to reflect changes as the result of the transition from CENG to Exelon.
- Attachment C – updated to reflect RAI responses.
- Attachment G – updated to reflect RAI responses.
- Attachment J – updated to reflect RAI responses.
- Attachment S – Table S-1; revised to reflect the completion of one modification.
    - Table S-2; updated to reflect RAI responses, deletion of some modifications which are no longer required, update of modification descriptions to reflect design developments, clarification that further design details may vary slightly and a change in the period for completion of all modifications.
    - Table S-3; updated to reflect RAI responses, including an NRC requested commitment relative to the RCP Seal modification.
- Attachment V – updated to reflect RAI responses.
- Attachment W – updated to reflect RAI responses and final composite FPRA analysis.

NEI 04-02 Table B-1 Transition of Fundamental Fire Protection Program & Design Elements

94 Pages

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.1 General	General. This chapter contains the fundamental elements of the fire protection program and specifies the minimum design requirements for fire protection systems and features. These fire protection program elements and minimum design requirements shall not be subject to the performance-based methods permitted elsewhere in this standard. Previously approved alternatives from the fundamental protection program attributes of this chapter by the AHJ take precedence over the requirements contained herein.	None	N/A	- None
3.2.1 Intent	Intent. A site-wide fire protection plan shall be established. This plan shall document management policy and program direction and shall define the responsibilities of those individuals responsible for the plan's implementation. This section establishes the criteria for an integrated combination of components, procedures, and personnel to implement all fire protection program activities.	Complies	The Fire Protection Program Report (EPM-FPPR) Vol. I, Part II [Sec. 2.0] establishes the Ginna fire protection plan and states: "The Fire Protection Plan describes the controls associated with the Ginna Fire Protection Program; identifies the organizations and positions responsible for the fire protection program; describes the authority of positions responsible for implementing the program; and outlines the plans for fire protection, fire detection and suppression capability, and limitation of fire damage. The Fire Protection Plan describes the features necessary to implement the fire protection program such as: administrative controls; personnel requirements for fire prevention and manual fire suppression activities; automatic and manually operated fire detection and suppression systems; and the means to limit fire damage to structures, systems, and components important to safety so that the capability to safely shutdown the plant is ensured." Additionally, CC-AA-211 delineates the responsibility and authority for implementation of	- EPM-FPPR ANL, Fire Protection Program Report (FPPR) - CC-AA-211, Fire Protection Program

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.2.1 (Continued)			the fire protection program.	
3.2.2 Mgmt Policy Direction & Responsibility	Management Policy Direction and Responsibility. A policy document shall be prepared that defines management authority and responsibilities and establishes the general policy for the site fire protection program.	Complies	CC-AA-211 serves as the policy document that defines management authority and responsibilities and establishes the general policy for the site fire protection program. Management authority and responsibilities are also described by the Fire Protection Program Report (EPM-FPPR) Vol. I, Part II [Sec. 7.0].	- EPM-FPPR ANL, Fire Protection Program Report (FPPR) - CC-AA-211, Fire Protection Program
3.2.2.1 Sr Management Position Designation	The policy document shall designate the senior management position with immediate authority and responsibility for the fire protection program.	Complies	The Fire Protection Program Report (EPM-FPPR) Vol. I, Part II [Sec. 7.1] and CC-AA-211 state, "The site fire protection program is under the direction of the Site Vice President who has available the following staff knowldegeable in both fire protection and nuclear safety. The staff is responsible for the formulation, implementation, and assessment of the effectiveness of the program." The Vice President is considered the senior management position with immediate authority and responsibility for the fire protection program.	- EPM-FPPR ANL, Fire Protection Program Report (FPPR) - CC-AA-211, Fire Protection Program
3.2.2.2 Daily Admin & Coord Designation	The policy document shall designate a position responsible for the daily administration and coordination of the fire protection program and its implementation.	Complies	The Fire Protection Program Report (EPM-FPPR) Vol. I, Part II [Sec. 7.3] and CC-AA-211 serve as the policy document and assign responsibilities for daily fire protection program administration, coordination, and implementation.	- EPM-FPPR ANL, Fire Protection Program Report (FPPR) - CC-AA-211, Fire Protection Program
3.2.2.3 Define the Fire Protection Interfaces	The policy document shall define the fire protection interfaces with other organizations and assign responsibilities for the coordination of activities. In addition, this policy document shall identify the various plant positions having the authority for implementing the various areas of the fire protection program.	Complies	The Fire Protection Program Report (EPM-FPPR) Vol. I, Part II [Sec. 7.0], and CC-AA-211 serve as the policy documents that define the fire protection interfaces with other organizations and assign responsibilities for coordination of activities. Additionally, they identify the plant positions having authority for implementing the various areas of the fire protection program.	- EPM-FPPR ANL, Fire Protection Program Report (FPPR) - CC-AA-211, Fire Protection Program

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.2.2.4 Identify the Appropriate AHJ	The policy document shall identify the appropriate AHJ for the various areas of the fire protection program.	Complies	CC-AA-211 specifies the appropriate AHJ for the various areas of the fire protection program including Nuclear Safety, Life Safety, Occupational Safety, and Property Loss.	- CC-AA-211, Fire Protection Program
3.2.3 Procedures	Procedures shall be established for implementation of the fire protection program. In addition to procedures that could be required by other sections of the standard, the procedures to accomplish the following shall be established:	None	This is a general statement section. Please refer to the following subsections for the specific NFPA 805 subsection requirements and the compliance statement for each.	- None
3.2.3(1) Inspections	Inspection, testing, and maintenance for fire protection systems and features credited by the fire protection program	Submit for NRC Approval	NRC approval is requested for the ability to utilize performance-based methods to establish the appropriate inspection, testing, and maintenance frequencies for fire protection systems and features required by NFPA 805. Performance-based inspection, testing, and maintenance frequencies will be establishes as described in Electric Power Research Institute (EPRI) Technical Report TR-1006756, "Fire Protection Surveillance Optimization and Maintenance Guide for Fire Protection Systems and Features", Final Report, July 2003. See revised Attachment L to the License Amendment Request for Ginna.	- EPRI Technical Report TR 1006756 - Supplement to License Amendment to Transition to NFPA 805 dated September 5, 2014.

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.2.3(2) Compensatory Actions	Compensatory actions implemented when fire protection systems and other systems credited by the fire protection program and this standard cannot perform their intended function and limits on impairment duration	Complies	The Technical Requirements Manual (TRM) [Sec. TR 3.3.4 and 3.7.1 - 3.7.6] specifies the compensatory actions and measures that are to be implemented in the event that fire protection systems, components, or features credited by the Fire Protection Program are degraded inoperable, or impaired. A-52.12 [Sec. 6.7 and Attach. 3] provides control and implementation of fire protection-related compensatory actions.	- Technical Requirments Manual, Technical Requirements Manual - A-52.12, Nonfunctional Equipment Important to Safety
3.2.3(3) Reviews of Fire Protection Program	Reviews of fire protection program - related performance and trends	Complies	The Fire Protection Program Report (EPM-FPPR) Vol. I, Part II [Sec. 6.2] and CC-AA-211 [3.1.13] state: "Nuclear Oversight (NOS) is responsible for performing fire protection audits, assessments, and surveillances in accordance with Nuclear Oversight assessment plans and procedures, and site specific Technical Specifications, Technical Requirement Manuals, and/or commitments (QA Topical Report NO-AA-10)". Reviews of Fire Protection Program related performance trends will be addressed via the fire protection program health report along with post-transition NFPA 805 monitoring program.	- NO-AA-10, Quality Assurance Topical Report (QATR) - EPM-FPPR ANL, Fire Protection Program Report (FPPR) - CC-AA-211, Fire Protection Program - Fire Protection Program Health Report
3.2.3(4) Reviews of Plant Mods	Reviews of physical plant modifications and procedure changes for impact on the fire protection program	Complies	The Fire Protection Program Report (EPM-FPPR) Vol. I, Part II [Sec. 8.5] requires a review of all station modifications and procedure changes for possible impact on Fire Protection Program requirements. These reviews are performed and documented in accordance with CC-AA-102, CC-AA-209, and LS-AA-128-101.	- EPM-FPPR ANL, Fire Protection Program Report (FPPR) - CC-AA-102, Design Input and Configuration Impact Screening - CC-AA-209, Fire Protection Configuration Change Review - LS-AA-128-101, Regulatory Review of Proposed Changes to the

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.2.3(4) Reviews of Plant Mods (Continued)				Approved NFPA 805 Fire Protection Program
3.2.3(5) Maintenance of FPP	Long-term maintenance and configuration of the fire protection program	Complies	Long-term maintenance and configuration control of the fire protection program is governed by CC-AA-211, CC-AA-102, CC-AA-209, and IP-FPP-1. Specifically: NO-AA-10 governs the Quality Assurance Program which includes the Fire Protection Program Report (EPM-FPPR) Vol. I, Part II [Sec. 6.1]. The Fire Protection Program Report (EPM-FPPR) Vol. I, Part II [Sec. 8.1] states: "A regulatory review of the proposed changes to the approved Fire Protection Program (LS-AA-128, LS-AA-128-101) is required to be performed to determine if a proposed change to the approved fire protection program can be made without prior NRC approval." [Sec. 8.2] states: "Administrative controls shall be established and maintained to control updates to the FPPR. This includes the use of plant procedures to control updates to the FPPR. Administrative requirements should be established for the review and approval of changes to the FPPR. Procedures CC-AA-209 and IP-FPP-1 provide required directions." CC-AA-102 and CC-AA-209 are also used for screening the impact on the fire protection program configuration control of the fire protection program during the modification process.	- LS-AA-128, Regulatory Review of Proposed Changes to the Approved Fire Protection Program - LS-AA-128-101, Regulatory Review of Proposed Changes to the Approved NFPA 805 Fire Protection Program - EPM-FPPR ANL, Fire Protection Program Report (FPPR) - CC-AA-211, Fire Protection Program - CC-AA-102, Design Input and Configuration Impact Screening - CC-AA-209, Fire Protection Configuration Change Review - IP-FPP-1, Fire Protection Program Report (FPPR) Periodic and Continuous Updating - NO-AA-10, Quality Assurance Topical Report (QATR)

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.2.3(6) Fire Brigade Response	Emergency response procedures for the plant industrial fire brigade	Complies	The Fire Protection Program Report (EPM-FPPR) Vol. I, Part II [Sec. 9.0] establishes the procedural and administrative training requirements for fire brigade personnel, equipment, and fire fighting procedures. SC-3 (and daughter SC-3 series procedures) establish and implement the site contingency and emergency plan. The fire emergency response plan is summarized in SC-3.	- EPM-FPPR ANL, Fire Protection Program Report (FPPR) - SC-3, , Site Contingency Plan
3.3 Prevention	A fire prevention program with the goal of preventing a fire from starting shall be established, documented, and implemented as part of the fire protection program. The two basic components of the fire prevention program shall consist of both of the following: (1) Prevention of fires and fire spread by controls on operational activities (2) Design control that restrict the use of combustible materials	Complies	A fire prevention program has been established, documented, and implemented as part of the overall Ginna fire protection program. The basic components are: (1) Controls on Operational Activities (EPM-FPPR Vol. I, Part II [Sec. 8.0], OP-AA-201-004, OP-AA-201-006, and OP-AA-201-009). (2) Combustible Materials Design Controls (EPM-FPPR Vol. I, Part II [Sec. 8.3], CC-AA-209, and CC-AA-102).	- EPM-FPPR ANL, Fire Protection Program Report (FPPR) - CC-AA-209, Fire Protection Program Configuration Change Review - CC-AA-102, Design Input and Configuration Change Impact Screening - OP-AA-201-004, Fire Prevention for Hot Work - OP-AA-201-009, Control of Transients - OP-AA-201-006, Control of Temporary Heat Sources
3.3.1 Fire Prevention for Operational Activities	The fire prevention program activities shall consist of the necessary elements to address the control of ignition sources and the use of transient combustible materials during all aspects of plant operations. The fire prevention program shall focus on the human and programmatic elements necessary to prevent fires from starting or, should a fire start, to keep the fire as small as possible.	Complies	Procedures are in place that adequately control ignition sources (EPM-FPPR Vol. I, Part II [Sec. 8.4], OP-AA-201-004, and OP-AA-201-006). The control of transient combustible materials are governed by EPM-FPPR Vol. I, Part II [Sec. 8.3], OP-AA-201-009, and the aim to minimize the size of fires that may occur during all aspects of plant operations is included in SC-3.3.1, and other Site Contingency procedures (SC-3 series).	- EPM-FPPR ANL, Fire Protection Program Report (FPPR) - SC-3.3.1, Immediate Fire Notification - SC-3, Site Contingency Plan - OP-AA-201-004, Fire Prevention for Hot Work-

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.3.1 Fire Prevention for Operational Activities (Continued)				OP-AA-201-006, Control of Temporary Heat Sources - OP-AA-201-009, Control of Transients
3.3.1.1 General Fire Prevention Activities	General Fire Prevention Activities. The fire prevention activities shall include but not be limited to the following program elements:	None	This is a general statement section. Please refer to the following subsections for the specific NFPA 805 subsection requirements and the compliance statement for each. Based on review of the fire prevention programmatic controls described in sub-sections 1,2, and 3 below, the NFPA 805, section 3.3.1.1 requirements are satisfied and no other additional elements were evaluated.	- None
3.3.1.1(1) Training	Training on fire safety information for all employees and contractors including, as a minimum, familiarization with plant fire prevention procedures, fire reporting, and plant emergency alarms	Complies	Initial General Employee Training includes the following minimum fire protection program elements as discussed in FAQ 06-0028: - Individual responsibilities regarding fire barriers such as fire dampers, doors, and seals (Combined Nanel and Exelon General Employee Study Guide, under objective of individual responsibilities regarding fire protection). - Actions an individual is required to take upon discovery of a fire. (Combined Nanel and Exelon General Employee Study Guide, under objective of individual responsibilities regarding fire protection). - Individual responsibilities regarding control of transient combustibles and disposal of flammable combustible materials (Combined Nanel and Exelon General Employee Study Guide, under objective of individual responsibilities regarding fire protection).	- FAQ 06-0028,rev. 002, Training Definition and Content - Combined Nantel and Exelon Nuclear General Employee Study Guide - IR 02474528

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.3.1.1(1) Training *(Continued)*			- Examples of types of Hot Work activities requiring a permit (Combined Nanel and Exelon General Employee Study Guide, under objective of individual responsibilities regarding fire protection). - Recognition of and response to a station alarm (Combined Nanel and Exelon General Employee Study Guide, under objective of individual to recognize and state the response to a station fire alarm). - Location and use of fire prevention procedures (Combined Nanel and Exelon General Employee Study Guide) - Other plant specific fire prevention activities (Combined Nanel and Exelon General Employee Study Guide, various sections).	
3.3.1.1(2) Documentation	Documented plant inspections including provisions for corrective actions for conditions where unanalyzed fire hazards are identified	Complies	Plant inspections are performed and documented in accordance with A-54.7 [documented on Attachments 1-4], O-6.1, and OP-AA-201-001. In accordance with OP-AA-201-001, the Fire Marshal is responsible for the conduct of periodic inspections and identification of corrective action for conditions where unanalyzed fire hazards are identified.	- A-54.7, Fire Protection Tour -O-6.1, Equipment Operator Rounds and Log Sheets - OP-AA-201-001, Fire Marshal Tours
3.3.1.1(3) Administrative Controls	Administrative controls addressing the review of plant modifications and maintenance to ensure that both fire hazards and the impact on plant fire protection systems and features are minimized.	Complies	The Fire Protection Program Report (EPM-FPPR) Vol. I, Part II [Sec. 8.5], and CC-AA-102, CC-AA-209, and CC-AA-209-1001 requires a review of all station modifications for possible impact on safe shutdown and fire protection requirements. This review is performed and documented in accordance to CC-AA-102, and CC-AA-209-1001. Review of plant maintenance is included in MA-AA-1000 [Sec. 6.7, 17.0].	- EPM-FPPR ANL, Fire Protection Program Report (FPPR) - CC-AA-102, Design Input and Configuration Impact Screening - CC-AA-209, Fire Protection Configuration Change Review - CC-AA-209-1001, Guidelines for Performing Fire Protection Program

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.3.1.1(3) Administrative Controls (Continued)				Configuration Review - MA-AA-1000, Conduct of Maintenance Manual
3.3.1.2 Control of Combustible Materials	Control of Combustible Materials. Procedures for the control of general housekeeping practices and the control of transient combustibles shall be developed and implemented. These procedures shall include but not be limited to the following program elements:	None	This is a general statement section. Please refer to the following subsections for the specific NFPA 805 subsection requirements and the compliance statement for each. Procedures for control of general housekeeping practices and transient combustibles have been established, documented, and implemented as part of the fire protection program. These controls include, but are not limited to the elements described in sub-section 1 through 6 below. Based on review of the fire prevention programmatic controls described in sub-sections 1 through 6 below, the NFPA 805, section 3.3.1.2 requirements are satisfied and no other additional elements were evaluated.	- None
3.3.1.2(1) Wood	Wood used within the power block shall be listed pressure-impregnated or coated with a listed fire-retardant application. Exception: Cribbing timbers 6 in. by 6 In. (15.2 cm by 15.2 cm) or larger shall not be required to be fire retardant treated.	Complies	All wood (lumber) brought into the power block is required to be treated with a fire retardant material in accordance with OP-AA-201-009. This procedure also includes an exception that does not require lumber greater than 6" x6" to be treated with fire retardant. This exception is in accordance with the exception cited for NFPA 805, Sec. 3.3.1.2(1). CR-2013-001507 identified plywood in the SH used to mount electrical equipment. The corrective action process will address the issue identified.	- OP-AA-201-009, Control of Transients -CR-2013-001507, Several Electrical panels are mounted to plywood in the SH -TSR-93-089, rev. 0, Containment Wood Spacer

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.3.1.2(1) Wood (Continued)		Complies with use of Evaluation	TSR-93-089 performed a technical evaluation regarding the wood spacers used in containment, identified in the NRC April 1993 NRC inspection, for cable penetration CVPCE 21 and CVPCE 24 located in fire zone RC-2. The conclusion of the evaluation was the wood does not create a potential for affecting safety related or safety significant components under normal or accident conditions because the additional fire loading is negligible and wood is a natural insulator which will help to keep the cables from shorting therefore reducing the fire potential. The bases for previous approval remain valid. In the event that any other untreated wood is discovered within the Power Block, due to original construction issues or otherwise, the issue will be tracked and evaluated within the Corrective Action Program.	
3.3.1.2(2) Plastic	Plastic sheeting materials used in the power block shall be fire-retardant types that have passed NFPA 701, Standard Methods of Fire Tests for Flame Propagation of Textiles and Films, large-scale tests, or equivalent.	Complies	Plastic sheeting material is required to be of the fire retardant type in accordance with OP-AA-201-009 which states, "Plastic films and fabrics that are USED as sheeting material for protective floor coatings, contamination control, temporary enclosures, etc.,shall be of material that is UL listed as weather resistant and flame-retardant type or MEET the flame-retardant requirements of NFPA 701 or UL Standard 214, or equivalent requirements"."	-OP-AA-201-009, Control of Transients
3.3.1.2(3) Waste	Waste, debris, scrap, packing materials, or other combustibles shall be removed from an area immediately following the completion of work or at the end of the shift, whichever comes first.	Complies	Storage and removal of waste, debris, scrap, packing materials, or other combustibles is controlled in accordance with OP-AA-201-009. This procedure states, "REMOVE all waste (e.g. debris, scraps, used rags, loose packing material, oil spills) resulting from the work activity from the area	- OP-AA-201-009, Control of Transients - MA-AA-716-026, Station Housekeeping-Material Condition Report - MA-AA-1000, Conduct of

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.3.1.2(3) Waste (Continued)			immediately following completion of the activity, or at the end of each work shift, which ever comes first, or PLACE in appropriate containers (i.e., storage cabinet, trash receptacles, etc.). MA-AA-716-026 controls the station housekeeping/material condition program, and MA-AA-1000 controls the conduct of maintenance which includes housekeeping.	Maintenance Manual
3.3.1.2(4) Designation of Storage Areas	Combustible storage or staging areas shall be designated, and limits shall be established on the types and quantities of stored materials.	Complies	Combustible storage or staging areas and established limits on types and quantities of stored materials are controlled by OP-AA-201-009. The process and list of restrictions for transient combustible materials is outlined in OP-AA-201-009.	- OP-AA-201-009, Control of Transients
3.3.1.2(5) Flammable and Combustible Liquids	Controls on use and storage of flammable and combustible liquids shall be in accordance with NFPA 30, Flammable and Combustible Liquids Code, or other applicable NFPA standards.	Complies	The controls on the use and storage of flammable and combustible liquids invoked by CC-AA-209-1001 and OP-AA-201-009 are in accordance with NFPA 30. No other NFPA standards were determined to be applicable based on guidance in NEI 04-02 (FAQ 06-0020 Rev. 1).	- NEI 04-02,rev. 2, Industry Guideline - CC-AA-209-1001, Guidelines for Performing Fire Protection Program Configuration - OP-AA-201-009, Control of Transients
3.3.1.2(6) Flammable Gases	Controls on use and storage of flammable gases shall be in accordance with applicable NFPA standards.	Complies	The controls on the use and storage of flammable gases are invoked by CC-AA-209-1001, OP-AA-201-009, and SA-AA-122. Specific examples include: Storage of flammable gases within any plant structure with the exception of designated storage areas is prohibited. Bulk storage of flammable gases in designated	- DA-ME-2002-005,rev. 0, Primary and Secondary Hydrogen Storage Buildings NFPA 50A Code Review. - NEI 04-02,rev. 2, Industry Guideline - CC-AA-209-1001, Guidelines for Performing Fire Protection Program

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.3.1.2(6) Flammable Gases (Continued)			outdoor locations are a minimum of 50 feet from plant buildings, structures, and equipment with the exception of the Primary and Secondary Storage Buildings which are evaluated within NFPA 50A Code Review (ref. DA-ME-2002-005). Requirements are imposed on storage cylinder use, location, orientation, etc. are also included within CC-AA-209-1001. No other NFPA standards were determined to be applicable based on guidance in NEI 04-02 (FAQ 06-0020).	Configuration - OP-AA-201-009, Control of Transients - SA-AA-122, Handling and Storage of Compressed Gas Cylinders/Portable Tanks and Cryogenic Contrainers/Dewars
3.3.1.3.1 Hot Work Safety Procedure	A hot work safety procedure shall be developed, implemented, and periodically updated as necessary in accordance with NFPA 51B, Standard for Fire Prevention During Welding, Cutting, and Other Hot Work, and NFPA 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations.	Complies	The controls on hot work invoked by OP-AA-201-004 are in accordance with NFPA 51B. Fire Protection Program procedures are reviewed and updated as necessary as part of internal self-assessments per PI-AA-126-1001. Compliance with NFPA 241 is addressed by compliance with NFPA 51B. Specifically, section 5.1.1 of NFPA 241-2000 (as referenced by NFPA 805-2001) states with respect to hot work, "Responsibility for hot work operations and fire prevention precautions, including permits and fire watches, shall be in accordance with NFPA 51B, Standard for Fire Prevention During Welding, Cutting, and Other Hot Work." The requirements invoked by NFPA 51B - 2009, "Standard for Fire Protection During Welding, Cutting and Other Hot Work" are satisfied by OP-AA-201-004, "Fire Prevention for Hot Work". The intent of the requirements invoked by NFPA 241, "Standard for Safeguarding Construction,	- A-102.12, Fire Watch Training - A-54.7, Fire Protection Tour - OP-AA-201-001, Fire Marshal Tours - PI-AA-126-1001, Focused Area Self-Assessments - OP-AA-201-009, Control of Transients - OP-AA-201-004, Fire Prevention for Hot Work - CC-AA-102, Design Input and Configuration Change Impact Screening

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.3.1.3.1 Hot Work Safety Procedure (Continued)			Alteration, and Demolition Operations" are satisfied by procedures governing the plant modification processes, which include control of combustible materials and ignition sources, use of fire retardant lumber, use of fire watches, fire protection plant tours, etc. These procedures consist of OP-AA-201-009, A-102.12 [Sec. 3.0], A-54.7, OP-AA-201-001, and CC-AA-102.	
3.3.1.3.2 Smoking	Smoking and other possible sources of ignition shall be restricted to properly designated and supervised safe areas of the plant.	Complies	Smoking and other possible sources of ignition are restricted to properly designated and supervised safe areas of the plant as follows: Smoking – [OP-AA-201-001, A-54.7] Hot Work – [OP-AA-201-004] Other (e.g., open flames) – [OP-AA-201-004]	- A-54.7, Fire Protection Tour - OP-AA-201-001, Fire Marshal Tours - OP-AA-201-004, Fire Prevention for Hot Work
3.3.1.3.3 Open Flame	Open flames or combustion-generated smoke shall not be permitted for leak or air flow testing.	Complies	Provisions are in place via OP-AA-201-006 that prohibit open flames or combustion-generated smoke for leak or air flow testing.	- OP-AA-201-006, Control of Temporary Heat Sources
3.3.1.3.4 Portable Heaters	Plant administrative procedure shall control the use of portable electric heaters in the plant. Portable fuel fired heaters shall not be permitted in plant areas containing equipment important to nuclear safety or where there is a potential for radiological releases resulting from a fire.	Submit for NRC Approval	Provisions are also in place within OP-AA-201-006 to control the use of portable fuel (liquid) fired heaters in the plant. The procedure specifically states, "Portable fuel fired heaters SHALL NOT be permitted in plant areas containing equipment important to nuclear safety OR where there is a potential for radiological releases resulting from a fire." Procedure OP-AA-201-004 outlines the authorization and use of the Hot Work Permit which includes controls the use of portable electric heaters and portable space heaters (combustion type) within the power block. An exception to this requirement includes the	- OP-AA-201-004, Fire Prevention for Hot Work - OP-AA-201-006, Control of Temporary Heat Sources

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.3.1.3.4 (Continued)			combustion type space heaters used in the Screenhouse.	
3.3.2 Structural	Structural. Walls, floors, and components required to maintain structural integrity shall be of noncombustible construction, as defined in NFPA 220, Standard on Types of Building Construction.	Complies with Clarification	Clarification: Power block structures are constructed of noncombustible materials. The UFSAR [Sec. 9.5.1.1.1] and the Fire Protection Program Report (EPM-FPPR) Vol. I, Part II [Sec. 3.0] state that the Ginna Fire Protection Program must comply with GDC 3, which requires use of noncombustible and fire resistant materials throughout the facility wherever necessary to preclude fire risk. With respect to this criterion, fire prevention in all areas of the plant was provided by structure and component design which optimized the containment of combustible materials and maintained exposed combustible materials below their ignition temperature in the design atmosphere. Additionally, use of noncombustible materials, as defined by NFPA 220 - 2012, for walls, floors, and components of power block structures that are required to maintain structural integrity, and construction is administratively controlled by CC-AA-209-1001.	- EPM-FPPR ANL, Fire Protection Program Report (FPPR) - CC-AA-209-1001, Guidelines for Performing Fire Protection Program Configuration Review - Ginna UFSAR
3.3.3 Interior Finishes	Interior Finishes. Interior wall or ceiling finish classification shall be in accordance with NFPA 101, Life Safety Code, requirements for Class A materials. Interior floor finishes shall be in accordance with NFPA 101 requirements for Class I interior floor finishes.	Complies	Interior finish materials are controlled to meet the cited NFPA 101 - 2009 criteria for Class A materials, by use of GC- 76.11 [sections 2.2.4 and 3.6]. This procedure ensures that within the power block, nuclear grade paint is used for concrete/block floor, ceiling, or wall applications (Carboline 890/890 N or equal). This is a Class A material which uses the ASTM E84 testing standard as specified in 10.3.1 and complies with the NFPA 101 section 10.3.2.1 flame spread index of 0-25 and smoke developed index of 0-450	- NEIL Loss Control Manual, Sept 2012 Edition, NEIL Loss Control Manual - NFPA 101 - 2009 Edition, Life Safety Code - ECP-11-000067,rev. 0, Equivalent Change Technical Evaluation of the flame spread and smoke generation values within ECP-2008-0058 Rev. 0

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.3.3 Interior Finishes (Continued)			(reference ECP-11-000067). The credited bases for acceptance are valid and meet applicable quality requirements. Use of combustible materials is also administratively controlled by OP-AA-201-009. CC-AA-209-1001 includes the requirement that installation of carpet shall be in accordance with NFPA 101 requirements for Class I interior floor finishes. Specifically that the interior floor finishes shall have a critical radiant flux of not less than 0.45 W/cm2. This is consistent with Ginna's current practices following the NEIL (Nuclear Electric Insurance Limited) Loss Control Manual [Chapter 3, Section 3.2.10.2].	- GC-76.11, Painting Application and Inspection - OP-AA-201-009, Control of Transient - CC-AA-209-1001, Guidelines for Performing Fire Protection Program Configuration Review
3.3.4 Insulation Materials	Thermal insulation materials, radiation shielding materials, ventilation duct materials, and soundproofing materials shall be noncombustible or limited combustible.	Complies	UFSAR [Sec. 9.5.1.1.1] and the Fire Protection Program Report (EPM-FPPR) Vol. I, Part II [Sec. 3.0] state that the Ginna Fire Protection Program must comply with GDC 3, which requires use of noncombustible and fire resistant materials throughout the facility wherever necessary to preclude fire risk. Existing thermal insulation materials, radiation shielding materials, ventilation duct materials, and sound proofing materials satisfy the GDC 3 requirement to the extent practicable which meets the intent of NFPA 805, Sec. 3.3.4. Use of these materials in the plant is administratively controlled CC-AA-209-1001 and CC-AA-102.	- EPM-FPPR ANL, Fire Protection Program Report (FPPR) - CC-AA-209-1001, Guidelines for Performing Fire Protection Program Configuration Review - CC-AA-102, Design Input and Configuration Change Impact Screening - Ginna UFSAR
3.3.5.1 Suspended Wiring	Wiring above suspended ceiling shall be kept to a minimum. Where installed, electrical wiring shall be listed for plenum use, routed in armored cable, routed in metallic conduit, or routed in cable trays with solid metal top and bottom covers.	Submit for NRC Approval	Ginna has wiring above suspended ceilings that may not comply with the requirements of this code section. Suspended ceilings were identified in the following areas:	- CC-AA-209-1001, Guidelines for Performing Fire Protection Program Configuration Review

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.3.5.1 Suspended Wiring (Continued)			▪ TSC (Technical Support Center) and adjoining hallway ▪ Service Building Basement office areas ▪ Control Room See Attachment L of the Transition report for further details on the request for NRC approval for existing wiring above suspended ceilings. The wiring above suspended ceilings for future installations is controlled administratively within CC-AA-209-1001.	
3.3.5.2 Electrical Raceways	Only metal tray and metal conduits shall be used for electrical raceways. Thin wall metallic tubing shall not be used for power, instrumentation, or control cables. Flexible metallic conduits shall only be used in short lengths to connect components.	Complies	Noncombustible materials are used in the construction of cable trays. CC-AA-209-1001 states, "Only metal tray and metal conduits for electrical raceways shall be used for electrical raceways. Thin wall metallic tubing shall not be used for power, instrumentation, or control cables. Flexible metallic conduits shall only be used in short lengths to connect components." Additionally, as described in NEI 04-02 [FAQ 06-0021], where used, cable air drops of limited length (approx. 3 feet) are acceptable.	- FAQ 06-0021,rev. 2, Frequently Asked Question - CC-AA-209-1001, Guidelines for Performing Fire Protection Program Configuration Review- NEI 04-02,rev. 2, Industry Guideline

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.3.5.3 Electrical Cable Construction	Electric cable construction shall comply with a flame propagation test as acceptable to the AHJ.	Complies via Previous Approval Submit for NRC Approval	The UFSAR [Sec. 9.5.1.2.4.8] states, "The cable insulation used at Ginna includes Kerite, oil-based rubber, neoprene, and polyvinyl chloride (PVC). The cables have, as a minimum, passed the ASTM and UL horizontal and vertical flame tests. Power cables and PVC control cables have passed the Consolidated Edison Bonfire Test. The majority of electrical cables were purchased and installed prior to issuance of IEEE 383; however, the potential combustion products for the materials used at the station have been evaluated from generic test reports and do not exhibit an unusual or significantly hazardous nature. All cables used for modifications meet IEEE 383 criteria unless specifically excepted." A specific determination is made whenever it is impracticable to meet IEEE 383 criteria for cables used in modifications. RG003006 [Encl. 1, Item 3.2.4, pg. 2] states, "SER Section 3.2.4 indicates that the licensee is investigating the fire characteristics, including fire resistance, of the cable insulation used in the plant. By letter dated April 30, 1979, the licensee provided a list of cable insulation types and quantities used in the plant. The assumptions on Page I-1 of the licensee's study performed in response to SER Section 3.2.1 obviate the need for a separate staff analysis of the fire characteristics of electrical cable insulation. We conclude that this item is acceptable." The approval request is for the video/communication/data cables that do not comply with the requirement of NFPA 805, section 3.3.5.3.	- RG003006, Safety Evaluation Report Supplement 2, 2/6/81 - CC-AA-209-1001, Guidelines for Performing Fire Protection Program Configuration Review - CC-AA-102, Design Input and Configuration Impact Screening - Ginna UFSAR, - EPM-FPPR ANL Fire Protection Program Report (FPPR)

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.3.5.3 Electrical Cable Construction (Continued)			See Attachment L of the Transition report for further details on the request for NRC approval for the video/communication/data cables that do not comply with this requirement. Procedure CC-AA-209-1001 and CC-AA-102 ensures that all new power, control or instrument cable installed will be constructed to meet or exceed the requirements of: IEEE 383-1974 or IEEE 1202-1991 or CSA (Canadian Standards Association) 22.2 No. 0.3 or NFPA 262 or UL 44, UL 83, UL 1581, UL 1666, or UL 1685	
3.3.6 Roofs	Metal roof deck construction shall be designed and installed so the roofing system will not sustain a self-propagating fire on the underside of the deck when the deck is heated by a fire inside the building. Roof coverings shall be Class A as determined by tests described in NFPA 256, Standard Methods of Fire Tests of Roof Coverings.	Complies via Previous Approval Complies with use of Evaluation	For the Fire Protection Evaluation documented via RG010540 [Sec. 5.0, Guideline D.1.e, pg. 5-23], the response to BTP APCSB 9.5-1, Appendix A, Guideline D.1.e stated, "All metal roofs were specified to be FM Class I except the Screen House. The FHA describes the roof construction for this area and outlines fire protection requirements." As part of the NFPA 805 transition process, Design Analysis DA-ME-08-013 was issued to document the acceptability of the Screen House roof assembly. Based on the low combustible loading inside the Screen House and the passive and active fire suppression features to mitigate a fire,	- RG010540, RG&E Fire Protection Evaluation, 2/24/77 - DA-ME-08-013,rev. 0, Evaluation of Screen House Roof Assembly - CC-AA-209-1001, Guidelines for Performing Fire Protection Program Configuration Review

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.3.6 Roofs (Continued)			the lack of a Class A roof was evaluated in the design analysis as being acceptable. As stated in the analysis, "There are robust fire mitigating design features within the Screen House which include: curbing around the diesel fire pump and oil storage tank, a drainage system within the curbed area, an automatic deluge sprinkler system S17 and smoke detectors installed over the cable trays in the SH basement, an automatic wet-pipe suppression system S18 and detection system Z26 installed above the fire pumps and service water pumps in the SH Operating floor, inside and outside hose reel coverage, and a large overhead door located in the south wall and roof exhaust fans to be used for potential smoke removal." The credited bases for acceptance are valid and meet applicable quality requirements. For new construction CC-AA-209-1001 is the administrative control to utilize Class A roof coverings as determined by tests described in NFPA 256 - 2003.	
3.3.7 Bulk Flammable Gas Storage	Bulk Flammable Gas Storage. Bulk compressed or cryogenic flammable gas storage shall not be permitted inside structures housing systems, equipment, or components important to nuclear safety.	Complies with use of Evaluation	Provisions are in place via CC-AA-209-1001 that prohibit bulk storage of compressed or cryogenic flammable gas within structures housing systems, equipment, or components important to safety. With the exception of the Primary and Secondary Hydrogen Storage Buildings, SA-AA-122 requires that bulk compressed or cryogenic flammable gas be stored outdoors, a minimum of 50 feet away from buildings, structures, and equipment. The Primary and Secondary Hydrogen Storage Buildings, which are designated storage areas, are separated from adjacent plant structures by 3-hour	- DA-ME-2002-005,rev. 0, Primary and Secondary Hydrogen Storage Buildings NFPA 50A Code Review. - CC-AA-209-1001, Guidelines for Performing Fire Protection Program Configuration Review - SA-AA-122, Handling and Storage of Compressed Gas Cylinders/Portable Tanks and Cryogenic

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.3.7 Bulk Flammable Gas Storage (Continued)			rated fire barriers such that a fire or explosion will not adversely impact systems, equipment, or components important to nuclear safety. Assessment of the Hydrogen Storage Buildings with the applicable requirements of NFPA 50A has been documented via DA-ME-2002-005. The credited bases for acceptance are valid and meet applicable quality requirements. In addition, within the Turbine Building: The gas bottle racks are anchored to the concrete pedestal in the air ejector area located in the Turbine Building Mezzanine, and are also located greater than 5' away from the rack located in the Turbine Building Basement near the elevator. The racks are not located in the vicinity of any safety related equipment. The racks are located in a non-seismic building with no seismic category 1 or SR equipment; therefore, the rack is not required to meet seismic criteria. Signs are also provided to ensure total hydrogen content less than 400 scf.	Containers/Dewars
3.3.7.1 Storage of Flammable Gas	Storage of flammable gas shall be located outdoors, or in separate detached buildings, so that a fire or explosion will not adversely impact systems, equipment, or components important to nuclear safety. NFPA 50A, Standard for Gaseous Hydrogen Systems at Consumer Sites, shall be followed for hydrogen storage.	Complies with use of Evaluation	Storage of flammable gases is administratively controlled by SA-AA-122 and CC-AA-209-1001. Flammable gas storage is located in separate or detached buildings such that a fire or explosion will not adversely impact systems, equipment, or components important to safety. NFPA 50A - 1973/1978 requirements are followed for Ginna's Primary and Secondary H2 Storage Buildings and compliance has been assessed [DA-ME-2002-005]. The credited bases for acceptance are valid and meet applicable quality requirements. Flammable gas storage in fire areas TB-1 and TB-	- DA-ME-2002-005,rev. 0, Primary and Secondary Hydrogen Storage Buildings NFPA 50A Code Review. - CC-AA-209-1001, Guidelines for Performing Fire Protection Program Configuration Review - SA-AA-122, Handling and Storage of Compressed Gas Cylinders/Portable Tanks and Cryogenic Containers/Dewars

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.3.7.1 Storage of Flammable Gas (Continued)			2 is such that the total content is less than 400 scf. Flammabe gas storage is controlled administratively per SA-AA-122 and CC-AA-209-1001. NFPA 50A currently is withdrawn and incorporated into NFPA 55. NFPA 55-2010 section 10.1.1 states, "This chapter shall not apply to individual systems using containers having a total hydrogen content of less than 400 scf if each system is separated by a distance not less than 5 ft.".	
3.3.7.2 Outdoor HP Flammable Gas Storage	Outdoor high-pressure flammable gas storage containers shall be located so that the long axis is not pointed at buildings.	Complies	Outdoor high-pressure flammable gas storage is administratively controlled by SA-AA-122 and CC-AA-209-1001 such that the long axis is not pointed at buildings.	- CC-AA-209-1001, Guidelines for Performing Fire Protection Program Configuration Review - SA-AA-122, Handling and Storage of Compressed Gas Cylinders/Portable Tanks and Cryogenic Containers/Dewars
3.3.7.3 Flammable Gas Storage Cylinders	Flammable gas storage cylinders not required for normal operation shall be isolated from the system.	Complies	The storage of flammable gases, including the requirement that gas cylinders not required for normal operation shall be isolated from the system, is administratively controlled by SA-AA-122 and CC-AA-209-1001.	- CC-AA-209-1001, Guidelines for Performing Fire Protection Program Configuration Review - SA-AA-122, Handling and Storage of Compressed Gas Cylinders/Portable Tanks and Cryogenic Containers/Dewars
3.3.8 Bulk Storage of Flammable & Combustible Liquids	Bulk Storage of Flammable and Combustible Liquids. Bulk storage of flammable and combustible liquids shall not be permitted inside structures containing systems, equipment, or components important to nuclear safety. As a minimum, storage and use shall comply with NFPA	Complies with use of Evaluation	Provisions are in place within CC-AA-209-1001 and OP-AA-201-009 that prohibit bulk storage of flammable or combustible liquids within structures housing systems, equipment, or components important to safety. OP-AA-201-009 invokes NFPA 30 requirements and compliance with NFPA 30-	- EIR 51-9159545,rev. 000, RE Ginna Nuclear Station Code Compliance Evaluation for NFPA 30, Flammable and Combustible Liquids Code,

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.3.8 Bulk Storage of Flammable & Combustible Liquids (Continued)	30, Flammable and Combustible Liquids Code.		2000, Flammable and Combustible Liquids Code, that has been assessed and documented by EIR 51-9159545. The credited bases for acceptance are valid and meet applicable quality requirements.	2000 Edition - CC-AA-209-1001, Guidelines for Performing Fire Protection Program Configuration Review - OP-AA-201-009, Control of Transients
3.3.9 Transformers	Where provided, transformer oil collection basins and drain paths shall be periodically inspected to ensure that they are free of debris and capable of performing their design function.	Complies	The piping between the transformer yard to the retention pond is periodically inspected by Rep Task P600016 (5 year frequency). This rep task checks the piping internally for blockage and unblocks/repairs as necessary. The retention pond is also drained and cleaned by procedure T-6.16 and Rep Task P301845. These rep tasks ensures the design function of the transformer yard drainage system.	- P600016, Rep Task - P301845, Rep Task - T-6.16, Draining of the Transformer Yard Storm Drain Retention Pond
3.3.10 Hot Pipes and Surfaces	Hot Pipes and Surfaces. Combustible liquids, including high flashpoint lubricating oils, shall be kept from coming in contact with hot pipes and surfaces, including insulated pipes and surfaces. Administrative controls shall require the prompt cleanup of oil on insulation.	Complies	The administrative controls to require the prompt cleanup of oil on insulation is included within OP-AA-201-001 which checks that no environmental hazards (e.g. uncontrolled leaks) are present. Where oil leaks exist, the oil is NOT on hot surfaces or fibrous insulation. Additionally, Fire Protection Tour procedure A-54.7, includes the inspection of combustible liquids including lubricating oils in contact with insulation or the surface of piping. Deficiencies identified during plant tours in accordance with A-54.7 and OP-AA-201-001 are entered into the corrective action program, which ensures a review for prompt actions as required.	- A-54.7, Fire Protection Tour - OP-AA-201-001, Fire Marshal Tours

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.3.11 Electrical Equipment	Adequate clearance, free of combustible material, shall be maintained around energized electrical equipment.	Complies	As defined by NEI 04-02 [FAQ 06-0024], the term "adequate clearance, free of combustible material, shall be maintained around electrical equipment" is the clear space around equipment provided to ensure an acceptable level of fire prevention for Structures, Systems, or Components (SSCs) necessary to ensure the Nuclear Safety Performance Criteria. This clear space or distance is maintained such that combustible material does not reside in an area where transient fuel packages have been shown to adversely affect "energized electrical equipment" needed to meet the nuclear safety performance criteria for the fire zone/ area, either as an ignition source or target set. OP-AA-201-009 establishes Combustible Control Zones for all plant areas where electrical equipment relied upon to achieve the Nuclear Safety Performance Criteria could be subjected to a credible transient combustible fire exposure hazard. Additionally, OP-AA-201-009 does not allow transient combustible material to be staged or stored such that material is within (3) feet of live electrical components. This established the adequate clearance, free of combustible material around energized electrical equipment.	- OP-AA-201-009, Control of Transients
3.3.12 Reactor Coolant Pumps	Reactor Coolant Pumps. For facilities with non-inerted containments, reactor coolant pumps with an external lubrication system shall be provided with an oil collection system. The oil collection system shall be designed and installed such that	None	This is a general statement section. Please refer to the following subsections for the specific NFPA 805 subsection requirements and the compliance statement for each.	- ESM-97-009,rev. 0, Effectiveness Review of RCP Motor Lube Oil Spillage Collection System

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.3.12 Reactor Coolant Pumps (Continued)	leakage from the oil system is safely contained for off normal conditions such as accident conditions or earthquakes. All of the following shall apply.		The Fire Protection Program Report (EPM-FPPR) Vol. I, Part II, Sec. [10.2.17] states, "The RCP motor oil collection system consists of a package of splash guards, drip pans, and enclosures assembled as attachments to the reactor coolant pump motor at strategic locations to preclude the possibility of oil making contact with hot reactor coolant system components and piping. Any leaking oil is drained from each individual pump to its own collection tank, which is capable of handling the entire oil inventory of the motor. Strainers are placed at the drain of each drip pan or enclosure. The oil collection components are designed and attached to preclude dislodging during a seismic event." The Fire Protection Program Report (EPM-FPPR) Vol. III, Part IV [Sec. 14.0], also states, "The effectiveness of the lube oil system is documented in 'Effectiveness Review of RCP Motor Lube Oil Spillage Collection System', evaluation number ESM-97-009. The review was performed to ensure that the requirements of NRC Information Notice 94-58 and NRC Inspection Procedure 64100, Requirement 02.04, are met. The evaluation concluded that the system is adequately designed to contain the lube oil spills from the various leak sites located on the RCP motors and that the lube oil collection system piping, pipe supports, and collection tank supports are designed to maintain structural integrity during a seismic event without loss of operability of safety-related equipment." The oil collection system is designed and installed such that leakage from the oil system is safely contained for normal and off normal conditions.	- EPM-FPPR ANL, Fire Protection Program Report (FPPR)

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.3.12(1) Reactor Coolant Pumps	*(1) The oil collection system for each reactor* coolant pump shall be capable of collecting lubricating oil from all potential pressurized and nonpressurized leakage sites in each reactor coolant pump oil system.	*Submit for* NRC Approval	ESM-97-009 [Sec. 5.0] states, "The RCP motor lube oil spillage collection system is designed to collect leaks, drips, spills, and sprays from all potential leakage site located on the RCP motor. The following leakage sites have been identified as the potential pressurized and unpressurized leakage sites. Lower bearing shaft drip pan enclosure - 4 unpressurized collection sites Lower bearing level control switch enclosure - 1 unpressurized collection site Upper bearing oil cooler enclosure - 1 pressurized collection site Upper bearing oil drain valve - 1 unpressurized collection site Upper bearing RTD - 1 unpressurized collection site Upper bearing level control switch - 1 unpressurized collection site Upper bearing oil lift system - 1 pressurized collection site Upper bearing oil discharge pan - 1 unpressurized collection site" The oil collection system complies with the NFPA 805 section 3.3.12 (1) requirements regarding the above leakage sites. See Attachment L for NRC approval request for the potential of oil misting from the reactor coolant pumps due to normal motor consumption not captured by the oil collection system.	- ESM-97-009,rev. 0, Effectiveness Review of RCP Motor Lube Oil Spillage Collection System - M-97-001,rev. 0, RCP Motor Lube Oil Collection System Oil Inventory and Flow Calculations

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.3.12(2) Reactor Coolant Pumps	(2) Leakage shall be collected and drained to a vented closed container that can hold the inventory of the reactor coolant pump lubricating oil system.	Complies	Any potential leakage is collected and drained to a vented collection tank sized to accommodate the system inventory (200 gallons) as detailed within ESM-97-009 and M-97-001. ESM-97-009 [Sec. 5.0] states, "The lube oil spillage collection system is designed to contain the entire inventory of lube oil filled in each RCP motor approximately 200 gallons. All potential leak sites are connected by their independent pans, enclosures, and drain pipes to a common drain header, which finally drains into the lube oil spillage collection tank. The oil spills, drips, and leaks from the various potential leak sites are collected in a closed and vented, horizontal saddle supported tank."	- ESM-97-009,rev. 0, Effectiveness Review of RCP Motor Lube Oil Spillage Collection System - M-97-001,rev. 0, RCP Motor Lube Oil Collection System Oil Inventory and Flow Calculations
3.3.12(3) Reactor Coolant Pumps	(3) A flame arrestor is required in the vent if the flash point characteristics of the oil present the hazard of a fire flashback.	Complies	"Each tank is provided with a 3 inch vent and flame arrestor, which will prevent hazard due to any fire flashback", as described within ESM-97-009 [Sec. 5.0].	- ESM-97-009,rev. 0, Effectiveness Review of RCP Motor Lube Oil Spillage Collection System
3.3.12(4) Reactor Coolant Pumps	(4) Leakage points on a reactor coolant pump motor to be protected shall include but not be limited to the lift pump and piping, overflow lines, oil cooler, oil fill and drain lines and plugs, flanged connections on oil lines, and the oil reservoirs, where such features exist on the reactor coolant pumps.	Complies	As detailed within ESM-97-009 [Sec. 5.0], the RCP motor lube oil spillage collection system is designed to collect leaks, drips, spills, and sprays from all potential leakage sited located on the RCP motor including: Lower bearing shaft drip pan enclosure - 4 unpressurized collection sites Lower bearing level control switch enclosure - 1 unpressurized collection site Upper bearing oil cooler enclosure - 1 pressurized collection site Upper bearing oil drain valve - 1 unpressurized collection site Upper bearing RTD - 1 unpressurized collection site Upper bearing level control switch - 1	- ESM-97-009,rev. 0, Effectiveness Review of RCP Motor Lube Oil Spillage Collection System

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.3.12(4) Reactor Coolant Pumps (Continued)			unpressurized collection site Upper bearing oil lift system - 1 pressurized collection site Upper bearing oil discharge pan - 1 unpressurized collection site	
3.3.12(5) Reactor Coolant Pumps	(5) The collection basin drain line to the collection tank shall be large enough to accommodate the largest potential oil leak such that oil leakage does not overflow the basin.	Complies	ESM-97-009 [Sec. 5.0] states, "The drain lines and drain header are 2" NPT flexible hose and threaded unions". Calculation M-97-001 demonstrates that a 2" drain line is adequate to accommodate the maximum potential leak due to a postulated crack at the upper bearing cooler oil line.	- ESM-97-009,rev. 0, Effectiveness Review of RCP Motor Lube Oil Spillage Collection System - M-97-001,rev. 0, RCP Motor Lube Oil Collection System Oil Inventory and Flow Calculations
3.4.1 On-Site Fire-Fighting Capability	On-Site Fire-Fighting Capability. All of the following requirements shall apply.	None	This is a general statement section. Please refer to the following subsections for the specific NFPA 805 subsection requirements and the compliance statement for each.	- None
3.4.1(a) Brigade Availability	A fully staffed, trained, and equipped fire-fighting force shall be available at all times to control and extinguish all fires on site. This force shall have a minimum complement of five persons on duty and shall conform with the following NFPA standards as applicable: (1) NFPA 600, Standard on Industrial Fire Brigades (interior structural fire fighting). (2) NFPA 1500, Standard on Fire Department Occupational Safety and Health Program. (3) NFPA 1582, Standard on Medical Requirements for Fire Fighters and Information for Fire Department Physicians.	Complies with use of Evaluation	(a) 1 CC-AA-211 describes that a Fire Brigade of at least five members is maintained onsite at all times. The Fire Brigade does not include member of the shift crew necessary for post fire safe shutdown, the Shift Technical Advisor (STA), or any personnel required for other essential functions during a fire emergency. UFSAR [Sec. 9.5.1.2.5.2] states, "A fire brigade shall be maintained on site at all times. This excludes the two members of the minimum shift crew necessary for safe shutdown. The fire brigade composition may be less than the minimum requirements for a period of time not to exceed 2 hours to accommodate unexpected absence of fire brigade members provided immediate action is	- EPM-FPPR ANL, Fire Protection Program Report (FPPR) - CC-AA-211, Fire Protection Program - EIR 51-9159544,rev. 000, RE Ginna Nuclear Station Code Compliance Evaluation for NFPA 600, Standard on Industrial Fire Brigades, 2000 Edition - Ginna UFSAR,rev. 23 - FAQ 06-0007,rev. 2, Chapter 3 Req'mts for Fire Brigade

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.4.1(a) Brigade Availability (Continued)			taken to restore the fire brigade to the minimum requirements." This is consistent with the Fire Protection Program Report (EPM-FPPR) Vol. I Part II [Sec. 7.0]. The on site Fire Brigade is appropriately staffed, trained, and equipped. Compliance of Fire Brigade operations with the applicable requirement of NFPA 600 -2000, Standard on Industrial Fire Brigades, has been assessed and documented by EIR 51-9159544. The credited bases for acceptance are valid and meet applicable quality requirements.	
		None	a (2) NFPA 1500 is not applicable to Ginna per FAQ 06-0007 which states, "The NFPA standards divide fire brigades into two types, based on organization and duties: "Industrial Fire Brigades" and "Industrial Fire Departments." Practically this means that a fire fighting organization at a nuclear power plant must comply with either NFPA 600 (for an Industrial Fire Brigade) or both NFPA 1500 and NFPA 1582 (for an Industrial Fire Department")."	
		None	a (3) NFPA 1582 is not applicable to Ginna per FAQ 06-0007 which states, "The NFPA standards divide fire brigades into two types, based on organization and duties: "Industrial Fire Brigades" and "Industrial Fire Departments." Practically this means that a fire fighting organization at a nuclear power plant must comply with either NFPA 600 (for an Industrial Fire Brigade) or both NFPA 1500 and NFPA 1582 (for an Industrial Fire Department")."	

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.4.1(b) Brigade Members Availability	*Industrial fire brigade members shall have no other* assigned normal plant duties that would prevent immediate response to a fire or other emergency as required.	Complies	*The staff required for fire brigade is independent of* other responsibilities during fire events as specified in CC-AA-211 and the Fire Protection Program Report (EPM-FPPR) Vol. I Part II [Sec. 7.15]. The fire brigade consists of a total of five members: (1) Fire Brigade Captain (Auxiliary Operator and Fire Brigade Trained with additional Captain Training) (1) Backup Fire Brigade Captain (Auxiliary Operator and Fire Brigade Trained with additional Captain Training) (1) Fire Brigade Member (Auxiliary Operator and Fire Brigade Trained) (1) Fire Brigade Member (Fire Brigade Trained) (1) Fire Brigade Member (Fire Brigade Trained) This compliment excludes the two members of the shift crew necessary for safe shutdown. The Fire Brigade Captain and control room personnel responsibilities are outlined in SC-3.4.1.	- EPM-FPPR ANL, Fire Protection Program Report (FPPR) - CC-AA-211, Fire Protection Program- A-103.9, Fire Brigade Training -SC-3.4.1,rev. 04000, Fire Brigade Captain and Control Room Personnel Responsibilities
3.4.1(c) Brigade Members Training	During every shift, the brigade leader and at least two brigade members shall have sufficient training and knowledge of nuclear safety systems to understand the effects of fire and fire suppressants on nuclear safety performance criteria. Exception to (c): Sufficient training and knowledge shall be permitted to be provided by an operations advisor dedicated to industrial fire brigade support.	Complies via Previous Approval	Ginna's fire protection program is consistent with existing commitments and utilizes a compliance category of "Complies by previous NRC Approval" in accordance with NFPA 805 Section 3.1. The fire brigade training is acceptable per NRC FP SER, 2/14/79, sections 3.1.31 and 6.2 [RG001680], along with the Fire Protection Program Report (EPM-FPPR) Vol. II, Appendix A, Table A-1 [sec. B.5.b].	- EPM-FPPR ANL, Fire Protection Program Report (FPPR) - RG001680, Safety Evaluation Report Docket No. 50-244, 2/14/1979
3.4.1(d) Notification of Fire Brigade	The industrial fire brigade shall be notified immediately upon verification of a fire.	Complies	SC-3 states, "All fires are reported to the Control Room. The discoverer shall immediately go to the paging system or telephone to report the type and location of the fire and the equipment involved. The	- SC-3, Site Contingency Plan

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.4.1(d) (Continued)			Control Room will respond to a report of fire by sending the Fire Brigade."	
3.4.1(e) Physical Requirements	Each industrial fire brigade member shall pass an annual physical examination to determine that he or she can perform the strenuous activity required during manual firefighting operations. The physical examination shall determine the ability of each member to use respiratory protection equipment.	Complies	All fire brigade personnel receive an annual physical examination in accordance with the Fire Protection Program Report (EPM-FPPR) Vol. I Part II [sec. 7.22], and OP-AA-201-005 using procedure HR-AA-07-107. The fire brigade must meet all physical examination requirements of Respiratory Protection medical evaluation within HR-AA-07-107. This evaluation determines if the fire brigade member can perform strenuous activity required during manual firefighting operation, and the ability of each member to use respiratory protection equipment.	- EPM-FPPR ANL, , Fire Protection Program Report (FPPR) - HR-AA-07-107, Fire Brigade Surveillance Exam - OP-AA-201-005, Fire Brigade Qualification
3.4.2 Pre-Fire Plans	Current and detailed pre-fire plans shall be available to the industrial fire brigade for all areas in which a fire could jeopardize the ability to meet the performance criteria described in Section 1.5.	Complies	Current and detailed Fire Response Plans are available, and controlled, for the fire brigade in the Service Building, TSC, and Control Room per SC-3.15.15 [Attach. 7, 21, 22, 24, and 27].	- SC-3.15.15, Emergency Fire Equipment Inventory and Inspection
3.4.2.1 Fire Area Configuration	The plans shall detail the fire area configuration and fire hazards to be encountered in the fire area, along with any nuclear safety components and fire protecton systems and features that are present.	Complies	The Fire Protecton Program Report (EPM-FPPR) Vol. I, Part II [Sec. 9.4] and OP-AA-201-008 outline the content of the Fire Response Plans (FRPs). In accordance with NFPA 805, Sec. 3.4.2.1, the information provided in the FRPs includes the fire area configuration (described in terms of the manner in which the fire areas are separed from adjacent fire areas), potential hazards in the area, major nuclear safety components, and fire proteciton systems and features that are present.	-EPM-FPPR ANLFire Protection Program Report (FPPR) -FRP-0.0, Major Incident at Ginna -FRP-1.0, , Containment Basement -FRP-2.0, Containment Intermediate Floor -FRP-3.0, Containment Operating Floor -FRP-4.0, Auxiliary Building Basement -FRP-5.0, Auxiliary Building Intermediate Floor

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.4.2.1 Fire Area Configuration (Continued)				-FRP-6.0, Auxiliary Building Operating Floor -FRP-7.0, Intermediate Building Sub-Basement -FRP-8.0, Intermediate Building Controlled Side Basement -FRP-9.0, Intermediate Building Controlled Side Operating Floor -FRP-10.0, Intermediate Building Controlled side Top Floor -FRP-11.0, Intermediate Building Clean Side Basement -FRP-12.0, Intermediate Building Main Steam Header Floor -FRP-13.0, Intermediate Clean Side Fan Floor -FRP-14.0, , Intermediate Building Clean Side Top Floor -FRP-15.0, Cable Tunnel -FRP-16.0, Air Handling Room -FRP-17.0, Battery Room A -FRP-18.0, Battery Room B -FRP-19.0, Relay Room/Multiplexer Room/Annex Room -FRP-20.0, Control Room -FRP-21.0, Turbine Building Basement

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.4.2.1 Fire Area Configuration (Continued)				-FRP-22.0, Turbine Building Intermediate Floor -FRP-23.0, Turbine Building Operating Floor -FRP-24.0, Diesel Generator Room A and Vault -FRP-25.0, Diesel Generator Room B and Vault -FRP-26.0, Fire Response Plan Procedure, Oil Storage Room -FRP-27.0, Secondary Hydrogen Bottle House -FRP-28.0, All Volatile Treatment Room -FRP-29.0, Technical Support Center -FRP-30.0, Screen House Basement -FRP-31.0, Screen House Operating Floor -FRP-32.0, Transformer Yard -FRP-33.0, Primary Nitrogen Bottle House -FRP-34.0, Primary Hydrogen Bottle House -FRP-35.0, Standby Auxiliary Feedwater Building -FRP-36.0, Service Building Basement -FRP-36.1, Service Building Main Floor

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.4.2.1 Fire Area Configuration (Continued)				-FRP-37.0, Contaminated Storage Building -FRP-38.0, Nuclear Assessment Building -FRP-39.0, Upper Radwaste Building -FRP-42.0, Butler Building -FRP-43.0, Off Loading Portal -FRP-44.0, On-Site Warehouse -FRP-45.0, Guardhouse -FRP-47.0, Ginna Training Center (East and West) -FRP-47.1, Simulator Building -FRP-48.0, Station 13A Switchyard -FRP-49.0, Off-Site Warehouse -FRP-50.0, Off-Site Diesel Fuel Oil Storage Facility -FRP-51.0, Ginna Administration Building - FRP-52.0, Canister Preparation Building - OP-AA-201-008, Pre-Fire Plan Manual

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.4.2.2 Review Fire Plans	*Pre-fire plans shall be reviewed and updated as necessary.*	Complies	OP-AA-201-008 specifically addresses the periodic review of the Fire Response Procedures every (3) years.	- OP-AA-201-008, Pre-Fire Plan Manual
3.4.2.3 Fire Plan Availability	Pre-fire plans shall be available in the control room and made available to the plant industrial fire brigade.	Complies	SC-3.1.1 [Sec. 3.1.4] states, "The communicator may use the Fire Response Plan (FRP) procedures and drawings located in the Control Room to assist and support the Fire Brigade Captain." Additionally, current and detailed Fire Response Plans are available, and controlled, for the fire brigade in the Service Building, TSC, and Control Room per SC-3.15.15 [Attach. 7, 21, 22, 24, and 27].	- SC-3.1.1, Fire Alarm Response (Fire Brigade Activation) - SC-3.15.15, Emergency Fire Equipment Inventory and Inspection
3.4.2.4 Coordination with Other Plant Groups	Pre-fire plans shall address coordination with other plant groups during fire emergencies.	Complies	The FRPs provide instructions for Fire Brigade coordination with a) Control Room, b) Security, c) Radiation Protection, d) Offsite Assistance	- FRP-1.0, Containment Basement - FRP-2.0, Containment Intermediate Floor - FRP-3.0, Containment Operating Floor - FRP-4.0, Auxiliary Building Basement - FRP-5.0, Auxiliary Building Intermediate Floor - FRP-6.0, Auxiliary Building Operating Floor - FRP-7.0, Intermediate Building Sub-Basement - FRP-8.0, Intermediate Building Controlled Side Basement - FRP-9.0, Intermediate Building Controlled Side Operating Floor - FRP-10.0, Intermediate Building Controlled Side

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.4.2.4 ***Coordination with*** **Other Plant Groups (Continued)**				Top Floor - FRP-11.0, Intermediate Building Clean Side Basement - FRP-12.0, Intermediate Building Main Steam Header Floor - FRP-13.0, Intermediate Clean Side Fan Floor - FRP-14.0, Intermediate Building Clean Side Top Floor - FRP-15.0, Cable Tunnel - FRP-16.0, Air Handling Room - FRP-17.0, Battery Room A - FRP-18.0, Battery Room B - FRP-19.0, Relay Room/Multiplexer Room/Annex Room - FRP-20.0, Control Room - FRP-21.0, Turbine Building Basement - FRP-22.0, Turbine Building Intermediate Floor - FRP-23.0, Turbine Building Operating Floor - FRP-24.0, Diesel Generator Room A and Vault - FRP-25.0, Diesel Generator Room B and Vault - FRP-26.0, Fire Response Plan Procedure, "Oil

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.4.2.4 Coordination with Other Plant Groups (Continued)				Storage Room, - FRP-27.0, Secondary Hydrogen Bottle House - FRP-28.0, All Volatile Treatment Room (AVT) - FRP-29.0, Technical Support Center - FRP-30.0, Screen House Basement - FRP-31.0, Screen House Operating Floor - FRP-32.0, Transformer Yard - FRP-33.0, Primary Nitrogen Bottle House - FRP-34.0, Primary Hydrogen Bottle House - FRP-35.0, Standby Auxiliary Feedwater Building - FRP-36.0, Service Building Basement - FRP-36.1, Service Building Main Floor - FRP-37.0, Contaminated Storage Building - FRP-39.0, Upper Radwaste Building - FRP-40.0, Smith Engineering Building - FRP-41.0, Pole Barn - FRP-42.0, Butler Building - FRP-43.0, Off Loading Portal - FRP-44.0, On-Site

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.4.2.4 Coordination with Other Plant Groups (Continued)				Warehouse - FRP-45.0, Guardhouse - FRP-47.0, Ginna Training Center (East and West) - FRP-47.1, Simulator Building - FRP-48.0, Station 13A Switchyard - FRP-49.0, Off-Site Warehouse - FRP-50.0, Off-Site Diesel Fuel Oil Storage Facility - FRP-51.0, Ginna Administration Building - FRP-52.0, Canister Preparation Building

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.4.3 Training and Drills	Industrial fire brigade members and other plant personnel who would respond to a fire in conjunction with the brigade shall be provided with training commensurate with their emergency responsibilities.	None	This is a general statement section. Please refer to the following subsections for the specific NFPA 805 subsection requirements and the compliance statement for each.	- None
3.4.3(a) Industrial Fire Brigade Training	Plant Industrial Fire Brigade Training. All of the following requirements shall apply. (1) Plant industrial fire brigade members shall receive training consistent with the requirements contained in NFPA 600, Standard on Industrial Fire Brigades, or NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, as appropriate. (2) Industrial fire brigade members shall be given quarterly training and practice in fire fighting, including radioactivity and health physics considerations, to ensure that each member is thoroughly familiar with the steps to be taken in the event of a fire. (3) A written program shall detail the industrial fire brigade training program. (4) Written records that include but are not limited to initial industrial fire brigade classroom and hands-on training, refresher training, special training schools attended, drill attendance records, and leadership training for industrial fire brigades shall be maintained for each industrial fire brigade member.	Complies with use of Evaluation Complies Complies Complies	(a) Plant Industrial Fire Brigade Training (1) Ginna complies with NFPA 600 as evaluated in reference 51-9159544. NFPA 1500 is not applicable to Ginna per FAQ 06-0007 which states, "The NFPA standards divide fire brigades into two types, based on organization and duties: "Industrial Fire Brigades " and "Industrial Fire Departments." Practically this means that a fire fighting organization at a nuclear power plant must comply with either NFPA 600 (for an Industrial Fire Brigade) or both NFPA 1500 and NFPA 1582 (for an Industrial Fire Department)." (2) Fire brigade members are given quarterly training which includes classroom training and fire drills in accordance to procedure A-103.9. Procedure A-103.9 details the content of the classroom instruction which includes the toxic characteristics of expected products of combustion, including the containment and monitoring of potentially contaminated fire suppression products, and review of radiation surveys as they affect fire fighting plans. Fire Brigade training for "Fires in Radiological Controlled Areas" is included in lesson plan FFB05C. (3) A written program [A-103.9] details the fire brigade training program. (4) A-103.9 and TQ-AA-205 prescribes the	- FFB05C, Fires in Radiologically Controlled Areas - A-103.9, Fire Brigade Training - 51-9159544, RE Ginna Nuclear Station Code Compliance Evaluation for NFPA 600, Standard on Industrial Fire Brigades, 2000 Edition - TQ-AA-205, Training Records

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.4.3(a) Industrial Fire Brigade Training (Continued)			requirements for written fire brigade training records.	
3.4.3(b) Non-Industrial Fire Brigade Training	Training for Non-Industrial Fire Brigade Personnel. Plant personnel who respond with the industrial fire brigade shall be trained as to their responsibilities, potential hazards to be encountered, and interfacing with the industrial fire brigade.	Complies	As described by the Site Contingency Plan, SC-3, the location and severity of a fire will determine which plant personnel are involved and the need for off site assistance. The fire brigade captain evaluates the need for off site assistance within the Fire Response Procedure set (see Sec. 3.4.2.4 for a complete listing of the FRPs). The location of the fire will determine the need for other personnel such as RP, security, or off site assistance. Since drills are conducted quarterly per A-103.9, non-fire brigade personnel, such as RP and security personnel routinely receive training as to their responsibilities, potential hazards encountered, and interfacing with the fire brigade. Finally, drills involving off site fire departments are held at least annually [OP-AA-201-003].	- SC-3, Site Contingency Plan - A-103.9, Fire Brigade Training - OP-AA-201-003, Fire Drill Performance
3.4.3(c) Drills	Drills. All of the following requirements shall apply. (1) Drills shall be conducted quarterly for each shift to test the response capability of the industrial fire brigade. (2) Industrial fire brigade drills shall be developed to test and challenge industrial fire brigade response, including brigade performance as a team, proper use of equipment, effective use of pre-fire plans, and coordination with other groups. These drills shall evaluate the industrial fire brigade's abilities to react, respond, and demonstrate proper fire-fighting techniques to control and extinguish the fire and smoke conditions being simulated by the drill scenario. (3) Industrial fire brigade drills shall be conducted in	Complies	1) Fire drills are conducted for each shift brigade, quarterly with one drill per year held on a back shift per OP-AA-201-003 and A-103.9. 2) OP-AA-201-003 prescribes fire drill scenarios that FOCUS on realistic fire situations based on plant operating experience and that challenge plant operations. At least four different scenarios are used during a calendar year. Also, Attach. 1, "Sample Fire Brigade Record" form to OP-AA-201-003 includes provisions that evaluate the brigade's abilities to work as a team and react and respond to challenging conditions. These include recording the time for laying the first and second hose handline, proper use of equipment, simulated	- OP-AA-201-003, Fire Drill Performance - A-103.9, Fire Brigade Training

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.4.3(c) Drills (Continued)	various plant areas, especially in those areas identified to be essential to plant operation and to contain significant fire hazards. (4) Drill records shall be maintained detailing the drill scenario, industrial fire brigade member response, and ability of the industrial fire brigade to perform as a team. (5) A critique shall be held and documented after each drill.		inoperable fire suppression systems, and coordination with other groups (Control Room, RP, offsite fire department). 3) All drills are pre-planned in accordance with OP-AA-201-003, which ensures that drills are conducted for a variety of plant areas essential to plant operation and that contain significant fire hazards. Additionally, OP-AA-201-003 requires at least one drill per quarter be conducted in a risk significant area as identified in the site PRA analysis. 4) OP-AA-201-003 requires the Fire Marshal to *maintain completed fire drill records*, quarterly reviews, and end of year fire drill review for a minimum of three years. Additionally, OP-AA-201-003 assesses the ability of the fire brigade to perform as a team. 5) Attach. 1 to OP-AA-201-003 includes a fire brigade drill critique which is required to be completed after each drill.	
3.4.4 Fire-Fighting Equipment	Protective clothing, respiratory protective equipment, radiation monitoring equipment, personal dosimeters, and fire suppression equipment such as hoses, nozzles, fire extinguishers, and other needed equipment shall be provided for the industrial fire brigade. This equipment shall conform with the applicable NFPA standards.	Complies	The fire-fighting equipment cited and additional equipment is provided for fire brigade use and is maintained via controlled inventory in the Service Building Fire Brigade Response room per SC-3.15.15. The Site Support Emergency Vehicle is also equipped with required equipment which is also stored and maintained in accordance with SC-3.15.15. This equipment conforms to NFPA 600 section 2-6.1 standards [Engineering Information Record 51-9159544].	- SC-3.15.15, Emergency Fire Equipment Inventory and Inspection - 51-9159544,rev. 000, RE Ginna Nuclear Station Code Compliance Evaluation for NFPA 600, Standard on Inductrial Fire Brigades, 2000 Edition

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.4.5.1 Mutual Aid Agreement	Off-site fire authorities shall be offered a plan for their interface during fires and related emergencies on site.	Complies	A written agreement with the local fire company [SC-3.0.1,] is maintained to ensure adequate support for a fire emergency. Members of the local fire company have received training in basic radiation principles, typical radiation hazards, and precautions to be taken in a fire involving radioactive materials in the plant. Per OP-AA-201-003, drills involving off site fire department personnel are conducted at least annually.	- SC-3.0.1, General Information-Major Incident - OP-AA-201-003, Fire Drill Performance
3.4.5.2 Site-Specific Training	Fire fighters from the off-site fire authorities who are expected to respond to a fire at the plant shall be offered site-specific training and shall be invited to participate in a drill at least annually.	Complies	A written agreement with the local fire company [SC-3.0.1] is maintained to ensure adequate support for a fire emergency. Members of the local fire company have received training in basic radiation principles, typical radiation hazards, and precautions to be taken in a fire involving radioactive materials in the plant. Per OP-AA-201-003, drills involving off site fire department personnel are conducted at least annually.	- OP-AA-201-003, Fire Drill Performance - SC-3.0.1, General Information-Major Incident
3.4.5.3 Security and Radiation Protection	Plant security and radiation protection plans shall address off-site fire authority response.	Complies	SC-3.3.1 addresses plant security and radiation protection requirements for off site fire authority response.	- SC-3.3.1, Immediate Fire Notification
3.4.6 Communications	An effective emergency communications capability shall be provided for the industrial fire brigade.	Complies	An effective emergency communications capability is provided for the industrial fire brigade as described in the Fire Protection Program Report (EPM-FPPR) Vol. I, Part II [Sec. 10.2.25]. There are three communications systems within the plant. The primary system is the combination paging and party system; in addition, there is a sound powered phone system and a radio paging system. The sound powered system is hard wired with separate wires from the combination paging and party system. The radio paging system provides communication with areas inside the containment	- EPM-FPPR ANL, Fire Protection Program Report (FPPR)

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.4.6 Communications (Continued)			with the help of a radio antenna mounted in the containment. Additionally, a repeater located in the Nuclear Assessment Building allows for greater flexibility with radio communications.	
3.5.1 Adequate Reliability, Quantity & Duration	A fire protection water supply of adequate reliability, quantity, and duration shall be provided by one of the two following methods. (a) Provide a fire protection water supply of not less than two separate 300,000-gal (1,135,500-L) supplies. (b) Calculate the fire flow rate for 2 hours. This fire flow rate shall be based on 500 gpm (1892.5 L/min) for manual hose streams plus the largest design demand of any sprinkler or fixed water spray system(s) in the power block as determined in accordance with NFPA 13, Standard for the installation of Sprinkler Systems, or NFPA 15, Standard for Water Spray Fixed Systems for Fire Protection. The fire water supply shall be capable of delivering this design demand with the hydraulically least demanding portion of fire main loop out of service.	Complies	Complies with method (b) The fire protection water supply is capable of delivering the design demand with the hydraulically least demanding portion of the fire main loop out of service. The Fire Protection Program Report (EPM-FPPR) Vol. I, Part II [Sec. 10.2.8] states, "The on-site fire service water [pumped from Lake Ontario] provides the supply for most of the automatic and manual water suppression systems and hose stations in the plant. The off-site supply for the fire hydrants (yard hydrants) on the yard fire main are supplied with water from the town of Ontario. The yard hydrant system can be used as a back-up to some of the fixed protection systems and inside hose stations by cross-tying both systems through wall hydrants in four locations...A dry hydrant was installed west of the Screen House for the purpose of drafting water from the discharge canal. The use of an on-site pumper truck is required to utilize this water supply." Fire suppression systems in power block areas that utilize the off-site supply as the primary water supply are located in the Screen House, the Contaminated Storage Building, Canister Preparation Building, and Upper Radwaste Building. The off-site supply can also be used as a back-up water supply to the SAFW pumps and the	- DA-ME-2001-031, Evaluation of Suppression System Flow and Pressure Requirements - EPM-FPPR ANL, Fire Protection Program Report (FPPR)

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.5.1 Adequate Reliability, Quantity & Duration (Continued)			*diesel generator lube-oil coolers and jacket heat* exchangers via temporary hoses. Per DA-ME-2001-031 [Sec. 7.3], the largest fixed suppression system hydraulic demand for safety-related plant areas is System S29 which is approximately 1,240 gpm. This includes a 200 gpm "inside" hose stream allowance. The remaining 300 gpm allowance for "outside" hose streams is supplied by the off-site water supply. 1240 gpm x 120 minutes = 148,800 gallons. Lake Ontario contains much greater than 148,800 gallons of water. The fire pumps are capable of delivering 1240 gpm at the system design pressure of 132 psi per DA-ME-2001-031. The credited bases for acceptance are valid and meet applicable quality requirements.	
3.5.2 Water Tanks	The tanks shall be interconnected such that fire pumps can take suction from either or both. A failure in one tank or its piping shall not allow both tanks to drain. The tanks shall be designed in accordance with NFPA 22, Standard for Water Tanks for Private Fire Protection. Exception No. 1: Water storage tanks shall not be required when fire pumps are able to take suction from a large body of water (such as a lake), provided each fire pump has its own suction and both suctions and pumps are adequately separated. Exception No. 2: Cooling tower basins shall be an acceptable water source for fire pumps when the volume is sufficient for both purposes and water quality is consistent with the demands of the fire service.	Complies	The fire protection water supply system complies with Exception 1 as described below: The Fire Protection Program Report (EPM-FPPR) Vol. I, Part II [Sec. 10.2.9, 10.2.24] states, "Each of the two (2) fire pumps utilize water from Lake Ontario and take suction from the circulating water intake" [via independent suction lines]. The pumps are physically separated from each other by 16 feet with no intervening combustibles [33013-2143]. A curb was installed around the diesel fire pump and the diesel oil storage tank to control any diesel oil leaks. The curbed area is equipped with a floor drain which drains to a holding tank buried outside the screen house. An automatic sprinkler system	- EPM-FPPR ANL, Fire Protection Program Report (FPPR) -33013-2143, Plant Arrangement ScreenHouse

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.5.2 Water Tanks (Continued)			is also provided in the area of the two fire pumps (supplied by the yard loop). Therefore, the pumps are considered adequately separated. Ref. the Fire Protection Program Report (EPM-FPPR) Vol.I Part II [Sec. 10.2.24].	
3.5.3 Fire Pumps	Fire pumps, designed and installed in accordance with NFPA 20, Standard for the Installation of Stationary Pumps for Fire Protection, shall be provided to ensure that 100 percent of the required flow rate and pressure are available assuming failure of the largest pump or pump power source.	Complies with use of Evaluation	As described by the Fire Protection Program Report (EPM-FPPR) Vol. I, Part II [Sec. 10.2.9], "The [on-site] water supply is delivered by a combination of two vertical shaft centrifugal fire pumps located in the Screen House. Both pumps take suction from the circulating water intake [via independent suction lines]. One pump is diesel engine-driven and the other is electric motor-driven....Each pump has a rated output of 2,000 gpm at 125 psig minimum, which is adequate to meet the largest anticipated water demand. Design Analysis DA-ME-2001-031 documents the pump performance capabilities versus the various suppression system demands." Compliance with NFPA 20-1983, "Standard for Centrifugal fire Pumps" has been assessed and documented via FPPR Vol. II, Appendix D [Table D-5] and the R.E. Ginna NFPA Code Compliance Assessment [Report No. 02-0950-1343]. Deviations from NFPA 20 that were evaluated as part of the code review included location of the motor-driven fire pump controller, use of 1/4" diameter pressure sensing lines, and location of pressure sensing line connections. In addition, CR 2007-000201 was issued to assess lack of a locking mechanism on the diesel engine-driven fire pump controller cabinet. It was determined that the existing cabinet configuration meets the intent of the code.	- DA-ME-93-108,rev. 1, Diesel Fire Pump Fuel Consumption Calculation - DA-ME-2001-031, Evaluation of Suppression System Flow and Pressure Requirements - DA-CE-95-161,rev. 2, Diesel Fire Pump Control Panel Anchorage - DA-ME-95-137,rev. 0, Fire Pump Relief Valve Setpoint Change - DA-ME-95-149,rev. 0, Diesel Fire Pump Fuel Oil Supply Piping - PCR 2001-0038,rev. 0, Fire Pump Bowl and Shaft Assembly Upgrade - IR 02-0950-1343,rev. 0, R.E.Ginna NFPA Code Compliance Assessment 7/86 Report No. 02-0950-1343 - CR-2007-000201,rev. 0, Diesel Fire Pump Controller Cabinet Needs to be Locked - EPM-FPPR ANL, Fire Protection Program Report

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.5.3 Fire Pumps (Continued)			CR-2012-006004 evaluated a deviation from the installation testing for the fire pumps as and determined the fire pumps did not meet the NFPA 20 requirements at the time of installation (achieving 65% of total rated head at not less than 150% rated capacity), however, the pumps meet the testing and maintenance requirements of NFPA 25. CA-2012-002913 and CA-2012-002914 are corrective actions to track the refurbishment of the diesel and motor driven fire pumps. STP-O-13.1 dated 12/28/11 shows that the fire pump performance curves were compared with their respective water supply capabilities. The pumps are able to supply the required flow and head to the fire water systems. Additional engineering evaluations associated with the acceptability of the fire pump design and arrangement are: DA-CE-95-161 DA-ME-95-149 DA-ME-95-137 DA-ME-93-108 The credited bases for acceptance are valid and meet applicable quality requirements.	(FPPR) -CR-2012-006004,rev.0, Diesel and Motor Driven Fire Pumps do not meet NFPA 20 code requirements -CA-2012-002913, Corrective Action to Refurbish diesel fire pump -CA-2012-002914, Corrective Action to Refurbish motor fire pump -STP-O-13.1, Annual Fire Pump Insurance Surveillance Test 12/28/11.
3.5.4 Required Fire Pumps	At least one diesel engine driven fire pump or two more seismic Category I Class IE electric motor driven fire pumps connected to redundant Class IE emergency power buses capable of providing 100 percent of the required flow rate and pressure shall be provided.	Complies with use of Evaluation	The Fire Protection Program Report (EPM-FPPR) Vol. I Part II [Sec. 10.2.9] states, "The [on-site] water supply is delivered by a combination of two vertical shaft centrifugal fire pumps located in the Screen House...One pump is diesel engine-driven and the other is electric motor-driven...Each pump has a rated output of 2,000 gpm at 125 psig	- DA-ME-2001-031, Evaluation of Suppression System Flow and Pressure Requirements - EPM-FPPR ANL, Fire Protection Program Report (FPPR)

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.5.4 Required Fire Pumps (Continued)			minimum, which is adequate to meet the largest anticipated water demand. Design Analysis DA-ME-2001-031 [Sec. 7.3] documents the pump performance capabilities versus the various suppression system demands." The credited bases for acceptance are valid and meet applicable quality requirements.	
3.5.5 Pump and Driver Separation	Each pump and its driver and controls shall be separated from the remaining fire pumps and from the rest of the plant by rated fire barriers.	Complies via Previous Approval	Summary of licensee submittal: In response to a letter dated May 3, 1978 [Record RG009150] to RG&E from the NRC, a request for responses to Enclosure 1 [Robert E. Ginna Nuclear Power Plant Docket No. 50-244 Request for Additional Information] RG&E prepared responses to the NRC on June 9, 1978 regarding the questions and positions within Enclosure 1 [Record RG009126] . In response to "Curbed Areas" [Enclosure 1 item 16], RG&E's response related to the diesel driven fire pump area to provide the results of an analysis that shows that curbed areas surrounding combustible liquid tanks have sufficient capacity to contain the full contents of the tanks plus the quantity of water required for extinguishment of a fire involving the combustible liquid was: "There are no combustible liquid tanks that are curbed in safety related areas. The drainage system is utilized to contain spills caused by leakage, overflows, or pipe rupture. The proposed curb for the diesel driven fire pump area will be sized to contain all of the diesel fuel from a full day tank. In addition, the drain will carry this fuel to a buried holding tank with sufficient capacity to contain all the diesel fuel. " Summary of NRC response: RG001680 (Letter to RG&E from NRC dated 2/14/79) section 4.3.1.2 states, "There is no fire	- RG001680, Safety Evaluation Report Docket No. 50-244, 2/14/1979 - Ginna UFSAR, -RG009150, Letter from NRC to RG&E dated May 3, 1978 -RG009126, Letter from RG&E dated June 9, 1978. -EWR1834A Design Analysis, Fire Protection – Mechanical Package No. 3

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.5.5 Pump and Driver Separation (Continued)			*barrier between the two pumps [fire pumps], which* are about 20 feet apart. The 275 gallon fuel storage tank for the diesel engine driven fire pump is located in the screen house approximately 10 feet from the pump. The licensee has proposed to install an automatic sprinkler system in the area which includes the two fire pump; and to provide curbs around the diesel fire pump and the oil storage tank. The curbed area will be provided with a floor drain which drains to a holding tank buried outside of the building. This protection would be adequate to prevent a fire from disabling both fire pumps."............."We find that, subject to implementation of the above described modifications, the fire pumps will provide adequate fire water supply [only modification identified in section 4.3.1.2 was the curb around the diesel fire pump and oil storage tank]. This satisfies the objectives identified in Section 2.2 of this report and is, therefore, acceptable." Modification status: Curbed area and drain/tank are each capable of holding the entire contents plus an additional 10%. These were installed under EWR 1834A. The physical layout of the pumps has not changed since the previous approval and it was determined that the actual distance between the centerline to centerline of the pumps was measured to be 16 feet. The bases for previous approval remain valid.	
3.5.6 Pump Start and Stop	Fire pumps shall be provided with automatic start and manual stop only.	Complies with Clarification	Clarification: UFSAR Sec. 9.5.1.2.3.2 and the Fire Protection Program Report (EPM-FPPR) Vol. I Part II [Sec. 10.2.9] state that both pumps start automatically on a drop in system pressure. An automatic controller	- EPM-FPPR ANL, Fire Protection Program Report (FPPR) - Ginna UFSAR, - SC-3.16.2

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.5.6 Pump Start and Stop (Continued)			is located with each fire pump. Each pump can be manually stopped at the controller. In addition, the electric-driven fire pump can also be manually stopped by opening a circuit breaker located in the screen house near the fire pumps. Both pumps can be started manually from the Auxiliary Benchboard or locally at the controllers in the Screen House. The electric fire pump trips automatically on undervoltage and SI, or can be manually tripped at the breaker in the Screen House. The diesel fire pump will trip on overspeed and requires action to reset [SC-3.16.2, VTD-F1744-4006, VTD-C0742-5006]. The clarification is that the electric fire pump trips auto-matically on undervoltage and SI, and the diesel fire pump trips automatically on overspeed, whereas the requirement is manual stop only. Engineering Service Request, ESR-11-0421 (ECP-13-000702), as originally listed in Attachment S-2, item 18, of the LAR, has also been installed to protect the automatic start of the diesel fire pump.	- VTD-F1744-4006 - VTD-C0742-5006 - Attachment S-2, item 18 - ECP-13-000702, Modify the diesel fire pump control panel remote start circuit to isolate the remote start circuit from the control panel
3.5.7 Individual Fire Pump	Individual fire pump connections to the yard fire main loop shall be provided and separated with sectionalizing valves between connections.	Complies	The Fire Protection Program Report (EPM-FPPR) Vol. I Part II [Sec. 10.2.9] states, "A separate 10" discharge line from each pump supplies the 8" and 10" interior loop main. All automatic and manual fixed water suppression systems and interior hose stations are supplied by this loop main. Gate valves subdivide the main into a number of sections so that a single section can be isolated without impairing the entire loop. The design is such that isolation of a section of fire water piping system does not cause a loss of both the fixed suppression system protection and the manual hose coverage for the same area with the exception of the Service Building which is provided	- EPM-FPPR ANL, Fire Protection Program Report (FPPR)

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.5.7 Individual Fire Pump (Continued)			*with two hose reels that are connected to the* suppression system piping. Reach & Rod Post Indication Gate Valve sectional valves are provided on the off-site yard main to subdivide it so that a single section can be isolated without impairing the entire system."	
3.5.8 Automatic Pressure Maintenance	A method of automatic pressure maintenance of the fire protection water system shall be provided independent of the fire pumps.	Complies	The Fire Protection Program Report (EPM-FPPR) Vol. I, Part II [Sec. 10.2.9] states, "A 15,000 gallon pressure tank (10,000 gallons of water) with an instrument air system interface and a 120 gpm centrifugal booster pump maintain system pressure at a minimum of 100 psig."	- EPM-FPPR ANL, Fire Protection Program Report (FPPR)
3.5.9 Fire Pump Notification	Means shall be provided to immediately notify the control room, or other suitable constantly attended location, of operation of fire pumps.	Complies	The UFSAR [Sec. 9.5.1.2.3.2] states, "Pump running, water flow, and pump power loss or engine trouble signals are annunciated in the Control Room, as well as at the individual pump controllers. The fire relay panel provides these signals for the Control Room alarms and indications and start signals to the pumps on system pressure drop and on water flow in the fixed fire suppression systems served by the pumps." The Fire System Alarm Panel alarm is included in Alarm Response procedure AR-K-31.	- AR-K-31, Fire System Alarm Panel - Ginna UFSAR
3.5.10 Underground Yard Fire Main Loop	An underground yard fire main loop, designed and installed in accordance with NFPA 24, Standard for the Installation of private Fire Service Mains and Their Appurtenances, shall be installed to furnish anticipated water requirements.	Complies with use of Evaluation	Compliance with NFPA 24-1984, "Private Fire Mains and Their Appurtenances" has been assessed and documented in the Fire Protection Program Report (EPM-FPPR) Vol.II, Appendix D [Table D-6] and the R.E. Ginna NFPA Code Compliance Assessment [Report No. 02-0950-1343]. Deviations from NFPA 24 that were evaluated as part of the code review included lack of post indicator valve identification tags, construction of the hose houses, and contents of the hose houses. To resolve these deviations, the	- IR 02-0950-1343,rev. 0, R.E.Ginna NFPA Code Compliance Assessment 7/86 Report No. 02-0950-1343 - EPM-FPPR ANL, Fire Protection Program Report (FPPR)

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.5.10 Underground Yard Fire Main Loop (Continued)			hose houses were replaced, the post indicator valves were tagged with EINs, and the equipment contents are maintained within the hose houses. The credited bases for acceptance are valid and meet applicable quality requirements.	
3.5.11 Maintenance or Repair	Means shall be provided to isolate portions of the yard fire main loop for maintenance or repair without simultaneously shutting off the supply to both fixed fire suppression systems and fire hose stations provided for manual backup. Sprinkler systems and manual hose station standpipes shall be connected to the plant fire protection water main so that a single active failure or a crack to the water supply piping to these systems can be isolated so as not to impair both the primary and backup fire suppression systems.	Complies	The Fire Protection Program Report (EPM-FPPR) Vol. I, Part II [Sec. 10.2.9] states, "A separate 10" discharge line from each pump supplies the 8" and 10" interior loop main. All automatic and manual fixed water suppression systems and interior hose stations are supplied by this loop main. Gate valves subdivide the main into a number of sections so that a single section can be isolated without impairing the entire loop. The design is such that isolation of a section of fire water piping system does not cause a loss of both the fixed suppression system protection and the manual hose coverage for the same area with the exception of the Service Building which is provided with two hose reels that are connected to the suppression system piping. Reach & Rod Post Indication Gate Valve sectional valves are provided on the off-site yard main to subdivide it so that a single section can be isolated without impairing the entire system."	- EPM-FPPR ANL, Fire Protection Program Report (FPPR)
3.5.12 Threads	Threads compatible with those used by local fire departments shall be provided on all hydrants, hose couplings, and standpipe risers. Exception: Fire departments shall be permitted to be provided with adapters that allow interconnection between plant equipment and the fire department equipment if adequate training and procedures are provided.	Complies	The Fire Protection Program Report (EPM-FPPR) Vol. II, Appendix A Table A-1, [Sec. E.2.g] states, "Threads on hydrant outlets and hose couplings are compatible with those of fire departments which serve the plant." This is also demonstrated during the annual drills involving off site fire department personnel OP-AA-201-003.	- OP-AA-201-003, Fire Drill Performance- EPM-FPPR ANL, Fire Protection Program Report (FPPR)

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.5.13 Headers	Headers fed from each end shall be permitted inside buildings to supply both sprinkler and standpipe systems, provided steel piping and fittings meeting the requirements of ANSI B31.1, Code for Power Piping, are used for the headers (up to and including the first valve) supplying the sprinkler systems where such headers are part of the seismically analyzed hose standpipe system. Where provided, such headers shall be considered an extension of the yard main system. Each sprinkler and standpipe system shall be equipped with an outside screw and yoke (OS&Y) gate valve or other approved shutoff valve.	Complies with Clarification	The Fire Protection Program Report (EPM-FPPR) Vol. I, Part II [Sec. 10.2.9] states, "A separate 10" discharge line from each fire pump supplies the 8" and 10" interior loop main. All automatic and manual fixed water suppression systems and interior hose stations are supplied by this loop main. Outside screw and yoke gate valves subdivide the loop into a number of sections so that a single section can be isolated without impairing the entire loop. The design is such that isolation of a section of fire water piping system does not cause a loss of both the fixed suppression system protection and the manual hose coverage for the same area, with the exception of the service building. For the service building, use of manual hose lines from the exterior yard main provides backup suppression capability." The above ground fire service water piping is fabricated of carbon steel piping and fittings [ME-318 line spec. Class 125-11] fittings meeting the requirements of ANSI B31.1 "Power Piping". The fire service piping is classified as non-nuclear safety class with II/I supports where those portions of structures, systems, or components whose continued function is not required but whose failure could reduce the functioning of any plant feature included in items 1.a through 1.q of Regulatory Guide 1.29, to an unacceptable safety level or could result in incapacitating injury to occupants of the control room and is designed and constructed so that the SSE would not cause such failure as stated in Regulatory Guide 1.29 2.c.	- RG010540, RG&E Fire Protection Evaluation, 2/24/77 - ME-318, Pipe Line Specification - EPM-FPPR ANL, Fire Protection Program Report (FPPR)

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.5.13 Headers *(Continued)*			Additionally, the Fire Protection Program Report (EPM-FPPR) Vol. II, Appendix A, Table A-1, [Sec. E.3.a] states, "Each sprinkler system has an OS&Y shutoff valve. Each individual hose station has a small OS&Y valve. (RG010540)". Clarification: Ginna was an operating plant when Appendix A to BTP APCSB 9.5-1 was issued in 1976. Regulatory Position E.3.d relative to the capability to supply water to at least standpipes following a SSE was not applicable to plants under construction or in operation as of July 1, 1976.	
3.5.14 Periodic Inspection Program	*All fire protection water supply and fire suppression* system control valves shall be under a periodic inspection program and shall be supervised by one of the following methods. 3.5.14(a) Electrical supervision with audible and visual signals in the main control room or other suitable constantly attended location. 3.5.14(b) Locking valves in their normal position. Keys shall be made available only to authorized personnel. 3.5.14(c) Sealing valves in their normal positions. This option shall be utilized only where valves are located within fenced areas or under the direct control of the owner/operator.	Complies with use of Evaluation	3.5.14 (a) and (b) The Fire Protection Program Report (EPM-FPPR), Vol. I, Part II, [Sec. 10.2.12] states, "All control valves for spray or sprinkler systems are electrically supervised with alarms in the Control Room or are locked in the proper position. Other important valves on the water supply are either electrically supervised or locked in the proper position." To demonstrate that the fire protection water supply system is operable and thus meets the requirements of the TRM [TR 3.7.1, TR 3.7.2], a procedurally controlled periodic fire protection system supply valve inspection program is conducted. All fire protection water supply and fire suppression system control valves are periodically tested according to STP-O-13.4.2 through STP-O-13.4.14, STP-O-13.16 through STP-O-13.4.27, and STP-O-13.4.36 through STP-O-13.4.41.	- EPM-FPPR ANL, Fire Protection Program Report (FPPR) - IR 02-0950-1343,rev. 0, R.E.Ginna NFPA Code Compliance Assessment 7/86 Report No. 02-0950-1343 - R. E. Ginna "Technical Requirements Manual (TRM)" - STP-O-13.4.2, Multimatic Valve Testing-Suppression System S27 Turbine Oil Reservoir - STP-O-13.4.3, Flood Valve Testing – Suppression System S25 H2 Seal Oil Unit Auto Deluge - STP-O-13.4.4, Multimatic Valve Testing – Suppression System S12

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.5.14 Periodic Inspection Program (Continued)			STP-O-13.17 [Sec. 6.0] implements a semi-annual functional test of all fire protection water supply valve supervisory switches to ensure that closure of the valve will initiate an alarm signal in the Control Room. FPS-5 [Attach. 1] implements a quarterly inspection of fire protection valves in the off-site yard main flowpath. Compliance with NFPA 26-1983, "Supervision of Valves Controlling Water Supplies for Fire Protection" has been assessed and documented in the Fire Protection Program Report (EPM-FPPR) Vol. II, Appendix D [Table D-7] and the R.E. Ginna NFPA Code Compliance Assessment [Report No. 02-0950-1343]. Deviations from NFPA 26 that were evaluated as part of the code review included lack of identification tags on some valves, lack of a documented periodic inspection process for some valves, and lack of a means for supervising some valves. To address these deviations all valves were tagged with unique EINs and procedures were revised to periodically inspect all valves. All valves controlling water supplies are supervised with the exception of four wall hydrants, valves in the diesel and motor-driven fire pump test lines, and all underground valves in the domestic water system. The facility's Technical Requirements Manual requires a periodic check of the position of those valves that are not locked, supervised, or otherwise secured in position is in the correct position per TSR 3.7.1.2. The credited bases for acceptance are valid and meet applicable quality requirements.	1A Diesel Generator Preaction System - STP-O-13.4.5, Multimatic Valve Testing-Suppression System S13 1B Diesel Generator Preaction System - STP-O-13.4.6, Flood Valve Testing-Suppression System S14 Turbine Driven Aux. Feedwater Pump and Turbine Lube Oil Reservoir Manual Deluge - STP-O-13.4.7, Protomatic Valve Testing - Oil Storage Room Auto Deluge Zone S16 - STP-O-13.4.8, Deluge Valve System Testing System S20 (Main Transformer) - STP-O-13.4.9, Deluge Valve System Testing - #11 Transformer Zone S21 - STP-O-13.4.10A, Deluge Valve System Testing - System S22 (#12-A Transformer) - STP-O-13.4.10B, Deluge Valve System Testing - System S23 (#12-B Transformer) - STP-O-13.4.11, Multimatic Valve Testing - Suppression System S05

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.5.14 Periodic Inspection Program (Continued)				Cable Tunnel Auto Deluge - STP-O-13.4.12, Alarm Valve System Testing – Fire System S-26 Turbine Island Sprinkler - STP-O-13.4.13, Alarm Valve System Testing - Fire System S19 - Service Building Sprinkler - STP-O-13.4.14, Multimatic Auto Deluge Valve System Testing System #14 (S02) 1G Auxiliary Charcoal Filter -STP-O-13.4.16, Flood Vavle Testing-Suppression System S01 Auxiliary Building Basement Pre-Action System - STP-O-13.4.17, Multimatic Valve Testing-Suppression System #S03 Aux Bldg Mezz Level West Pre-Action System - STP-O-13.4.18, Flood Valve Testing - Suppression System S04 Auxiliary Building Mezzanine Pre-Action System - STP-O-13.4.19, Flood Valve Testing – Suppression System S06 Air Handling Room Auto Deluge - STP-O-13.4.20, Flood

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.5.14 Periodic Inspection Program (Continued)				Valve Testing-Suppression System S09 Relay Room SE Manual Deluge - STP-O-13.4.21, Flood Valve Testing – Suppression System S10 Relay Room West Manual Deluge - STP-O-13.4.22, Flood Valve Testing – Suppression System S11 Relay Room Northeast manual deluge - STP-O-13.4.23, Traveling Screen High Pressure Spray Wash Automatic Isolation Verification - STP-O-13.4.24, Multimatic Valve Testing – Suppression System S17 Screenhouse Screenhouse Bsmt Auto Deluge - STP-O-13.4.25, Multimatic Valve Testing – Suppression System #S15 Inter. Bldg. Bsmt Cable Trays Pre-Action System - STP-O-13.4.26, Multimatic Valve Testing-Suppression System S29 Control Room Wall Auto Spray - STP-O-13.4.27, Alarm Valve Testing – Suppression System #S18 Service Water Pump

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.5.14 Periodic Inspection Program (Continued)				*Sprinkler System* - STP-O-13.4.36, Alarm Valve Testing – Suppression System S36 Auxiliary Bldg. West Stairwell and Crane Bay Sprinkler System - STP-O-13.4.37, Alarm Valve Testing – Suppression System S35 Auxiliary Building East Stairwell Sprinkler System - STP-O-13.4.38, Alarm Valve System Testing - Fire System S38 Turbine Building East Mezzanine Level Sprinkler (Office Areas) - STP-O-13.4.39, TSC Diesel Generator Fire System Flow Check S30 - STP-O-13.4.40,rev. 0, TSC HVAC Charcoal Filter Deluge System S31 - STP-O-13.4.41, TSC HVAC Detector and Hose Reel Water Supply Zone S33 - STP-O-13.4.45, Alarm Valve System Testing – Fire System S45 GE Betz Auto Sprinkler Suppression System - STP-O-13.4.47, Alarm Valve System Testing- Fire

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.5.14 Periodic Inspection Program (Continued)				System S51 Canister Preparation Building Suppression System - STP-O-13.4.48, DDAFW Pre-Action Suppression System Testing - STP-O-13.17, Valve Tamper Switches - TRM,rev. 49, Technical Requirements Manual - FPS-5, Inspection, Lubrication and/or Spring Testing of PIV and Curb Valves
3.5.15 Hydrants	Hydrants shall be installed approximately every 250 ft (76 m) apart on the yard main system. A hose house equipped with hose and combination nozzle and other auxiliary equipment specified in NFPA 24, Standard for the Installation of Private Fire Service Mains and Their Appurtenances, shall be provided at intervals of not more than 1000 ft (305 m) along the yard main system. Exception: Mobile means of providing hose and associated equipment, such as hose carts or trucks, shall be permitted in lieu of hose houses. Where provided, such mobile equipment shall be equivalent to the equipment supplied by three hose houses.	Complies	The Fire Protection Program Report (EPM-FPPR) Vol. I, Part II [Sec. 10.2.10] states, "Yard hydrants are provided at approximately 250-ft intervals around the exterior of the plant. The lateral to each hydrant is controlled by a Reach Rod or Post Indicator Valve. Firefighting equipment is housed within hose houses." SC-3.15.15 [Attach. 2 through 5] list the four (4) hose houses provided in the plant yard area and the equipment contained within each for monthly inspection purposes. The equipment stored in the hose houses is suitable for exterior use by the fire brigade. The hose houses are not more than 1000 ft along the yard main system as shown on reference 33013-2170, 33013-2171, 33013-2172, and 33013-2173. The equipment in the hose houses meet the intent of that specified by NFPA 24-1984 and is consistent with RG00160 [Sec. 3.1.26].	- RG001680, Safety Evaluation Report Docket No. 50-244, 2/14/1979 - EPM-FPPR ANL, Fire Protection Program Report (FPPR) - 33013-2170, Plant Arrangement Yard - NW - SC-3.15.15 Emergency Fire Equipment Inventory and Inspection - 33013-2172, Plant Arrangement Yard - SW - 33013-2173, Plant Arrangement Yard - SE - 33013-2171, Plant Arrangement Yard - NE

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.5.16 Water Supply	The fire protection water supply system shall be dedicated for fire protection use only. Exception No. 1 : Fire protection water supply systems shall be permitted to be used to provide backup to nuclear safety systems, provided the fire protection water supply systems are designed and maintained to deliver the combined fire and nuclear safety flow demands for the duration specified by the applicable analysis. Exception No. 2: Fire protection water storage can be provided by plant systems serving other functions, provided the storage has a dedicated capacity capable of providing the maximum fire protection demand for the specified duration as determined in this section.	Complies with use of Evaluation Submit for NRC Approval	Complies with use of Evaluation The UFSAR [Sec. 9.5.1.2.3.5] states, "The [offsite] yard loop supplies water to the yard hydrants and as a partial backup to the water suppression systems inside the plant. The yard loop provides a backup source of cooling water if service water (SW) is lost. It provides a backup to the condensate storage tanks for feedwater to the motor-driven (MDAFW) or turbine-driven auxiliary feedwater (TDAFW) pumps. It provides a backup to the condensate test tank for feedwater to the standby auxiliary feedwater pumps (SAFW). It can be used to provide cooling water to the emergency diesel generators. It provides an alternative source of cooling to the component cooling water (CCW) heat exchangers (under emergency, beyond design basis conditions only). The yard loop is equipped with manual isolation gate valves to provide segment isolation in the case of line failures. The yard loop is supplied water from the town of Ontario water system." DA-ME-2000-001 and DA-ME-2000-040 describe the acceptability of the yard loop to supply water for the secondary uses described above, via plant operator actions using temporary hose connections. The credited bases for acceptance are valid and meet applicable quality requirements. Submit for NRC Approval PCR-99-090 modified the fire suppression water system to furnish high pressure water to the traveling screen spray wash system. Specifically, the UFSAR [Sec. 9.5.1.2.3.3] states, "When not required for fire suppression, the electric motor-driven fire pump can be aligned to supply water to	- DA-ME-2000-040, City Water Yard Loop X-Tie to Fire Yard Loop Hydraulic Calculation - DA-ME-2000-001, City Yard Loop Capability to Supply Cooling Water to EDG, SAFW and Flight Screen House Fire with a Loss of Service Water - PCR-99-090,rev. 1, Fire Protection System and HPSW System Intertie - Ginna UFSAR

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.5.16 Water Supply (Continued)			the traveling screen wash header at a pressure higher than service water pressure. The purpose of this spray wash system is to remove debris from the traveling screens when high debris conditions exist. The high pressure spray wash (HPSW) system is manually operated, and encompasses piping, two manual gate valves, an automatic isolation valve and a check valve which cross-connects between the fire suppression system test line and the main traveling screen wash header supply line downstream of the safety-related service water non-essential load isolation motor-operated valves. Since the electric motor-driven fire pump secondary function is to supply the high pressure spray wash system only when plant conditions warrant its use, upon any automatic actuation of the electric motor-driven fire pump via a fire suppression system demand, the high pressure spray wash system will automatically be isolated such that the primary function of supplying the fire suppression system can be satisfied." As described above, use of the electric-driven fire pump to supply the HPSW application will automatically be secured in the event that the electric fire pump is required for fire suppression purposes. Therefore, the fire protection water supply system design meets the intent of Exception No. 1 to NFPA 805, Section 3.5.16. However, during the NFPA 805 transition process, no prior NRC approval of use of the fire protection water supply for HPSW system applications was identified. Therefore, NRC approval of this non-fire protection use of the fire protection water supply system is requested.	

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.5.16 Water Supply (Continued)			See Attachment L of the Transition Report for further details on the request for NRC approval for the use of the fire protection water system to supply the high pressure spray wash system.	
3.6.1 Standpipe and Hose Systems	For all power block buildings, Class III standpipe and hose systems shall be installed in accordance with NFPA 14, "Standard for the Installation of Standpipe, Private Hydrant, and Hose Systems".	Complies with use of Evaluation	For all power block building, Class III standpipe and hose systems compliance with NFPA 14-1983 has been assessed and documented in the Fire Protection Program Report (EPM-FPPR) Vol. II, Appendix D [Table D-3] and the R.E. Ginna NFPA Code Compliance Assessment [Report No.02-0950-1343]. Deviations from NFPA 14 that were evaluated as part of the code review included lack of listed fire hose at some hose stations and lack of pressure gauges at the top of some standpipe system risers. To address these deviations, all fire hose stations were equipped with 100 ft of UL or ULC approved municipal fire hose [UFSAR Sec. 9.5.1.2.3.6, Sec. 9.5.1.3.3 and EPM-FPPR Vol. I, Part II Sec. 10.2.11]. Pressure gauges are located at the top of standpipes greater than 60 ft high [EPM-FPPR Vol II, Appendix D Table D-3]. DA-ME-94-004 documents that effective hose stream coverage throughout the plant can be achieved, but in some instances hose streams supplied by exterior yard hydrants is needed to supplement interior hose station coverage. Hose stretch tests have also been performed to address the commitment identified in RG001680 [Sec. 3.1.36]. DA-ME-92-140 provides a hydraulic analysis of hose stations inside Containment. The residual pressure at the outlet of hose station valves in Containment exceeds 100 psi, but this is	- DA-ME-92-145, Controlled Intermediate Building Sub-Basement Fire Protection Systems Evaluation - RG001680, Safety Evaluation Report Docket No. 50-244, 2/14/1979 - DA-ME-94-004, Hose Reels - IR 02-0950-1343,rev. 0, R.E.Ginna NFPA Code Compliance Assessment 7/86 Report No. 02-0950-1343 - DA-ME-92-140, Containment Hose Reel Hydraulic Calculation - EPM-FPPR ANL, Fire Protection Program Report (FPPR) - ECP-10-000834,rev. 0, Perform a comparison between UL and ULC - Ginna UFSAR

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.6.1 Standpipe and Hose Systems (Continued)			necessary to overcome hose pressure losses and maintain effective nozzle pressure. Additionally, nozzle flow rates at Containment hose reels do not meet a 100 gpm flow rate, but the flow rates (80 gpm minimum) are sufficient for service inside Containment. DA-ME-92-145 was issued to demonstrate that adequate hose station coverage is provided for the Intermediate Building Sub-Basement. The credited bases for acceptance are valid and meet applicable quality requirements. No additional code differences of significance were identified.	
3.6.2 Water Flow and Nozzle Pressure	A capability shall be provided to ensure an adequate water flow rate and nozzle pressure for all hose stations. This capability includes the provision of hose station pressure reducers where necessary for the safety of plant industrial fire brigade members and off-site fire department personnel.	Complies with use of Evaluation	The UFSAR [Sec. 9.5.1.2.3.1 and Sec. 9.5.1.2.3.2] states, "A fire header of sufficient size is provided to deliver an adequate quantity of water throughout the plant at a pressure of no less than 75 psig at the highest nozzle....A 15,000-gal pressure tank (10,000 gal of water) and a 120-gpm centrifugal jockey pump maintain system pressure at a minimum of 100 psig." The Fire Protection Program Report (EPM-FPPR) Vol. II, Appendix D [Table D-3] states that fire hose stations at Ginna do not require the use of pressure reduction devices. DA-ME-2000-040 evaluated the capability of the standpipe systems at Ginna to provide an adequate water flow rate and nozzle pressure for hose station as defined in NFPA 14-1976. The credited bases for acceptance are valid and meet applicable quality requirements. Fire hose stations at Ginna do not require the use of pressure reduction devices based on pump pressures. Fire Brigade is trained (LP-N1530)	- DA-ME-2000-040, City Water Yard Loop X-Tie to Fire Yard Loop Hydraulic Calculation - Ginna UFSAR - LP-N1530 (Lesson Plan)

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.6.2 Water Flow and Nozzle Pressure (Continued)			without the use of reduction devices. Pressure reducing devices are installed for the containment hose reels, however they are left in the full open position.	
3.6.3 Hose Nozzle	The proper type of hose nozzle to be supplied to each power block area shall be based on the area fire hazards. The usual combination spray/straight stream nozzle shall not be used in areas where the straight stream can cause unacceptable damage or present an electrical hazard to fire-fighting personnel. Listed electrically safe fixed fog nozzles shall be provided at locations where high-voltage shock hazards exist. All hose nozzles shall have shutoff capability and be able to control water flow from full open to full closed.	Complies	The Fire Protection Program Report (EPM-FPPR) Vol. I, Part II [Sec. 10.2.11] states, "Forty-two hose stations are provided to protect various areas of the plant. The nozzles are 1 1/2" fog nozzles pinned to the hose adapters with provision made to prevent use of the straight stream position." Additionally, the Fire Protection Program Report (EPM-FPPR) Vol. I, Part II [Sec. 10.2.11] describes that, hose reels are distributed throughout the station so that safety-related areas in the station are within 20 feet of a fog nozzle when attached to not more than 100 foot lengths of hose."	- EPM-FPPR ANL, Fire Protection Program Report (FPPR)
3.6.4 Manual Fire Suppression	Provisions shall be made to supply water at least to standpipes and hose stations for manual fire suppression in all areas containing systems and components needed to perform the nuclear safety functions in the event of a safe shutdown earthquake (SSE).	Complies via Previous Approval	Complies via Previous Approval. Ginna was an operating plant when Appendix A to BTP APCSB 9.5-1 was issued in 1976. Regulatory Position E.3.d relative to the capability to supply water to at least standpipes following a SSE was not applicable to plants under construction or in operation as of July 1, 1976. In addition, GL 86-10 [Sec. 7.2 of Enclosure 2 dated 4/14/86] states, "It should be noted that the [seismic standpipe design] guidelines cited above from the BTP CMEB 9.5-1 are not applicable to plants reviewed and approved under BTP APCSB 9.5-1." The Federal Register notice that promulgated adoption of NFPA 805 makes the following	- GL 86-10, Generic Letter 86-10, Implementation of Fire Protection Requirements

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.6.4 Manual Fire Suppression (Continued)			statement: "A commentor noted that Appendix A to BTP APCSB 9.5-1 did not require seismically qualified standpipes and hose stations for operating plants and plants with construction permits issued prior to July 1, 1976. NRC agrees that Appendix A to BTP APCSB 9.5-1 made separate provisions for operating plants and plants with construction permits issued prior to July 1, 1976, and did not require seismically qualified standpipes and hose stations for those plants. Therefore, the requirements in section 3.6.4 of NFPA 805 is not applicable to licensees with nonseismic standpipes and hose stations previously in accordance with Appendix A to BTP APCSB 9.5-1. Therefore, Section 3.6.4 of NFPA 805 does not apply to Ginna and regulatory compliance is based on "previously approved alternatives" provision in NFPA 805, Sec.3.1. The bases for previous approval remain valid.	
3.6.5 Seismic Required Hose Stations	Where the seismic required hose stations are cross-connected to essential seismic non-fire protection water supply systems, the fire flow shall not degrade the essential water system requirement.	Complies via Previous Approval	Complies via Previous Approval. Ginna was an operating plant when Appendix A to BTP APCSB 9.5-1 was issued in 1976. Regulatory Position E.3.d relative to the capability to supply water to at least standpipes following a SSE was not applicable to plants under construction or in operation as of July 1, 1976. In addition, GL 86-10 [Sec. 7.2 of Enclosure 2 dated 4/14/86] states, "It should be noted that the [seismic standpipe design] guidelines cited above from the BTP CMEB 9.5-1 are not applicable to plants reviewed and approved under BTP APCSB	- GL 86-10, Generic Letter 86-10, Implementation of Fire Protection Requirements

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.6.5 Seismic Required Hose Stations (Continued)			9.5-1." See compliance bases for 3.6.4 above. Therefore, Section 3.6.5 of NFPA 805 does not apply to Ginna and regulatory compliance is based on "previously approved alternatives" provision in NFPA 805, Sec.3.1. The bases for previous approval remain valid.	
3.7 Fire Extinguishers	Where provided, fire extinguishers of the appropriate number, size, and type shall be provided in accordance with NFPA 10, Standard for Portable Fire Extinguishers. Extinguishers shall be permitted to be positioned outside of fire areas *due to radiological conditions.*	Complies	Pressurized water, dry chemical, and carbon dioxide portable fire extinguishers are distributed throughout the plant in accordance with the provisions of NFPA10-1984 [EPM-FPPR, Vol. II, Appendix A Table A-1]. Portable extinguishers have been selected and installed to meet the type of fire emergency which might occur in the areas where the equipment is located. Their location is made conspicuous by signs and notation of the fire extinguisher station number [EPM-FPPR Vol. I, Part II, sec. 10.2.14]." Finally, the fire extinguisher inspection process implemented via SC-3.15.3 meets that prescribed by NFPA 10.	- SC-3.15.3, Portable Fire Extinguisher Inspection - EPM-FPPR ANL, Fire Protection Program Report (FPPR)
3.8.1 Fire Alarm	Fire Alarm. Alarm initiating devices shall be installed in accordance with NFPA 72, National Fire Alarm Code. Alarm annunciation shall allow the proprietary alarm system to transmit fire-related alarms, supervisory signals, and trouble signals to the control room or other constantly attended location from which required notifications and response can be initiated. Personnel assigned to the proprietary alarm station shall be permitted to have other duties. The following fire-related signals shall be transmitted: (1) Actuation of any fire detection device (2) Actuation of any fixed fire	Complies with use of Evaluation	Complies with use of Evaluation The UFSAR [Sec. 9.5.1.2.2] states, "The plant has a protective signaling system which alarms locally in selected parts of the plant and transmits fire alarm, supervisory, and trouble signals to the Control Room. In addition to signals from fire detection devices in various rooms or ventilating systems, the system transmits signals indicating [suppression system] water flow, fire pump operation, fire pump trouble, and low fire water tank level or pressure. Fire alarms are initiated by smoke or heat detectors and by [fire suppression	- RG001680, Safety Evaluation Report Docket No. 50-244, 2/14/1979 - DA-ME-2000-052,rev. 0, Fire Detection System - IR 02-0950-1343,rev. 0, R.E.Ginna NFPA Code Compliance Assessment 7/86 Report No. 02-0950-1343 - EPM-FPPR ANL, Fire Protection Program Report

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.8.1 Fire Alarm (Continued)	suppression system (3) Actuation of any manual fire alarm station (4) Starting of any fire pump (5) Actuation of any fire protection supervisory device (6) Indication of alarm system trouble condition	 Complies	system] water flow or pressure switches. Additional protection is available by installation of tamper switches on major valves, unless they are locked in position. The signaling system is powered by the emergency power supply system and automatically transfers to a 4-hour battery backup supply if normal power supply is interrupted. Fire detection and signaling systems are generally designed and installed in accordance the NFPA 72D." Compliance with NFPA 72D-1986, "Proprietary Protective Signaling Systems," and NFPA 72E-1984, "Automatic Fire Detectors" has been assessed and documented in the Fire Protection Program Report (EPM-FPPR) Vol. II, Appendix D [Tables D-11 and D-12], and the R.E. Ginna NFPA Code Compliance Assessment [Report No. 02-0950-1343]. Deviations from NFPA 72D evaluated as part of the code review included lack of a system sequential events recorder. However, the NRC accepted the lack of automatic recording capability per RG001680 [Sec. 4.2], Appendix A to BTP APCSB 9.5-1, Position E.1. Additional detailed assessment of the adequacy of fire detection system coverage throughout the plant is documented by DA-ME-2000-052, which addresses deviations from NFPA 72E. The credited bases for acceptance are valid and meet applicable quality requirements. Complies The following fire-related signals are transmitted: (1) Actuation of any fire detection device [EPM-FPPR Vol. I, Part II, Sec. 10.2.1, SC-3.16.2.9, and	(FPPR) - SC-3.16.2.1, Operating Instructions Control Room Fire Control Panel - SC-3.16.2.9, Operating Instructions Guardhouse Fire Panel - Ginna UFSAR, rev. 23

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.8.1 Fire Alarm (Continued)			SC-3.16.2.1] (2) Actuation of any fixed fire suppression system [EPM-FPPR Vol. I, Part II, Sec. 10.1, SC-3.16.2.9, and SC-3.16.2.1] (3) Actuation of any manual fire alarm station [SC-3.16.2.9, and SC-3.16.2.1] Automatic fire alarm systems are actuated through manual pull stations. The system alarms in the Control Room or Guard House (constantly attended location) upon actuation. (4) Starting of any fire pump [EPM-FPPR Vol. I, Part II, Sec. 10.1, and SC-3.16.2.1] (5) Actuation of any fire protection supervisory device [EPM-FPPR Vol. I, Part II, Sec. 10.2.1, SC-3.16.2.1, and SC-3.16.2.9] (6) Indication of alarm system trouble condition [EPM-FPPR Vol. I, Part II, Sec. 10.2.1, SC-3.16.2.1, and SC-3.16.2.9]	
3.8.1.1 Communication	Means shall be provided to allow a person observing a fire at any location in the plant to quickly and reliably communicate to the control room or other suitable contantly attended location.	Complies	The Fire Protection Program Report (EPM-FPPR) Vol. I, Part II, Sec. [10.2.25] states, "There are three communication systems within the plant. The primary system is the combination paging and party system; in addition, there is a sound powered phone system and a radio paging system. The sound powered system is hard wired with separate wires from the combination paging and party system. The radio paging system provides communication with areas inside the containment with the help of a radio antenna mounted in the	- EPM-FPPR ANL, Fire Protection Program Report (FPPR) - SC-3.13, Fire Communications

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.8.1.1 Communication (Continued)			containment. Additionally, a repeater located in the Nuclear Assessment Building allows for greater flexibility with radio communications. There is adequate redundancy with these three systems to ensure good communications throughout the plant during any fire emergency." Additionally, the Fire Communications are administratively controlled via SC-3.13.	
3.8.1.2 Notifying Fire	Means shall be provided to promptly notify the following of any fire emergency in such a way as to allow them to determine an appropriate course of action: (1) General site population in all occupied areas (2) Members of the industrial fire brigade and other groups supporting fire emergency response. (3) Off-site fire emergency response agencies. Two independent means shall be available (e.g., telephone and radio) for notification of off-site emergency services.	Complies	Means are provide to promptly notify the following of any fire emergency in such a way as to allow them to determine an appropriate course of action: (1) General site population in all occupied areas are notified in accordance with SC-3.3.1 [Sec. 3]. (2) Members of the industrial fire brigade and other groups supporting fire emergency response are notified in accordance with SC-3.3.1 [Sec. 3]. (3) Off-site fire emergency response agencies are notified in accordance with SC-3.3.2 [Sec. 5]. Two independent means of communication is available for notification of off-site emergency services [EP-CE-114-100].	- SC-3.3.1, Immediate Fire Notification - SC-3.3.2, Offsite Notification of Fire - EP-CE-114-100, Emergency Notifications
3.8.2 Detection	If automatic fire detection is required to meet the performance or deterministic requirements of Chapter 4, then these devices shall be installed in accordance with NFPA 72, National Fire Alarm Code, and its applicable appendixes.	Complies with use of Evaluation	Required automatic fire detection systems are identified in LAR Section 4.8. Complies with Use of Evaluation Compliance with NFPA 72E-1984, Automatic Fire Detectors, has been assessed and documented in the Fire Protection Program Report (EPM-FPPR), Vol. II, Appendix D [Table D-12]. The differences from NFPA 72E requirements identified were: A concern regarding the ability of eight (8) ionization type detectors installed above the Reactor Building Operating Floor (Fire Zone RC-3)	- PCR 2000-0048,rev. 1, Smoke Detector Upgrades - DA-ME-2000-052, Fire Detection System - EPM-FPPR ANL, Fire Protection Program Report (FPPR)

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.8.2 Detection (Continued)			to provide adequate area coverage was identified. No other code differences were identified. Design Analysis DA-ME-2000-052 documented the acceptability of the installed plant detection systems which included the Reactor Containment Building. Minor instances were identified where installation of additional fire detectors was deemed necessary. *These fire detector upgrade* modifications were implemented via PCR 2000-0048. Based on the completion of these modifications, DA-ME-2000-052 concluded that the fire detection system coverage meets the applicable NRC guidance in GL 86-10. Specifically, the degree and extent of fire detection system coverage was determined to be adequate to protect against the hazards in the respective plant *areas. The credited bases for acceptance are valid* and meet applicable quality requirements.	
3.9.1 NFPA Standards	If an automatic or manual water-based fire suppression system is required to meet the performance or deterministic requirements of Chapter 4, then the system shall be installed in accordance with the appropriate NFPA standards including the following: (1) NFPA 13, Standard for the Installation of Sprinkler Systems (2) NFPA 15, Standard for Water Spray Fixed Systems for Fire Protection (3) NFPA 750, Standard on Water Mist Fire Protection Systems (4) NFPA 16, Standard for the Installation of Foam-Water Sprinkler and Foam-Water Spray Systems	Complies with use of Evaluation	Required automatic or manual water-based fire suppression systems are identified in LAR section 4.8. (1) Complies with use of Evaluation NFPA 13, Standard for the Installation of Sprinkler Systems Compliance with NFPA 13-1985, Standard for the Installation of Sprinkler Systems has been assessed and documented in the Fire Protection Program Report (EPM-FPPR), Vol. II, Appendix D [Table D-2]. Additionally, the ability of the fire protection water supply to adequately meet the hydraulic demand requirements of automatic and manual water-based suppression systems is addressed in DA-ME-2001-031. The credited bases for acceptance are valid and meet	- DA-ME-2001-031, Evaluation of Suppression System Flow and Pressure Requirements - P301845, Perform annual Cleaning of Retention Pond - PCR 2004-0066,rev. 0, Retention Pond Upgrade - EPM-FPPR ANL, Fire Protection Program Report (FPPR) - T-6.16, Draining of the Transformer Yard Storm Drain Retention Pond

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.9.1 NFPA Standards (Continued)		 Complies with use of Evaluation None None	applicable quality requirements. (2) Complies with use of Evaluation NFPA 15, Standard for Water Spray Fixed Systems for Fire Protection Compliance with NFPA 15-1985, Standard for Water Spray Fixed Systems for Fire Protection has been assessed and documented in the Fire Protection Program Report (EPM-FPPR), Vol. II, Appendix D [Table D-4]. Additionally, the "collection pond" as described in EPM-FPPR, Vol. II, Appendix D, Table D-4, section 4-6.2 was rebuilt in 2004 under PCR-2004-0066 and is drained and cleaned via procedure T-6.16 and Rep Task P301845. (3) Not applicable to Ginna NFPA 750, Standard on Water Mist Fire Protection Systems (4) Not applicable to Ginna NFPA 16, Standard for the Installation of Foam-Water Sprinkler and Foam-Water Spray Systems	
3.9.2 Water Flow Alarm	Each system shall be equipped with a water flow alarm.	Complies	Each system is equipped with a local water flow alarm as documented in the Fire Protection Program Report (EPM-FPPR), Vol. II, Appendix D [Table D-2 Sec. 3-17.2].	- EPM-FPPR ANL, Fire Protection Program Report (FPPR)
3.9.3 Suppression System Annunciation	All alarms from fire suppression systems shall annunciate in the control room or other suitable constantly attended location.	Complies	All alarms for the actuation of any manual fire alarm station [SC-3.16.2.9, and SC-3.16.2.1] or an automatic suppression system annunciates in the Control Room or Guard House (constantly attended location) upon actuation.	- SC-3.16.2.1, Operating Instructions Control Room Fire Control Panel - SC-3.16.2.9, Operating Instructions Guardhouse Fire Panel

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.9.4 Diesel-driven Fire Pumps	Diesel-driven fire pumps shall be protected by automatic sprinklers.	Complies	The Fire Protection Program Report (EPM-FPPR) Vol. I, Part II [Sec. 10.2.12.4] states, "Automatic sprinkler systems provide protection for the following: Service Water Pump Area and Fire Pump Area in the Screen House." [Ref. Drawing D381-0314]	- D381-0314, Piping Fire Service Addition - EPM-FPPR ANL, Fire Protection Program Report (FPPR)
3.9.5 OS&Y Gate Valve	Each system shall be equipped with an OS&Y gate valve or other approved shutoff valve.	Complies	Each system has an outside screw and yoke shutoff valve as documented in the Fire Protection Program Report (EPM-FPPR) Vol. II, Appendix A Table A-1 [Sec. E.3.a], and Vol. II, Appendix D, Table D-5 Sec. [2-9.7].	- EPM-FPPR ANL, Fire Protection Program Report (FPPR)
3.9.6 Valve Performance	All valves controlling water-based fire suppression systems required to meet the performance or deterministic requirements of Chapter 4 shall be supervised as described in 3.5.14.	Complies	All valves controlling water-based fire suppression systems required to meet the performance or deterministic requirement of Chapter 4 as identified in LAR Section 4.8 are supervised as described in 3.5.14. The Fire Protection Program Report (EPM-FPPR), Vol. I, Part II, [Sec. 10.2.12] states, "All control valves for spray or sprinkler systems are electrically supervised with alarms in the Control Room. Other important valves on the water supply are either electrically supervised or locked in the proper position."	- EPM-FPPR ANL, Fire Protection Program Report (FPPR)
3.10.1 NFPA Standards	If an automatic total flooding and local application gaseous fire suppression system is required to meet the performance or deterministic requirements of Chapter 4, then the system shall be designed and installed in accordance with the following applicable NFPA codes: (1) NFPA 12, Standard on Carbon Dioxide Extinguishing Systems (2) NFPA 12A, Standard on Halon 1301 Fire Extinguishing Systems (3) NFPA 2001, Standard on Clean Agent Fire Extinguishing	None	Required gaseous fire suppression systems are identified in LAR Section 4.8. The systems are designed and installed in accordance with the following applicable NFPA codes: (1) NFPA 12, Standard on Carbon Dioxide Extinguishing Systems. Not Applicable to Ginna.	- EPM-FPPR ANL, Fire Protection Program Report (FPPR) - STP-O-13.4.29, Halon System Testing Relay Room/Computer Room (S08) - PS00447, Reptask

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.10.1 NFPA Standards (Continued)	Systems	Complies with use of Evaluation	(2) NFPA 12A, Standard on Halon 1301 Fire Extinguishing Systems Complies with use of Evaluation: The Relay Room and MUX Room gaseous suppression system is the only required gaseous suppression system required to meet NFPA 805 Chapter 4 requirements. The Fire Protection Program Report (EPM-FPPR) Vo1. I, Part II, Sec. [10.2.13] describes the total flooding automatic Halon 1301 extinguishing system of the Relay Room and MUX Room. This system is designed to deliver a 5% concentration of Halon in the protected area. A reserve supply of Halon 1301 for the Relay and MUX rooms permits prompt restoration of automatic protection following a system discharge. The manual actuators (one for each system) for the Relay Room and MUX Room are located to the left of the entrance to the Relay Room. Audible alarms and red lights above the entrance door of the appropriate room are activated when either system is actuated. Compliance with NFPA 12A-1985, Halon 1301 Fire Extinguishing Systems has been assessed and documented in the Fire Protection Program Report [EPM-FPPR, Vol.II, Appendix D,Table D1c-1, E4-1]. The credited bases for acceptance are valid and meet applicable quality requirements. Additionally, the testing of Relay Room and MUX Room gaseous suppression system is performed semi annually via STP-O-13.4.29 and Reptask PS00447. No code deviations were identified.	

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.10.1 NFPA Standards (Continued)		None	(3) NFPA 2001, Standard on Clean Agent Fire Extinguishing Systems. Not Applicable to Ginna.	
3.10.2 Control Room Alarm	Operation of gaseous fire suppression systems shall annunciate and alarm in the control room or other constantly attended location identified.	Complies	The Relay Room and MUX Room gaseous suppression system (S08) is the only required gaseous suppression system required to meet NFPA 805 Chapter 4 requirements. The Relay Room and MUX Room (S08) gaseous suppression system annunciates and alarms in the Control Room [SC-3.16.2.1 and EWR 1832B]. As described in the UFSAR [Sec. 9.5.1.2.3.8], "Ionization type smoke detectors in the area alarm and annunciate in the control room.....The system is controlled by an electronic control system that is interfaced with the station fire detection system. The control system coordinates the fire detection system with local alarm actuation, air conditioning and ventilation shutdown, electrical power disconnection, and Halon discharge."	- EWR 1832B,rev. 0, Fire signaling system - SC-3.16.2.1, Operating Instructions Control Room Fire Control Panel - Ginna UFSAR

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.10.3 Ventilation To Prevent Over-Pressurization	Ventilation system design shall take into account prevention from over-pressurization during agent injection, adequate sealing to prevent loss of agent, and confinement of radioactive contaminants.	Complies	Position E.5 of Appendix A to BTP APCSB 9.5-1 discusses consideration of potential enclosure over-pressurization for design of CO2(total flooding) systems. No similar design consideration is discussed by Position E.4 for Halon total flooding systems. Therefore, in general, over-pressurization design considerations should be limited to carbon dioxide total flooding system applications. However, the adequacy of the Relay/MUX Room ventilation system design to withstand over pressurization during agent injection and loss of agent through seals within the Relay/MUX Room boundary was demonstrated via Halon system acceptance testing [Test No. 1078]. The Relay/MUX Room is not a radiologically controlled area.	- Test No. 1078, Ginna Relay Room Total Flooding of Room with Halon 1301
3.10.4 Single Active Failure	In any area required to be protected by both primary and backup gaseous fire suppression systems, a single active failure or a crack in any pipe in the fire suppression system shall not impair both the primary and backup fire suppression capability.	Complies	NFPA 805, Section 3.10.4 is clarified in Appendix A, "Explanatory Material" to the standard. As described by A.3.10.4, "The backup gaseous suppression system referred to in this section would be a CO2 hose reel. This backup system does not refer to the primary and alternate bottle banks on a Halon or CO2 system." CO2 extinguishing systems are not used to meet Chapter 4 requirements at Ginna. The backup fire suppression capability for the Relay Room Halon system is provided by manually actuated fixed water spray systems, augmented by hose reel [water] coverage as required [EPM-FPPR Vol. I, Part II, Sec. 10.2.12.2].	- EPM-FPPR ANL, Fire Protection Program Report (FPPR)

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.10.5 Disarming Automatic System	Provisions for locally disarming automatic gaseous suppression systems shall be secured and under strict administrative control.	Complies	Procedure A-52.12 includes administrative control measures for impairment and compensatory actions associated with the Relay/MUX Room Halon suppression system [A-52.12, Sec. 6.7 and Attach. 3].	- A-52.12, Nonfunctional Equipment Important to Safety
3.10.6 Occupied Areas	Total flooding carbon dioxide systems shall not be used in normally occupied areas.	None	Not applicable to Ginna. Carbon dioxide fire extinguishing systems are not used to meet Chapter 4 requirements.	- None
3.10.7 Audible Alarm	Automatic total flooding carbon dioxide systems shall be equipped with an audible pre-discharge alarm and discharge delay sufficient to permit egress of personnel. The carbon dioxide system shall be provided with an odorizer.	None	Not applicable to Ginna. Carbon dioxide fire extinguishing systems are not used to meet Chapter 4 requirements.	- None
3.10.8 Lock Out	Positive mechanical means shall be provided to lockout total flooding carbon dioxide systems during work in the protected space.	None	Not applicable to Ginna. Carbon dioxide fire extinguishing systems are not used to meet Chapter 4 requirements.	- None
3.10.9 Secondary Thermal Shock	The possibility of secondary thermal shock (cooling) damage shall be considered during the design of any gaseous fire suppression system, but particularly with carbon dioxide.	Complies	Ginna's only use of gaseous fire suppression is a Halon 1301 system. Halon 1301 does not present a risk of secondary thermal shock. Per Page 4-156 of the SFPE Handbook of Fire Protection Engineering, Halon 1301 is "Stored as a liquid under pressure and released at normal room temperature as a vapor...."	- SFPE Fourth Edition, Fire Protection Engineering
3.10.10 Corrosive Characteristics	Particular attention shall be given to corrosive characteristics of agent decomposition products on safety systems.	Complies	Halon decomposition products do not have any corrosive characteristics that have an effect on safety systems. The Fire Protection Handbook [page 17-94] states, "In 1972, following extensive testing by several major companies on the effects of Halon 1301 decomposition products on electrical equipment, the NFPA Committee on Electronic	- SFPE, SFPE Handbook of Fire Protection Engineering, Second Edition - Fire Protection Handbook, Fire Protection Handbook, 20th edition (page 17-94)

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.10.10 Corrosive Characteristics (Continued)			Computer/Data Processing Equipment recognized Halon 1301 total flooding systems as suitable for protection of electronic computer/data processing equipment." The SFPE Handbook of Fire Protection Engineering [page 4-125] states, "Areas...where damage to equipment or materials....must be minimized are also ideally protected by this agent...Halon 1301 gets into blocked and baffled spaces readily and leaves no corrosive or abrasive residue after use...".	
3.11 Passive Fire Protection Features	Passive Fire Protection Features. This section shall be used to determine the design and installation requirements for passive protection features. Passive fire protection features include wall, ceiling, and floor assemblies, fire doors, fire dampers, and through fire barrier penetration seals. Passive fire protection features also include electrical raceway fire barrier systems (ERFBS) that are provided to protect cables and electrical components and equipment from the effects of fire.	None	This is a general statement section. Please refer to the following subsections for the specific NFPA 805 subsection requirement and the compliance statement for each.	- None
3.11.1 Building Separation	Building Separation. Each major building within the power block shall be separated from the others by barriers having a designated fire resistance rating of 3 hours or by open space of at least 50 ft (15.2 m) or space that meets the requirements of NFPA 80A, Recommended Practice for Protection of Buildings from Exterior Fire Exposures. Exception: Where a performance-based analysis determines the adequacy of building separation, the requirements of 3.11.1 shall not apply.	Complies with Clarification	Complies with Clarification: The requirement that major power block buildings be separated by barriers having a designated fire resistance rating of 3 hours or by open space of at least 50 ft or space that meets the requirements of NFPA 80A-2007 is a new requirement in NFPA 805, in that there is no corresponding position in Appendix A to BTP APCSB 9.5-1 or the Ginna current licensing basis. Therefore, previous NRC approval does not pertain to NFPA 805, Section 3.11.1. This is a new requirement and as such, there is not	- RG001680, Safety Evaluation Report Docket No. 50-244, 2/14/1979 - RG002940, Safety Evaluation Report Supplement 1, 12/17/80 - RG003007, Safety Evaluation Report Supplement 2, 2/6/81 - RG010540, RG&E Fire Protection Evaluation, 2/24/77 - EPM-FPPR ANL, Fire

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.11.1 Building Separation (Continued)			a corresponding position within Ginna's current license, and therefore there is not explicit NRC prior approval of this new requirement. The clarification is that Ginna has NRC approval for building separation as discussed in previous SERs. Ginna was built prior to this new requirement and as such the only power block building that is separated by at least 50 feet is the Screen House. Most of Ginna's buildings interface with each other and share various walls [33013-2100]. The Fire Protection Program Report (EPM-FPPR) Vol. I Part III [Sec. 7.0] details the wall boundaries for each fire area. The adequacy of the methods used for building separation have been assessed and accepted by the NRC via the SERs and their supplements as described below: The Fire Protection Program Report (EPM-FPPR) Vol. I, Part III [Sec. 5.3] states, "At Ginna Station, the construction of walls, floors, and ceilings is typically either of reinforced concrete construction having a fire rating in excess of three hours or of concrete block construction with a fire rating of at least two hours. Based on this criteria, 17 fire areas were identified at Ginna. The only exceptions to two or three-hour-rated boundary fire barriers occurred in three locations: at the 289 ft 6 in. elevation of the Control Building (Control Room), at the access points into the Cable Tunnel, and at the floor-to-floor interface of the fire areas in the Auxiliary Building."	Protection Program Report (FPPR) - License Renewal Safety Evaluation Report, 3/3/04 - 33013-2100, Plant Arrangement General Plant Plot Plan and Drawing Index

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.11.1 Building Separation (Continued)			Each is discussed separately below. RG001680 [Sec. 4.11] identified a number of instances in which upgrade of original fire barriers, or the need for new fire-rated barriers was needed, and states, "We find that, subject to implementation of the above described modifications, fire barriers in the plant will be adequate to contain fires and are, therefore, acceptable." Specifically section 4.11 states,"Barrier (walls, floors, and floor-ceiling assemblies) enclosing fire areas generally have 3 hour fire resistance ratings. Barriers which do not have three hour ratings include: the non rated wall separating the 289'-6" elevation of the control building from the turbine building, and the 2 hour rated walls separating these buildings at lower elevations; the non rated walls between the north and south sections of the intermediate building on the 253'-6", 271'-0"/278'-4", and 293'-0"/298'-4" elevations; the 2 hour rated walls between the mechanical equipment room and station battery room A, and between the two battery rooms; the 2 hour rated wall between the relay room and the computer room; and the non rated ceiling assembly of the computer room, which separates it from the relay room. Also, construction joints between the containment and adjoining walls of the intermediate and auxiliary buildings are filled with polystyrene foam which is combustible. In addition, there is exposed structural steel in the intermediate building, control complex, turbine building, diesel generator building, turbine oil storage room, and operating floor of the auxiliary building. The structural steel on elevation 217'-0" of	

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.11.1 Building Separation (Continued)			the turbine building on elevation 278'-4" of the intermediate buildings are tied together in at least one location." Selected structural steel building members were coated with a protective material to resist the effects of fires as described in the License Renewal SER [Sec. 2.4.2.3.1]. RG001680 also states, "The licensee has proposed to install a bullet proof, pressure resistant, steel barrier, between the turbine building and the control room. An automatically actuated water curtain will provide adequate fire resistance for this barrier. The licensee has also proposed to replace the existing computer room ceiling with a 1 hour rated assembly. Construction joints between the containment and adjoining walls will be modified to provide fire resistance rating commensurate with the barriers. The rating of fire barriers, including the ceiling, separating the relay room from the computer room will be upgraded to 3 hours, or the combustibles within the computer room be reduced to the level where the hazard can be contained by the proposed barriers. The licensee will evaluate the need to protect the exposed structural steel against the fire damage where failure of such steel could jeopardize the safe shutdown. The fire hazards in the mechanical equipment room and in the station battery rooms were reviewed against the fire rating of the walls and it was concluded that the walls are adequate to contain these fire hazards.	

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.11.1 Building Separation (Continued)			The licensee will establish the adequacy of fire resistance for those walls separating the north and the south sections of the intermediate building, or upgrade them. We find that, subject to implementation of the above described modifications, fire barriers in the plant will be adequate to contain fires and is, therefore, acceptable." RG002940 [Item 3.1.21] addresses separation of the Control Building from the Turbine Building and construction joints between Containment and adjoining walls. Specifically, it states, "In the SER, we were concerned that the unrated walls separating the control room from the turbine building would be inadequate to prevent a fire in either the Turbine Building or the kitchen from affecting redundant safe shutdown circuits in the control room. We were also concerned that the design of the water curtain which the licensee proposed to install to protect the unrated walls would not provide timely response or sufficient water spray density to preclude damage to safe shutdown systems from a fire in the Turbine Building. By letter dated June 4, 1980 the licensee provided additional information. The water discharge density is according to the guidelines given in NFPA Standard 15 and therefore acceptable. The design of the water curtain will be in accordance with NFPA Standard 15. The system will be actuated by a heat detection system. The detector heads will have a heat collector canopy directly over it to assist in decreasing delayed actuation. The fire water piping will be hydraulically designed to accommodate two hose streams operating with the	

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.11.1 Building Separation (Continued)			water curtain. The fire pump has the capacity to supply the required pressure and water flow. Based on our evaluation, we conclude that the water curtain protection proposed by the licensee will adequately protect the wall between the control room and the turbine building and, therefore, is acceptable with regards to fire protection." RG003007 [Item 3.2.8] addresses fire barrier concerns with the Diesel Generator Rooms, Turbine Building, and Screen House. The Hydrogen Seal Oil Unit Enclosure is located in Fire Area BOP, at approximately column lines D and 10 and consists of walls and ceiling constructed of sheet metal studs and fire rated drywall covering materials to provide the structure with an overall one (1) hour fire rating. The floor is non-rated to grade. The overhead doors in the enclosure are fusible link operated rolling fire doors. S25 is an automatic deluge suppression system which protects the Hydrogen Seal Oil Unit area. A trench surrounds the Hydrogen Seal Oil Unit and contains drains that control flammable liquid spills from impacting adjacent areas. The current safe shutdown analysis for App. R demonstrates shutdown from outside the area. Steel is not protected. The Fire Protection Program report (EPM-FPPR) Vol. I, Part III [Sec. 7.3] describes that Pyrocreted structural steel was installed in area of Turbine Lube Oil Reservoir. Pyrocrete structural steel upgrades have been provided in the second story barriers to the Turbine Building where structural steel interfaced with block wall material construction. Exposed structural steel was not	

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.11.1 Building Separation (Continued)			protected in the areas of the hydrogen seal oil unit, turbine island, condenser pit, or Screen House since Appendix R safe shutdown can be achieved from outside these fire areas [EPM-FPPR, Vol. II, Appendix A, Table A-1].	
3.11.2 Fire Barriers	Fire barriers required by Chapter 4 shall include a specific fire resistance rating. Fire barriers shall be designed and installed to meet the specific fire resistance rating using assemblies qualified by fire tests. The qualification fire tests shall be in accordance with NFPA 251, Standard Methods of Tests of Fire Endurance of Building Construction and Materials, or ASTM E 119, Standard Test Methods for Fire Tests of Building Construction and Materials.		Appropriately rated fire barriers are provided or have been found acceptable by the NRC or by licensee evaluation. The Fire Protection Program Report (EPM-FPPR) Vol. I, Part II, Sec. [10.2.18] states, "Fire barriers are located throughout the plant to separate established fire areas from each other and also to separate certain safety related areas from the remainder of the plant. These barriers are designed to stop a fire from propagating from one area to the other based upon the fire rating of the barrier. All penetrations in these barriers are sealed with appropriate materials to match the rating requirements of the barrier. Fire areas have been defined based upon separation of equipment and cables to ensure that at least one path of safe shutdown systems is always available. The fire hazards analysis submitted to the NRC in February 1977 (RG010540) identified the fire barriers in the plant and the requirements for maintaining their integrity. These barrier requirements were determined by the fire loadings calculated for each area subject to a potential fire hazard. As a result of this analysis, several design modifications were implemented at the plant including upgrading of the rating of original barriers and installing new barriers. Additional definition of fire areas and barriers and analysis of fire zones	- RG006079, NRC Correspondence, 3/21/85 - RG010540, RG&E Fire Protection Evaluation, 2/24/77 - DA-ME-2003-018,rev.1, Appendix R Barrier Replacement - EPM-FPPR ANL, Fire Protection Program Report (FPPR)

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.11.2 Fire Barriers (Continued)			were conducted as part of the 10CFR50, Appendix R, review effort. The addition of the water curtain around the perimeters of the stairwells and equipment hatch at the ceiling level of the Auxiliary building mezzanine floor is a part of this effort. Also, 3 hour rated dampers were installed in ducts penetrating these fire areas. New fire barrier materials were installed in the emergency diesel generator cable vault, battery room 1B, the charging pump room, the Auxiliary building, the Intermediate building, and the Containment." In certain instances, specific exemptions from regulatory requirement were requested and granted [RG006079]. Specific exemptions are included in the Fire Protection Program Report (EPM-FPPR) Vol. III, Part IV, [Sec. 9.0]:	
		Complies w/use of Evaluation	Complies w/use of Evaluation Fire Area CT Prior Exemption (classified as adequate for the hazard through DA-ME-13-001) from the rating boundary requirement for either a 1 or 3 hour fire barrier between CT and AHR, CT and IBN, and CT and ABBM. The bases for Granting the original Exemption [EPM-FPPR Vol. III, Part IV, Sec. 9.2.8] are: (1)The barriers are continuous and constructed of noncombustible materials. There is reasonable assurance that during the initial stages of a fire, before significant temperature rise occurs, the barriers will be able to confine the products of combustion to one side of the barrier. (2)The fire area will be protected by an area-wide fire detection system. As a result, potential fire will	- DA-ME-13-001, rev. 0, Evaluation of R.E. Ginna Nuclear Station Appendix R Exemptions for Transition to NFPA 805

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.11.2 Fire Barriers (Continued)			be detected in its formative stages, before significant propagation or temperature rise occurs. Fire would be suppressed by manual suppression by the fire brigade. (3)If rapid temperature rise occurs at the Cable Tunnel before the arrival of the fire brigade, the existing automatic sprinkler systems located on both sides of the barrier will activate to control the fire, reduce room temperature and protect the barrier from the effects of the fire. DA-ME-13-001 documents that the bases for the original exemption remain valid and the existing design features are adequate for the hazard. The credited bases for acceptance are valid and meet applicable quality requirements.	
		Complies w/use of Evaluation	*Complies w/use of Evaluation* Fire Area EDG1B Prior Exemption (classified as adequate for the hazard through DA-ME-13-001) from III.G.2 three-hour barrier required between emergency diesel generator feeds in Fire Area EDG1B. The bases for Granting the original Exemption [EPM-FPPR Vol. III, Part IV, Sec. 9.2.9] are: "(1)A full height sheet metal enclosure separates redundant circuits for EDG 1A and 1B. The barrier is continuous and constructed of noncombustible materials. There is reasonable assurance that during the initial stages of a fire, before significant temperature rise occurs, the barriers will be able to confine the products of combustion to one side of the barrier. (2)Fire detection is located in the area and fire will be detected in its formative stages, before significant propagation or temperature rise occurs	- DA-ME-13-001, *rev.* 0, Evaluation of R.E. Ginna Nuclear Station Appendix R Exemptions for Transition to NFPA 805

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.11.2 Fire Barriers (Continued)			and fire would be suppressed by manual suppression by the fire brigade. (3)In the EDG vault the licensee has utilized a silicone foam in the construction of the barrier that has passed the ASTM E-119 fire exposure test for 3 hours. In addition, the licensee committed to protect the steel with a UL listed "fire-proofing" which provides reasonable assurance that conducted heat will not pose a threat to the shutdown related cables within the barrier". A replacement barrier was installed and evaluated under DA-ME-2003-018 Rev. 1 (Complies with use of Evaluation). DA-ME-13-001 documents that the bases for the original exemption remain valid and the existing design features are adequate for the hazard. The credited bases for acceptance are valid and meet applicable quality requirements.	
		Complies w/use of Evaluation	Complies w/use of Evaluation Fire Area BR1B Prior Exemption from III.G.2 requirements to provide protection to the structural steel in Battery Room 1B equivalent to that of the barrier. The bases for Granting the original Exemption [EPM-FPPR Vol. III, Part IV, Sec. 9.2.10] are: (1)The licensee committed to protect the exposed structural steel in Battery Room 1B with material that has a 1-hour fire rating. The exposed steel in Battery Room 1A will not be protected because the floor/ceiling is not relied upon to separate redundant shutdown systems in adjoining fire areas. (2)The combustible load in the battery rooms is low (12 minute fire). Therefore, the common wall between the battery rooms (2-hour rated) and the	- DA-ME-13-001, rev. 0, Evaluation of R.E. Ginna Nuclear Station Appendix R Exemptions for Transition to NFPA 805

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.11.2 Fire Barriers (Continued)			1-hour fire proofing on the structural steel in the ceiling of battery room 1B offer adequate fire protection. (3)Fire detection is provided in the battery rooms and will detect a fire in its initial stages before significant temperature rise occurs. Therefore, there is reasonable assurance that the fire will be extinguished by the fire brigade before it becomes a significant threat to the integrity of the fire barriers. The specific quantity of combustibles in fire area BR1B have changed over time due to plant modifications and use of higher heat of combustion values for battery cases. However, the fire hazards in BR1B are not of the severity that the 1-hour structural steel fire proofing would be compromised. DA-ME-13-001 documents that the bases for the original exemption remain valid and the existing design features are adequate for the hazard. The credited bases for acceptance are valid and meet applicable quality requirements. The Fire Protection Program Report (EPM-FPPR) Vol. I, Part III [Sec. 7.0] details each of the individual fire areas with a description of the rated fire barriers.	
3.11.3 Fire Barrier Penetrations	Penetrations in fire barriers shall be provided with listed fire-rated door assemblies or listed rated fire dampers having a fire resistance rating consistent with the designated fire resistance rating of the barrier as determined by the performance requirements established by Chapter 4. (See 3.11.3.4 for penetration seals for through penetration fire stops.) Passive fire protection devices such as doors and dampers shall conform	Complies	Doors and dampers in fire barriers required by Chapter 4 are generally listed fire-rated door assemblies and listed rated fire dampers having a fire resistance rating consistent with the designated fire resistance rating of the barrier. Sub-Element (1): Complies The commitment to NFPA 80-1986, Standard for Fire Doors and Fire Windows, is documented in the Fire Protection Program Report (EPM-FPPR) Vol.	- DA-ME-93-119,rev.0, Fire Damper Replacement - EPM-FPPR ANL, Fire Protection Program Report (FPPR) - FPS-15, Fire Protection and Safety Procedure - DA-ME-93-117B,rev. 0, Out of Wall and Special

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.11.3 Fire Barrier Penetrations (Continued)	with the following NFPA standards, as applicable: (1) NFPA 80, Standard for Fire Doors and Fire Windows (2) NFPA 90A, Standard for the Installation of Air-conditioning and Ventilating System (3) NFPA 101, Life Safety Code Exception: Where fire area boundaries are not wall-to-wall, floor-to ceiling boundaries with all penetrations sealed to the fire rating required of the boundaries, a performance-based analysis shall be required to assess the adequacy of fire barrier forming the fire boundary to determine if the barrier will withstand the fire effects of the hazards in the area. Openings in fire barriers shall be permitted to be protected by other means as acceptable to the AHJ.		II, Appendix A, Table A-1, [Sec. D.1.j.]. The commitments are organized based on fire area interfaces. Additionally, the Fire Protection Program Report (EPM-FPPR) Vol. I, Part II, Sec. [10.2.21] states, "Fire door assemblies (doors, frames, and hardware) are generally provided in door openings in required fire barriers. These assemblies are UL listed as either 3-hour rated ("A" label), 1 1/2 hour rated ("B" label) or 3/4 hour rated ("C" label). Three hour rated doors are provided in three hour or less rated fire barriers, 1 1/2 hour rated doors are provided in barriers that require a 2 hour or less fire rating, and 3/4 hour rated doors are provided in certain barriers for property conservation purposes". Fire Protection and Safety Procedure FPS-15 also includes the requirement that fire door assemblies shall include UL or FM label.	Fire Damper Configurations - EWR 4882, Fire Dampers - EWR 2463,rev. 1, Fire Dampers - M-103, Inspection and Maintenance of Fire Dampers - STP-E-13.26, Testing of Fire Dampers
		Complies with use of Evaluation	Sub-Element (2): Complies with use of evaluation As stated in the Fire Protection Program Report (EPM-FPPR) Vol. I, Part II Sec. [10.2.22], "Fire dampers are generally provided in HVAC ducts that penetrate required fire barriers to prevent the propagation of a fire through the duct. Some duct penetrations do not have fire rated dampers and have been evaluated in appropriate engineering evaluations documented in Appendix E (Summary of Fire Protection Engineering Evaluations) of the FPPR". The applicable engineering evaluations include: Design Analysis DA-ME-93-117B which documents (37) fire dampers to ensure/justify that these installations are adequate for the fire rated barriers they penetrate and that the configurations are	

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance *Statement*	Compliance Basis	References
3.11.3 Fire Barrier Penetrations (Continued)			adequate to withstand the hazards in the fire area in which they are installed. The review documents the adequacy of the configuration per UL and NFPA recommendations along with the hazards associated with the fire areas in which they are installed. Design Analysis DA-ME-93-119 which evaluated the replacement fire dampers for AH-44, BA-33 and BB-46. *Many dampers were installed under* EWR 2463 [Design Criteria] and EWR 4882 [Design Criteria], using NFPA 90A in the design and installation. The credited bases for acceptance are valid and meet applicable quality requirements. In addition, Inspection and Maintenance Procedure M-103, ensures the UL or FM label for hour rating, and the testing of Fire Dampers are controlled via STP-E-13.26.	
		Complies	Sub-Element (3): Complies NFPA 101-2009 compliance is achieved through NFPA 80 and NFPA 90A. NFPA 101, 2009 edition, refers to NFPA 80 in regards to rated fire door assemblies, and NFPA 90A in regards to rated fire dampers. Table B-1 section 3.11.3 (1) and 3.11.3 (2) discuss compliance of NFPA 80 and NFPA 90A.	

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.11.4 Through Penetration Fire Stops	*Through Penetration Fire Stops.* Through penetration fire stops for penetrations such as pipes, conduits, bus ducts, cables, wires, pneumatic tubes and ducts, and similar building service equipment that pass through fire barriers shall be protected as follows. (a) The annular space between the penetrating item and the through opening in the fire barrier shall be filled with a qualified fire-resistive penetration seal assembly capable of maintaining the fire resistance of the fire barrier. The assembly shall be qualified by tests in accordance with a fire test protocol acceptable to the AHJ or be protected by a listed fire rated device for the specified fire resistive period. (b) Conduits shall be provided with an internal fire seal that has an equivalent fire resitive rating to that of the fire barrier through opening fire stop and shall be permitted to be installed on either side of the barrier in a location that is as close to the barrier as possible. Exception: Openings inside conduit 4 in. (10.2 cm) or less in diameter shall be sealed at the fire barrier with a fire rated internal seal unless the conduit extends greater than 5 ft (1.5 m) on each side of the fire barrier. In this case the conduit opening shall be provided with noncombustible material to prevent the passage of smoke and hot gases. The fill depth of the material packed to a depth of 2 in. (5.1 cm) shall constitute an acceptable smoke and hot gas seal in this application.	Complies with use of Evaluation	As stated in the Fire Protection Program Report (EPM-FPPR) Vol. I, Part II, Sec. [10.2.23], "Fire barriers are located throughout the plant to separate major areas from each other and also to separate certain safety related areas from the remainder of the plant. These are designed to stop a fire from propagating from one area to another based upon the rating of the barrier wall. All penetrations in these barriers are sealed with appropriate materials to match the hourly rating requirements of the barrier. Visual inspection of fire barrier penetration seals are regularly performed to insure that the penetration seals will continue to perform their design function. There are no rated fire barriers that perform a pressure sealing function." (a) The adequacy of through opening penetration seal design in regards to maintaining the fire resistance of the fire barrier and tested in accordance with a fire test protocol for electrical, mechanical/piping, and construction joint seals is described below: Electrical [UFSAR Sec. 9.5.1.2.4.10] "Electrical Seals for electrical penetrations fall into two major categories: 1) Seals installed in 1975 using BISCO SF-20; and 2) Seals installed since September 1979 using Dow Corning 3-6458. The adequacy of several fire endurance tests and their applicability to cable tray and conduit penetration seals was documented in a NRC submittal in June 1980. The NRC concurred with the evaluation via RG002940 [Item 3.2.5], which states, "The licensee verified, and we agree, that the seal designs at	- RG002940, Safety Evaluation Report Supplement 1, 12/17/80 - ME-92-0006,rev.0, Analysis of Pen's and Fire Barriers - DA-CE-93-081,rev.1, Pressure Wall Seals - DA-ME-94-118-00,rev. 0, Fire Barrier Penetration Seal - DA-ME-94-118-01,rev. 0, Fire Barrier Penetration Seal Qualification Analysis - DA-ME-94-118-02,rev. 0, Fire Barrier Penetration Seal Qualification Analysis - DA-ME-94-118-04,rev.0, Fire Barrier Seal Qualification - DA-ME-94-118-05,rev.0, Fire Barrier Seal Qualification - DA-ME-94-118-06,rev.0, FB Seal Qualification for CT Air Handling Room Smoke Barrier - DA-ME-94-118-07,rev.0, FB Seal Qualification for RR Floor Penetration - DA-ME-94-118-08,rev.0, Fire Barrier penetration Seal Analysis - DA-ME-94-118-09,rev.0, Fire Barrier Seal

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.11.4 Through Penetration Fire Stops (Continued)			Ginna are either similar to or more conservative than the seal designs tested by the ASTM E-119 fire test method for a 3-hour rating. Based on our review, we conclude that the licensee has verified that electrical penetration seals are of a 3-hour rated design as tested by the ASTM E-119 test method and, therefore, are acceptable." NRC Information Notice 88-04 alerted licensees that some fire barrier penetration seal designs may not be adequately qualified for the design rating of the penetrated fire barriers. As part of RG&E's review in response to Information Notice 88-04, a program *was established to evaluate fire barrier* penetrations against a tested configuration and examine the qualification test documentation. Branch Technical Position (BTP)-APCSB 9.5-1 requires that cable and cable tray penetrations of fire barriers (vertical and horizontal) be sealed to give protection at least equivalent to that of the fire barrier. Although not specifically stated in APCSB 9.5-1 that penetration designs must be qualified by tests, RG&E proceeded with this program in order that the penetrations would continue to meet a tested configuration, when being maintained or involved in a plant modification, thereby ensuring the barrier would not be degraded. For fire barrier penetration seals for which it is not possible to achieve a duplication of a specific tested configuration, appropriate compensatory measures are taken, such as posting fire watch patrols when required by the Technical Requirements Manual (TRM) section 3.7.5, temporarily repairing and qualifying the penetration until it can be reworked, and performing technical evaluations to demonstrate that the penetration	Qualification - DA-ME-94-118-10,rev. 0, Fire Barrier Penetration Seal Qualification Analysis - DA-ME-94-118-11,rev. 0, Fire Barrier Penetration Seal Qualification Analysis - DA-ME-94-118-12,rev. 0, Fire Barrier Penetration Seal Qualification Analysis - DA-ME-94-118-13,rev. 0, Fire Barrier Penetration Seal Qualificaiton Analysis for Non Regulatory Fire Barrier Seals - DA-ME-94-118-14,rev. 0, Temporary Penetration Seals - DA-ME-94-118-15,rev. 0, Fire Barrier Penetration Seal Qualification Analysis - DA-ME-94-118-16,rev. 0, Fire Barrier Penetration Seal Qualification Analysis - DA-ME-94-118-17,rev. 0, Fire Barrier Penetration Seal Qualification Analysis - DA-ME-94-118-18,rev. 0, Fire Barrier Penetration Seal Qualification Analysis - DA-ME-94-118-19,rev. 0, Special Boot Seals Evaluation - DA-ME-94-118-99,rev. 0, Penetration Seal Design

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.11.4 *Through* Penetration Fire Stops (Continued)			meets an equivalent level of protection. Guidance *from Generic Letter 86-10 is employed in these* cases." Mechanical / Piping [UFSAR Sec. 9.5.1.2.4.11] "Piping penetrations are either poured in place or sealed by one of the following methods: grout, silicon RTV foam, or flexible silicone-rubber boots. The fire rating adequacy of the seals was documented in a NRC submittal in June 1980. The NRC concurred with the evaluation via RG002940 [Item 3.1.24] which states, "By a June 4, 1980 letter, the licensee referenced FM Test Reports 24963, J.I. 1A5Q6.AC, and 26543, and CTL Reports SF-20 and SF-15OL. The penetration seals at Ginna are of the design and type tested and described in the above test reports. The tests followed the ASTM E-119 fire test method. Based on the data in these test reports, we conclude that the penetration seal designs have been properly verified and, therefore, are acceptable." Construction Joints [UFSAR Sec. 9.5.1.2.4.14] Construction joints between containment and surrounding buildings provide fire resistance commensurate with the hazards. RG002940 [Item 3.1.25] provides the NRC's evaluation which states, "By a June 4, 1980 letter, the licensee referenced SWRI fire test report CTM-0200. It describes the results of testing construction joints using silicone foam material, which is what the licensee proposes to use. The joint seal tested was 6" deep and 6" wide and successfully passed the ASTM E-119 fire test. The construction joint seals at Ginna are 12" deep and less than 4" wide,	Bases - ME-91-0020,rev.0, Penetration Analysis - ME-91-0022,rev.1, Penetration Analysis NCR 91-410 - DA-ME-93-117A,rev.0, GL 86-10 Evaluation for Containment Electrical Penetrations - DA-ME-92-101, rev.0,Penetrations Analysis - DA-ME-92-105,rev.0, CR Fire Penetration Seals and Combustible Loading - Ginna UFSAR

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.11.4 Through Penetration Fire Stops (Continued)			therefore, the seals are of a more conservative design than that tested. Based on the test results, the licensee's proposal to upgrade the construction joint seals with silicone foam material is acceptable." The DA-ME-94-118 series of engineering evaluations (DA-ME-94-118-00 through DA-ME-94-118-02, and DA-ME-94-118-04 through DA-ME-94-118-19, and DA-ME-94-118-99) that was prepared in response to IN 88-04 document the adequacy of the various electrical cable, piping, and duct penetration seal designs utilized at Ginna. In addition, DA-ME-92-101, DA-ME-93-117A, DA-CE-93-081, DA-ME-92-105, ME-91-0020, ME-91-0022, and ME-92-0006 document the acceptability of various penetrations. The credited bases for acceptance are valid and meet applicable quality requirements. (b) The adequacy of internal conduit seal designs are based on provision of an internal fire seal that has an equivalent fire resistive rating to that of the fire barrier through opening fire stop. DA-ME-94-118-17 was prepared in response to IN 88-04 and serves to document the adequacy of internal conduit seal designs utilized at Ginna. The credited bases for acceptance are valid and meet applicable quality requirements.	
3.11.5 ERFBS	"ELECTRICAL RACEWAY FIRE BARRIER SYSTEMS (ERFBS). ERFBS required by Chapter 4 shall be capable of resisting the fire effects of the hazards in the area. ERFBS shall be tested in accordance with and shall meet the acceptance	Complies	Ginna is not crediting the existing HEMYC wrap configurations within the plant as a fire rated barrier, with the exception of fire area BR1B (Battery Room 1B) to protect cables L0318, C0687, and a portion of E0053 as described below:	- Attachment S-2, item 7 - 0028-0018-000-001, Qualification of HEMYC Fire Barrier Wrap in Battery Room B of Ginna Nuclear

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.11.5 ERFBS (Continued)	criteria of NRC Generic Letter 86-10, Supplement 1, "Fire Endurance Test Acceptance Criteria for Fire Barrier Systems Used to Separate Safe Shutdown Trains Within the Same Fire Area." The ERFBS needs to adequately address the design requirements and limitations of supports and intervening items and their impact on the fire barrier system rating. The fire barrier system's ability to maintain the required nuclear safety circuits free of fire damage for a specific thermal exposure, barrier design, raceway size and type, cable size, fill, and type shall be demonstrated. Exception No. 1: When the temperatures inside the fire barrier system exceed the maximum temperature allowed by the acceptance criteria of Generic Letter 86-10, "Fire Endurance Acceptance Test Criteria for Fire Barrier Systems Used to Separate Redundant Safe Shutdown Training Within the Same Fire Area," Supplement 1, functionality of the cable at these elevated temperatures shall be demonstrated. Qualification demonstration of these cables shall be performed in accordance with the electrical testing requirements of Generic Letter 86-1 0, Supplement 1, Attachment 1, "Attachment Methods for Demonstrating Functionality of Cables Protected by Raceway Fire Barrier Systems During and After Fire Endurance Test Exposure." Exception No. 2: ERFBS systems employed prior to the issuance of Generic Letter 86-10, Supplement I, are acceptable providing that the system successfully met the limiting endpoint temperature requirements as specified by the AHJ at the time of acceptance."		An analysis has been performed to address the commitment of LAR attachment S, Table S-2, Item 7. The analysis (Ref. 0028-0018-000-001) compares the Ginna Hemyc wrap configuration in Battery Room B to the following test configurations and is representative of the wrap configuration in the field (air drops, terminations, support/interference protection, collars, etc.): Omega Point Laboratories, Inc., Project Number 14790-123264, Date: April 18, 2005, Titled: HEMYC (1-Hour) Electrical Raceway Fire Barrier Systems Performance Testing: Cable tray, Cable Air Drop and Junction Box Raceways. Intertek Testing Services NA, Inc., Report Number 3106846, Revision Date: February 5, 2007, Titled: HEMYC 1-Hour Electrical Raceway Fire Barrier System (ERFBS), Fire Resistance Performance. Furnace temperatures used in the testing follow the ASTM E-119 time-temerature curve. The specific combustible loading in BR1B is not an input in the analysis (Ref. 0028-0018-000-001). The results of the evaluation (Ref. 0028-0018-000-001) indicate that the Hemyc wrap configuration will be able to provide 25 minutes of protection after the damage temperature (205 ^{0}C) of the thermoplastic cables is reached. This is provided that the Unistrut supports inside the steel cable chase are stuffed with ceramic fiber material to ensure a path for combustion products does not exist. 205 ^{0}C is the damage temperature of the	Station, Revision 02. - Work Order (WO) C92936867

NFPA 805 Chapter 3 Reference	Requirements/Guidance	Compliance Statement	Compliance Basis	References
3.11.5 ERFBS (Continued)			thermoplastic cables according to NUREG/CR-6850 and as referenced in the Fire PRA notebook G1-FSS-F001. The credited bases for acceptance are valid and meet applicable quality requirements. The installation of the needed ceramic fiber will be tracked via work order C92936867.	

C. NEI 04-02 Table B-3 – Fire Area Transition

Table C-1 – NFPA 805 Ch 4 Compliance (NEI 04-02 Table B-3) 232 Pages Attached

Table C-2 – NFPA 805 Required Fire Protection Systems and Features 11 Pages Attached

Note: In the VFDR Summary section of the B-3 Table 'codes' are provided that cross reference to discussions in the NSCA document.

NFPA 805 Ch 4 Compliance (NEI 04-02 Table B-3)

Fire Area ID: ABBM - Auxiliary Building Basement/Mezzanine **Fire Area Definition**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description
ABB	235'-8" Auxiliary Bldg Basement Floor
ABM	253'-0" Auxiliary Bldg Mezzanine Floor

Fire Area ID: ABBM - Auxiliary Building Basement/Mezzanine **Performance Goals**

Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Performance Goal	Method of Accomplishment	Comments
1. Reactivity Control Function	Immediate reactor shutdown is achieved by de-energizing all CRDMs which results in control rod negative reactivity insertion into the reactor core.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
2. Inventory Control Function	• RCS inventory depletion control is maintained by closure of all letdown paths, all sample paths, all head vent paths, and both PORVs. • RCS inventory makeup is controlled by either one of the following: o Train "A" CVCS success path from the RWST to the RCS o Train "A" SIS success path from the RWST to the RCS and the PORV associated with the "A" nitrogen surge tank.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
3. Pressure Control Function	• RCS high pressure control is maintained by automatic mechanical operation of all PRZR Code Safety Valves, stopping of both RCPs, and securing all PRZR heaters. • RCS lowering pressure control is maintained by closure of both PRZR PORVs, closure of both PRZR Normal Spray valves or stopping the associated RCP(s), and closure of both SG ARVs.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
4. Decay Heat Removal Function	• RCS high temperature control is maintained by automatic mechanical operation of all SG Code Safety Valves. • RCS lowering temperature control is maintained by closure of both MSIVs, closure of both SG ARVs, stopping both MFW Pumps, stopping AFW System flow to the non-credited SG, and controlling flow to the credited SG. • SG makeup control is maintained by either one of the following to SG "A": o TDAFW Pump success path from the SG "A" MSS and pump suction from the CST or SWS o SAFW Pump "C" success path from the SWS or FPS	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
5. Process Monitoring Function	RCS Temperature: TI-409A-1 (RCS LOOP A HL INDICATION) Location: MCB, and TI-409B-1 (RCS LOOP A CL INDICATION) Location: MCB RCS Pressure:PI-420-2 (RCS HL PRESSURE (0-3000 PSIG)) Location: MCB, and PI-420B (RCS PRESSURE (0-3000 PSIG))	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"

Fire Area ID: ABBM - Auxiliary Building Basement/Mezzanine **Performance Goals**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Performance Goal	Method of Accomplishment	Comments
	Location: ABELIP Pressurizer Level:LI-426 (PRZR LEVEL) Location: MCB, LI-428A (PRZR LEVEL (WR)) Location: ABELIP, and LI-433A (PRZR LEVEL) Location: MCB Steam Generator Level:LI-461 (S/G "A" LEVEL (NR)) Location: MCB, LI-504 (S/G "A" LEVEL [0-520" H2O (WR)) Location: MCB, and LI-506A (S/G "B" WIDE RANGE LEVEL) Location: IBELIP Steam Generator Pressure:PI-469 (S/G "A" PRESSURE) Location: MCB, and PI-479 (S/G "B" PRESSURE) Location: MCB Neutron Flux Monitoring:NI-31B (NIS SOURCE RANGE INDICATION) Location: MCB Tank Level:LI-2022A (CDST "A" LEVEL) Location: MCB, and LI-921 (RWST LEVEL) Location: MCB System Flow Rate:FI-2031 (TDAFW PUMP DISCH FLOW) Location: MCB, FI-4084A (SAFW PUMP "C" <PSF01A> DISCH FLOW) Location: SAF, FI-4084B (SAFW PUMP "C" <PSF01A> DISCH FLOW) Location: MCB DG Cooling:PI-2103 ("A" DIESEL GEN HX CLNG WTR HDR PRESS IND) Location: EDG1A	
6. Vital Auxiliaries	• DC Power and instrument power availability is maintained by train “A” of the BDC/IAC System from Battery “A” or the TSC Battery System. • AC Power availability is maintained by train “A” Diesel-Generator and train “A” DBV/DGS support components. • Diesel-Generator engine cooling is maintained by the train ”A” SWS success path or alignment of alternate cooling from the FPS to the “A” Diesel. • Except for a Control Room fire, train “A” CREATS is maintained for controlling the Control Room environmental conditions within the required specifications for habitability and design limits for equipment operability. Ventilation systems for the SAFW components in the SAFW Building, the DG components in the Diesel Building, and the TSC components in the Technical Support Center are maintained for equipment design limits.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"

References **Document ID**

Fire Suppression Activities Effect on Nuclear Safety Performance Criteria

(ABB)

Scenario 1: Suppression Effects in ABB of a Fire Originating In ABB:

Suppression effects (activation of preaction sprinkler system S01 and manual firefighting) are not expected to extend beyond the area of fire origin. Preaction sprinkler systems require both, the fusing of a sprinkler head and the opening of the preaction valve as a result of actuation of a heat or smoke detector or manual pull box, and would only be expected to activate small number of sprinklers.

Scenario 2: Suppression Effects in ABB of a Fire Originating Outside of ABB

Since preaction sprinkler systems require both, the fusing of a sprinkler head and the opening of the preaction valve as a result of actuation of a heat or smoke detector or manual pull box, operation of a fire suppression system outside of ABB could not impact fire suppression systems within ABB. Similarly, manual firefighting activities outside of ABB would not be expected to affect equipment/components located within ABB.

(ABM)

Scenario 1: Suppression Effects in ABM of a Fire Originating In ABM:

Suppression effects (activation of Charcoal Filter Unit G deluge system S02, preaction and wet-pipe sprinkler systems S04, S35 and S36 or manual firefighting are not expected to extend beyond the area of fire origin. Water spray from the deluge system is expected to be substantially contained within the filter unit and contained by the equipment or floor drain systems. Preaction sprinkler systems require both, the fusing of a sprinkler head and the opening of the preaction valve as a result of actuation of a heat or smoke detector or manual pull box. The activation of a preaction or wet-pipe sprinkler system would only be expected to activate small number of sprinklers. The only potentially vulnerable component in the area associated with suppression systems protecting other Fire Zones that could be affected by water discharge from S03 or manual firefighting is electric manual pull box S05MX at the Auxiliary Building entrance to the Cable Tunnel. The extent of consequences expected would be shorting out the switch and discharge of water to the Cable Tunnel, Fire Zone CT which contains only safe shutdown related cables (no SSD components). Based on assumption 3, the safe shutdown related cables would not be damaged by water discharge.

Scenario 2: Suppression Effects in ABM of a Fire Originating Outside of ABM:

Charcoal Filter Unit G deluge system S02 is actuated by the associated fire detection system in the area which could be vulnerable to a fire originating outside ABM if the detection circuits and/or control panel are routed or located outside the fire zone (e.g., SSA in the Relay Room). However, water is expected to be substantially contained by the filter unit and drainage system. Since preaction sprinkler systems require both, the fusing of a sprinkler head and the opening of the preaction valve as a result of actuation of a heat or smoke detector or manual pull box, operation of a fire suppression system outside of ABM could not impact preaction fire suppression systems within ABM. Since automatic wet-pipe sprinkler systems are not electrically activated, operation of a fire suppression system outside of ABM could not impact automatic wet-pipe sprinkler systems within ABM. Similarly, manual firefighting activities outside of ABM would not be expected to affect equipment/components located within ABM.

Fire Area ID: ABBM - Auxiliary Building Basement/Mezzanine **Fire Risk Evaluation**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
(All)	Area Wide	None	None	R, S	Modifications: R S Procedures/Recovery Actions: R
ABB	235'-8" Auxiliary Bldg Basement Floor	E	E, R	E, rr	Combustible Loading Controls: E Detection System, Z01: E R Detection System, Z02: E R Detection System, Z02D1: E R Floor drains/sump: rr Procedural Controls Regarding Securing Ventilation: rr Water Suppression, S01: E
ABM	253'-0" Auxiliary Bldg Mezzanine Floor	E, R	E, R	E, rr	Combustible Loading Controls: E Detection System, Z03: E R Floor drains/sump: rr Procedural Controls Regarding Securing Ventilation: rr Water Suppression, S02: E R Water Suppression, S03: E R Water Suppression, S04: E R Water Suppression, S35: E R Water Suppression, S36: E R

Title
Fire Risk Evaluation for Fire Area ABBM

Risk Summary
The delta CDF and delta LERF results for the fire area are summarized below. At the fire area level, the increase in risk is less than 1E-05/rx-yr for the delta CDF, and less than 1E-06/rx-yr for the delta LERF.

All CCDPs and CLERPs are less than 1, ensuring that low CDF and LERF values are not reached solely because of a low fire scenario frequency.

Δ CDF
Δ LERF
Redacted

DID Maintained
A qualitative evaluation of defense-in-depth (DID) using insights gained from the Fire PRA was performed for the fire area.

The fire detection (smoke) and suppression system (automatic pre-action) installed in Fire Zone ABM are credited in the Fire PRA for Compartment ABM-C1 (253 ft, intermediate open area). The Fire PRA also takes credit for the fire detection system installed in Fire Zone ABB to support manual suppression in Compartment ABB-C1 (253 ft, AB Basement open area). Given the relatively high fire frequency in the fire area, the fire suppression system in the Fire Zone ABB is credited for DID. Portable extinguishers and hose stations are credited by the Fire PRA in Compartments ABB-C1 and ABM-C1. In the rest of the fire area, they are available for fire brigade use and do not require additional DID enhancement. Existing administrative control are determined adequate given the nature of combustibles in the area and the quantified scenarios captured in the Fire PRA results. Given the relatively low values of CCDP and CLERPs in the fire area, no DID actions are required. In addition, no modifications are required for DID in the fire area.

With the DID requirements above, the evaluation finds that an adequate balance between the DID echelons is maintained.

Safety Margin Maintained

The safety margin for the analyses supporting the fire risk evaluation of the fire area was evaluated and accounted for potential impacts from fire modeling and the plant system performance, including the PRA logic model. All analyses and assessment have been performed utilizing accepted techniques and industry accepted standards. In addition, safety analysis acceptance criteria in the licensing basis (e.g., FSAR, supporting analyses) have been considered and provide sufficient margin to account for analysis and data uncertainty.

Conclusions

Fire Area ID:	ABBM - Auxiliary Building Basement/Mezzanine	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

VFDR ID VFDR-ABBM-004

VFDR

Instrument Air to the CNMT is isolated (via 5397) by an unrelated operator action to mitigate spurious operation of AOVs inside CNMT. With Instrument Air isolated, and cable fire damage (R0542), credited Aux. Spray valve AOV-296 cannot be controlled from the MCB.
Local action is taken to operate AOVs 294 and 296 for RCS pressure control during cooldown by aligning the Service Air System to supply Instrument Air in the CNMT to support operation of 296 from the MCB. However, operator action to "de-power" 125V DC distribution panel DCPDPCB04A (which is credited to mitigate other spurious actuations) removes the necessary control power to operate these AOVs from the MCB.
This VFDR is associated with the Inventory and Pressure Control Functions. [OE010, OP017, OP307, PC315]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

CVC - 294 - CHRG TO LOOP B CL (AOV) {R0535(LOI)}
CVC - 296 - AUX SPRAY AOV {R0542(LOI)}
PSA - 7141 - SA MIDDLE ISOL VLV TO CONTAINMENT (INTER BLDG) {Requires Operator Action}
PSA - 7222 - SA OUTER ISOL VLV TO CONTAINMENT (INTER BLDG) {Requires Operator Action}
PSA - 7227 - SA ISOL VLV (IN CNMT) {Requires Operator Action}
PSA - 7227A - SA TO IA CROSSTIE ISOLATION VALVE INSIDE CONTAINMENT {Requires Operator Action}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was *performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction* for the VFDR.

VFDR ID VFDR-ABBM-005

VFDR

Fire damage to instrument air piping can challenge reliance on instrument/service air whether being aligned from the normal air compressors or from the diesel air compressor or a deterministic assumption of a loss of offsite power to BUS13 and BUS15 results in the loss of the normal Service Air and Instrument Air compressors.
Local manual alignment of Diesel Air Compressor (CSA05) to the Service Air and Instrument Air Systems is taken to manipulate air operated SSD components (i.e., 294, 296, 4297, 4298, 9710A, 9710B and align long-term air supply to the credited CHG Pump (PCH01A)). However, this action may not be successful due to the integrity of instrument air piping.
This VFDR is associated with the Vital Auxiliaries Function. [OE004, PH308, PH331]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA issue.

Component(s)

IAS - 7009A - IA ISOL VLV TO CHARGING PUMP A CONTROLS {Requires Operator Action, Component in FA}
IAS - 7009B - IA ISOL VLV TO CHARGING PUMP B CONTROLS {Requires Operator Action, Component in FA}
IAS - 7009D - INST AIR QUICK DISCONNECT ISOL VALVE FOR CHARGING PUMP A {Requires Operator Action, Component in FA}
LAC - BUS13 - 480V SWITCHGEAR {L0327(LO), L0331(LO), L0177(LOCI), L0178(LOCI), L0329(LOCI), L0328(P), Cascading Impact}

Fire Area ID:	ABBM - Auxiliary Building Basement/Mezzanine	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

LAC - BUS15 - 480V SWITCHGEAR {L0187(LO), L0317(LO), L0198(LOC), L0004(LOCI), L0005(LOCI), L0024(P), L0079(P), L0197(P), Cascading Impact}
PSA - 14005H - SA ISOL VLV {Requires Operator Action, Component in FA}
PSA - 7000A - IA/SA CROSS-CONNECT {Requires Operator Action}
PSA - 7002D - DIESEL AIR COMPRESSOR SUPPLY ISOLATION VALVE {Requires Operator Action}
PSA - 7195A - BU AIR COMP DISCHARGE INNER ISOL VAL TO SERV AIR HEADER {Requires Operator Action}
PSA - 7203 - SERV AIR ISOL VALVE TO THE TURBINE BUILDING FROM YARD {Requires Operator Action}
PSA - CSA05 - DIESEL AIR COMPRESS (OUTSIDE UNIT) FOR BU SERV AIR/INSTR AIR {Requires Operator Action}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-ABBM-006

VFDR

If offsite power is available, fire damage to 125V DC control cabling can prevent stopping RCP "A" and/or RCP "B" from the MCB or restart the pump(s) if successfully tripped. The pump(s) continuing to run, or restarting, could have an adverse impact on controlling the RCS cooldown rate.
Local action is taken to secure the affected RCPs at the appropriate 4KV AC breakers.
This VFDR is associated with the Decay Heat Removal Function. {OP017, PH309, PH312}.
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

RCS - PRC01A - RCP A {C1281(L), M0050(LC)}
RCS - PRC01B - RCP B {C1370(L), M0145(LC), M0140(P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-ABBM-007

VFDR

The CHG pump suction isolation valve (AOV-112C) from the VCT is required closed to allow the RWST to supply highly borated water to the pump. However, AOV-112C fails open on a loss of IA (deterministic assumption) OR cannot be closed due to fire damaged cables resulting in VCT inventory loss, CHG pumps drawing suction from the VCT cover gas instead of the RWST and consequent failure of the credited CHG Pump (PCH01A). Fire damage to cables also prevents operation of PCH01A from the MCB; the pump can spuriously start after being stopped or cannot be stopped when running.
Local action is taken to isolate the VCT cover gas supply so that the RWST head pressure would override the VCT head pressure and cause check valve (V-266) closure. However, manual valves requiring this HSD action are located within the fire area under consideration. Additionally, "Fire damage to manual valves should be evaluated with respect to the ability to manually operate as a part of the post-fire safe

shutdown scenario." (Reference NEI 00-01, Section 3.2.1.2)
This VFDR is associated with the Reactivity Control Function, and Inventory and Pressure Control Functions. [OE005, OP017, PH315]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

CVC - 112C - VCT OUTLET AOV {R0056(LC), R0063(LC), R0060(LCI), R0061(LI), R0062(LI), Component in FA}
CVC - 261 - VCT H2 INLT MANUAL BLK VLV {Requires Operator Action, Component in FA}
CVC - 262 - VCT NITROGEN INLET MANUAL BLK VLV {Requires Operator Action, Component in FA}
CVC - PCH01A - CHRG PUMP A {L0400C(L), L0399(LOCI), L0400(LOCI), E0063(P), E0064(P), E0307(P), L0398(P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDMAKEUP, consisting of locally aligning and starting the new charging system was credited to help resolve this VFDR. *In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was* credited to help resolve this VFDR.

VFDR ID VFDR-ABBM-008

VFDR

A MSO concern exists related to RWST Drain Down via Containment Sump. Containment sump MOVs (850A and 850B) are subject to spurious opening. MOV-856 is required to be closed to prevent RWST drain down to the sump during HSD. Fire damage to cable C0790 can spuriously open 856, bypassing the control power key switch (1/856-KS on MCB).
Local action is taken within the fire area under consideration to mitigate this spurious operation.
This VFDR is associated with the Reactivity Control Function, and Inventory and Pressure Control Functions. [OP017, PH318]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

RHR - 850A - CNMT SUMP TO RHR PUMP MOV {C0703(LI), C0704(LOCI), C0702(P), E0061(P), E0061A(P), Component in FA}
RHR - 850B - CNMT SUMP TO RHR PUMP MOV {C1069(LI), C1070(LOCI), C1068(P), E0167(P), E0167A(P), Component in FA}
RHR - 856 - RWST TO RHR MOV {C0791(L), C0789(LI), C0790(LOCI), C0788(P), E0061(P), E0061A(P), Component in FA}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDMAKEUP, consisting of locally aligning and starting the new charging system was credited to help resolve this VFDR. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

VFDR ID VFDR-ABBM-009

VFDR

A MSO concern exists related to loss of BUS14 and BUS18. The scenario is postulated due to the following separation concerns:
(a) On a LOOP (deterministic assumption) fire damage to cables can prevent credited KDG01A from starting. Both "A" (L0365 or L0780) and

Fire Area ID:	ABBM - Auxiliary Building Basement/Mezzanine	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

"B" (L0782) DG start circuits are impacted preventing automatic DG start. This affects BOTH BUS14 and BUS18.
(b) Spurious opening or failure to close of breaker 52/EG1A1 (cable L0319) and spurious opening of 52/14 (cable L0315), if offsite power is available, results in a loss of power to credited BUS14.
Local action is taken to mitigate the spurious operation as follows:
(a) Strip the loads off BUS14 (BUS18 can be stripped from the MCB)
(b) Transfer control circuitry and place KDG01A in service at the DGAELCP. However, fire damage to common power cable (L0365) prevents the DG from being started locally at the DGAELCP
(c) After KDG01A has been started, load BUS14
This VFDR is associated with the Vital Auxiliaries Function. [OP017, OP021, PH319, PH323, PH326, PH335]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

ABV - AAF04 - AUXILIARY BUILDING EXHAUST FAN G {L0644(L), G0488A(LC), L0643(LCO), G0947(LO), L0647(LO), L0647A(LO), L0732(LO), G0490A(LOI), E0063(P), E0064(P), L0641(P)}
AFW - PAF01A - AUXILIARY FEEDWATER PUMP A {L0374(L), L0372(LOCI), E0063(P), E0064(P), L0371(P)}
AFW - PSF01A - SAFW PUMP C {FWL0010(LI), L0744(LO), E0063(P), E0064(P)}
CCW - PAC02A - CCW PUMP A {L0284(LC), L0395(LOCI), E0063(P), E0064(P), L0394(P)}
CSS - PSI02A - CONTAINMENT SPRAY PUMP A {L0337(LOCI), E0063(P), E0064(P), L0336(P)}
CVC - PCH01A - CHRG PUMP A {L0400C(L), L0399(LOCI), L0400(LOCI), E0063(P), E0064(P), E0307(P), L0398(P)}
EAC - 52/EG1A1 - EDG A SUPPLY TO BUS 14 {L0185(LC), L0319(LOCI), E0063(P), E0064(P), L0318(P)}
EAC - KDG01A - DIESEL-GENERATOR A {L0365(L), L0780(LC), L0782(LC)}
LAC - 52/14 - SPT SUPPLY BREAKER TO BUS 14 {L0185(LC), L0315(LOCI), E0063(P), E0064(P)}
LAC - BUS14 - 480V SWITCHGEAR {L0185(LC), L0776(LO), L0315(LOCI), L0319(LOCI), L0329(LOCI), E0063(P), E0064(P), L0318(P), L0328(P)}
LAC - MCCC - MOTOR CONTROL CENTER C {L0391(LOC), E0061(P), E0061A(P), E0063(P), E0064(P)}
LAC - UVBUS14 - BUS 14 UV CIRCUITRY {E0274B(), L0312(), L0681(), L0684(), L0686(), L0687(), L0688(), L0689(), L0876A()}
RCS - EHTRRC01A - PRESSURIZER PROPORTIONAL HEATERS {L0381(LOCI), R1101(OC), C2205(P), C2206(P), C2207(P), C2208(P), C2209(P), C2210(P), C2211(P), E0063(P), E0064(P), L0382(P), L0383(P), L0383A(P)}
RCS - EHTRRC02A - PRESSURIZER PROPORTIONAL HEATERS {L0381(LOCI), R1101(OC), C2212(P), C2213(P), C2214(P), C2215(P), C2216(P), C2217(P), E0063(P), E0064(P), L0382(P), L0383(P), L0383A(P)}
RCV - ACF08A - CONTAINMENT RECIRCULATING FAN A {L0352(LOCI)}
RCV - ACF08D - CONTAINMENT RECIRCULATING FAN D {L0363(LOCI)}
RHR - PAC01A - RHR PUMP A {L0378(LOCI), E0063(P), E0064(P), L0377(P)}
SIS - PSI01A - SI PUMP A {L0333(LOCI), E0063(P), E0064(P), L0332(P)}
SIS - PSI01C - SI PUMP C {L0211(LC), L0706(LO), L0210(LOCI), L0325(LOCI), E0063(P), E0064(P), E0168(P), E0169(P), L0209(P), L0324(P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery ActionDGHFDMNL-LD-STRT, consisting of locally starting the Diesel Generators per ER-D/G.1 Step 6.1, was credited to help resolve this VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-ABBM-010

Fire Area ID: ABBM - Auxiliary Building Basement/Mezzanine **VFDRs**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

VFDR

A separation concern exists related to operability of the credited CHG Pump (PCH01A). The CHG Pump suction source can be lost with VCT outlet valve AOV-112C spuriously closing due to fire damage to cables (R0056, R0063 and/or R0060) and RWST to CHG Pump suction valve AOV-112B remaining closed due to fire damaged cables (R0056A, R0056 and/or R0061). Additionally, cable fire damage can result in loss of control of PCH01A from the MCB.
Local action is taken to establish CHG Pump control and flow path (open V-358, transfer controls at ABELIP and start PCH01A at the ABELIP).
This VFDR is associated with the Reactivity Control Function, and Inventory and Pressure Control Functions. [OP017, OP301, PH329]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

CVC - 112B - RWST TO CHARGING PUMP SUCTION {R0056A(LO), R0061(LO), R0056(LOI)}
CVC - 112C - VCT OUTLET AOV {R0056(LC), R0063(LC), R0060(LCI), R0061(LI), R0062(LI)}
CVC - 289 - CHARGING PUMPS DISCHARGE ISOL VLV TO RCP SEAL INJECTION {Requires Operator Action }
CVC - 358 - CHARGING PUMP SUCTION FROM RWST MANUAL IV {Requires Operator Action }
CVC - PCH01A - CHRG PUMP A {L0400C(L), L0399(LOCI), L0400(LOCI), E0063(P), E0064(P), E0307(P), L0398(P)}
IAC - ABELIP - AUX BLDG EMERG LOCAL INSTR PANEL {E0305(P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDMAKEUP, consisting of locally aligning and starting the new charging system was credited to help resolve this VFDR. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

VFDR ID

VFDR-ABBM-011

VFDR

Cable fire damage results loss of control of non-credited components associated with BUS16. Maintaining BUS16 energized could result in non-credited undesired pumps running adversely impacting a controlled shutdown.
Local action is taken to isolate the normal MAC power supply to BUS16. However, BUS16 can remain energized through:
(a) Non-credited DG (KDG01B) when offsite power is not available, since no prescribed action exists to secure the non-credited EAC System path by locally tripping KDG01B - OR -
(b) Spurious closure of 52/BT16-15 (fire damage to cable L0198) with BUS16 being fed from BUS15 when offsite power is available
This VFDR is associated with the Vital Auxiliaries Function. [OP017, OP309, PH330, OMH702]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

EAC - KDG01B - DIESEL-GENERATOR B {L0786(L), L0784(LC)}
LAC - 52/15 - BKR FOR BUS 15 SUPPLY {L0198(LC)}
LAC - 52/BT16-15 - BREAKER FOR BUS 16 TO BUS 15 TIE {L0703(LO), L0198(LOCI), E0168(P), E0169(P), L0197(P)}
LAC - BUS16 - 480V SWITCHGEAR {L0206(LC), L0700(LO), L0777(LO), L0203(LOC), L0184(LOCI), L0189(LOCI), L0198(LOCI),

Fire Area ID:	ABBM - Auxiliary Building Basement/Mezzanine	**VFDRs**
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L0204(LOCI), E0168(P), E0169(P), L0188(P)}
MAC - 52/16SS - STATION SERVICE TRANSFORMER 16 SUPPLY {L0777(LO)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDMAKEUP, consisting of locally aligning and starting the new charging system was credited to help resolve this VFDR. Recovery Action CVHFDCHGTRIPFIRE, consisting of locally securing the charging pumps, is also credited. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

VFDR ID

VFDR-ABBM-012

VFDR

Cable fire damage to CHG pump flow control valve AOV-142 (R0150) could result in an erroneous signal and spurious valve closure. Loss of the CHG flow path during shutdown would result in loss of the ability to make up and the loss of ability to borate the RCS.
Local action is taken to re-establish CHG flow by opening V-384C to bypass AOV-142. However, this valve is located in the fire area (AB Basement, behind RWST) requiring entry to perform a hot shutdown action. Additionally "Fire damage to manual valves should be evaluated with respect to the ability to manually operate as a part of the post-fire safe shutdown scenario." (Reference NEI 00-01, Section 3.2.1.2)
This VFDR is associated with the Reactivity Control Function, and Inventory and Pressure Control Functions. [OE005, OP017, PH332]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

CVC - 142 - CHRG FCV {R0150(I)}
CVC - 384C - AOV 142 BYP VLV {Requires Operator Action, Component in FA}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDMAKEUP, consisting of locally aligning and starting the new charging system was credited to help resolve this VFDR. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

VFDR ID

VFDR-ABBM-013

VFDR

The desired shutdown position of the Letdown Isolation valve (427) or the Letdown Orifice valves (200A, 200B, 202) during shutdown is closed. Fire damage to cables for valve 427 (R0215 or R0505) could cause the valve to fail open and for valves 200A (R0504 or 0509), 200B (R0500 or R0504 or R0509) and 202 (R0500 or R0503 or R0510) causes the valve(s) to spuriously open or remain open effectively causing a RCS inventory loss during shutdown.
Local actions are taken to mitigate the spurious operations as follows:
(a) Open breakers at DC power panel. However, operator action to 'de-power' circuits to mitigate spurious operation may not be effective. A short to an energized conductor from another circuit in conjunction with fire damage (grounds) to both circuits can result in a spurious operation defeating de-powering the subject circuit. - AND -
(b) Isolate IA to Containment causing the valves to fail closed. However, this action may not be successful to prevent spurious operation of AOVs in the Containment as the instrument air header is not vented.
This VFDR is associated with the Inventory and Pressure Control Functions. [OE001, OE010, OP017, OP023, PH302, PH303, PH334]

Fire Area ID: ABBM - Auxiliary Building Basement/Mezzanine **VFDRs**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

BDC - DCPDPCB04A - MAIN CONTROL BOARD DC DIST PANEL A {Requires Operator Action}
BDC - DCPDPCB04B - MAIN CONTROL BOARD DC DIST PANEL B {Requires Operator Action}
CVC - 135 - LOW PRESS LTDN PRESS CONTROL VLV PCV-135 {PT-135-LINE(L), R0140(I), R0142(I)}
CVC - 200A - LTDN ORIFICE AOV {R0498(L), R0499(L), R0500(LOI), R0504(LOI), R0509(LOI)}
CVC - 200B - LTDN ORIFICE AOV {R0498(L), R0499(L), R0500(LOI), R0502(LOI), R0504(LOI)}
CVC - 202 - LTDN ORIFICE AOV {R0498(L), R0499(L), R0500(LOI), R0503(LOI), R0510(LOI)}
CVC - 427 - RCS LETDOWN ISOLATION {R0215(LCI), R0505(LC)}
IAS - 5397 - IA CNMT MAN ISOL VLV {Requires Operator Action}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-ABBM-014

VFDR

Fire damage to 480V AC power cables C5191 and C5195 would render Battery Chargers A1 and B1 (respectively) unavailable to supply long-term power to components required to achieve safe and stable conditions in an orderly manner.
Local action is taken to align the TSC DC supply to provide power for long-term operation of:
(a) ABELIP and DG "A" Fuel Oil Transfer Pump (PDG02A), by aligning DCPDPCB02A
(b) IBELIP and TDAFW Pump DC LUBE OIL Pump (PLO11), by aligning DCPDPCB02B
This VFDR is associated with the Vital Auxiliaries Function. [PH336, PH337]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

AFW - PLO11 - TDAFWP DC LUBE OIL PUMP {Cascading Impact}
BDC - DCPDPCB01A - BATTERY A MAIN DISCONNECT {Operator Action required}
BDC - DCPDPCB01B - BATTERY B MAIN DISCONNECT {Operator Action required}
BDC - DCPDPCB02A - BATTERY A MAIN FUSE CABINET {Operator Action required}
BDC - DCPDPCB02B - BATTERY B MAIN FUSE CABINET {Operator Action required}
BDC - DCPDPCB05A - TSC BATTERY A FUSED DISCONNECT {Operator Action required}
BDC - DCPDPCB05B - TSC BATTERY B FUSED DISCONNECT {Operator Action required}
BDC - DCPDPCD01 - TSC BATTERY A & B FUSED DISCONNECT {Operator Action required}
BDC - DCPDPTB02 - TSC TO BATTERY A & B THROWOVER SWITCH {Operator Action required}
DGS - PDG02A - DG FO TRANSFER PUMP A {Cascading Impact}
IAC - ABELIP - AUX BLDG EMERG LOCAL INSTR PANEL {E0305(P)}
IAC - IBELIP - INTERMEDIATE BLDG EMERG LOCAL INSTR PANEL {Cascading Impact}

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Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

LAC - 52/15 - BKR FOR BUS 15 SUPPLY {L0198(LC)}
LAC - 52/BT16-15 - BREAKER FOR BUS 16 TO BUS 15 TIE {L0703(LO), L0198(LOCI), E0168(P), E0169(P), L0197(P)}
LAC - BUS15 - 480V SWITCHGEAR {L0703(LO), L0198(LOC), E0168(P), E0169(P), L0079(P), L0197(P)}
LAC - BUS16 - 480V SWITCHGEAR {L0206(LC), L0700(LO), L0777(LO), L0203(LOC), L0184(LOCI), L0189(LOCI), L0198(LOCI), L0204(LOCI), E0168(P), E0169(P), L0188(P)}
LAC - BYCA1 - BATTERY CHARGER A1 {C5191(P), Cascading Impact}
LAC - BYCB1 - BATTERY CHARGER B1 {C5195(P), Cascading Impact}
LAC - BYCTSC - TSC BATTERY CHARGER {Operator Action required}
LAC - KED03 - TSC EMERGENCY DIESEL-GENERATOR {Operator Action required}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Actions DCHFDTSCLT and FSHFDTSCLT-DR, respectively consisting of aligning the TSC diesel generator and the TSC battery charger, were credited to help resolve this VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-ABBM-019

VFDR

Procedure directed action to "de-power" circuits to mitigate spurious operation may not be effective. Action is taken at the MCB to de-energize circuits in 125V DC Panels (DCPDPCB04A and DCPDPCB04B) to fail components to their respective Loss Of Power position. As no additional local action is taken to assure the components remain in the desired position, subsequent fire-induced shorts to energized conductors of different circuits in conjunction with fire damage (grounds) could result in spurious operations.
This VFDR is associated with the Reactivity Control Function, and Inventory and Pressure Control Functions. [OE010, OP017, OP022, PH302, PH303]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

BDC - DCPDPCB04A - MAIN CONTROL BOARD DC DIST PANEL A {Requires Operator Action}
BDC - DCPDPCB04B - MAIN CONTROL BOARD DC DIST PANEL B {Requires Operator Action}
CVC - 110B - RMW FLOW CONTROL VLV AOV-110B {R0034B(LI), R0034C(LI), R0034A(LO), R0034(LOI)}
CVC - 110C - BLENDER OUTLET TO VCT (AOV) {R0035B(LI), R0035C(LI), R0035A(LO), R0035(LOI)}
CVC - 111 - RMW TO BA BLENDER FLOW CONTROL VLV HCV-111 {R0036B(LI), R0036C(LI), R0036A(LO), R0036(LOI)}
CVC - 123 - EXCESS LTDN FCV {R0077(LOC)}
CVC - 371 - RCS LETDOWN ISOLATION {R0569(LI), R0570(LI), R0571(LI), R0568(LO), R0567(LOI)}
CVC - 392A - CHRG TO LOOP B HL (AOV) {R0549(LOI)}
RCS - 591 - REACTOR HEAD VENT OUTER (SOV) TO 593 {SAC0216(L), SAC0214(LOI)}
RCS - 593 - REACTOR HEAD VENT INNER (SOV) TO 591 {SAC0216(L), SAC0212A(LOI)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

Fire Area ID:	ABBM - Auxiliary Building Basement/Mezzanine	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

VFDR ID VFDR-ABBM-021

VFDR

3-Phase proper phase rotation shorts must be considered for high/low pressure interface in-series valves MOVs 700, 701, 720, and 721 since power cabling for the valves is routed through this area. Reliance on de-powering to prevent spurious opening requires assurance that no three-phase cabling of the same or higher voltage is routed in the same raceway between the MCC and the valve. Spurious operation of these valves results in a high/low pressure system interface concern. Additionally; an IN 92-18 concern exists, as identified in DA-EE-2000-066 – Attachment G.
This VFDR is associated with the Inventory and Pressure Control Functions, and Decay Heat Removal Function. [OP001, OP002, OP017]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

RHR - 700 - RHR PUMP SUCTION FROM RCS MOV {C5044(L), C0722(LOCI), C0724(LOCI), C0720(P), C0720A(P), C5019(P), E0061(P), E0061A(P)}
RHR - 701 - RHR PUMP SUCTION FROM RCS {C5048(L), C1089(LOCI), C1091(LOCI), C1087(P), C1087A(P), C5026(P), E0167(P), E0167A(P)}
RHR - 720 - RHR DISCHARGE TO LOOP B {C5043(L), C0715(LI), C0717(LOCI), C0713(P), C0713A(P), C5018(P), E0061(P), E0061A(P)}
RHR - 721 - RHR DISCHARGE TO LOOP B {C5047(L), C1081(LI), C1083(LOCI), C1079(P), C1079A(P), C5025(P), E0167(P), E0167A(P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. The delta risk was qualitatively evaluated as insignificant based on the consideration that 3-phase proper polarity hot short are implausible. No recovery action was credited to resolve this VFDR.

VFDR ID VFDR-ABBM-022

VFDR

A MSO concern exists related to spurious (ESF) Safety Injection Actuation. Actuation is possible due to fire damaged cabling resulting in a low PZR pressure signal with two out of three PZR pressure transmitters loops (PT-429 and PT-430) impacted.
This VFDR is associated with the Inventory and Pressure Control Functions. [OP017, OP005]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

RPS - PT-429 - PRZR PRESS XMTR {R1101(I), R3408(I), R1091(LI), R1096(LI)}
RPS - PT-430 - PRZR PRESS XMTR {R3973(I)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-ABBM-023

Fire Area ID:	ABBM - Auxiliary Building Basement/Mezzanine	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

VFDR

A MSO concern exists related to inadvertent PORV (430/431C) actuation as follows:
I. PORV opening and spurious operation/failure of block valves
(a) PORVs (430 and 431C) spuriously open--when required closed for HSD--due to fire damage to SOV cables (8620A for 430; 8616B, 8619B and 8620B for 431C), - AND -
(b) Block valves (515 and 516) fail open or spuriously open after being closed due to cable fire damage
II. PORV opening due to high pressure signal
(a) High PZR pressure signal from PT-429 and a high PZR signal from channel 2 (PT-430) actuates 430
Local actions are taken to mitigate spurious operation as follows:
(a) Open breakers at DC power panel. However, operator action to "de-power" circuits to mitigate spurious operation may not be effective. A short to an energized conductor from another circuit in conjunction with fire damage (grounds) to both circuits can result in a spurious operation defeating de-powering the subject circuit. - AND -
(b) Isolate IA to Containment causing the valves to fail closed. However, this action may not be successful to prevent spurious operation of AOVs in the Containment as the instrument air header is not vented.
This VFDR is associated with the Inventory and Pressure Control Functions. [OE001, OE010, OP008, OP011, OP017, PH302, PH303, PH334]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

BDC - DCPDPCB04A - MAIN CONTROL BOARD DC DIST PANEL A {Requires Operator Action}
BDC - DCPDPCB04B - MAIN CONTROL BOARD DC DIST PANEL B {Requires Operator Action}
IAS - 5397 - IA CNMT MAN ISOL VLV {Requires Operator Action}
IAS - 8619B - N2 ARMING SOV FOR PORV 431C {SAC0212A(LO), SAC0212B(LO)}
IAS - 8620A - PORV 430 ACTUATION SOV {R0275(LO)}
IAS - 8620B - PORV 431C ACTUATION SOV {R0275(LO)}
NAS - 8616B - ACCUM TO SURGE TANK SOV FOR PORV 431C {SAC0214(LO)}
RCS - 430 - PORV (AOV) {R0275(LOI)}
RCS - 431C - PORV (AOV) {SAC0212A(LO), SAC0212B(LO), R0275(LOI)}
RCS - 515 - PORV BLOCK VALVE (MOV) FOR 431C {C1058(LI), C1060(LOCI), C1056(P), E0167(P), E0167A(P)}
RCS - 516 - PORV BLOCK VALVE (MOV) FOR 430 {C0692(LI), C0694(LOCI), C0690(P), E0061(P), E0061A(P)}
RPS - PT-429 - PRZR PRESS XMTR {R1101(I), R3408(I), R1091(LI), R1096(LI)}
RPS - PT-430 - PRZR PRESS XMTR {R3973(I)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID

VFDR-ABBM-024

VFDR

On a postulated LOOP, fire damage to HEMYC wrapped cabling (L0318), which is no longer considered "qualified" as a 1-hour rated fire barrier, results in a loss of 480V AC power to credited Train "A" BUS14 and BUS18. Fire damage to cable L0318 (multiple phase to ground or a phase to phase fault) results in loss of BUS14 (including MCCC fed via BUS14) and BUS18 challenging the capability to achieve safe and stable plant conditions.

This VFDR is associated with the Vital Auxiliaries Function. [OE012, OP311]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

AFW - PSF01A - SAFW PUMP C {FWL0010(LI), L0744(LO), E0063(P), E0064(P), Cascading Impact}
CVC - PCH01A - CHRG PUMP A {L0400C(L), L0399(LOCI), L0400(LOCI), E0063(P), E0064(P), E0307(P), L0398(P)}
EAC - 52/EG1A1 - EDG A SUPPLY TO BUS 14 {L0185(LC), L0319(LOCI), E0063(P), E0064(P), L0318(P)}
EAC - 52/EG1A2 - EDG A SUPPLY TO BUS 18 {L0318(P)}
LAC - BUS14 - 480V SWITCHGEAR {L0185(LC), L0776(LO), L0315(LOCI), L0319(LOCI), L0329(LOCI), E0063(P), E0064(P), L0318(P), L0328(P)}
LAC - BUS18 - 480V SWITCHGEAR {L0206(LO), L0318(P)}
LAC - MCCC - MOTOR CONTROL CENTER C {L0391(LOC), E0061(P), E0061A(P), E0063(P), E0064(P)}
SWS - PSW01A - SERVICE WATER PUMP A {Cascading Impact}
SWS - PSW01C - SERVICE WATER PUMP C {Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID

VFDR-ABBM-025

VFDR

A loss of charging capability is possible. The VCT can fill with high temperature water from RCP seal leakoff, via the Seal Water HX without CCW cooling, flashing steam in the VCT and causing VCT pressure to rise above head pressure of the RWST. When the CHG Pump is restarted, this can result in the pump drawing suction from the VCT (instead of the RWST), introducing saturated water and thereby damaging the CHG pump. This scenario is postulated due to the following separation concerns:
(a) Total loss of RCP seal cooling (Thermal Barrier AND Seal Injection) due to a LOOP (deterministic assumption) and loss of EAC power (credited KDG01A fails to start, while non-credited KDG01B is deterministically assumed to be unavailable), - AND -
(b) VCT isolation valve (AOV-112C) fails open on a loss of air (deterministic assumption) OR fire damaged cables prevents AOV-112C from closing, - AND -
(c) RCP seal leak-off isolation valve (MOV-313) fails open or spuriously reopens due to fire damaged cables (note, RCP Seal Outlet AOVs 270A and 270B should be maintained open for RCP #2 seal integrity).
Local action is taken to close V-315A and V-315C to isolate the Seal Return Filter. However, manual valves requiring HSD action are located within the fire area under consideration. Additionally, "Fire damage to manual valves should be evaluated with respect to the ability to manually operate as a part of the post-fire safe shutdown scenario." (Reference NEI 00-01, Section 3.2.1.2)
This VFDR is associated with the Reactivity Control Function, and Inventory and Pressure Control Functions. [OE003, OE005, OP017, PH333]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

CVC - 112C - VCT OUTLET AOV {R0056(LC), R0063(LC), R0060(LCI), R0061(LI), R0062(LI)}

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Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

CVC - 313 - SEAL OR EXCESS LETDOWN RETURN ISOLATION MOV {C5057(L), C0873(LI), C0872(LOCI), C0871(P), E0061(P), E0061A(P), Cascading Impact}
CVC - 315A - INLET BLOCK VALVE TO SEAL RETURN FILTER {Requires Operator Action, Component in FA}
CVC - 315C - SEAL RETURN FILTER BYPASS VLV {Requires Operator Action, Component in FA}
CVC - PCH01A - CHRG PUMP A {L0400C(L), L0399(LOCI), L0400(LOCI), E0063(P), E0064(P), E0307(P), L0398(P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDMAKEUP, consisting of locally aligning and starting the new charging system was credited to help resolve this VFDR. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

VFDR ID VFDR-ABBM-026

VFDR

Fire damage to cabling and/or process sensing lines could cause the loss of both channels of MCB RWST level indication (LI-920 & LI-921).
The RWST is the preferred Charging suction source for a fire in in this area.
This VFDR is associated with the Process Monitoring Function. [OP310]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

SIS - LI-920 - RWST LEVEL {LT-920-LINE(I), R0369(I)}
SIS - LI-921 - RWST LEVEL {LT-921-LINE(I), R3689(I)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-ABBM-027

VFDR

A MSO concern exists related to KDG01A spuriously start without cooling.
With offsite power available and KDG01A idle, 52/EG1A1 can spuriously close onto an energized BUS14 causing a reverse power relay trip signal to 52/EG1A1 (BUS14) and 52/EG1A2 (BUS18). Breaker 52/EG1A1 is subject to spurious closure due to fire damaged cabling (L0185 or L0319). The short bypasses all interlocks that prevent premature breaker closure.
A subsequent LOOP (resulting in loss of MAC power to BUS18 with 52/EG1A2 locked out due the reverse power relay trip signal) AND a DG start would result in KDG01A running without cooling.
This VFDR is associated with the Vital Auxiliaries Function. [OP314]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

EAC - 52/EG1A1 - EDG A SUPPLY TO BUS 14 {L0185(LC), L0319(LOCI), E0063(P), E0064(P), L0318(P), Cascading Impact}
EAC - 52/EG1A2 - EDG A SUPPLY TO BUS 18 {L0318(P), Cascading Impact}

Fire Area ID:	ABBM - Auxiliary Building Basement/Mezzanine	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

EAC - KDG01A - DIESEL-GENERATOR A {L0365(L), L0780(LC), L0782(LC)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-ABBM-028

VFDR

Loss of credited Train "A" CREATS is postulated due to the following separation concerns:
(a) Fire damage to cable (L0391) results in loss of power to MCCC, which in turn impacts credited Train "A" CREATS due to loss of power to MCCN - OR -
(b) Fire damage to cable (C5618) results in loss of power to MCCN, which in turn impacts credited Train "A" CREATS components
Since the redundant Train "B" components are also considered unavailable (deterministic assumption), a loss of the Safe Shutdown Support function for MCR habitability and MCR equipment operability is postulated.
This VFDR is associated with the Vital Auxiliaries Function. [OP317, OP318]
This condition represents a variance from the deterministic requirements of Section 4.2.3 of NFPA 805. This is a separation issue.

Component(s)

CBV - AKA05A - CREATS HEATER A {Cascading Impact}
CBV - AKF10A - CREATS TRAIN A FAN {Cascading Impact}
CBV - AKP07A - CREATS COOLING SYSTEM TRAIN A {Cascading Impact}
LAC - ACPDPCB11 - CREATS LIGHTING PANEL A {Cascading Impact}
LAC - MCCC - MOTOR CONTROL CENTER C {L0391(LOC), E0061(P), E0061A(P), E0063(P), E0064(P), Cascading Impact}
LAC - MCCN - MOTOR CONTROL CENTER N {C5618(P), Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-ABBM-029

VFDR

A MSO concern exists related to inadvertent RCS pressure decrease. The scenario is postulated due to the following separation concerns:
(a) Failure of PZR Heaters (EHTRRC01A, EHTRRC02A, EHTRRC01B, and EHTRRC02B), - AND -
(b) Inability to trip and/or spurious start of at least one RCP (PRC01A and/or PRC01B) with spurious opening of PZR Spray valves (AOV-431A and AOV-431B), - AND -
(c) Inability to trip and/or spurious start of at least one CHG Pump (PCH01A, PCH01B, and/or PCH01C) with spurious opening of Auxiliary Spray valve (AOV-296)
Local actions are taken to mitigate spurious operation as follows:
(a) Open breakers at DC power panel. However, operator action to "de-power" circuits to mitigate spurious operation may not be effective. A short to an energized conductor from another circuit in conjunction with fire damage (grounds) to both circuits can result in a spurious operation defeating de-powering the subject circuit. - AND -

(b) Isolate IA to Containment causing the valves to fail closed. However, this action may not be successful to prevent spurious operation of AOVs in the Containment as the instrument air header is not vented. - AND -
(c) Stop the RCPs - AND -
(d) Stop the CHG Pumps
This VFDR is associated with the Inventory and Pressure Control Functions. [OE010, OP017, OP319, PH302, PH303, PH334]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

BDC - DCPDPCB04A - MAIN CONTROL BOARD DC DIST PANEL A {Requires Operator Action}
BDC - DCPDPCB04B - MAIN CONTROL BOARD DC DIST PANEL B {Requires Operator Action}
CVC - 296 - AUX SPRAY AOV {R0542(LOI)}
CVC - PCH01A - CHRG PUMP A {L0400C(L), L0399(LOCI), L0400(LOCI), E0063(P), E0064(P), E0307(P), L0398(P)}
CVC - PCH01B - CHRG PUMP B {L0264A(L), L0714(LC), L0263(LOCI), L0264(LOCI), E0168(P), E0169(P), L0262(P)}
CVC - PCH01C - CHRG PUMP C {L0268A(L), L0715(LO), L0267(LOCI), L0268(LOCI), E0168(P), E0169(P), L0266(P)}
IAS - 5397 - IA CNMT MAN ISOL VLV {Requires Operator Action}
RCS - 431A - PZR SPRAY VALVE (AOV) {R1091(LOC)}
RCS - 431B - PZR SPRAY VALVE (AOV) {R1096(LOC)}
RCS - EHTRRC01A - PRESSURIZER PROPORTIONAL HEATERS {L0381(LOCI), R1101(OC), C2205(P), C2206(P), C2207(P), C2208(P), C2209(P), C2210(P), C2211(P), E0063(P), E0064(P), L0382(P), L0383(P), L0383A(P)}
RCS - EHTRRC01B - PRESSURIZER BACKUP HEATERS {L0716(L), L0276(LOCI), C2223(P), C2224(P), C2225(P), C2226(P), C2227(P), C2228(P), C2229(P), E0168(P), E0169(P), L0271(P), L0271A(P), L0271B(P), L0272(P), L0272A(P)}
RCS - EHTRRC02A - PRESSURIZER PROPORTIONAL HEATERS {L0381(LOCI), R1101(OC), C2212(P), C2213(P), C2214(P), C2215(P), C2216(P), C2217(P), E0063(P), E0064(P), L0382(P), L0383(P), L0383A(P)}
RCS - EHTRRC02B - PRESSURIZER BACKUP HEATERS {L0716(L), L0276(LOCI), C2230(P), C2231(P), C2232(P), C2233(P), C2234(P), C2235(P), E0168(P), E0169(P), L0271(P), L0271A(P), L0272(P), L0272A(P), L0272B(P)}
RCS - PRC01A - RCP A {C1281(L), M0050(LC)}
RCS - PRC01B - RCP B {C1370(L), M0145(LC), M0140(P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-ABBM-030

VFDR

Credited TDAFW Pump suction cannot be aligned to SW from the MCB due to cable damage or a loss of AC power to Train "B" MOV-4013 and normally closed in-series valve 4098 (normal CST re-fill capability is not credited). In addition, suction line drain valve 4358D is normally open.
Local action is taken to align SW to the TDAFW Pump suction when CST level indicates less than 5 feet.
This VFDR is associated with the Decay Heat Removal Function. [OP017, PC302]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Fire Area ID:	ABBM - Auxiliary Building Basement/Mezzanine	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

Component(s)

AFW - 4098 - TDAFWP SUCTION FROM SWS MANUAL IV {Requires Operator Action}
AFW - 4358D - TDAFW PUMP SW SUCTION LINE TELLTALE ISOL VLV {Requires Operator Action}
LAC - MCCD - MOTOR CONTROL CENTER D {E0167(P), E0167A(P), E0168(P), E0169(P), L0287(P), L0288(P), L0289(LOC), Requires Operator Action, Component in FA}
SWS - 4013 - TDAFWP SW SUCTION MOV {C1214(P), C1216(LOCI), E0167A(P), E0167(P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Actions AXHFDSAFWX-2, consisting of locally aligning the Standby AFW pump, and AFHFDSUPPL-3, consisting of supplying alternate sources of water for the AFW system once the initial supply is depleted, were credited to help resolve this VFDR. In addition, Plant Modifications ESR-11-0050 (fire protection upgrades to the Standby AFW pumps) and ESR-12-0143 (supporting diesel generator that can power a standby AFW pump) were credited to help resolve this VFDR.

VFDR ID VFDR-ABBM-031

VFDR

Fire damage to HEMYC wrapped cabling (C0687), which is no longer considered "qualified" as a 1-hour rated fire barrier, affects the 480V AC power to credited EDG1A support components. Consequently, ACPDPDG01, PDG02A, ADF01A, ADF01B, and LIT-2050A would be unavailable.
This VFDR is associated with the Vital Auxiliaries Function. (OE012, OP313)
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

DBV - ADF01A - EDG A ROOM COOLING FAN {Cascading Impact}
DBV - ADF01B - EDG A ROOM COOLING FAN {Cascading Impact}
DGS - LIT-2050A - A D/G FUEL OIL DAY TANK (ALARM & CONTROL) {Cascading Impact}
DGS - PDG02A - DG FO TRANSFER PUMP A {Cascading Impact}
LAC - ACPDPDG01 - DIESEL GENERATOR A HEAT TRACE PANEL {Cascading Impact}
LAC - MCCH - MOTOR CONTROL CENTER H {C0687(P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-ABBM-032

VFDR

Fire damage to HEMYC wrapped cabling (L0400 and L0398), which is no longer considered "qualified" as a 1-hour rated fire barrier, affects power to credited CHG Pump (PCH01A). Loss of DC power cable L0400 results in the loss of 125V control of PCH01A and loss of AC power cable L0398 results in the loss of 480V power to PCH01A.
This VFDR is associated with the Reactivity Control Function, and the Inventory and Pressure Control Functions. (OE012, OP315)

Fire Area ID:	ABBM - Auxiliary Building Basement/Mezzanine	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

CVC - PCH01A - CHRG PUMP A {L0400C(L), L0399(LOCI), L0400(LOCI), E0063(P), E0064(P), E0307(P), L0398(P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID

VFDR-ABBM-033

VFDR

Fire damage to HEMYC wrapped cabling (E0053), which is no longer considered "qualified" as a 1-hour rated fire barrier, affects power to credited DC power distribution panel DCPDPAB01A. Loss of cable E0053, results in the loss of control of multiple credited SSD components from the MCB.
This VFDR is associated with the Vital Auxiliaries Function. [OE012, OP312]
This condition represents a variance from the deterministic requirements of Section 4.2.3 of NFPA 805. This is a separation issue.

Component(s)

AFW - PAF01A - AUXILIARY FEEDWATER PUMP A {Cascading Impact}
AFW - PSF01A - SAFW PUMP C {FWL0010(LI), L0744(LO), E0063(P), E0064(P), Cascading Impact}
BDC - DCPDPAB01A - AUX BLDG DC DIST PANEL A {E0053(P)}
BDC - DCPDPAB02A - AUX BLDG DC DIST PANEL A1 {E0053(P), Cascading Impact}
BDC - DCPDPAB03A - AUX BLDG DC DIST PANEL A2 {Cascading Impact}
CVC - PCH01A - CHRG PUMP A {L0400C(L), L0399(LOCI), L0400(LOCI), E0063(P), E0064(P), E0307(P), L0398(P), Cascading Impact}
EAC - 52/EG1A1 - EDG A SUPPLY TO BUS 14 {L0185(LC), L0319(LOCI), E0063(P), E0064(P), L0318(P), Cascading Impact}
LAC - 52/14 - SPT SUPPLY BREAKER TO BUS 14 {L0185(LC), L0315(LOCI), E0063(P), E0064(P), Cascading Impact}
LAC - 52/BT14-13 - BKR FOR BUS14 TO BUS13 TIE {E0063(P), E0064(P), L0328(P), L0329(LOCI), Cascading Impact}
LAC - BUS14 - 480V SWITCHGEAR {L0185(LC), L0776(LO), L0315(LOCI), L0319(LOCI), L0329(LOCI), E0063(P), E0064(P), L0318(P), L0328(P), Cascading Impact}
LAC - MCCC - MOTOR CONTROL CENTER C {L0391(LOC), E0061(P), E0061A(P), E0063(P), E0064(P), Cascading Impact}
RCS - EHTRRC01A - PRESSURIZER PROPORTIONAL HEATERS {L0381(LOCI), R1101(OC), C2205(P), C2206(P), C2207(P), C2208(P), C2209(P), C2210(P), C2211(P), E0063(P), E0064(P), L0382(P), L0383(P), L0383A(P), Cascading Impact}
RCS - EHTRRC02A - PRESSURIZER PROPORTIONAL HEATERS {L0381(LOCI), R1101(OC), C2212(P), C2213(P), C2214(P), C2215(P), C2216(P), C2217(P), E0063(P), E0064(P), L0382(P), L0383(P), L0383A(P), Cascading Impact}
SIS - 841 - ACCUM A TO LOOP B {C5558(L), C0846(LOCI), C0842(P), C0842A(P), C0842B(P), E0061(P), E0061A(P), Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID

VFDR-ABBM-035

Fire Area ID:	ABBM - Auxiliary Building Basement/Mezzanine	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

VFDR

Infeed power supply breaker could spuriously open due to fire damage at cable L0391 such that MCCC cannot be energized from BUS14. This would result in a loss of all downstream power supplies fed from MCCC.
This VFDR is associated with the Vital Auxiliaries Function. [OP317]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

IAC - CVTA1 - INSTRUMENT BUS B CONSTANT VOLTAGE XFMR {C0640(P), Cascading Impact}
IAC - IBPDPCBB - INSTR POWER DISTRIBUTION PANEL B {Cascading Impact}
IAC - IBPDPCBBW - INSTRUMENT BUS B {C0640(P), Cascading Impact}
LAC - ACPDPAB14 - AUX BLDG POWER DISTRIBUTION PANEL AB-14 {Cascading Impact}
LAC - ACPDPCB11 - CREATS LIGHTING PANEL A {Cascading Impact}
LAC - MCCC - MOTOR CONTROL CENTER C {L0391(LOC), E0061(P), E0061A(P), E0063(P), E0064(P), Cascading Impact}
LAC - MCCH - MOTOR CONTROL CENTER H {C0687(P), Cascading Impact}
LAC - MCCL - MOTOR CONTROL CENTER L {AFC0001(P), AHC0201(P), C5320(P), FWC0001(P), FWC0014(P), FWC0022(P), FWC0030(P), FWC0075(P), Cascading Impact}
LAC - MCCN - MOTOR CONTROL CENTER N {C5618(P), Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID

VFDR-ABBM-038

VFDR

Fire damage to cabling affects credited KDG01A availability as follows:
(a) Both "A" (L0365 or L0780) and "B" (L0782) DG start circuits are impacted preventing automatic DG start, AND fire damage to common power cable (L0365) prevents the DG from being started locally at the DGAELCP.
(b) Loss of control of DG-A Fuel Oil Day Tank SOV(s) and DG-A Fuel Oil Transfer Pump are postulated due to an impacted common power supply cable (L0365) routed in this fire area. As a consequence, long-term fuel supply to KDG01A is not available challenging availability of the credited DG.
This VFDR is associated with the Vital Auxiliaries Function. [OP016, OP021]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

DGS - 5907 - DG A FUEL OIL DAY TANK SOV {L0365(L)}
DGS - 5907A - FOTP A RECIRC SOV {L0365(L)}
DGS - PDG02A - DG FO TRANSFER PUMP A {Cascading Impact}
EAC - KDG01A - DIESEL-GENERATOR A {L0365(L), L0780(LC), L0782(LC)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Plant Modification ESR-12-0412, providing fusing to protect against consequences of a hot short on Cable L0365, was credited to help resolve this VFDR.

Fire Area ID: ABI - Auxiliary Building Operating Floor and Intermediate Building **Fire Area Definition**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description
ABO	271'-0", 278'-4" & 281'-10", AB Operating Floor
CPB	269'-2", Canister Preparation Building
IB-0	237' and 238'-0", Intermediate Bldg Sub-Basement
IBN-1	253'-6" Intermediate Building North
IBN-2	278'-4" Intermediate Building North
IBN-3	298'-4" Intermediate Building North
IBN-4	293'-0" Intermediate Building North
IBS-1	253'-6" Intermediate Building South
IBS-2	271'-0" Intermediate Building South
IBS-3	293'-0" Intermediate Building South
N2	271'-0" Nitrogen Storage Building

Fire Area ID: ABI - Auxiliary Building Operating Floor and Intermediate Building **Performance Goals**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Performance Goal	Method of Accomplishment	Comments
1. Reactivity Control Function	Immediate reactor shutdown is achieved by de-energizing all CRDMs which results in control rod negative reactivity insertion into the reactor core.	Method of Accomplishment (Hot Shutdown) Shutdown Method II Success Path "B"
2. Inventory Control Function	• RCS inventory depletion control is maintained by closure of all letdown paths, all sample paths, all head vent paths, and both PORVs. • RCS inventory makeup is controlled byTrain "B" CVCS success path from the RWST to the RCS.	Method of Accomplishment (Hot Shutdown) Shutdown Method II Success Path "B"
3. Pressure Control Function	• RCS high pressure control is maintained by automatic mechanical operation of all PRZR Code Safety Valves, stopping of both RCPs, and securing all PRZR heaters. • RCS lowering pressure control is maintained by closure of both PRZR PORVs, closure of both PRZR Normal Spray valves or stopping the associated RCP(s), and closure of both SG ARVs.	Method of Accomplishment (Hot Shutdown) Shutdown Method II Success Path "B"
4. Decay Heat Removal	• RCS high temperature control is maintained by automatic mechanical operation of all SG Code Safety Valves. • RCS lowering temperature control is maintained by closure of both MSIVs, closure of both SG ARVs, stopping both MFW Pumps, stopping AFW System flow to the non-credited SG, and controlling flow to the credited SG. • SG makeup control is maintained by either one of the following to SG "B": o TDAFW Pump success path from the SG "B" MSS and pump suction from the CST or SWS o SAFW Pump "D" success path from the SWS or FPS	Method of Accomplishment (Hot Shutdown) Shutdown Method II Success Path "B"
5. Process Monitoring Function	RCS Temperature:TI-409A-2 (RCS LOOP A HL INDICATION) Location: IBELIP, TI-409B-2 (RCS LOOP A CL INDICATION) Location: IBELIP, TI-410A-1 (RCS LOOP B HL INDICATION (0-700 F)) Location: MCB, and TI-410B-1 (RCS LOOP B CL INDICATION) Location: MCB RCS Pressure:PI-420A (RCS HL PRESSURE (0-3000 PSIG)) Location: MCB Pressurizer Level:LI-428 (PRZR LEVEL CHANNEL 3) Location: MCB	Method of Accomplishment (Hot Shutdown) Shutdown Method II Success Path "B"

Fire Area ID: ABI - Auxiliary Building Operating Floor and Intermediate Building **Performance Goals**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Performance Goal	Method of Accomplishment	Comments
	Steam Generator Level:LI-460AA (S/G "A" LEVEL APPENDIX R [0-520" H2O (WR)) Location: IBELIP and LI-507 (S/G "B" LEVEL [0 - 520" H20 (WR)) Location: MCB Steam Generator Pressure:PI-469A (S/G "A" PRESSURE) Location: IBELIP, and PI-478 (S/G "B" PRESSURE) Location: MCB Neutron Flux Monitoring:N-32R (APPENDIX R SOURCE RANGE MONITOR) Location: IBELIP, AND NI-32B (NIS SOURCE RANGE INDICATION) Location: MCB Tank Level:LI-2022B (CDST "B" LEVEL) Location: MCB, and LI-920 (RWST LEVEL) Location: MCB System Flow Rate:FI-2015A (TDAFW PUMP DISCH FLOW) Location: IBELIP, FI-4085A (SAFW PUMP "D" <PSF01B> DISCH FLOW) Location: SAF, FI-4085B (SAFW PUMP "D", <PSF01B> DISCH FLOW) Location: MCB	
6. Vital Auxiliaries	• DC Power and instrument power availability is maintained by train "B" of the BDC/IAC System from Battery "B" or the TSC Battery System. • AC Power availability is maintained by train "B" Diesel-Generator and train "B" DBV/DGS support components. • Diesel-Generator engine cooling is maintained by the train "B" SWS success path or alignment of alternate cooling from the FPS to the "B" Diesel. • Except for a Control Room fire, train "B" CREATS is maintained for controlling the Control Room environmental conditions within the required specifications for habitability and design limits for equipment operability. Ventilation systems for the SAFW components in the SAFW Building, the DG components in the Diesel Building, and the TSC components in the Technical Support Center are maintained for equipment design limits.	Method of Accomplishment (Hot Shutdown) Shutdown Method II Success Path "B"

References	Document ID
	EIR 51-9089546-001 Rev. 001 - R. E. Ginna Nuclear Power Station, Nuclear Safety Capability Assessment

Fire Suppression Activities Effect on Nuclear Safety Performance Criteria

(ABO)

Scenario 1: Suppression Effects in ABO of a Fire Originating In ABO:

Suppression effects (activation of sprinkler systems S35 and S36 or manual firefighting) are not expected to extend beyond the area of fire origin. Activation of an automatic sprinkler system would only be expected to activate a small number of sprinklers.

Scenario 2: Suppression Effects in ABO of a Fire Originating Outside of ABO:

Since automatic wet-pipe sprinkler systems are not electrically activated, operation of a fire suppression system outside of ABO could not impact automatic sprinkler systems within ABO. Similarly, manual firefighting activities outside of ABO would not be expected to affect equipment/components located within ABO.

(IB-0)

Scenario 1: Suppression Effects in IB-0 of a Fire Originating In IB-0:

There are no fixed suppression systems in IB-0 and the effects of manual firefighting are not expected to extend beyond the area of fire origin.

Scenario 2: Suppression Effects in IB-0 of a Fire Originating Outside of IB-0:

There are no suppression systems in IB-0 that could be impacted by operation of a fire suppression system or manual firefighting outside of IB-0.

(IBN-1)

Scenario 1: Suppression Effects in IBN-1 of a Fire Originating In IBN-1:

Activation of the Turbine Driven Auxiliary Feedwater Pump Area and Oil Transfer Pump Area deluge system, S14, preaction sprinkler system, S15, or manual firefighting activities are not expected to extend beyond the area of fire origin. Water spray from the deluge system is expected to be substantially contained within the diked area of the feedwater pump. Preaction sprinkler systems require both, the fusing of a sprinkler head and the opening of the preaction valve as a result of actuation of a heat or smoke detector or manual pull box. The activation of a preaction sprinkler system would only be expected to activate small number of sprinklers.

Scenario 2: Suppression Effects in IBN-1 of a Fire Originating Outside of IBN-1:

Turbine Driven Auxiliary Feedwater Pump Area and Oil Transfer Pump Area deluge system S14 is actuated by the associated electric manual pull box which could be vulnerable to a fire originating outside IBN-1 if the electrical circuits and/or control panel are routed or located in the area of fire origin (e.g., SSA in the Relay Room). However, water is expected to be substantially contained in the Turbine Driven Auxiliary Feedwater Pump Area and Intermediate Building drainage system.

Since preaction sprinkler systems require both, the fusing of a sprinkler head and the opening of the preaction valve as a result of actuation of a heat or smoke detector or manual pull box, operation of a fire suppression system outside of IBN-1 could not impact preaction fire suppression systems within IBN-1.

Similarly, manual firefighting activities outside of IBN-1 would not be expected to affect equipment/components located within IBN-1.

Curbing is installed around the TDAFW pump lube oil system. Check valves have been installed in the drain piping to prevent backflow.

(IBN-2)

Scenario 1: Suppression Effects in IBN-2 of a Fire Originating In IBN-2:

There are no suppression systems in IBN-2 and the effects of manual firefighting are not expected to extend beyond the area of fire origin.

Scenario 2: Suppression Effects in IBN-2 of a Fire Originating Outside of IBN-2:

There are no suppression systems in IBN-2 that could be impacted by operation of a fire suppression system or manual firefighting activities outside of IBN-2.

(IBN-3)

Scenario 1: Suppression Effects in IBN-3 of a Fire Originating In IBN-3:

There are no suppression systems in IBN-3 and the effects of manual firefighting are not expected to extend beyond the area of fire origin.

Scenario 2: Suppression Effects in IBN-3 of a Fire Originating Outside of IBN-3:

There are no suppression systems in IBN- hat could be impacted by operation of a fire suppression system or manual firefighting activities outside of IBN-3.

(IBN-4)

Scenario 1: Suppression Effects in IBN-4 of a Fire Originating In IBN-4:

There are no suppression systems in IBN-4 and the effects of manual firefighting are not expected to extend beyond the area of fire origin.

Scenario 2: Suppression Effects in IBN-4 of a Fire Originating Outside of IBN-4:

There are no suppression systems in IBN-4 that could be impacted by operation of a fire suppression system or manual firefighting activities outside of IBN-4.

(IBS-1)

Scenario 1: Suppression Effects in IBS-1 of a Fire Originating In IBS-1:

There are no suppression systems in IBS-1 and the effects of manual firefighting are not expected to extend beyond the area of fire origin.

Scenario 2: Suppression Effects in IBS-1 of a Fire Originating Outside of IBS-1:

There are no suppression systems in IBS-1 that could be impacted by operation of a fire suppression system or manual firefighting activities outside of IBS-1.

(IBS-2)

Scenario 1: Suppression Effects in IBS-2 of a Fire Originating In IBS-2:

There are no suppression systems in IBS-2 and the effects of manual firefighting are not expected to extend beyond the area of fire origin.

Scenario 2: Suppression Effects in IBS-2 of a Fire Originating Outside of IBS-2:

There are no suppression systems in IBS-2 that could be impacted by operation of a fire suppression system or manual firefighting activities outside of IBS-2.

(IBS-3)

Scenario 1: Suppression Effects in IBS-3 of a Fire Originating In IBS-3:

There are no suppression systems in IBS-3 and the effects of manual firefighting are not expected to extend beyond the area of fire origin.

Scenario 2: Suppression Effects in IBS-3 of a Fire Originating Outside of IBS-3:

There are no suppression systems in IBS-3 that could be impacted by operation of a fire suppression system or manual firefighting activities outside of IBS-3.

(N2)

Scenario 1: Suppression Effects in N2 of a Fire Originating In N2:

There are no suppression systems in N2 and the effects of manual firefighting are not expected to extend beyond the area of fire origin.

Scenario 2: Suppression Effects in N2 of a Fire Originating Outside of N2:

There are no suppression systems in N2 that could be impacted by operation of a fire suppression system or manual firefighting activities outside of N2.

(CPB)

Scenario 1: Suppression Effects in CPB of a Fire Originating in CPB:

The activation of deluge fire suppression system S51 and manual firefighting activities are not expected to extend beyond the area of fire origin.

Scenario 2: Suppression Effects in CPB of a Fire Originating Outside of CPB:

The suppression system and manual firefighting activities outside of CPB would not impact the suppression systems in the CPB, since the valve tamper switch, flow switch, and air compressor switch, are located in a Mechanical Room inside the CPB which is closed off by a door.

NFPA 805 Ch 4 Compliance (NEI 04-02 Table B-3)

Fire Area ID: ABI - Auxiliary Building Operating Floor and Intermediate Building **Fire Risk Evaluation**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
(All)	Area Wide	None	None	R, S	Modifications: R S Procedures/Recovery Actions: R
ABO	271'-0", 278'-4" & 281'-10", AB Operating Floor	E, D	E, D	rr	Detection System, Z04: E D Detection System, Z35: E D Floor drains/sump: rr Procedural Controls Regarding Flood Barriers: rr Procedural Controls Regarding Securing Ventilation: rr Water Suppression, S35: E D Water Suppression, S36: E D
CPB	269'-2", Canister Preparation Building	D	None	rr	Procedural Controls Regarding Securing Ventilation: rr Trenches and floor drains: rr Water Suppression, S51: D
IB-0	237' and 238'-0", Intermediate Bldg Sub-Basement	None	E, D	rr	Detection System, Z36: E D Floor drains/sump: rr
IBN-1	253'-6" Intermediate Building North	E, D	E, R	E	Combustible Loading Controls: E Detection System, Z22: E R Physical separation greater than 20 ft.: E Water Suppression, S14: E D Water Suppression, S15: E D
IBN-2	278'-4" Intermediate Building North	None	E, D	E	Combustible Loading Controls: E Detection System, Z37D1: E D Physical separation greater than 20 ft.: E
IBN-3	298'-4" Intermediate Building North	None	E, D	E	Combustible Loading Controls: E Detection System, Z37D2: E D Physical separation greater than 20 ft.: E
IBN-4	293'-0" Intermediate Building	None	E, D	E, rr	

Fire Area ID: ABI - Auxiliary Building Operating Floor and Intermediate Building **Fire Risk Evaluation**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
	North				Combustible Loading Controls: E Detection System, Z23: E D Detection System, Z24: E D Detection System, Z37D3: E D Floor drains/sump: rr Physical separation greater than 20 ft.: E Procedural Controls Regarding Securing Ventilation: rr
IBS-1	253'-6" Intermediate Building South	None	E, D	rr	Detection System, Z38D1: E D Floor drains/sump: rr Procedural Controls Regarding Securing Ventilation: rr
IBS-2	271'-0" Intermediate Building South	None	E, D	rr	Detection System, Z38D2: E D Floor drains/sump: rr Procedural Controls Regarding Securing Ventilation: rr
IBS-3	293'-0" Intermediate Building South	None	E, D	rr	Detection System, Z38D3: E D Floor drains/sump: rr Procedural Controls Regarding Securing Ventilation: rr
N2	271'-0" Nitrogen Storage Building	None	None	None	None

Title Fire Risk Evaluation for Fire Area ABI

Risk Summary The delta CDF and delta LERF results for the fire area are summarized below. At the fire area level, the increase in risk is less than 1E-05/rx-yr for the delta CDF, and less than 1E-07/rx-yr for the delta LERF.

All CCDPs and CLERPs are less than 1, ensuring that low CDF and LERF values are not reached solely because of a low fire scenario frequency.

Δ CDF

Δ LERF

Redacted

DID Maintained A qualitative evaluation of defense-in-depth (DID) using insights gained from the Fire PRA was performed for the fire area.

The installed fire detection system and suppression system are credited in the Fire PRA for Fire Zone IBN-1. Installed detection is also credited in Fire Zones ABO and IBS-1 to support manual suppression. Given the relatively high fire frequency in the fire area, the other fire detection systems installed in the fire area are credited for DID (none exists in Fire Zones CPB and N2). The installed fire suppression

Fire Area ID:	ABI - Auxiliary Building Operating Floor and Intermediate Building	**Fire Risk Evaluation**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

systems are also credited in Fire Zones ABO and CPB for DID. Portable extinguishers and hose stations are credited by the Fire PRA in Fire Zones IBN-1, IBN-2, IBS-1, and also in Compartment ABO-C1 of Fire Zone ABO. In the rest of the fire area, they are available for fire brigade use and do not require additional DID enhancement. Existing administrative control are determined adequate given the nature of combustibles in the area and the quantified scenarios captured in the Fire PRA results.

With the DID requirements above, the evaluation finds that an adequate balance between the DID echelons is maintained.

Safety Margin Maintained

The safety margin for the analyses supporting the fire risk evaluation of the fire area was evaluated and accounted for potential impacts from fire modeling and the plant system performance, including the PRA logic model. All analyses and assessment have been performed utilizing accepted techniques and industry accepted standards. In addition, safety analysis acceptance criteria in the licensing basis (e.g., FSAR, supporting analyses) have been considered and provide sufficient margin to account for analysis and data uncertainty.

Conclusions

Fire Area ID:	ABI - Auxiliary Building Operating Floor and Intermediate Building	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

VFDR ID VFDR-ABI-001

VFDR

Fire damage to instrument air piping can challenge reliance on instrument/service air whether being aligned from the normal air compressors or from the diesel air compressor or a deterministic assumption of a loss of offsite power to BUS13 and BUS15 results in the loss of the normal Service Air and Instrument Air compressors.
Local manual alignment of Diesel Air Compressor (CSA05) to the Service Air and Instrument Air Systems is taken to manipulate air operated SSD components (i.e., 112B, 112C, PCH01B, 9710A, 9710B). However, this action may not be successful due to the integrity of instrument air piping.
This VFDR is associated with the Vital Auxiliaries Function. [OE004, PH003]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA issue and a separation issue.

Component(s)

AFW - 9710A - SAFW PUMP C RECIRC TO CONDENSATE TEST TANK {FWC0078(LI), FWC0076(LO), FWC0075(P), Cascading Impact}
AFW - 9710B - SAFW PUMP D RECIRC TO CONDENSATE TEST TANK {Cascading Impact}
CVC - 112B - RWST TO CHARGING PUMP SUCTION {Cascading Impact}
CVC - 112C - VCT OUTLET AOV {Cascading Impact}
CVC - PCH01B - CHRG PUMP B {E0169(P), Cascading Impact}
LAC - BUS13 - 480V SWITCHGEAR {Cascading Impact}
LAC - BUS15 - 480V SWITCHGEAR {E0169(P), Cascading Impact}
PSA - 7000A - IA/SA CROSS-CONNECT {Requires Operator Action}
PSA - 7002D - DIESEL AIR COMPRESSOR SUPPLY ISOLATION VALVE {Requires Operator Action}
PSA - 7195A - BU AIR COMP DISCHARGE INNER ISOL VAL TO SERV AIR HEADER {Requires Operator Action}
PSA - 7203 - SERV AIR ISOL VALVE TO THE TURBINE BUILDING FROM YARD {Requires Operator Action}
PSA - CSA05 - DIESEL AIR COMPRESS (OUTSIDE UNIT) FOR BU SERV AIR/INSTR AIR {Requires Operator Action}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-ABI-002

VFDR

A loss of charging capability is possible. The VCT can fill with high temperature water from RCP seal leakoff, via the Seal Water HX without CCW cooling, flashing to steam in the VCT and causing VCT pressure to rise above head pressure of the RWST. When the CHG Pump is restarted, this can result in the pump drawing suction from the VCT (instead of the RWST), introducing saturated water and thereby damaging the CHG pump. This scenario is postulated due to the following separation concerns:
(a) Total loss of RCP seal cooling (Thermal Barrier AND Seal Injection) due to a LOOP (deterministic assumption) and loss of EAC power (credited KDG01B fails to start, while non-credited KDG01A is deterministically assumed to be unavailable), - AND -
(b) VCT isolation valve (AOV-112C) fails open on a loss of air (deterministic assumption) or 125V DC power - AND -
(c) RCP seal leak-off isolation valve (MOV-313) cannot be closed from the MCB due to a loss of power or spuriously reopens due to fire damaged cable (note, RCP Seal Outlet AOVs 270A and 270B should be maintained open for RCP #2 seal integrity).

Fire Area ID:	ABI - Auxiliary Building Operating Floor and Intermediate Building	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

This VFDR is associated with the Reactivity Control Function, and Inventory and Pressure Control Functions. [OE003, OP017]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

CVC - 112C - VCT OUTLET AOV {Cascading Impact}
CVC - 313 - SEAL OR EXCESS LETDOWN RETURN ISOLATION MOV {C5057(L), C0872(LOCI), C0871(P), E0061(P), E0061A(P)}
CVC - PCH01B - CHRG PUMP B {E0169(P), Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDMAKEUP, consisting of locally aligning and starting the new charging system was credited to help resolve this VFDR. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

VFDR ID

VFDR-ABI-004

VFDR

A MSO concern exists related to inadvertent RCS pressure increase. This scenario is postulated due to the following separation concerns:
(a) Spurious operation of PZR Heaters (EHTRRC01A, EHTRRC02A, EHTRRC01B, and EHTRRC02B) due to fire damaged cabling, -AND-
(b) Loss of RCPs and normal pressurizer spray capability via 431A and 431B due to a LOOP (deterministic assumption), -AND-
(c) Inadvertent closure of AOV-296 due to an unrelated operator action to electrically fail AOV-270A closed by de-energizing circuit #6 at DCPDPCB04A
The resultant RCS pressure increase would cause PORVs and/or safety valves to open.
Local action is taken at BUS16 to de-energize pressurizer backup heaters (EHTRRC01B and EHTRRC02B).
This VFDR is associated with the Inventory and Pressure Control Functions. [OE009, PH805]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

BDC - DCPDPCB04A MAIN CONTROL BOARD DC DIST PANEL A {Cascading Impact}
CVC - 296 - AUX SPRAY AOV {Cascading Impact}
RCS - 431A - PZR SPRAY VALVE (AOV) {Cascading Impact}
RCS - 431B - PZR SPRAY VALVE (AOV) {Cascading Impact}
RCS - EHTRRC01A - PRESSURIZER PROPORTIONAL HEATERS {L0737(LO), L0381(LOCI), E0063(P), E0064(P), L0382(P), L0383(P), L0383A(P)}
RCS - EHTRRC01B - PRESSURIZER BACKUP HEATERS {L0276(LOCI), L0277(LOCI), E0169(P)}
RCS - EHTRRC02A - PRESSURIZER PROPORTIONAL HEATERS {L0737(LO), L0381(LOCI), E0063(P), E0064(P), L0382(P), L0383(P), L0383A(P)}
RCS - EHTRRC02B - PRESSURIZER BACKUP HEATERS {L0276(LOCI), L0277(LOCI), E0169(P)}
RCS - PRC01A - RCP A {C1281(L), M0050(LC), M0045(P), Cascading Impact}
RCS - PRC01B - RCP B {C1370(L), M0145(LC), Cascading Impact}

Fire Area ID:	ABI - Auxiliary Building Operating Floor and Intermediate Building	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID

VFDR-ABI-005

VFDR

3-Phase proper phase rotation shorts must be considered for high/low pressure interface in-series valves MOVs 700 and 701 since power cabling for the valves is routed through this area. Reliance on de-powering to prevent spurious opening requires assurance that no three-phase cabling of the same or higher voltage is routed in the same raceway between the MCC and the valve. Spurious operation of these valves results in a high/low pressure system interface concern. Additionally; an IN 92-18 concern exists, as identified in DA-EE-2000-066 – Attachment G.

This VFDR is associated with the Inventory and Pressure Control Functions. [OP001, OP002, OP017]

This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

RHR - 700 - RHR PUMP SUCTION FROM RCS MOV {C0720(P), C0720A(P), C5019(P)}
RHR - 701 - RHR PUMP SUCTION FROM RCS {C1087(P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. The delta risk was qualitatively evaluated as insignificant based on the consideration that 3-phase proper polarity hot short are implausible. No recovery action was credited to resolve this VFDR.

VFDR ID

VFDR-ABI-006

VFDR

A MSO concern exists related to RWST drain down via Containment Spray Actuation. Actuation is possible due to the following separation concerns:

(a) High containment pressure signal from at least two out of three containment pressure transmitters (PT-946, PT-948 and/or PT-950) AND high containment pressure signal from at least two out of three containment pressure transmitters (PT-945, PT-947 and/or PT-949) - OR -

(b) Train "A" Pump (PSI02A) spurious starts and at least one discharge valve (860A) spuriously opens

This VFDR is associated with the Inventory and Pressure Control Functions. [OP003, OP017, OP816]

This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

CSS - 860A - CS PUMP A DISCHARGE {C0755(LI), C0756(LOCI), C0754(P), E0061(P), E0061A(P), Cascading Impact}
CSS - 860B - CS PUMP A DISCHARGE {Cascading Impact}
CSS - 860C - CS PUMP B DISCHARGE {C0817(P), C0818(LI), C0819(LOCI), E0061(P), E0061A(P), Cascading Impact}
CSS - 860D - CS PUMP B DISCHARGE {Cascading Impact}
CSS - PSI02A - CONTAINMENT SPRAY PUMP A {L0729(L), L0337(LOCI), E0063(P), E0064(P), L0336(P), Cascading Impact}
CSS - PSI02B - CONTAINMENT SPRAY PUMP B {Cascading Impact}
ESF - PT-945 - CNMT PRESS XMTR {R0895(I)}

Fire Area ID:	ABI - Auxiliary Building Operating Floor and Intermediate Building	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

ESF - PT-946 - CNMT PRESS XMTR {R0937(I)}
ESF - PT-947 - CNMT PRESS XMTR {R0984(I), PT-947-LINE}
ESF - PT-948 - CNMT PRESS XMTR {R0940(I), PT-948-LINE}
ESF - PT-949 - CNMT PRESSURE {R0987(I), PT-949-LINE}
ESF - PT-950 - PRESSURE TRANSMITTER CONTAINMENT PRESSURE INSTRUMENT LOOP 950 {R1030(I),PT-950-LINE}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDMAKEUP, consisting of locally aligning and starting the new charging system was credited to help resolve this VFDR. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

VFDR ID VFDR-ABI-007

VFDR

A MSO concern exists related to spurious (ESF) Safety Injection Actuation due to fire damaged cabling. Actuation is possible due to the following separation concerns:
(a) Low PZR pressure signal from two out of three PZR pressure transmitters (PT-430 and PT-431) - OR -
(b) Low PZR pressure signal (as above) AND either a low SG "B" pressure signal (from at least two out of three SG "B" pressure transmitter loops PI-478, PI-479 and/or PT-483) OR a low SG "A" pressure signal (from at least two out of three SG "A" pressure transmitter loops PT-468, PI-469 and/or PT-482) - OR -
(c) High containment pressure signal from at least two out of the three containment pressure transmitter loops (PT-945, PT-947, and/or PT-949) - OR -
(d) SI signal from Train "A" SI logic circuits (fire damage to cable L0772)
This VFDR is associated with the Inventory and Pressure Control Functions. [OP004, OP005, OP006]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

ESF - PT-945 - CNMT PRESS XMTR {R0895(I)}
ESF - PT-947 - CNMT PRESS XMTR {PT-947-LINE(I), R0984(I)}
ESF - PT-949 - CNMT PRESSURE {PT-949-LINE(I), R0987(I)}
ESF - SI-TRAIN-A - SAFEGUARDS INITIATION TRAIN A {L0354(), L0772()}
MSS - PI-469 - S/G A PRESSURE (MCB) {PT-469A-LINE(I), R0926(I), R3423(I), PT-469-LINE(L), Cascading Impact}
MSS - PI-478 - S/G B PRESSURE (MCB) {PT-478-LINE(I), R0975(I), Cascading Impact}
MSS - PI-479 - S/G B PRESSURE (MCB) {PT-479-LINE(I), R1024(I), R3419(I), Cascading Impact}
MSS - PT-468 - STM GEN A PRESS XMTR {PT-468-LINE(I), R0886(I), R3421(I), Cascading Impact}
MSS - PT-482 - S/G A STM PRESS XMTR {PT-482-LINE(I), R0978(I), R1285(I), R3425(I), Cascading Impact}
MSS - PT-483 - S/G B STM PRESS XMTR {PT-483-LINE(I), R0931(I), R1337(I), R3416(I), Cascading Impact}
RPS - PT-430 - PRZR PRESS XMTR {Cascading Impact}
RPS - PT-431 - PRZR PRESS XMTR {R0998(I), Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction

for the VFDR.

VFDR ID VFDR-ABI-008

VFDR

A MSO concern exists related to Inadvertent PORV Actuation as follows:
I. PORV opening and spurious operation/failure of block valve
(a) PORV (430) spuriously opens--when required closed for HSD--due to fire damage to SOV cables (8616A and 8619A), - AND -
(b) Block valve (516) fails open or spuriously opens after being closed due to cable fire damage
II. PORV opening due to high pressure signal
(a) High PZR pressure signal from PT-431 and a high PZR signal from PT-449 actuates 431C via SOV-8620B, - OR -
(b) High PZR pressure signal from at least two out of the three transmitters (PT-450, PT-451 and/or PT-452) actuates BOTH 430 (via 8616A and 8619A) and 431C (via 8616B and 8620B)
Action is taken at the MCB to mitigate spurious operation of PORV-430 by opening the 125V DC breaker at the DCPDPCB04A power panel. However, operator action to "de-power" circuits to mitigate spurious operation may not be effective. A short to an energized conductor from another circuit in conjunction with fire damage (grounds) to both circuits can result in a spurious operation defeating de-powering the subject circuit.
This VFDR is associated with the Inventory and Pressure Control Functions. [OE010, OP007, OP009, OP017, OP823, PH801]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue

Component(s)

BDC - DCPDPCB04A MAIN CONTROL BOARD DC DIST PANEL A {Requires Operator Action}
IAS - 8619A - N2 ARMING SOV FOR PORV 430 {SAC0211A(LO), SAC0211B(LO)}
IAS - 8619B - N2 ARMING SOV FOR PORV 431C {Cascading Impact}
IAS - 8620B - PORV 431C ACTUATION SOV {Cascading Impact}
NAS - 8616A - ACCUM TO SURGE TANK SOV FOR PORV 430 {SAC0213(LO)}
NAS - 8616B - ACCUM TO SURGE TANK SOV FOR PORV 431C {Cascading Impact}
RCS - 430 - PORV (AOV) {SAC0211A(LO), SAC0211B(LO)}
RCS - 431C - PORV (AOV) {Cascading Impact}
RCS - 516 - PORV BLOCK VALVE (MOV) FOR 430 {C0690(P), C0692(LI), C0694(LOCI), E0061(P)}
RPS - PT-431 - PRZR PRESS XMTR {R0998(I)}
RPS - PT-449 - PRZR PRESS XMTR {R1104(I)}
RPS - PT-450 - RC OVERPRESS PROTECTION XMTR {SAI0106(I)}
RPS - PT-451 - RC OVERPRESS PROTECTION {SAI0107(I)}
RPS - PT-452 - RC OVERPRESS PROTECTION {SAI0108(I)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR. .

VFDR ID VFDR-ABI-011

Fire Area ID: ABI - Auxiliary Building Operating Floor and Intermediate Building **VFDRs**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

VFDR

A MSO concern exists related to Inadvertent Steam Dumping due to spurious operation of ARVs. Steam dumping resulting in RCS over-cooling, RCS shrinkage, and low pressurizer level is possible due to the following separation concerns:
(a) ARVs (3410 and 3411) spuriously open due to fire damage to cables or to the digital feedwater circuit (ADF-CTRL) - OR -
(b) ARV 3411 opens due to a spurious High-Pressure signal for SG "A" (PT-468) - OR -
(c) ARV 3410 opens due to a spurious High-Pressure signal for SG "B" (PT-478)
Actions are taken at the MCB to mitigate spurious operation by de-energizing circuits at the DCPDPCB04A and DCPDPCB04B power panels. However, operator action to "de-power" circuits to mitigate spurious operation may not be effective. A short to an energized conductor from another circuit in conjunction with fire damage (grounds) to both circuits can result in a spurious operation defeating de-powering the subject circuit.
This VFDR is associated with the Decay Heat Removal Function, and the Inventory and Pressure Control Functions. [OE010, OP017, OP802, OP821, OP822, PH809, PH810]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

BDC - DCPDPCB04A MAIN CONTROL BOARD DC DIST PANEL A {Requires Operator Action}
BDC - DCPDPCB04B MAIN CONTROL BOARD DC DIST PANEL B {Requires Operator Action}
FCS - ADF-CTRL - ADVANCED DIGITAL FEEDWATER CONTROL {I/P-468-LINE(), R1252(), R1254(), R1255(), R1279A(), R1285(), R1309(), R1310(), R1331A(), R1337(), R3051(), R3053(), R3055(), R3057(), R3059(), R3061(), R3063(), R3065(), R3067(), R3069(), R4343(), R4344(), R4346(), R4348(), R4350(), R4352(), R4354(), R4356(), R4388(), R4393()}
MSS - 3410 - SG-B ATMOS RELIEF {G0239(LI), G0239A(LOI)}
MSS - 3411 - SG-A ATMOS RELIEF {G0232(LI), G0232A(LOI)}
MSS - PI-478 - S/G "B" PRESSURE (MCB) {PT-478-LINE(I), R0975(I)}
MSS - PT-468 - STM GEN "A" PRESS XMTR {PT-468-LINE(I), R0886(I), R3421(I)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-ABI-012

VFDR

A separation concern exists related to Inadvertent Steam Dumping as follows:
(a) Cable fire damage can prevent one or both MSIVs from closing - AND -
(b) Loss of power from ACPDPCB03 can fail open MSS valves to moisture separator reheaters (3425, 3425A, 3426, 3426A, 3427, 3427A, 3428, and 3428A) -AND/OR-
(c)Loss of power to solenoid valves 20/AST and 5501S3 (as a result of de-energizing circuits at DCPDPCB04A and DCPDPCB04B to mitigate other spurious operations) disables the turbine trip function of these valves, preventing them from closing Turbine Inlet Valves 3544, 3545, 3462, 3463, 3464, and 3465).This VFDR is associated with the Decay Heat Removal Function. [OP803, OP813] This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and issue a separation issue.

Fire Area ID: ABI - Auxiliary Building Operating Floor and Intermediate Building **VFDRs**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Component(s)

LAC - ACPDPCB03 - CONTROL BUILDING 120/208V DISTRIBUTION PANEL B1 {Cascading Impact}
LAC - ACPDPTB07 - TURBINE BUILDING MISCELLANEOUS 120V DISTRIBUTION PANEL A {Cascading Impact}
LAC - ACPDPTB10 - TURBINE BUILDING MISCELLANEOUS 120V DISTRIBUTION PANEL B {Cascading Impact}
MSS - 3425 - MAIN STEAM CONTROL AOV TO MSR 1A {Cascading Impact}
MSS - 3425A - MOISTURE SEPARATOR REHEATER 1A MINI WARMUP AIR OPERATED VALV {Cascading Impact}
MSS - 3426 - MAIN STEAM CONTROL AOV TO MSR 1B {Cascading Impact}
MSS - 3426A - MSR 1B MINI WARM-UP AOV {Cascading Impact}
MSS - 3427 - MAIN STEAM CONTROL AOV TO MSR 2A {Cascading Impact}
MSS - 3427A - MSR 2A MINI WARMUP AOV {Cascading Impact}
MSS - 3428 - MAIN STEAM CONTROL AOV TO MSR 2B {Cascading Impact}
MSS - 3428A - MSR 2B MINI WARMUP AOV {Cascading Impact}
MSS - 3516 - MSIV B {G1180(L), G1182(L), G1199(L), G1181(LC), G1183(LC), G1198(LC), G1200(LC), G1197(LI), G1201(LI)}
MSS - 3517 - MSIV A {G1186(L), G1188(L), G1193(L), G1187(LC), G1189(LC), G1192(LC), G1194(LC), G1191(LI), G1195(LI)}
TGS - 20/AST - TURBINE AUTO STOP TRIP SOLENOID (20/AST) {G0057(LO)}
TGS - 3462 - HP TURB E/H GOV VLV {Cascading Impact}
TGS - 3463 - HP TURB E/H GOV VLV {Cascading Impact}
TGS - 3464 - HP TURB E/H GOV VLV {Cascading Impact}
TGS - 3465 - HP TURB E/H GOV VLV {Cascading Impact}
TGS - 3544 - HP TURBINE MAIN STEAM STOP VLV {Cascading Impact}
TGS - 3545 - HP TURBINE MAIN STEAM STOP VLV {Cascading Impact}
TGS - 5501S3 - TURBINE EMERGENCY TRIP SOLENOID VALVE (20/ET) {G0059(LO)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Modification ESR-12-0128, which ensures automatic MSIV closure, was credited to help resolve this VFDR.

VFDR ID VFDR-ABI-013

VFDR

A separation concern exists related to aligning SAFW Pump “D” for SG inventory control during HSD as follows:
(a) Fire damage to cables (FWC0026 and FWC0018) can result in SAFW cross-over MOV-9703A spuriously opening in conjunction with SAFW Pump “C” discharge MOV-9704A, partially diverting SAFW Pump “D” flow to SG "A". Additionally, re-positioning either of these valves via the hand wheel may not be successful due to IN 92-18 concerns as identified in DA-EE-2000-066 – Attachment G.
(b) Fire damage to cable (C0892 and C0898A) can result in spuriously closing SAFW supply valve from SW System MOV-4615. This causes a loss of suction source to SAFW Pump, PSF01B. Local action is taken to align SAFW Pump "D" (PSF01B) to SG "B”.
This VFDR is associated with the Decay Heat Removal Function. [OP001, OP017, OP804, OP809, PH807]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

AFW - 9703A - SAFW PUMP X-OVER MOV {FWC0025(LC), FWC0023(LI), FWC0026(LOI), FWC0022(P)}
AFW - 9704A - SAFW PUMP C MOV {FWC0017(LC), FWC0015(LI), FWC0018(LOI), FWC0014(P)}
AFW - PSF01B - SAFW PUMP D {E0169(P)}
SWS - 4615 - AUX BLDG MOV FROM SWP C/D {C0898A(LC), C0892(LOC), C0890(P), E0061(P), E0061A(P)}

Fire Area ID:	ABI - Auxiliary Building Operating Floor and Intermediate Building	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Actions AXHFDSAFWX-2, consisting of locally aligning the Standby AFW pump, and AFHFDSUPPL-3, consisting of supplying alternate sources of water for the AFW system once the initial water supply is depleted, were credited to help resolve this VFDR. In addition, Plant Modifications ESR-11-0050 (fire protection upgrades to the Standby AFW pumps) and ESR-12-0143 (supporting diesel generator that can power a standby AFW pump) were credited to help resolve this VFDR.

VFDR ID

VFDR-ABI-014

VFDR

A MSO concern exists related to RCP (PRC01A) seal damage. Seal Outlet (AOV-270A) is susceptible to spurious closure (cable R0525). PRC01A can spuriously restart due to cable fire damage (M0050) bypassing the pump start permissive. If PRC01A continues to run with no seal cooling, pump damage would occur, leading to a pressure boundary breach.
Local action is taken to remove 125V DC power at DCPDPCB04A to fail AOV-270A open, and to mitigate subsequent spurious actuation. However, operator action to "de-power" circuits to mitigate spurious operation may not be effective. A short to an energized conductor from another circuit in conjunction with fire damage (grounds) to both circuits can result in a spurious operation defeating de-powering the subject circuit.
This VFDR is associated with the Inventory and Pressure Control Functions. [OE010, OP017, OP815, OP805, PH814]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

BDC - DCPDPCB04A MAIN CONTROL BOARD DC DIST PANEL A {Requires Operator Action}
CVC - 270A - RCP SEAL OUTLET AOV {R0525(LCI)}
RCS - PRC01A - RCP A {C1281(L), M0050(LC), M0045(P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. Plant Modification ESR-11-0305, which provides the RCP pumps with shutdown seals, was credited to help resolve this VFDR.

VFDR ID

VFDR-ABI-015

VFDR

A MSO concern exists related to Excess Feedwater Flow to Steam Generators from the Aux Feedwater System. The scenario is possible due to the following separation concerns:
I. TDAFW pump (PAF03) providing excess flow to SGs
(a) Either steam supply MOV (3504A or 3505A) spuriously opens due to fire damaged cables -AND-
(b) Either DC Lube Oil Pump (PL011) or AC Lube Oil Pump (PLO10) spuriously starts due to fire damaged cables -AND-
(d) Discharge flow control MOV (3996) fails open (or spuriously opens when closed) due to fire damaged cables -AND-
(e) Discharge flow control AOVs (4297 and 4298) are administratively maintained open (valves can also fail open on deterministic assumption of loss of air).
- OR -
II. MDAFW Pumps (PAF01A and/or PAF01B) providing excess flow to SGs
(a) PAF01A and/or PAF01B spuriously starts due to fire damaged cables -AND-

(b) Discharge cross-over MOV (4000A) spuriously opens due to fire damaged cables -AND-
(c) Discharge MOV (4007 and/or 4008) fails open (or spuriously opens when closed) due to fire damaged cables.
Local action is taken to mitigate the spurious operation. However, any effort to control AFW flow locally would require entry into the fire area under consideration. The TDAFW pump, TDAFW pump steam supply valves, and TDAFW pump AC lube oil pump power supply are located in this fire area.
This VFDR is associated with the Decay Heat Removal Function. [OP017, OP806, PH803, PH806]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

AFW - 3996 - TDAFWP DISCHARGE MOV {E0093(L), E0094(L), E0095(L), E0096(LI), E0097(LOCI), E0338(LOCI), Located in FA}
AFW - 4000A - AFW CROSSOVER STOP VLV {AFC0001(P), AFC0002(LI), AFC0004(LCI), AFC0005(LOI), Located in FA}
AFW - 4007 - MDAFW PUMP A DISCHARGE MOV {C0707(P), C0708(LOCI), C0709(LIO), C0710(LO), C5059(L), E0061(P), E0061A(P), Located in FA}
AFW - 4008 - MDAFW PUMP B DISCHARGE MOV {C1073(P), C1075(LIO), Located in FA}
AFW - 4297 - TDAFWP FCV TO S/G A {G0902(LC), Located in FA}
AFW - 4298 - TDAFWP FCV TO S/G B {G0901(LC), Located in FA}
AFW - PAF01A - AUXILIARY FEEDWATER PUMP A {L0374(L), L0735(LO), L0372(LOCI), L0373(LOCI), E0063(P), E0064(P), L0371(P), Located in FA}
AFW - PAF01B - AUXILIARY FEEDWATER PUMP B {L0373(LO), L0251(LOCI), L0252(LOCI), E0169(P), L0250(P), Located in FA}
AFW - PAF03 - TURBINE DRIVEN AUXILIARY FEEDWATER PUMP {Located in FA}
AFW - PLO10 - TDAFW PUMP AC LUBE OIL PUMP {C0591(LCI), C0590(P), E0061(P), E0061A(P), Located in FA}
AFW - PLO11 - TDAFWP DC LUBE OIL PUMP {E0194(LC), E0194A(LC), E0193(LCI), E0193A(LOC), E0191(P), E0192(P), E0340(P), Located in FA}
BDC - DCPDPTB01B - TURBINE BLDG DC DISTRIBUTION PANEL {Cascading Impact, Requires Operator Action}
LAC - BUS14 - 480V SWITCHGEAR {L0185(LC), L0724(LO), L0727(LO), L0776(LO), L0315(LOCI), L0319(LOCI), L0329(LOCI), E0063(P), E0064(P), L0318(P), L0328(P), Cascading Impact, Located in FA}
LAC - MCCC - MOTOR CONTROL CENTER C {L0391(LOC), E0061(P), E0061A(P), E0063(P), E0064(P), L0389(P), L0390(P), Located in FA}
MSS - 3504A - SG B TO TDAFWP {E0109(L), E0110(L), E0111B(L), E0111(LI), E0111A(LI), E0112(LOCI), E0108(P), Located in FA}
MSS - 3505A - SG A TO TDAFWP {E0033(L), E0034(L), E0035(LI), E0036(LOCI), E0032(P), Located in FA}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. The delta risk was qualitatively evaluated as insignificant based on the long time needed for a steam generator to overfill from two motor-driven AFW pumps or the turbine-driven AFW pump spuriously running. This long time window ensures that the flow can be stopped before the overfill actually occurs. No recovery action was credited to resolve this VFDR.

VFDR ID VFDR-ABI-016

VFDR

A SAFW flow diversion via the Condensate Test Tank Overflow is postulated as follows:
(a) With SAFW Pump "C" running, valve AOV-9710A can spuriously open due to cable fire damage OR can fail open upon loss of instrument air. AOV-9710A can also spuriously open due to cable fire damage to FI-4084A and FI-4084B.

(b) With SAFW Pump "D" running, valve AOV-9710B can fail open due to loss of instrument air.
This VFDR is associated with the Decay Heat Removal Function. [OP017, OP810]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

AFW - 9710A - SAFW PUMP C RECIRC TO CONDENSATE TEST TANK {FWC0078(LI), FWC0076(LO), FWC0075(P)}
AFW - 9710B - SAFW PUMP D RECIRC TO CONDENSATE TEST TANK {Cascading Impact}
AFW - FI-4084A - SAFW PUMP C DISCH FLOW - SAF {MER0018(I), MEC0003(P)}
AFW - FI-4084B - SAFW PUMP C DISCH FLOW - MCB {MER0018(I), MEC0003(P)}
AFW - PSF01A - SAFW PUMP C {FWL0009(L), FWL0010(LI), FWL0008A(LO), L0743(LO), L0744(LO), FWL0008(LOC), E0063(P), E0064(P), FWL0001(P)}
AFW - PSF01B - SAFW PUMP D {Cascading Impact}

Disposition

Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, eliminates the Standby AFW connection to the Condensate test tank so that the tank can be used as the suction supply to the new Charging pump. As such, this plant modification also provides a deterministic resolution to this VFDR.

VFDR ID

VFDR-ABI-017

VFDR

A MSO concern exists related to Excess Feedwater Flow to SG "A" from the SAFW System as follows:
(a) Valve 9629A can spuriously open due to cable fire damage, - AND -
(b) SAFW Pump "C" (PSF01A) can spuriously start due to cable fire damage, - AND -
(c) Cable fire damage prevents closing valve 9701A and 9704A.
This results in SAFW Pump C (PSF01A) overfilling SG "A" adversely affecting RCS cool down rate.
This VFDR is associated with the Decay Heat Removal Function. [OP811]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

AFW - 9629A - SAFW PUMP C SUCTION MOV {FWC0033(LC), FWC0031(LI), FWC0034(LOI), FWC0030(P)}
AFW - 9701A - SAFW PUMP C DISCH MOV {FWC0002(L), FWC0008(L), FWC0006(LC), FWC0007(LI), FWC0004(LOC), FWC0005(LOC), FWC0001(P)}
AFW - 9704A - SAFW PUMP C MOV {FWC0017(LC), FWC0015(LI), FWC0018(LOI), FWC0014(P)}
AFW - PSF01A - SAFW PUMP C {FWL0009(L), FWL0010(LI), FWL0008A(LO), L0743(LO), L0744(LO), FWL0008(LOC), E0063(P), E0064(P), FWL0001(P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. The delta risk was qualitatively evaluated as insignificant based on the long time needed for a steam generator to overfill from a Standby AFW pump spuriously running. This long time window ensures that the flow can be stopped before the overfill actually occurs. No recovery action was credited to resolve this VFDR.

Fire Area ID:	ABI - Auxiliary Building Operating Floor and Intermediate Building	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

VFDR ID VFDR-ABI-019

VFDR

A separation concern exists due to fire damaged cables impacting both credited channels of SG "B" Pressure Indication (PI-478 and PI-479 at the MCB) and both credited channels of SG "A" Pressure Indication (PI-469 at the MCB and PI-469A at the IBELIP). Additionally, PI-478 cables are protected by HEMYC wrap which is no longer considered "qualified" as a 1-hour rated fire barrier.
This VFDR is associated with the Process Monitoring Function. [OE012, OP818, OP820]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

MSS - PI-469 - S/G A PRESSURE (MCB) {PT-469A-LINE(I), R0926(I), R3423(I), PT-469-LINE(L)}
MSS - PI-469A - S/G A PRESSURE (IBELIP) {PT-469A-LINE(I), R4084(I), E0301(P)}
MSS - PI-478 - S/G B PRESSURE (MCB) {PT-478-LINE(I), R0975(I)}
MSS - PI-479 - S/G B PRESSURE (MCB) {PT-479-LINE(I), R1024(I), R3419(I)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-ABI-020

VFDR

Breaker 52/BT16-14 can spuriously close due to cable fire damage locking out any power supply breaker to BUS14 and BUS16 that is not closed at the time 52/BT16-14 closes. This prevents the buses from being powered by KDG01B adversely affecting the ability to achieve safe and stable conditions.
This VFDR is associated with the Vial Auxiliaries Function. [OP819]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

LAC - 52/BT16-14 - BREAKER FOR BUS 16 TO BUS 14 TIE {L0206(LC), L0203(LOC)}
LAC - BUS16 - 480V SWITCHGEAR {L0206(LC), L0203(LOC), E0169(P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery ActionDGHFDMNL-LD-STRT, consisting of locally starting the Diesel Generators per ER-D/G.1 Step 6.1, was credited to help resolve this VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-ABI-022

VFDR

Fire damage to cables could cause spurious operation and loss of control from the MCB for multiple credited components powered from BUS16. No dedicated procedure action is taken to mitigate any spurious operations postulated due to this separation concern.
This VFDR is associated with the Vital Auxiliaries Function. [OP017, OP826]

This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

AFW - PAF01B - AUXILIARY FEEDWATER PUMP B {L0373(LO), L0251(LOCI), L0252(LOCI), L0250(P)}
LAC - 52/BT16-14 - BREAKER FOR BUS 16 TO BUS 14 TIE {L0206(LC), L0203(LOC)}
LAC - BUS16 - 480V SWITCHGEAR {L0206(LC), L0203(LOC), Cascading Impact}
RCS - EHTRRC01B - PRESSURIZER BACKUP HEATERS {L0276(LOCI), L0277(LOCI)}
RCS - EHTRRC02B - PRESSURIZER BACKUP HEATERS {L0276(LOCI), L0277(LOCI)}
RCV - ACF08B - CONTAINMENT RECIRCULATING FAN B {L0224(LOCI), L0225(LOCI), Cascading Impact}
RCV - ACF08C - CONTAINMENT RECIRCULATING FAN C {L0239(LOCI), L0240(LOCI), Cascading Impact}
SFP - PAC07B - SPENT FUEL POOL RECIRCULATING PUMP B {C5307(LC), C5306(LO), Cascading Impact}
SIS - PSI01C - SI PUMP C {L0211(LC), L0726(LO), L0210(LOCI), L0325(LOCI), E0063(P), E0064(P), L0324(P), Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDMAKEUP, consisting of locally aligning and starting the new charging system was credited to help resolve this VFDR. Recovery Action CVHFDCHGTRIPFIRE, consisting of locally securing the charging pumps, is also credited. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

VFDR ID VFDR-ABI-023

VFDR

Fire damage to cables (L0276 or L0277) can cause the Pressurizer Backup Heaters to remain constantly energized or to remain off. In either case, the heaters cannot be controlled automatically or manually from the MCB adversely impacting RCS pressure control and control of RCS sub-cooling.
This VFDR is associated with the Inventory and Pressure Control Functions. [OP017, OP807]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

RCS - EHTRRC01B - PRESSURIZER BACKUP HEATERS {L0276(LOCI), L0277(LOCI), E0169(P)}
RCS - EHTRRC02B - PRESSURIZER BACKUP HEATERS {L0276(LOCI), L0277(LOCI), E0169(P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDMAKEUP, consisting of locally aligning and starting the new charging system was credited to help resolve this VFDR. Recovery Action CVHFDCHGTRIPFIRE, consisting of locally securing the charging pumps, is also credited. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

VFDR ID VFDR-ABI-027

VFDR

A MSO concern exists related to RWST Drain Down via Containment Sump MOV-850A which is subject to spurious opening. MOV-856 is required to be closed to mitigate RWST drain down to the sump during HSD. Fire damage to cable C0790 can spuriously open 856, bypassing the control power key switch (1/856-KS on MCB).

Local action is taken to open the 480V AC breaker at MCCC within the fire area under consideration to mitigate this spurious operation and locally close MOV-856 in Fire Area ABBM.
This VFDR is associated with the Reactivity Control Function, and Inventory and Pressure Control Functions. [OP010, OP017, PH802]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

LAC - MCCC - MOTOR CONTROL CENTER C {L0391(LOC), E0061(P), E0061A(P), E0063(P), E0064(P), L0389(P), L0390(P), Located in FA}
RHR - 850A - CNMT SUMP TO RHR PUMP MOV {C0703(LI), C0704(LOCI), C0702(P), E0061(P), E0061A(P)}
RHR - 856 - RWST TO RHR MOV {C0791(L), C0789(LI), C0790(LOCI), C0788(P), E0061(P), E0061A(P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-ABI-028

VFDR

If offsite power is available or non-credited KDG01A starts and connects to BUS14, various loads may spuriously start challenging a controlled shutdown of the plant. A spurious KDG01A start could be initiated by fire damage to cable L0780 for "A" starting circuit or cable L0782 for "B" starting circuit -AND- a spurious closure of breaker 52/EG1A1 could be initiated by fire damage to cables L0185 or L0319.
Local action is taken to mitigate the spurious operation. However, these actions would require entry into the fire area under consideration.
This VFDR is associated with the Vital Auxiliaries Function. [OP017, OP826, PH803, PH813]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

CVC - PCH01A - CHRG PUMP A {E0063(P), E0064(P), E0307(P), L0398(P), L0400(LOCI), L0400C(L), L0739(LC), Cascading Impact}
EAC - 52/EG1A1 - EDG A SUPPLY TO BUS 14 {E0063(P), E0064(P), L0185(LC), L0318(P), L0319(LOCI)}
EAC - KDG01A - DIESEL-GENERATOR A {L0365(L), L0780(LC), L0782(LC)}
LAC - BUS14 - 480V SWITCHGEAR {L0185(LC), L0724(LO), L0727(LO), L0776(LO), L0315(LOCI), L0319(LOCI), L0329(LOCI), E0063(P), E0064(P), L0318(P), L0328(P), Cascading Impact, Located in FA}
RCS - EHTRRC01A - PRESSURIZER PROPORTIONAL HEATERS {L0737(LO), L0381(LOCI), E0063(P), E0064(P), L0382(P), L0383(P), L0383A(P), Cascading Impact}
RCS - EHTRRC02A - PRESSURIZER PROPORTIONAL HEATERS {L0737(LO), L0381(LOCI), E0063(P), E0064(P), L0382(P), L0383(P), L0383A(P), Cascading Impact}
RHR - PAC01A - RHR PUMP A {L0736(LO), L0378(LOCI), E0063(P), E0064(P), L0377(P), Cascading Impact}
SIS - PSI01A - SI PUMP A {L0728(LO), L0333(LOCI), E0063(P), E0064(P), L0332(P), Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was

performed. Recovery Action RCHFDMAKEUP, consisting of locally aligning and starting the new charging system was credited to help resolve this VFDR. Recovery Action CVHFDCHGTRIPFIRE, consisting of locally securing the charging pumps, is also credited. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

VFDR ID VFDR-ABI-029

VFDR

If offsite power is available, cable fire damage can prevent tripping one or both RCPs (PRC01A and/or PRC01B) from the MCB. The pumps continuing to run will have an adverse impact on controlling RCS cool down rate.
Local action is taken at the 4KV buses to trip both pumps.
This VFDR is associated with the Decay Heat Removal Function. [OP017, PH804]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

RCS - PRC01A - RCP A {C1281(L), M0050(LC), M0045(P)}
RCS - PRC01B - RCP B {C1370(L), M0145(LC)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-ABI-030

VFDR

Fire damage to cables can cause SG Blowdown and RCS Sampling valves to spuriously open or remain open.
Local action is taken to de-energize the Nuclear Sample Panel. However, operator action to "de-power" circuits to mitigate spurious operation may not be effective. A short to an energized conductor from another circuit in conjunction with fire damage (grounds) to both circuits can result in a spurious operation defeating de-powering the subject circuit.
This VFDR is associated with the Inventory and Pressure Control Functions. [OE010, OP017, PH815]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

BDC - DCPDPTB01B - TURBINE BLDG DC DISTRIBUTION PANEL {Cascading Impact}
LAC - NSP - NUCLEAR SAMPLING PANEL {Component in FA}
PSS - 951 - PZR STEAM SAMPLE AOV {R3135(LOI), R3140(LOI)}
PSS - 953 - PZR WATER SAMPLE AOV {R3141(LOI), R3150(LOI)}
PSS - 955 - LOOP B HL SAMPLE {R3141(LOI), R3150(LOI)}
PSS 966A - PZR STEAM SAMPLE AOV {R3164(LOI), R3165(LO), R3166(LI), R3167(LI), R3171(LOI)}
PSS 966B - PZR LIQUID SAMPLE AOV {R3164(LOI), R3168(LO), R3169(LI), R3170(LI), R3171(LOI)}
PSS 966C - LOOP B HL SAMPLE {R3159(LOI), R3160(LO), R3161(LI), R3162(LI), R3163(LOI)}

Fire Area ID:	ABI - Auxiliary Building Operating Floor and Intermediate Building	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

SGB - 5737 - SGB B AOV {R3181(LI), R3182(LI), R3180(LO), R3194(LO), R3176(LOI), R3192(LOI)}
SGB - 5738 - SGB A AOV {R3178(LI), R3179(LI), R3177(LO), R3194(LO), R3176(LOI), R3192(LOI)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID

VFDR-ABI-031

VFDR

A MSO concern exists related to Reactor Trip capability. Fire damage cabling would result in Reactor Trip breaker "open" function being unavailable as follows:
(a) 52/RTA: A line-ground fault (to cable L0611 or E0224 or L0614) would result in the loss of Trip Coil capability AND a hot short (to cable L0610) would result in the loss of UV Trip Coil capability - AND -
(b) 52/RTB: A line-ground fault (to cable L0631 or E0233 or L0634) would result in the loss of Trip Coil capability AND a hot short (to cable L0630) would result in the loss of UV Trip Coil capability.
Simultaneous fire damage to cabling as described above would result in automatic and manual Reactor Trip breaker tripping capability being unavailable.
Local action is taken to trip at the ROD DRIVE MG SET switchgear and REACTOR TRIP BREAKER switchgear.
This VFDR is associated with the Reactivity Control Function. [OP017, OP825, PH001, PH002]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA issue and a separation issue.

Component(s)

LAC – 52/13 - BKR FOR BUS13 SUPPLY {L0329(LC), Cascading Impact}
LAC – 52/15 - BKR FOR BUS15 SUPPLY {Cascading Impact}
LAC - BUS13 - 480V SWITCHGEAR {Requires Operator Action}
LAC - BUS15 - 480V SWITCHGEAR {E0169(P), Cascading Impact, Requires Operator Action}
RPS - 52/RTA - REACTOR TRIP BREAKER A {L0610(LO), L0611(LOC), L0614(P), E0224(P)}
RPS - 52/RTB - REACTOR TRIP BREAKER B {L0630(LO), L0631(LOC), L0634(L), E0233(P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDSCRAM-LCL, consisting of locally tripping the reactor, was credited to help resolve this VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID

VFDR-ABI-032

VFDR

A MSO concern exists related to spurious opening of Reactor Head Vent Valves (590 and 592) due to fire damaged cables.
Local action is taken to remove 125V DC power at DCPDPCB04A to fail Reactor Head Vents closed, and to mitigate subsequent spurious actuation. However, operator action to "de-power" circuits to mitigate spurious operation may not be effective. A short to an energized conductor from another circuit in conjunction with fire damage (grounds) to both circuits can result in a spurious operation defeating de-powering the subject circuit.

Fire Area ID:	ABI - Auxiliary Building Operating Floor and Intermediate Building	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

This VFDR is associated with the Inventory and Pressure Control Functions. [OE010, OP017, OP022, PH801]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

BDC - DCPDPCB04A - MAIN CONTROL BOARD DC DIST PANEL A {Requires Operator Action}
RCS - 590 - REACTOR HEAD VENT OUTER (SOV) TO 592 {SAC0215(L), SAC0211A(LOI)}
RCS - 592 - REACTOR HEAD VENT INNER (SOV) TO 590 {SAC0215(L), SAC0213(LOI)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No Recovery Action was credited to help resolve this VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-ABI-034

VFDR

A separation concern exists due to fire damaged cables impacting both channels of PRZR LEVEL indication at the MCB. Credited Pressurizer Level Channel 3 (LI-428) is considered unavailable due to fire damaged cabling -AND- Pressurizer Level Channel 1 (LI-426) is considered unavailable due to a loss of cascading power supply upon Battery "A" depletion.
This VFDR is associated with the Process Monitoring Function. [OP808]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

RCS - LI-426 - PRZR LEVEL (MCB) {Cascading Impact}
RCS - LI-428 - PRZR LEVEL CHANNEL 3 (MCB) {R1004(I), Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. Plant Modification ESR-12-0125, which provides in the control room a pressurizer pressure indication free of fire damage, was credited to help resolve this VFDR.

VFDR ID VFDR-ABI-035

VFDR

A separation concern exists due to fire damaged cables impacting both channels of RCS pressure indication at the MCB. Credited RCS Pressure Channel 3 (PI-420A) is considered unavailable due to fire damaged cabling -AND- RCS Pressure Channel 1 (PI-420-2) is considered unavailable due to a loss of cascading power supply upon Battery "A" depletion.
This VFDR is associated with the Process Monitoring Function. [OP812]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

RCS - PI-420-2 - RCS HL PRESSURE (0-3000 PSIG at MCB) {Cascading Impact}

Fire Area ID:	ABI - Auxiliary Building Operating Floor and Intermediate Building	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

RCS - PI-420A - RCS PRESSURE (0-3000 PSIG at MCB) {R0877(I), Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Modification ESR-12-0125, which provides pressurizer pressure indication, an adequate substitute for the monitoring functions, was credited to help resolve this VFDR.

VFDR ID

VFDR-ABI-036

VFDR

During a postulated fire in this area, power to MCCM can be lost due to lack of breaker coordination. None of the load feeder breakers from MCCM are coordinated with the upstream incoming breaker. This cascading impact affects aligning SAFW Pump "D" for SG inventory control. Loss of MCCM results in loss of ACPDPAB15 and SAFW components (AFP02, 9629B, 9701B, 9703B, and 9632B) failing in the undesired position.
This VFDR is associated with the Decay Heat Removal Function. [OP014]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

ABV - AFP02 - SAFW PUMP ROOM COOLING UNIT B {Cascading Impact}
AFW - 9629B - SAFW PUMP D SUCTION MOV {Cascading Impact}
AFW - 9701B - SAFW PUMP D DISCH MOV {Cascading Impact}
AFW - 9703B - SAFW PUMP X-OVER MOV {Cascading Impact}
AFW - 9746 - SAFW PUMP D DISCH MOV {Cascading Impact}
LAC - ACPDPAB15 - AUX BLDG POWER DISTRIBUTION PANEL AB-15 {Cascading Impact}
LAC - MCCM - MOTOR CONTROL CENTER M {AFC0009(P), Cascading Impact}
SWS - 9632B - SAFW ROOM B COOLER FCV {Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Actions AFHFDSUPPL-3, consisting of supplying alternate sources of water for the AFW system once the initial water supply is depleted, and AXHFDSAFWX-2, consisting of locally aligning the Standby AFW pump, were credited to help resolve this VFDR. In addition, Plant Modifications ESR-11-0050 (fire protection upgrades to the Standby AFW pumps) and ESR-12-0143 (supporting diesel generator that can power a standby AFW pump) were credited to help resolve this VFDR.

Fire Area ID:	BOP - Balance of Plant (Bldgs CD, TSC, H2, Srv, TB, TO)	**Fire Area Definition**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

Fire Zone ID	**Description**
AVT	253'-6", Condensate Demineralizer Building
GAB	271'-0" Ginna Admin Building
H2	253'-6", Hydrogen Storage Bdlg
SB-1	253'-6" Service Building Basement
SB-1HS	253'-6" Service Building Hot Shop
SB-1WT	253'-6" & 271'-0" Service Building Water Treatment Room
SB-2	271'-0", SB General Offices Area (excludes SB-1WT)
TB-1	253'-6", Turbine Building Basement
TB-1FP	253'-6" Turbine Building Feedpump Room
TB-2	271'-0" Turbine Building Intermediate Floor
TB-3	289'-6", Turbine Building Operating Floor
TO	253'-6" Turbine Building Turbine Oil Storage Building
TSC-1M	271'-0"Technical Support Center (Mechanical Equipment Room and Administrative Computer)
TSC-1N	271'-0" Technical Support Center
TSC-1S	271'-0" Technical Support Center (South of Corridor) and includes TSC D-G, Inverter & Battery Rooms

Fire Area ID: BOP - Balance of Plant (Bldgs CD, TSC, H2, Srv, TB, TO) **Performance Goals**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Performance Goal	Method of Accomplishment	Comments
1. Reactivity Control Function	Immediate reactor shutdown is achieved by de-energizing all CRDMs which results in control rod negative ractivity insertion into the reactor core.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
2. Inventory Control Function	• RCS inventory depletion control is maintained by closure of all letdown paths, all sample paths, all head vent paths, and both PORVs. • RCS inventory makeup is controlled by either one of the following: o Train "A" CVCS success path from the RWST to the RCS o Train "A" SIS success path from the RWST to the RCS and the PORV associated with the "A" nitrogen surge tank.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
3. Pressure Control Function	• RCS high pressure control is maintained by automatic mechanical operation of all PRZR Code Safety Valves, stopping of both RCPs, and securing all PRZR heaters. • RCS lowering pressure control is maintained by closure of both PRZR PORVs, closure of both PRZR Normal Spray valves or stopping the associated RCP(s), and closure of both SG ARVs.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
4. Decay Heat Removal Function	• RCS high temperature control is maintained by automatic mechanical operation of all SG Code Safety Valves. • RCS lowering temperature control is maintained by closure of both MSIVs, closure of both SG ARVs, stopping both MFW Pumps, stopping AFW System flow to the non-credited SG, and controlling flow to the credited SG. • SG makeup control is maintained by either one of the following to SG "A": o TDAFW Pump success path from the SG "A" MSS and pump suction from the CST or SWS o SAFW Pump "C" success path from the SWS or FPS	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
5. Process Monitoring Function	RCS Temperature:TI-409A-1 (RCS LOOP A HL INDICATION) Location: MCB, and TI-409B-1 (RCS LOOP A CL INDICATION) Location: MCB RCS Pressure:PI-420-2 (RCS HL PRESSURE (0-3000 PSIG)) Location: MCB, and PI-420B (RCS PRESSURE (0-3000 PSIG))	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"

Fire Area ID:	BOP - Balance of Plant (Bldgs CD, TSC, H2, Srv, TB, TO)	**Performance Goals**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

Performance Goal	Method of Accomplishment	Comments
	Location: ABELIP Pressurizer Level:LI-426 (PRZR LEVEL) Location: MCB, LI-428A (PRZR LEVEL (WR)) Location: ABELIP, and LI-433A (PRZR LEVEL) Location: MCB Steam Generator Level:LI-461 (S/G "A" LEVEL (NR)) Location: MCB, LI-504 (S/G "A" LEVEL [0-520" H2O (WR)) Location: MCB, and LI-506A (S/G "B" WIDE RANGE LEVEL) Location: IBELIP Steam Generator Pressure:PI-469 (S/G "A" PRESSURE) Location: MCB, and PI-479 (S/G "B" PRESSURE) Location: MCB Neutron Flux Monitoring:NI-31B (NIS SOURCE RANGE INDICATION) Location: MCB Tank Level:LI-2022A (CDST "A" LEVEL) Location: MCB, and LI-921 (RWST LEVEL) Location: MCB System Flow Rate:FI-2031 (TDAFW PUMP DISCH FLOW) Location: MCB, FI-4084A (SAFW PUMP "C" <PSF01A> DISCH FLOW) Location: SAF, FI-4084B (SAFW PUMP "C" <PSF01A> DISCH FLOW) Location: MCB DG Cooling:PI-2103 ("A" DIESEL GEN HX CLNG WTR HDR PRESS IND) Location: EDG1A	
6. Vital Auxiliaries	• DC Power and instrument power availability is maintained by train "A" of the BDC/IAC System from Battery "A" or the TSC Battery System. • AC Power availability is maintained by train "A" Diesel-Generator and train "A" DBV/DGS support components. • Diesel-Generator engine cooling is maintained by the train "A" SWS success path or alignment of alternate cooling from the FPS to the "A" Diesel. • Except for a Control Room fire, train "A" CREATS is maintained for controlling the Control Room environmental conditions within the required specifications for habitability and design limits for equipment operability. Ventilation systems for the SAFW components in the SAFW Building, the DG components in the Diesel Building, and the TSC components in the Technical Support Center are maintained for equipment design limits.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"

References	Document ID
	EIR 51-9089546-001 Rev. 001 - R. E. Ginna Nuclear Power Station, Nuclear Safety Capability Assessment

Fire Suppression Activities Effect on Nuclear Safety Performance Criteria

Scenario 1: Suppression Effects in AVT of a Fire Originating In AVT:

There are no suppression systems in AVT and the effects of manual firefighting are not expected to extend beyond the area of fire origin.

Scenario 2: Suppression Effects in AVT of a Fire Originating Outside of AVT:

There are no suppression systems in AVT that could be impacted by operation of a fire suppression system or manual firefighting activities outside of AVT.

Scenario 1: Suppression Effects in H2 of a Fire Originating In H2:

There are no suppression systems in H2 and the effects of manual firefighting are not expected to extend beyond the area of fire origin.

Scenario 2: Suppression Effects in H2 of a Fire Originating Outside of H2:

There are no suppression systems in H2 that could be impacted by operation of a fire suppression system or manual firefighting activities outside of H2.

Scenario 1: Suppression Effects in SB-1 of a Fire Originating In SB-1:

Suppression effects (activation of wet-pipe sprinkler system S19 or manual firefighting activities) are not expected to extend beyond the area of fire origin. Activation of an automatic sprinkler system would only be expected to activate small number of sprinklers.

Scenario 2: Suppression Effects in SB-1 of a Fire Originating Outside of SB-1:

Since automatic sprinkler systems are not electrically activated, operation of a fire suppression system outside of SB-1 could not impact the automatic sprinkler system within SB-1. Similarly, manual firefighting activities outside of SB-1 would not be expected to affect equipment/components located within SB-1.

Scenario 1: Suppression Effects in SB-1HS of a Fire Originating In SB-1HS:

Suppression effects (activation of wet-pipe sprinkler system S19 or manual firefighting activities) are not expected to extend beyond the area of fire origin. Activation of an automatic wet-pipe sprinkler system would only be expected to activate small number of sprinklers.

Scenario 2: Suppression Effects in SB-1HS of a Fire Originating Outside of SB-1HS:

Since automatic wet-pipe sprinkler systems are not electrically activated, operation of a fire suppression system outside of SB-1HS could not impact the automatic sprinkler system within SB-1HS. Similarly, manual firefighting activities outside of SB-1HS would not be expected to affect equipment/components located within SB-1HS.

Scenario 1: Suppression Effects in SB-1WT of a Fire Originating In SB-1WT:

Suppression effects (activation of wet-pipe sprinkler system S19 or manual firefighting activities) are not expected to extend beyond the area of fire origin. Activation of an automatic sprinkler system would only be expected to activate small number of sprinklers.

Scenario 2: Suppression Effects in SB-1WT of a Fire Originating Outside of SB-1WT:

Since automatic wet-pipe sprinkler systems are not electrically activated, operation of a fire suppression system outside of SB-1WT could not impact the automatic sprinkler system within SB-1WT. Similarly, manual firefighting activities outside of SB-1WT would not be expected to affect equipment/components located within SB-1WT.

Scenario 1: Suppression Effects in SB-2 of a Fire Originating In SB-2:

Suppression effects (activation of wet-pipe sprinkler system S19 or manual firefighting activities) are not expected to extend beyond the area of fire origin. Activation of an automatic sprinkler system would only be expected to activate small number of sprinklers.

Scenario 2: Suppression Effects in SB-2 of a Fire Originating Outside of SB-2:

Since automatic wet-pipe sprinkler systems are not electrically activated, operation of a fire suppression system outside of SB-2 could not impact the automatic sprinkler system within SB 2. Similarly, manual firefighting activities outside of SB-2 would not be expected to affect equipment/components located within SB-2.

Scenario 1: Suppression Effects in TB-1 of a Fire Originating In TB-1:

Suppression effects (activation of suppression systems and manual firefighting activities) are not expected to extend beyond the area of fire origin. Automatic wet-pipe sprinkler system actuation as a result of a fire in the area would only be expected to activate small number of sprinklers. Deluge systems in TB-1 are designed to spray specific equipment or floor areas of the Turbine Building.

Scenario 2: Suppression Effects in TB-1 of a Fire Originating Outside of TB-1:

Condenser Pit, Seal Oil Unit, and Lube Oil Reservoir Area deluge systems are actuated by the associated fire detection system or manual pull boxes in the basement area which could be vulnerable to a fire originating outside TB-1 if the detection circuits and/or control panel are routed or located outside the fire zone (e.g., SSA in the Relay Room). However, these systems are designed to spray specific equipment in the Turbine Building and suppression effects are not expected to extend beyond TB-1 and TB-2.

Since automatic wet-pipe sprinkler systems are not electrically activated, operation of a fire suppression system outside of TB-1 could not impact the automatic wet-pipe sprinkler systems within TB-1 that could have an impact on the nuclear safety performance criteria.

Similarly, manual firefighting activities outside of TB-1 would not be expected to affect equipment/components located within TB-1.

Installed dike area around the Turbine Lube Oil Reservoir and oil collection transfer pumps to this reservoir from the seal oil unit enclosure. A trench also surrounds the Hydrogen Seal Oil Unit and contains drains that control flammable liquid spills from impacting adjacent areas.

Scenario 1: Suppression Effects in TB-1FP of a Fire Originating In TB-1FP:

There are no suppression systems in TB-1FP and the effects of manual firefighting are not expected to extend beyond the area of fire origin.

Scenario 2: Suppression Effects in TB-1FP of a Fire Originating Outside of TB-1FP:

There are no suppression systems in TB-1FP that could be impacted by operation of a fire suppression system or manual firefighting activities outside of TB-1FP.

Scenario 1: Suppression Effects in TB-2 of a Fire Originating In TB-2:

Suppression effects (activation of suppression systems and manual firefighting activities) are not expected to extend beyond the area of fire origin. Automatic wet-pipe sprinkler system actuation as a result of a fire in the area would only be expected to activate small number of sprinklers. Deluge systems in TB-2 are designed to spray specific equipment or floor areas of the Turbine Building.

Scenario 2: Suppression Effects in TB-2 of a Fire Originating Outside of TB-2:

The Lube Oil Reservoir Area deluge system is actuated by the associated fire detection system or manual pull boxes in the basement area which could be vulnerable to a fire originating outside TB-2 if the detection circuits and/or control panel are routed or located outside the fire zone (e.g., SSA in the Relay Room). However, this system is designed to spray specific equipment in the Turbine Building and suppression effects are not expected to extend beyond TB-1 and TB-2.

Since automatic wet-pipe sprinkler systems are not electrically activated, operation of a fire suppression system outside of TB-2 could not impact the automatic wet-pipe sprinkler systems within TB-2 that could have an impact on the nuclear safety performance criteria.

Similarly, manual firefighting activities outside of TB-2 would not be expected to affect equipment/components located within TB-2.

Scenario 1: Suppression Effects in TB-3 of a Fire Originating In TB-3:

Suppression effects (activation of suppression systems and manual firefighting activities) are not expected to extend beyond the area of fire origin. Deluge system S29 is designed to spray the North Wall of the Control Room in the Turbine Building.

The only potentially vulnerable components in the area associated with suppression systems protecting other Fire Zones that could be affected by water discharge from S29 is electric manual pull boxes S20, S21, S22, and S23 at the South Wall. The extent of consequences expected would be shorting out the switch and discharge of water to the associated transformers.

Scenario 2: Suppression Effects in TB-3 of a Fire Originating Outside of TB-3:

Automatic deluge system S29 is actuated by the associated fire detection system which could be vulnerable to a fire originating outside TB-3 if the detection circuits and/or control panel are routed or located outside the fire zone (e.g., SSA in the Relay Room).However, this system is designed to spray on the Turbine Building side of the North Wall of the Control Room and suppression effects are not expected to extend beyond TB-3, TB-2 and TB-1.

Similarly, manual firefighting activities outside of TB-3 would not be expected to affect equipment/components located within TB-3.

Scenario 1: Suppression Effects in TO of a Fire Originating In TO:

Suppression effects (activation of suppression systems and manual firefighting) are not expected to extend beyond the area of fire origin. Deluge system S16 in TO is designed to spray the Turbine Lube Oil Storage Tank and other combustible liquids in the Oil Storage Room.

Scenario 2: Suppression Effects in TO of a Fire Originating Outside of TO:

The Oil Storage Room deluge system is actuated by the associated fire detection system or manual pull boxes in the area which could be vulnerable to a fire originating outside TO if the detection circuits and/or control panel are routed or located outside the fire zone (e.g., SSA in the Relay Room). However, this system is designed to spray on the Turbine Lube Oil Storage Tank and other combustible liquids in the Oil Storage Room and suppression effects are not expected to extend beyond TO.

Similarly, manual firefighting activities outside of TO could potentially spray on, and short out an electric manual pull box that could activate the deluge system. However, the system is designed to spray on the Turbine Lube Oil Storage Tank and other combustible liquids in the Oil Storage Room and suppression effects are not expected to extend beyond TO.

Fire Area ID: BOP - Balance of Plant (Bldgs CD, TSC, H2, Srv, TB, TO) **Fire Risk Evaluation**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
(All)	Area Wide	None	None	R, S	Modifications: R S Procedures/Recovery Actions: R
AVT	253'-6", Condensate Demineralizer Building	None	None	None	None
GAB	271'-0" Ginna Admin Building	D	D	None	Detection System, Z45: D Water Suppression, S40: D Water Suppression, S40C: D
H2	253'-6", Hydrogen Storage Bdlg	None	None	None	None
SB-1	253'-6" Service Building Basement	D	None	rr	Floor drains: rr Water Suppression, S39: D
SB-1HS	253'-6" Service Building Hot Shop	E, D	None	rr	Floor drains: rr Water Suppression, S19: E D
SB-1WT	253'-6" & 271'-0" Service Building Water Treatment Room	E, D	None	rr	Floor drains: rr Water Suppression, S19: E D
SB-2	271'-0", SB General Offices Area (excludes SB-1WT)	E, D	None	rr	Floor drains: rr Water Suppression, S19: E D
TB-1	253'-6", Turbine Building Basement	E, D	E, R	None	Detection System, Heat Detectors for S27: R Detection System, Z32: E R Detection System, Z33: E R Detection System, Z40: E R Water Suppression, S24: E D Water Suppression, S25: E D Water Suppression, S26: E D Water Suppression, S27: E D Water Suppression, S45: E D

Fire Area ID: BOP - Balance of Plant (Bldgs CD, TSC, H2, Srv, TB, TO) **Fire Risk Evaluation**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
TB-1FP	253'-6" Turbine Building Feedpump Room	None	E, R	None	Detection System, Z32: E R
TB-2	271'-0" Turbine Building Intermediate Floor	E, D	E, R	None	Detection System, Heat Detectors for S27: R Detection System, Z34: E R Detection System, Z41: E R Water Suppression, S26: E D Water Suppression, S27: E D Water Suppression, S38: E D
TB-3	289'-6", Turbine Building Operating Floor	D	E, D	None	Detection System, S29: E D Water Suppression, S29: D
TO	253'-6" Turbine Building Turbine Oil Storage Building	D	D	None	Detection System, S16: D Water Suppression, S16: D
TSC-1M	271'-0"Technical Support Center (Mechanical Equipment Room and Administrative Computer)	D	D	None	Detection System, Heat Detectors for S31: D Detection System, S34D1: D Detection System, S34D2: D Detection System, Smoke Detectors for S33: D Detection System, Z29: D Water Suppression, S31: D Water Suppression, S33: D
TSC-1N	271'-0" Technical Support Center	D	D	None	Detection System, Smoke Detectors for S33: D Detection System, Smoke Detectors for S37: D Detection System, Z28: D Detection System, Z31: D Detection System, Z39: D Water Suppression, S30: D Water Suppression, S33: D Water Suppression, S37: D
TSC-1S	271'-0" Technical Support Center (South of Corridor)	D	D	None	Detection System, Z27: D

Fire Area ID: BOP - Balance of Plant (Bldgs CD, TSC, H2, Srv, TB, TO) **Fire Risk Evaluation**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
	and includes TSC D-G, Inverter & Battery Rooms				Detection System, Z30: D Water Suppression, S30: D

Title Fire Risk Evaluation for Fire Area BOP

Risk Summary The delta CDF and delta LERF results for the fire area are summarized below. At the fire area level, the increase in risk is less than 1E-06/rx-yr for the delta CDF, and less than 1E-07/rx-yr for the delta LERF.

All CCDPs and CLERPs are less than 1, ensuring that low CDF and LERF values are not reached solely because of a low fire scenario frequency.

Δ CDF Redacted

Δ LERF

DID Maintained A qualitative evaluation of defense-in-depth (DID) using insights gained from the Fire PRA was performed for the fire area.

The installed fire detection systems are credited in the Fire PRA for Fire Zones TB-1, TB-1FP, and TB-2 to support manual suppression. Given that the fire area has the highest fire frequency in the plant, the other fire detection systems installed in the fire area are credited for DID (none exists in Fire Zones AVT, H2, SB-1, SB-1HS, SB-1WT, and SB-2). Given a potential for structural fire scenarios in several fire zones, including TB-1 and TB-3, and the possibility of a hot gas layer formation in Fire Zone TB-2, the fire suppression systems installed in these fire zones are credited for DID. The installed fire suppression systems are also credited for DID in the other fire zones of the fire area (none exist in Fire Zones AVT, H2, and TB-1FP). Portable extinguishers and hose stations are credited by the Fire PRA in Fire Zones TB-1, TB-1FP, TB-2, and TB-3. In the rest of the fire area, they are available for fire brigade use and do not require additional DID enhancement. Existing administrative control are determined adequate given the nature of combustibles in the area and the quantified scenarios captured in the Fire PRA results. Given the relatively low values of CCDP and CLERPs in the fire area, no DID actions are required. In addition, no modifications are required for DID in the fire area.

With the DID requirements above, the evaluation finds that an adequate balance between the DID echelons is maintained.

Safety Margin Maintained The safety margin for the analyses supporting the fire risk evaluation of the fire area was evaluated and accounted for potential impacts from fire modeling and the plant system performance, including the PRA logic model. All analyses and assessment have been performed utilizing accepted techniques and industry accepted standards. In addition, safety analysis acceptance criteria in the licensing basis (e.g., FSAR, supporting analyses) have been considered and provide sufficient margin to account for analysis and data uncertainty.

Conclusions

Fire Area ID:	BOP - Balance of Plant (Bldgs CD, TSC, H2, Srv, TB, TO)	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

VFDR ID VFDR-BOP-001

VFDR

Fire damage to instrument air piping can challenge reliance on instrument/service air whether being aligned from the normal air compressors or from the diesel air compressor or a deterministic assumption of a loss of offsite power to BUS13 and BUS15 results in the loss of the normal Service Air and Instrument Air compressors.
Local manual alignment of Diesel Air Compressor (CSA05) to the Service Air and Instrument Air Systems is taken to maintain long term operation from the MCB of CHG Pump (PCH01A) AOV-112B, and AOV-112C. Components requiring manual action are located in this fire area and this action may not be successful due to the integrity of instrument air piping.
This VFDR is associated with the Vital Auxiliaries Function. [OE004, OE005, PC846]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

CVC - 112B - RWST TO CHARGING PUMP SUCTION {Loss of IA}
CVC - 112C - VCT OUTLET AOV {Loss of IA}
CVC - PCH01A - CHRG PUMP A: {Cascading Impact}
LAC - BUS13 - 480V SWITCHGEAR {L0177(LOCI), L0178(LOCI), COL0001(P), E0028(P), E0107(P), E0107A(P), L0130(P), L0328(P), Cascading Impact}
LAC - BUS15 - 480V SWITCHGEAR {L0004(LOCI), L0005(LOCI), C5592(P), C5594(P), C5594A(P), C5804(P), C5805(P), E0028(P), E0029(P), E0107(P), L0024(P), L0047(P), L0079(P), L0197(P), Cascading Impact}
PSA - 7000A - IA/SA CROSS-CONNECT {Requires Operator Action, Component in FA}
PSA - 7002D - DIESEL AIR COMPRESSOR SUPPLY ISOLATION VALVE {Requires Operator Action, Component in FA}
PSA - 7195A - BU AIR COMP DISCHARGE INNER ISOL VAL TO SERV AIR HEADER {Requires Operator Action, Component in FA}
PSA - 7203 - SERV AIR ISOL VALVE TO THE TURBINE BUILDING FROM YARD {Requires Operator Action, Component in FA}
PSA - CSA05 - DIESEL AIR COMPRESS (OUTSIDE UNIT) FOR BU SERV AIR/INSTR AIR {Requires Operator Action}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-BOP-003

VFDR

Loss of power to BUS14 and BUS18 is postulated with possible excessive loading on KDG01A due to the following separation concerns:
(a) Short to ground on cable L0316 can prevent opening of breaker 52/14. Breaker 52/14 is interlocked to 52/EG1A1 and prevents its closure and alignment of KDG01A to BUS14.
(b) Short to ground on cables L0505 or L0506 can prevent opening of breaker 52/18. Breaker 52/18 is interlocked to 52/EG1A2 and prevents its closure and alignment of KDG01A.
(c) Fire damage to cable L0499 can cause a loss of power to the control circuitry for breaker 52/MCC1G1 which would not trip open as required on a LOOP, thereby applying possible excessive loading on KDG01A.
Local action is required to control KDG01A, strip the loads off BUS14/BUS18, start KDG01A, close breaker 52/EG1A2, start SW Pumps and install selected 125V DC Control Power circuitry fuses (locally at BUS14 and BUS 18) to facilitate 480V AC breaker operation from the MCB.

Fire Area ID:	BOP - Balance of Plant (Bldgs CD, TSC, H2, Srv, TB, TO)	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

This VFDR is associated with the Vital Auxiliaries Function. [OMC204, OMH201, OMH202, OMH203, OMH204, OMH205, OMH212, OP017, OP847, OP849, OP850]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

ABV - AAF04 - AUXILIARY BUILDING EXHAUST FAN G {Cascading Impact}
AFW - PAF01A - AUXILIARY FEEDWATER PUMP A: {Cascading Impact}
AFW - PSF01A - SAFW PUMP C: {Cascading Impact}
CCW - PAC02A - CCW PUMP A: {Cascading Impact}
CSS - PSI02A - CONTAINMENT SPRAY PUMP A: {Cascading Impact}
CVC - PCH01A - CHRG PUMP A: {Cascading Impact}
EAC - 52/EG1A1 - EDG A SUPPLY TO BUS 14: {Cascading Impact}
EAC - 52/EG1A2 - EDG A SUPPLY TO BUS 18 {Cascading Impact}
EAC - KDG01A - DIESEL-GENERATOR A {L0365(L), Cascading Impact}
LAC - 52/14 - SPT SUPPLY BREAKER TO BUS 14: {L0316(LOCI)}
LAC - 52/18 - SPT SUPPLY BREAKER TO BUS 18 {L0504(L), L0505(LOCI), L0506(LOCI)}
LAC - 52/BT14-13 - BKR FOR BUS14 TO BUS13 TIE : {L0177(LC), L0328(P)}
LAC - 52/IH1A - BREAKER FOR EHTRCW01A (CIRCULATING WATER INTAKE HEATER A) : {Cascading Impact}
LAC - 52/IH1C - BREAKER FOR EHTRCW01C (CIRCULATING WATER INTAKE HEATER C) : {Cascading Impact}
LAC - 52/MCC1G1 - MOTOR CONTROL CENTER G SUPPLY G1: {L0499(LOCI)}
LAC - BUS14 - 480V SWITCHGEAR: {L0177(LC), L0316(LOCI), M0095(LOCI), E0026(P), E0106(P), L0328(P), M0096(PI), Requires Operator Action}
LAC - BUS18 - 480V SWITCHGEAR: {L0429(LC), L0430(LC), L0504(LO), L0505(LOCI), L0506(LOCI), M0090(LOCI), E0026(P), E0106(P), M0091(PI), Requires Operator Action}
LAC - MCCC - MOTOR CONTROL CENTER C: {Cascading Impact}
RCS - EHTRRC01A - PRESSURIZER PROPORTIONAL HEATERS: {Cascading Impact}
RCS - EHTRRC02A - PRESSURIZER PROPORTIONAL HEATERS: {Cascading Impact}
RCV - ACF08A - CONTAINMENT RECIRCULATING FAN A: {Cascading Impact}
RCV - ACF08D - CONTAINMENT RECIRCULATING FAN D: {Cascading Impact}
RHR - PAC01A - RHR PUMP A: {Cascading Impact}
SIS - PSI01A - SI PUMP A: {Cascading Impact}
SIS - PSI01C - SI PUMP C: {Cascading Impact}
SWS - PSW01A - SERVICE WATER PUMP A: {Cascading Impact}
SWS - PSW01C - SERVICE WATER PUMP C: {Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action DGHFDMNL-LD-STRT, consisting of locally starting the Diesel Generators per ER-D/G.1 Step 6.1, was credited to help resolve this VFDR. In addition, Plant Modifications ESR-12-0141, which provides overcurrent protection for Diesel Generators, and ESR-12-0412, which provides fusing to prevent hot shorts on Diesel Generators, were credited to help resolve this VFDR.

VFDR ID VFDR-BOP-004

Fire Area ID: BOP - Balance of Plant (Bldgs CD, TSC, H2, Srv, TB, TO) **VFDRs**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

VFDR

A loss of the Service Air and Instrument Air Systems is postulated due to loss of BUS13 and BUS15 (both buses are located in this fire area) or fire damage to instrument air piping. This would result in AOV-112B and AOV-112C failing in an undesirable position, which would prevent proper alignment of the credited CHG pump flow-path from the MCB and would result in securing all CHG pumps until a CHG pump success path is locally established.
This VFDR is associated with the Reactivity Control Function, and Inventory and Pressure Control Functions. [OMH211, OP846]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

CVC - 112B - RWST TO CHARGING PUMP SUCTION {Loss of IA}
CVC - 112C - VCT OUTLET AOV {Loss of IA}
CVC - 261 - VCT H2 INLT MANUAL BLK VLV {Requires Operator Action}
CVC - 289 - CHARGING PUMPS DISCHARGE ISOL VLV TO RCP SEAL INJECTION {Requires Operator Action}
CVC - 358 - RWST MAKEUP AOV BYPASS VALVE {Requires Operator Action}
CVC - PCH01A - CHRG PUMP A: {Cascading Impact}
LAC - BUS13 - 480V SWITCHGEAR {L0177(LOCI), L0178(LOCI), COL0001(P), E0028(P), E0107(P), E0107A(P), L0130(P), L0328(P), Cascading Impact, Component in FA}
LAC - BUS15 - 480V SWITCHGEAR {L0004(LOCI), L0005(LOCI), C5592(P), C5594(P), C5594A(P), C5804(P), C5805(P), E0028(P), E0029(P), E0107(P), L0024(P), L0047(P), L0079(P), L0197(P), Cascading Impact, Component in FA}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDMAKEUP, consisting of locally aligning and starting the new charging system was credited to help resolve this VFDR. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

VFDR ID VFDR-BOP-008

VFDR

If offsite power is available, both RCPs (cable M0047 for PRC01A and cable M0142 for PRC01B) are subject to spurious operation due to cable fire damage. The pumps continuing to run will have an adverse impact on controlling RCS cool down rate.
Local action is taken to secure incoming power to BUS11A and BUS11B.
This VFDR is associated with the Decay Heat Removal Function. [OP017, OP854, PH825, PH826]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

RCS - PRC01A - RCP A: {M0051(LO), M0047(LOCI), E0025(P), E0027(P), M0045(P)}
RCS - PRC01B - RCP B: {M0051(L), M0142(LOCI), E0104(P), E0106A(P), M0140(P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

Fire Area ID:	BOP - Balance of Plant (Bldgs CD, TSC, H2, Srv, TB, TO)	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

VFDR ID VFDR-BOP-012

VFDR

Loss of control of DG "A" Fuel Oil Day Tank SOV(s) and DG "A" Fuel Oil Transfer Pump are postulated due to impacted common power supply cable (L0365) routed in this fire area. As a consequence, long-term fuel supply to KDG01A is not available challenging availability of the credited DG.
This VFDR is associated with the Vital Auxiliaries Function. [OP016]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

DGS - 5907 - DG A FUEL OIL DAY TANK SOV {L0365(L)}
DGS - 5907A - FOTP A RECIRC SOV {L0365(L)}
DGS - PDG02A - DG FO TRANSFER PUMP A {Cascading Impact}
EAC - KDG01A - DIESEL-GENERATOR A {L0365(L), Cascading Impact}

Disposition

Modification ESR-12-0412, which protects Cable L0365 from fire damages, is credited to deterministically resolve this VFDR.

VFDR ID VFDR-BOP-013

VFDR

Excessive load to KDG01A is postulated on a LOOP with KDG01A in-service. Cable damage (L0177) can spuriously close breaker 52/BT14-13 aligning KDG01A to BUS11A via BUS13. Cable damage (L0499) can cause a loss of power to control circuitry for breaker 52/MCC1G1. If MCCG is aligned to BUS18, breaker 52/MCC1G1 will not trip open as required on a LOOP.
This VFDR is associated with the Vital Auxiliaries Function. [OP017, OP848, OP850]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

EAC - KDG01A - DIESEL-GENERATOR A {L0365(L), Cascading Impact}
LAC - 52/BT14-13 - BKR FOR BUS14 TO BUS13 TIE : {L0177(LC), L0328(P)}
LAC - 52/MCC1G1 - MOTOR CONTROL CENTER G SUPPLY G1: {L0499(LOCI)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery ActionDGHFDMNL-LD-STRT, consisting of locally starting the Diesel Generators per ER-D/G.1 Step 6.1, was credited to help resolve this VFDR. In addition, Plant Modifications ESR-12-0141, which provides overcurrent protection for Diesel Generators, and ESR-12-0412, which provides fusing to prevent hot shorts on Diesel Generators, were credited to help resolve this VFDR.

Fire Area ID:	BR1A - Battery Room 1A, Elevation 253' 6"	**Fire Area Definition**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

Fire Zone ID	Description
BR1A	253'-6", Control Building Complex Battery Room 1A

Fire Area ID: BR1A - Battery Room 1A, Elevation 253' 6" **Performance Goals**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Performance Goal	Method of Accomplishment	Comments
1. Reactivity Control Function	Immediate reactor shutdown is achieved by de-energizing all CRDMs which results in control rod negative reactivity insertion into the reactor core.	Method of Accomplishment (Hot Shutdown) Shutdown Method II Success Path "B"
2. Inventory Control Function	• RCS inventory depletion control is maintained by closure of all letdown paths, all sample paths, all head vent paths, and both PORVs. • RCS inventory makeup is controlled byTrain "B" CVCS success path from the RWST to the RCS.	Method of Accomplishment (Hot Shutdown) Shutdown Method II Success Path "B"
3. Pressure Control Function	• RCS high pressure control is maintained by automatic mechanical operation of all PRZR Code Safety Valves, stopping of both RCPs, and securing all PRZR heaters. • RCS lowering pressure control is maintained by closure of both PRZR PORVs, closure of both PRZR Normal Spray valves or stopping the associated RCP(s), and closure of both SG ARVs.	Method of Accomplishment (Hot Shutdown) Shutdown Method II Success Path "B"
4. Decay Heat Removal Function	• RCS high temperature control is maintained by automatic mechanical operation of all SG Code Safety Valves. • RCS lowering temperature control is maintained by closure of both MSIVs, closure of both SG ARVs, stopping both MFW Pumps, stopping AFW System flow to the non-credited SG, and controlling flow to the credited SG. • SG makeup control is maintained by either one of the following to SG "B": o TDAFW Pump success path from the SG "B" MSS and pump suction from the CST or SWS o SAFW Pump "D" success path from the SWS or FPS	Method of Accomplishment (Hot Shutdown) Shutdown Method II Success Path "B"
5. Process Monitoring Function	RCS Temperature:TI-409A-2 (RCS LOOP A HL INDICATION) Location: IBELIP, TI-409B-2 (RCS LOOP A CL INDICATION) Location: IBELIP, TI-410A-1 (RCS LOOP B HL INDICATION (0-700 F)) Location: MCB, and TI-410B-1 (RCS LOOP B CL INDICATION) Location: MCB RCS Pressure:PI-420A (RCS HL PRESSURE (0-3000 PSIG))	Method of Accomplishment (Hot Shutdown) Shutdown Method II Success Path "B"

Fire Area ID: BR1A - Battery Room 1A, Elevation 253' 6" **Performance Goals**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Performance Goal	**Method of Accomplishment**	**Comments**
	Location: MCB Pressurizer Level:LI-428 (PRZR LEVEL CHANNEL 3) Location: MCB Steam Generator Level:LI-460AA (S/G "A" LEVEL APPENDIX R [0-520" H2O (WR)) Location: IBELIP and LI-507 (S/G "B" LEVEL [0 - 520" H20 (WR)) Location: MCB Steam Generator Pressure:PI-469A (S/G "A" PRESSURE) Location: IBELIP, and PI-478 (S/G "B" PRESSURE) Location: MCB Neutron Flux Monitoring:N-32R (APPENDIX R SOURCE RANGE MONITOR) Location: IBELIP, AND NI-32B (NIS SOURCE RANGE INDICATION) Location: MCB Tank Level:LI-2022B (CDST "B" LEVEL) Location: MCB, and LI-920 (RWST LEVEL) Location: MCB System Flow Rate:FI-2015A (TDAFW PUMP DISCH FLOW) Location: IBELIP, FI-4085A (SAFW PUMP "D", <PSF01B> DISCH FLOW) Location: SAF, FI-4085B (SAFW PUMP "D" <PSF01B> DISCH FLOW) Location: MCB	
6. Vital Auxiliaries	• DC Power and instrument power availability is maintained by train "B" of the BDC/IAC System from Battery "B" or the TSC Battery System. • AC Power availability is maintained by train "B" Diesel-Generator and train "B" DBV/DGS support components. • Diesel-Generator engine cooling is maintained by the train "B" SWS success path or alignment of alternate cooling from the FPS to the "B" Diesel. • Except for a Control Room fire, train "B" CREATS is maintained for controlling the Control Room environmental conditions within the required specifications for habitability and design limits for equipment operability. Ventilation systems for the SAFW components in the SAFW Building, the DG components in the Diesel Building, and the TSC components in the Technical Support Center are maintained for equipment design limits.	Method of Accomplishment (Hot Shutdown) Shutdown Method II Success Path "B"

References	**Document ID**
	EIR 51-9089546-001 Rev. 001 - R. E. Ginna Nuclear Power Station, Nuclear Safety Capability Assessment

Fire Area ID: BR1A - Battery Room 1A, Elevation 253' 6" **Performance Goals**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Suppression Activities Effect on Nuclear Safety Performance Criteria

Scenario 1: Suppression Effects in BR1A of a Fire Originating In BR1A:

There are no suppression systems in BR1A and the effects of manual firefighting are not expected to extend beyond the area of fire origin.

Scenario 2: Suppression Effects in BR1A of a Fire Originating Outside of BR1A:

There are no suppression systems in BR1A that could be impacted by operation of a fire suppression system or manual firefighting activities outside of BR1A.

The floor drain is provided with backflow protection.

NFPA 805 Ch 4 Compliance (NEI 04-02 Table B-3)

Fire Area ID: BR1A - Battery Room 1A, Elevation 253' 6" **Fire Risk Evaluation**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
(All)	Area Wide	None	None	R, S	Modifications: R S Procedures/Recovery Actions: R
BR1A	253'-6", Control Building Complex Battery Room 1A	None	E, R	E	Combustible Loading Controls: E Detection System, Z42: E R

Title
Fire Risk Evaluation for Fire Area BR1A

Risk Summary
The delta CDF and delta LERF results for the fire area are summarized below. At the fire area level, the increase in risk is less than 1E-06/rx-yr for the delta CDF, and less than 1E-07/rx-yr for the delta LERF.

All CCDPs and CLERPs are less than 1, ensuring that low CDF and LERF values are not reached solely because of a low fire scenario frequency.

Δ CDF
Δ LERF
Redacted

DID Maintained
A qualitative evaluation of defense-in-depth (DID) using insights gained from the Fire PRA was performed for the fire area.

The installed fire detection system in the fire area is credited in the Fire PRA to support manual suppression. There are no installed fire suppression systems in the fire area. Portable extinguishers and hose stations are available in adjacent fire areas, credited in the Fire PRA and do not require additional DID enhancement. Existing administrative control are determined adequate given the nature of combustibles in the area and the quantified scenarios captured in the Fire PRA results. Given the relatively low values of CCDP and CLERPs in the fire area, no DID actions are required. In addition, no modifications are required for DID in the fire area.

With the DID requirements above, the evaluation finds that an adequate balance between the DID echelons is maintained.

Safety Margin Maintained
The safety margin for the analyses supporting the fire risk evaluation of the fire area was evaluated and accounted for potential impacts from fire modeling and the plant system performance, including the PRA logic model. All analyses and assessment have been performed utilizing accepted techniques and industry accepted standards. In addition, safety analysis acceptance criteria in the licensing basis (e.g., FSAR, supporting analyses) have been considered and provide sufficient margin to account for analysis and data uncertainty.

Conclusions

Fire Area ID:	BR1A - Battery Room 1A, Elevation 253' 6"	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

VFDR ID VFDR-BR1A-001

VFDR

Fire damage to instrument air piping can challenge reliance on instrument/service air whether being aligned from the normal air compressors or from the diesel air compressor or a deterministic assumption of a loss of offsite power to BUS13 and BUS15 results in the loss of the normal Service Air and Instrument Air compressors.
Local manual alignment of Diesel Air Compressor (CSA05) to the Service Air and Instrument Air Systems is taken to manipulate air operated SSD components (i.e., 4297, 4298, 112B, 112C, PCH01B, 624, and 626). However, this action may not be successful due to the integrity of instrument air piping.
This VFDR is associated with the Vital Auxiliaries Function. [OE004, PH415]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA issue.

Component(s)

AFW - 4297 - TDAFWP FCV TO S/G A {Loss of IA}
AFW - 4298 - TDAFWP FCV TO S/G B {Loss of IA}
CVC - 112B - RWST TO CHARGING PUMP SUCTION {Loss of IA}
CVC - 112C - VCT OUTLET AOV {Loss of IA}
CVC - PCH01B - CHRG PUMP B {Loss of IA}
LAC - BUS13 - 480V SWITCHGEAR {E0028(P), E0107(P), L0328(P), Cascading Impact}
LAC - BUS15 - 480V SWITCHGEAR { E0028(P), E0107(P), L0079(P), L0197(P), Cascading Impact}
PSA - 7000A - IA/SA CROSS-CONNECT {Requires Operator Action}
PSA - 7002D - DIESEL AIR COMPRESSOR SUPPLY ISOLATION VALVE {Requires Operator Action}
PSA - 7195A - BU AIR COMP DISCHARGE INNER ISOL VAL TO SERV AIR HEADER {Requires Operator Action}
PSA - 7203 - SERV AIR ISOL VALVE TO THE TURBINE BUILDING FROM YARD {Requires Operator Action}
PSA - CSA05 - DIESEL AIR COMPRESS (OUTSIDE UNIT) FOR BU SERV AIR/INSTR AIR {Requires Operator Action}
RHR - 624 - RHR HX B OUTLET {Loss of IA}
RHR - 626 - RHR HX BYPASS {Loss of IA}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-BR1A-002

VFDR

A MSO concern exists related to spurious (ESF) Safety Injection Actuation due to cascading loss of Train "A" DC power. Actuation is possible due to:
(a) Low PZR pressure signal with two out of three PZR pressure transmitters loops (PT-429 and PT-430) impacted - OR -
(b) Low PZR pressure signal (as above) AND either a low SG "B" pressure signal (from two out of three SG "B" pressure transmitter loops PI-479 and PT-483) OR a low SG "A" pressure signal (from two out of three SG "A" pressure transmitter loops PT-468 and PI-469).
Local action is taken to de-energize SI actuation circuits by opening breakers at the DC power panels.
This VFDR is associated with the Inventory and Pressure Control Functions. [OE010, OP005, OP006, OP015, OP017, PH419]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a

separation issue.

Component(s)

BDC - DCPDPCB04A - MAIN CONTROL BOARD DC DIST PANEL A {Cascading Impact, Requires Operator Action}
BDC - DCPDPCB04B - MAIN CONTROL BOARD DC DIST PANEL B {Cascading Impact, Requires Operator Action}
ESF - SI-TRAIN-A - SAFEGUARDS INITIATION TRAIN A {E0214 (P), Cascading Impact}
ESF - SI-TRAIN-B - SAFEGUARDS INITIATION TRAIN B {Cascading Impact}
MSS - PI-469 - S/G A PRESS (MCB) {R4373 (I) and Cascading Impact}
MSS - PI-479 - S/G B PRESS (MCB) {Cascading Impact}
MSS - PT-468 - STM GEN A PRESS XMTR {Cascading Impact}
MSS - PT-482 - S/G A STM PRESS XMTR {R4375 (I), Cascading Impact}
MSS - PT-483 - S/G B STM PRESS XMTR {R4389 (I), Cascading Impact}
RPS - PT-429 - PRZR PRESS XMTR {Cascading Impact}
RPS - PT-430 - PRZR PRESS XMTR {Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-BR1A-003

VFDR

A MSO concern exists related to inadvertent steam dumping. Failure of 125V DC cables E0215 and E0212 results in the inability to successfully TRIP the Turbine-Generator -AND/OR- ESTABLISH MS Isolation to the secondary plant from the MCB. Additionally, Condenser Steam Dump Valves are susceptible to spurious OPEN -AND- MSS supply valves to the MSRs could fail OPEN, which would severely exacerbate the RCS cool down due to Inadvertent Steam Dumping.
Local action is taken to fail closed MSIV B (AOV-3516) and MSIV A (AOV-3517).
This VFDR is associated with the Decay Heat Removal Function. [OP017, OP401, PH407, PH420]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

MSS - 3349 - STEAM GEN CONDENSER STEAM DUMP VLV {G0765(LO), G0780(LO), G0799(LO), Cascading Impact}
MSS - 3350 - STEAM GEN CONDENSER STEAM DUMP VLV {G0819(LO), G0830(LO), Cascading Impact}
MSS - 3351 - STEAM GEN CONDENSER STEAM DUMP VLV {G0765(LO), G0780(LO), G0799(LO), Cascading Impact}
MSS - 3352 - STEAM GEN CONDENSER STEAM DUMP VLV {G0819(LO), G0830(LO), Cascading Impact}
MSS - 3353 - STEAM GEN CONDENSER STEAM DUMP VLV {G0765(LO), G0780(LO), G0799(LO), Cascading Impact}
MSS - 3354 - STEAM GEN CONDENSER STEAM DUMP VLV {G0819(LO), G0830(LO), Cascading Impact}
MSS - 3355 - STEAM GEN CONDENSER STEAM DUMP VLV {G0765(LO), G0780(LO), G0799(LO), Cascading Impact}
MSS - 3356 - STEAM GEN CONDENSER STEAM DUMP VLV {G0819(LO), G0830(LO), Cascading Impact}
MSS - 3425 - MAIN STEAM CONTROL AOV TO MSR 1A {Cascading Impact}
MSS - 3425A - MOISTURE SEPARATOR REHEATER 1A MINI WARMUP AIR OPERATED VALV {Cascading Impact}

Fire Area ID:	BR1A - Battery Room 1A, Elevation 253' 6"	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

MSS - 3426 - MAIN STEAM CONTROL AOV TO MSR 1B {Cascading Impact}
MSS - 3426A - MSR 1B MINI WARM-UP AOV {Cascading Impact}
MSS - 3427 - MAIN STEAM CONTROL AOV TO MSR 2A {Cascading Impact}
MSS - 3427A - MSR 2A MINI WARMUP AOV {Cascading Impact}
MSS - 3428 - MAIN STEAM CONTROL AOV TO MSR 2B {Cascading Impact}
MSS - 3428A - MSR 2B MINI WARMUP AOV {Cascading Impact}
MSS - 3516 - MSIV B {G0714A(LC), E0212(P), E0215(P), Cascading Impact, Requires Operator Action}
MSS - 3517 - MSIV A {G0715(LC), E0212(P), E0215(P), Cascading Impact, Requires Operator Action }
MSS - STEAM-DUMP-CONTROL - STEAM DUMP CONTROLS {R1244(), Cascading Impact}
TGS - 20/AST - TURBINE AUTO STOP TRIP SOLENOID (20/AST) {E0215(P), Cascading Impact}
TGS - 3462 - HP TURB E/H GOV VLV {Cascading Impact}
TGS - 3463 - HP TURB E/H GOV VLV {Cascading Impact}
TGS - 3464 - HP TURB E/H GOV VLV {Cascading Impact}
TGS - 3465 - HP TURB E/H GOV VLV {Cascading Impact}
TGS - 3544 - HP TURBINE MAIN STEAM STOP VLV {Cascading Impact}
TGS - 3545 - HP TURBINE MAIN STEAM STOP VLV {Cascading Impact}
TGS - 5501S3 - TURBINE EMERGENCY TRIP SOLENOID VALVE (20/ET) {E0212(P), Cascading Impact}

Disposition Modification ESR-12-0128, which ensures automatic MSIV closure, deterministically resolves this VFDR.

VFDR ID VFDR-BR1A-005

VFDR RCS cool down is challenged due to excess feed water flow to the SG. AFW Pump PAF01A can automatically start on a reactor trip. Fire damage to cable G1401 prevents control of AFW Pump PAF01A from the MCB.
This VFDR is associated with the Decay Heat Removal Function. [OP405]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s) AFW - PAF01A - AUXILIARY FEEDWATER PUMP A {G1401(L), Cascading Impact}

Disposition This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. The delta risk was qualitatively evaluated as insignificant based on the long time needed for a steam generator to overfill from an AFW pump spuriously running. This long time window ensures that the flow can be stopped before the overfill actually occurs. No recovery action was credited to resolve this VFDR.

VFDR ID VFDR-BR1A-007

VFDR A loss of charging capability is possible. The VCT can fill with high temperature water from RCP seal leakoff, via the Seal Water HX without CCW cooling, flashing steam in the VCT and causing VCT pressure to rise above head pressure of the RWST. When the CHG Pump is restarted, this results in the pump drawing suction from the VCT (instead of the RWST), introducing saturated water and; thereby, damaging the credited CHG pump. This scenario is postulated due to the following separation concerns:
(a) Loss of CCW cooling, due to cable damage de-energizing credited SW Pumps (PSW01B and PSW01D), - AND -

Fire Area ID:	BR1A - Battery Room 1A, Elevation 253' 6"	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

(b) VCT isolation valve (AOV-112C) fails open on a loss of instrument/service air OR loss of Train "A" DC power when Battery "A" is depleted,
- AND -
(c) RCP seal leak-off isolation valve (MOV-313) fails open on loss of Train "A" AC power (note, RCP Seal Outlet AOVs 270A and 270B should be maintained open for RCP #2 seal integrity).
This VFDR is associated with the Reactivity Control Function, and Inventory Control and Pressure Control Functions. [OE003]
Impacted Components:
* CVC - 112C: VCT OUTLET AOV {Cascading Impact}
* CVC - 313: SEAL OR EXCESS LETDOWN RETURN ISOLATION MOV {Cascading Impact}
* CVC - PCH01B: CHRG PUMP B {Cascading Impact}
* SWS - PSW01B: SERVICE WATER PUMP B {L0462(LOCI), Cascading Impact}
* SWS - PSW01D: SERVICE WATER PUMP D {L0466(LOCI), Cascading Impact}
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.
Impacted Components:
* CVC - 112C: VCT OUTLET AOV {Cascading Impact}
* CVC - 313: SEAL OR EXCESS LETDOWN RETURN ISOLATION MOV {Cascading Impact}
* CVC - PCH01B: CHRG PUMP B {Cascading Impact}
* SWS - PSW01B: SERVICE WATER PUMP B {L0462(LOCI), and Cascading Impact}
* SWS - PSW01D: SERVICE WATER PUMP D {L0466(LOCI), and Cascading Impact}
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDMAKEUP, consisting of locally aligning and starting the new charging system was credited to help resolve this VFDR. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

VFDR ID

VFDR-BR1A-009

VFDR

A MSO concern exists related to DG overload. Prior to aligning KDG01B to the credited 480V Buses, isolating unnecessary loads is required to prevent DG overload.
This VFDR is associated with the Vital Auxiliaries Function. [OMH721]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

LAC - 52/IH1B - BREAKER FOR EHTRCW01B (CIRCULATING WATER INTAKE HEATER B) {Cascading Impact}
LAC - 52/IH1D - BREAKER FOR EHTRCW01D (CIRCULATING WATER INTAKE HEATER D) {Cascading Impact}
LAC - BUS16 - 480V SWITCHGEAR {E0105(P), Cascading Impact}
LAC - BUS17 - 480V SWITCHGEAR {E0105(P), Cascading Impact}
RCV - ACF08B - CONTAINMENT RECIRCULATING FAN B {Cascading Impact}
RCV - ACF08C - CONTAINMENT RECIRCULATING FAN C {Cascading Impact}
SFP - PAC07B - SPENT FUEL POOL RECIRCULATING PUMP B {Cascading Impact}

Fire Area ID:	BR1A - Battery Room 1A, Elevation 253' 6"	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery ActionDGHFDMNL-LD-STRT, consisting of locally starting the Diesel Generators per ER-D/G.1 Step 6.1, was credited to help resolve this VFDR. In addition, Plant Modification ESR-12-0141, which provides overcurrent protection for Diesel Generators, was credited to help resolve this VFDR.

VFDR ID

VFDR-BR1A-018

VFDR

Fire damage to cables (L0682, L0683, L0690, L0692 and L0877) can simulate an under-voltage condition that will load shed credited BUS16.
Local action is taken to disable circuitry at BUS16 under-voltage relay cabinet by removal of DC fuse blocks FUARB1RC 16/2-P and FUARB1RC 16/3-N.
This VFDR is associated with the Vital Auxiliaries Function. [PH402]
Impacted Component:
* LAC - UVBUS16: BUS 16 UV CIRCUITRY {L0682(), L0683(), L0690(), L0691(), L0692(), L0693(), L0877(), Cascading Impact}
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery ActionDGHFDMNL-LD-STRT, consisting of locally starting the Diesel Generators per ER-D/G.1 Step 6.1, was credited to help resolve this VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID

VFDR-BR1A-019

VFDR

With offsite power available, cable fire damage prevents MCB trip of RCPs PRC01A (cable E0025) and PRC01B (cable E0104), and Feedwater Pumps PFW01A (cable E0025 or M0042) and PFW01B (cable E0104 or M0159). Additionally, cable fire damage could prevent closure of MFW isolation valves. This results in an impact to the ability to control SG inventory and RCS temperature.
Local action is taken at the switchgear to trip the pumps.
This VFDR is associated with the Decay Heat Removal Function. [OP403, PH409, PH412, PH413, PH414]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

MFW - 3976 - MFW PUMP B DISCHARGE MOV {E0021(P), Cascading Impact}
MFW - 3977 - MFW PUMP A DISCHARGE MOV {Cascading Impact}
MFW - 3994 - MAIN FW ISOLATION AOV TO S/G B {E0212(P)}
MFW - 3995 - MAIN FW ISOLATION AOV TO S/G A {E0215(P), Cascading Impact}
MFW - 4269 - MFW FCV TO S/G A {E0215(P), R0760(L), R0778(L), R0779(L), R0780(L), R0781(L), R0782(L), R0784(L), R0785(L), Cascading Impact}
MFW - 4270 - MFW FCV TO S/G B {E0212(P), R0769(L), R0778(L), R0780(L), R0781(L), R0782(L), R0784(L), R0785(L)}
MFW - 4271 - FCV 4269 BYPASS {E0215(P), R0760(L), R0778(L), R0779(L), R0780(L), R0781(L), R0782(L), R0784(L), R0785(L),

Cascading Impact}
MFW - 4272 - FCV 4270 BYPASS {E0212(P), R0769(L), R0778(L), R0779(L), R0781(L), R0782(L), R0784(L), R0785(L)}
MFW - PFW01A - MFW PUMP A {M0042 (LC), E0025 (P), Cascading Impact}
MFW - PFW01B - MFW PUMP B {M0159 (LC), E0104 (P)}
RCS - PRC01A - RCP A {E0025 (P), Cascading Impact}
RCS - PRC01B - RCP B {E0104 (P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID

VFDR-BR1A-020

VFDR

On a loss of Instrument Air and Service Air due to a deterministic assumption of a loss of offsite power, AOV-112B (CHG Pump suction from RWST) can fail closed. A concurrent loss of Train "A" DC power when Battery "A" is depleted (or a loss of Instrument Air/Service Air) can fail open AOV-112C (CHG Pump suction from VCT). This can result in damage to the credited CHG Pump when VCT inventory is depleted. Local action is taken to align the RWST to the CHG Pump suction header by opening manual valve V-358 (CHARGING PUMP SUCTION FROM RWST), closing manual valve V-261 (VCT HYDROGEN BLOCK VLV) and ensuring manual valve V-262 (VCT NITROGEN INLET VLV) is closed.
This VFDR is associated with the Reactivity Control Function, and Inventory and Pressure Control Functions. [PH411]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

CVC - 261 - VCT H2 INLT MANUAL BLK VLV {Requires Operator Action}
CVC - 262 - VCT NITROGEN INLET MANUAL BLK VLV {Requires Operator Action}
CVC - 358 - CHARGING PUMP SUCTION FROM RWST MANUAL IV {Requires Operator Action}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDMAKEUP, consisting of locally aligning and starting the new charging system was credited to help resolve this VFDR. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

VFDR ID

VFDR-BR1A-022

VFDR

Local alignment of BUS15 to BUS16 as a reliable power supply for MCCB (which supports availability of the 120V AC Instrument Bus D) is not viable since the power cable L0197 connecting BUS15 and BUS16 could be fire damaged in this area. Additionally, cross-tie breaker (52/BT16-15) is not coordinated with load breaker to MCCB from BUS15.
This VFDR is associated with the Vital Auxiliaries Function. [OP402, PH418]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Fire Area ID:	BR1A - Battery Room 1A, Elevation 253' 6"	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

Component(s)

IAC - CVTA2 - INSTRUMENT BUS D CONSTANT VOLTAGE TRANSFORMER {C0500(P), Cascading Impact}
IAC - IBPDPCBD - INSTR POWER DISTRIBUTION PANEL D {Cascading Impact}
IAC - IBPDPCBDY - INSTRUMENT BUS D {C0500(P), Cascading Impact}
LAC - 52/15 - BKR FOR BUS 15 SUPPLY {E0028(P), E0107(P), Cascading Impact}
LAC - 52/BT16-15 - BREAKER FOR BUS 16 TO BUS 15 TIE {L0197(P), Cascading Impact}
LAC - BUS15 - 480V SWITCHGEAR {E0028(P), E0107(P), L0079(P), L0197(P), Cascading Impact}
LAC - MCCB - MOTOR CONTROL CENTER B {E0021(P), Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-BR1A-024

VFDR

Loss of instrument buses (IBPDPCBAR and IBPDPCBBW) powered from Train "A" fails two out of three PZR level transmitter loops (LI-426 and LT-427) resulting in low-level signal that de-energizes the credited Train "B" PZR heaters. The signal cannot be bypassed by the selector switch on the MCB impacting the ability to control RCS pressure during cooldown.
This VFDR is associated with the Inventory and Pressure Control Functions. [OP019]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

BDC - DCPDPCB02A - BATTERY A MAIN FUSE CABINET{E0002(P), E0002A(P), E0248A(P), E0278A(P), E0278B(P), Cascading Impact}
BDC - DCPDPCB03A - MAIN DC DISTRIBUTION PANEL A{E0014(P), Cascading Impact}
IAC - CVTA1 - INSTRUMENT BUS B CONSTANT VOLTAGE XFMR{C0640(P), Cascading Impact}
IAC - IBPDPCBA - INSTR POWER DISTRIBUTION PANEL "A"{Cascading Impact}
IAC - IBPDPCBAR - INSTRUMENT BUS "A"{C2500(p), Cascading Impact}
IAC - IBPDPCBB - INSTR POWER DISTRIBUTION PANEL "B"{Cascading Impact}
IAC - IBPDPCBBW - INSTRUMENT BUS "B"{C0640(p), C2503(p), Cascading Impact}
IAC - INVTCVTA - INSTRUMENT BUS A CONSTANT VOLTAGE INVERTER/TRANSFORMER{E0050(p), Cascading Impact}
LAC - BUS14 - 480V SWITCHGEAR {E0026(P), L0328(P) }
LAC - MCCC - MOTOR CONTROL CENTER C {Cascading Impact}
RCS - EHTRRC01B - PRESSURIZER BACKUP HEATERS{Cascading Impact}
RCS - EHTRRC02B - PRESSURIZER BACKUP HEATERS{Cascading Impact}
RCS - LI-426 - PRZR LEVEL (MCB){Cascading Impact}
RPS - LT-427 - PRZR LVL XMTR {Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. The delta risk was qualitatively evaluated as insignificant based on the consideration that pressurizer heaters are not required to prevent core damage in the Fire

Fire Area ID:	BR1A - Battery Room 1A, Elevation 253' 6"	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

PRA. No recovery action was credited to resolve this VFDR.

Fire Area ID:	BR1B - Battery Room 1B, Elevation 253' 6"	**Fire Area Definition**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

Fire Zone ID	Description
BR1B	253'-6", Control Building Complex Battery Room 1B

Fire Area ID: BR1B - Battery Room 1B, Elevation 253' 6" **Performance Goals**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Performance Goal	Method of Accomplishment	Comments
1. Reactivity Control Function	Immediate reactor shutdown is achieved by de-energizing all CRDMs which results in control rod negative ractivity insertion into the reactor core.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
2. Inventory Control Function	• RCS inventory depletion control is maintained by closure of all letdown paths, all sample paths, all head vent paths, and both PORVs. • RCS inventory makeup is controlled by either one of the following: o Train "A" CVCS success path from the RWST to the RCS o Train "A" SIS success path from the RWST to the RCS and the PORV associated with the "A" nitrogen surge tank.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
3. Pressure Control Function	• RCS high pressure control is maintained by automatic mechanical operation of all PRZR Code Safety Valves, stopping of both RCPs, and securing all PRZR heaters. • RCS lowering pressure control is maintained by closure of both PRZR PORVs, closure of both PRZR Normal Spray valves or stopping the associated RCP(s), and closure of both SG ARVs.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
4. Decay Heat Removal Function	• RCS high temperature control is maintained by automatic mechanical operation of all SG Code Safety Valves. • RCS lowering temperature control is maintained by closure of both MSIVs, closure of both SG ARVs, stopping both MFW Pumps, stopping AFW System flow to the non-credited SG, and controlling flow to the credited SG. • SG makeup control is maintained by either one of the following to SG "A": o TDAFW Pump success path from the SG "A" MSS and pump suction from the CST or SWS o SAFW Pump "C" success path from the SWS or FPS	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
5. Process Monitoring Function	RCS Temperature:TI-409A-1 (RCS LOOP A HL INDICATION) Location: MCB, and TI-409B-1 (RCS LOOP A CL INDICATION) Location: MCB RCS Pressure:PI-420-2 (RCS HL PRESSURE (0-3000 PSIG)) Location: MCB, and PI-420B (RCS PRESSURE (0-3000 PSIG)) Location: ABELIP	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"

Fire Area ID: BR1B - Battery Room 1B, Elevation 253' 6" **Performance Goals**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Performance Goal	Method of Accomplishment	Comments
	Pressurizer Level:LI-426 (PRZR LEVEL) Location: MCB, LI-428A (PRZR LEVEL (WR)) Location: ABELIP, and LI-433A (PRZR LEVEL) Location: MCB Steam Generator Level:LI-461 (S/G "A" LEVEL (NR)) Location: MCB, LI-504 (S/G "A" LEVEL [0-520" H2O (WR)) Location: MCB, and LI-506A (S/G "B" WIDE RANGE LEVEL) Location: IBELIP Steam Generator Pressure:PI-469 (S/G "A" PRESSURE) Location: MCB, and PI-479 (S/G "B" PRESSURE) Location: MCB Neutron Flux Monitoring:NI-31B (NIS SOURCE RANGE INDICATION) Location: MCB Tank Level:LI-2022A (CDST "A" LEVEL) Location: MCB, and LI-921 (RWST LEVEL) Location: MCB System Flow Rate:FI-2031 (TDAFW PUMP DISCH FLOW) Location: MCB, FI-4084A (SAFW PUMP "C" <PSF01A> DISCH FLOW) Location: SAF, FI-4084B (SAFW PUMP "C" <PSF01A> DISCH FLOW) Location: MCB DG Cooling:PI-2103 ("A" DIESEL GEN HX CLNG WTR HDR PRESS IND) Location: EDG1A	
6. Vital Auxiliaries	• DC Power and instrument power availability is maintained by train "A" of the BDC/IAC System from Battery "A" or the TSC Battery System. • AC Power availability is maintained by train "A" Diesel-Generator and train "A" DBV/DGS support components. • Diesel-Generator engine cooling is maintained by the train "A" SWS success path or alignment of alternate cooling from the FPS to the "A" Diesel. • Except for a Control Room fire, train "A" CREATS is maintained for controlling the Control Room environmental conditions within the required specifications for habitability and design limits for equipment operability. Ventilation systems for the SAFW components in the SAFW Building, the DG components in the Diesel Building, and the TSC components in the Technical Support Center are maintained for equipment design limits.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"

References	Document ID
	EIR 51-9089546-001 Rev. 001 - R. E. Ginna Nuclear Power Station, Nuclear Safety Capability Assessment

Fire Suppression Activities Effect on Nuclear Safety Performance Criteria

Scenario 1: Suppression Effects in BR1B of a Fire Originating In BR1B:

There are no suppression systems in BR1B and the effects of manual firefighting are not expected to extend beyond the area of fire origin.

Scenario 2: Suppression Effects in BR1B of a Fire Originating Outside of BR1B:

There are no suppression systems in BR1B that could be impacted by operation of a fire suppression system or manual firefighting activities outside of BR1B.

Fire Area ID: BR1B - Battery Room 1B, Elevation 253' 6" **Fire Risk Evaluation**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
(All)	Area Wide	None	None	R	Modifications: R Procedures/Recovery Actions: R
BR1B	253'-6", Control Building Complex Battery Room 1B	None	E, R	E	Combustible Loading Controls: E Detection System, Z43: E R Fire-proofing material on structural steel: E

Title
Fire Risk Evaluation for Fire Area BR1B

Risk Summary
The delta CDF and delta LERF results for the fire area are summarized below. At the fire area level, the increase in risk is less than 1E-06/rx-yr for the delta CDF, and less than 1E-07/rx-yr for the delta LERF.

All CCDPs and CLERPs are less than 1, ensuring that low CDF and LERF values are not reached solely because of a low fire scenario frequency.

Δ CDF
Redacted

Δ LERF

DID Maintained
A qualitative evaluation of defense-in-depth (DID) using insights gained from the Fire PRA was performed for the fire area.

The installed fire detection system in the fire area is credited in the Fire PRA to support manual suppression. There are no installed fire suppression systems in the fire area. Portable extinguishers and hose stations are available in adjacent fire areas, credited in the Fire PRA and do not require additional DID enhancement. Existing administrative control are determined adequate given the nature of combustibles in the area and the quantified scenarios captured in the Fire PRA results. Given the relatively low values of CCDP and CLERPs in the fire area, no DID actions are required. In addition, no modifications are required for DID in the fire area.

With the DID requirements above, the evaluation finds that an adequate balance between the DID echelons is maintained.

Safety Margin Maintained
The safety margin for the analyses supporting the fire risk evaluation of the fire area was evaluated and accounted for potential impacts from fire modeling and the plant system performance, including the PRA logic model. All analyses and assessment have been performed utilizing accepted techniques and industry accepted standards. In addition, safety analysis acceptance criteria in the licensing basis (e.g., FSAR, supporting analyses) have been considered and provide sufficient margin to account for analysis and data uncertainty.

Conclusions

Fire Area ID:	BR1B - Battery Room 1B, Elevation 253' 6"	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

VFDR ID VFDR-BR1B-001

VFDR

A MSO concern exists related to spurious (ESF) Safety Injection Actuation. Actuation is possible due to the following separation concerns:
(a) Low PZR pressure signal with two out of three PZR pressure transmitter loops (PT-430 and PT-431) impacted. PT-431 is impacted due to a loss of Train "B" DC power. PT-430 is unavailable prior to establishing EAC power to MCCC. - OR -
(b) Low PZR pressure signal (as above) AND either a low SG "A" pressure signal (from two out of three SG "B" pressure transmitter loops PI-478 and PT-483) OR a low SG "A" pressure signal (from two out of three SG "A" pressure transmitter loops PT-482 and PI-469). PI-478 and PT-482 are impacted due to a loss of Train "B" DC power. PT-483 and PI-469 are unavailable prior to establishing EAC power to MCCC.
This VFDR is associated with the Inventory and Pressure Control Functions. [OP005, OP006, OP017]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

MSS - PI-469 - S/G A PRESSURE (MCB) {Cascading Impact}
MSS - PI-478 - S/G B PRESSURE (MCB) {Cascading Impact}
MSS - PT-482 - S/G A STM PRESS XMTR {Cascading Impact}
MSS - PT-483 - S/G B STM PRESS XMTR {Cascading Impact}
RPS - PT-430 - PRZR PRESS XMTR {Cascading Impact}
RPS - PT-431 - PRZR PRESS XMTR {Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-BR1B-003

VFDR

On a postulated LOOP, fire damage to HEMYC wrapped cabling, which is no longer considered "qualified" as a 1-hour rated fire barrier, results in a loss of 480V AC power to credited Train "A" BUS14 and BUS18. Fire damage to cable L0318 (multiple phase to ground or a phase to phase fault) results in loss of BUS14 and BUS18 and thereby the capability to achieve safe and stable plant conditions.
This VFDR is associated with the Vital Auxiliaries Function. [OE012, OP507]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

ABV - AAP07 - CHARGING PUMP ROOM COOLING UNIT A {Cascading Impact}
ABV - AFP01 - SAFW PUMP ROOM COOLING UNIT A {Cascading Impact}
AFW - 9629A - SAFW PUMP C SUCTION MOV {Cascading Impact}
AFW - 9701A - SAFW PUMP C DISCH MOV {Cascading Impact}
AFW - 9703A - SAFW PUMP X-OVER MOV {Cascading Impact}
AFW - 9704A - SAFW PUMP C MOV {Cascading Impact}
AFW - FI-2031 - TDAFW PUMP DISCH FLOW (MCB) {Cascading Impact}
AFW - FI-4084A - SAFW PUMP C DISCH FLOW - SAF {Cascading Impact}

Fire Area ID: BR1B - Battery Room 1B, Elevation 253' 6" **VFDRs**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

AFW - FI-4084B - SAFW PUMP C DISCH FLOW - MCB {Cascading Impact}
AFW - FT-2001 - MOTOR DRIVEN AUXILIARY FEED WATER PUMP A DISCHARGE FLOW TRAN {Cascading Impact}
AFW - PAF01A - AUXILIARY FEEDWATER PUMP A {Cascading Impact}
AFW - PLO10 - TDAFW PUMP AC LUBE OIL PUMP {Cascading Impact}
AFW - PSF01A - SAFW PUMP C {Cascading Impact}
BDC - DCPDPAB01A - AUX BLDG DC DIST PANEL A {E0053(P) and Cascading Impact}
BDC - DCPDPAB02A - AUX BLDG DC DIST PANEL A1 {E0053(P) and Cascading Impact}
BDC - DCPDPAB03A - AUX BLDG DC DIST PANEL A2 {Cascading Impact}
BDC - DCPDPCB02A - BATTERY A MAIN FUSE CABINET {Cascading Impact}
BDC - DCPDPCB03A - MAIN DC DISTRIBUTION PANEL A {Cascading Impact}
BDC - DCPDPCB04A - MAIN CONTROL BOARD DC DIST PANEL A {Cascading Impact}
BDC - DCPDPDG01A - EDG A DC DISTRIBUTION PANEL {E0020(P) and Cascading Impact}
BDC - DCPDPSH01A - SCREEN HOUSE DC DISTRIBUTION PANEL A {E0030(P) and Cascading Impact}
CBV - AKA05A - CREATS HEATER A {Cascading Impact}
CBV - AKD35A - CREATS TRAIN A DISCHARGE DAMPER {Cascading Impact}
CBV - AKF10A - CREATS TRAIN A FAN {Cascading Impact}
CBV - AKP07A - CREATS COOLING SYSTEM TRAIN A {Cascading Impact}
CCW - 738A - CCW TO RHR HX A MOV {Cascading Impact}
CCW - PAC02A - CCW PUMP A {Cascading Impact}
CND - LI-2022A - CDST A LEVEL {Cascading Impact}
CSS - PSI02A - CONTAINMENT SPRAY PUMP A {Cascading Impact}
CVC - 112C - VCT OUTLET AOV {Cascading Impact}
CVC - PCH01A - CHRG PUMP A {Cascading Impact}
DBV - ADD01A - OUTLET DAMPER FOR ADF01A {Cascading Impact}
DBV - ADD01B - OUTLET DAMPER FOR ADF01B {Cascading Impact}
EAC - 52/EG1A1 - EDG A SUPPLY TO BUS 14 {L0320(LOC), L0318(P) and Cascading Impact}
EAC - 52/EG1A2 - EDG A SUPPLY TO BUS 18 {L0510(LOCI), L0318(P) and Cascading Impact}
IAC - ABELIP - AUX BLDG EMERG LOCAL INSTR PANEL {Cascading Impact}
IAC - CVTA1 - INSTRUMENT BUS B CONSTANT VOLTAGE XFMR {Cascading Impact}
IAC - FOX1 - FOXBORO INSTRUMENT RACK 1 {Cascading Impact}
IAC - IBPDPCBA - INSTR POWER DISTRIBUTION PANEL A {Cascading Impact}
IAC - IBPDPCBAR - INSTRUMENT BUS A {Cascading Impact}
IAC - IBPDPCBB - INSTR POWER DISTRIBUTION PANEL B {Cascading Impact}
IAC - IBPDPCBBW - INSTRUMENT BUS B {Cascading Impact}
IAC - IBPDPCBE - INSTR POWER DISTRIBUTION PANEL E {Cascading Impact}
IAC - INVTCVTA - INSTRUMENT BUS A CONSTANT VOLTAGE INVERTER/TRANSFORMER {Cascading Impact}
IAC - MQ483 - REACTOR PROTECTION INSTRUMENT RACK Y2 INVERTER {Cascading Impact}
IAC - RVLMS1 - REACTOR VESSEL LEVEL MONITOR RACK 1 {Cascading Impact}
IAC - SAFWPCIP - SAFW PUMP C INSTRUMENT PANEL {Cascading Impact}
IAS - 8619A - N2 ARMING SOV FOR PORV 430 {Cascading Impact}
LAC - ACPDPAB14 - AUX BLDG POWER DISTRIBUTION PANEL AB-14 {Cascading Impact}
LAC - ACPDPCB11 - CREATS LIGHTING PANEL A {Cascading Impact}
LAC - ACPDPDG01 - DIESEL GENERATOR A HEAT TRACE PANEL {Cascading Impact}
LAC - BUS14 - 480V SWITCHGEAR {L0472(LO), L0320(LOC), L0318(P) and Cascading Impact}

Fire Area ID:	BR1B - Battery Room 1B, Elevation 253' 6"	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

LAC - BUS18 - 480V SWITCHGEAR {L0472(LC), L0779(LO), L0469(LOCI), L0510(LOCI), L0318(P) and Cascading Impact}
LAC - BYCA1 - BATTERY CHARGER A1 {Cascading Impact}
LAC - MCCC - MOTOR CONTROL CENTER C {Cascading Impact}
LAC - MCCH - MOTOR CONTROL CENTER H {C0687(P), E0022(P) and Cascading Impact}
LAC - MCCL - MOTOR CONTROL CENTER L {Cascading Impact}
LAC - MCCN - MOTOR CONTROL CENTER N {Cascading Impact}
MFW - LI-461 - S/G A LEVEL (NR AT MCB) {Cascading Impact}
MFW - LI-504 - S/G A LEVEL (WR) (0-520 H2O)(MCB) {Cascading Impact}
MFW - LI-506A - S/G B WIDE RANGE LEVEL (IBELIP) {Cascading Impact}
MSS - PI-469 - S/G A PRESSURE (MCB) {Cascading Impact}
MSS - PI-479 - S/G B PRESSURE (MCB) {Cascading Impact}
RCS - LI-426 - PRZR LEVEL (MCB) {Cascading Impact}
RCS - LI-428A - PRZR LEVEL (ABELIP) {Cascading Impact}
RCS - LI-433A - PRZR LEVEL (MCB) {Cascading Impact}
RCS - PI-420-2 - RCS HL PRESSURE (0-3000 PSIG at MCB) {Cascading Impact}
RCS - PI-420B - RCS PRESSURE (0-3000 PSIG at ABELIP) {Cascading Impact}
RCS - TI-409A-1 - RCS LOOP A HL INDICATION (MCB) {Cascading Impact}
RCS - TI-409B-1 - RCS LOOP A CL INDICATION (MCB) {Cascading Impact}
RHR - FT-689 - RHR LOOP FLOW TRANSMITTER {Cascading Impact}
RHR - PAC01A - RHR PUMP A {Cascading Impact}
SIS - LI-921 - RWST LEVEL {Cascading Impact}
SIS - PSI01A - SI PUMP A {Cascading Impact}
SWS - 4663 - AIR COND MOV {Cascading Impact}
SWS - 9632A - SAFW ROOM A COOLER FCV {Cascading Impact}
SWS - PSW01A - SERVICE WATER PUMP A {L0484(L), L0483(LOCI) and Cascading Impact}
SWS - PSW01C - SERVICE WATER PUMP C {L0484(L), L0487(LOCI) and Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. Plant Modification ESR-12-0142, which provides Cable L0318 with some protection against fire damage, was credited to help resolve this VFDR. No recovery action was credited to resolve this VFDR.

VFDR ID

VFDR-BR1B-004

VFDR

A MSO concern exists related to BUS14 power supply.
With offsite power available, spurious closure of breaker 52/EG1A2 (cable L0510) can take place with KDG01A idle causing the reverse power relay trip signal to 52/EG1A2 (BUS18) and 52/EG1A1 (BUS14). A simultaneous spurious trip of BUS14 offsite infeed breaker 52/14 (cable L0472) results in a loss of both power sources to BUS14.
With offsite power not available, power to BUS14 can be lost due to the following separation concerns:
(a) A spurious trip of breaker 52/EG1A2 (cable L0510) de-energizes BUS18. This results in a loss of KDG01A cooling water which, in turn, results in the loss of EAC power to BUS14; - OR -
(b) Fire damage to cable L0320 can spuriously open or prevent 52/EG1A1 from closing which would result in loss of power to BUS14
This VFDR is associated with the Vital Auxiliaries Function [OP017, OP502]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Fire Area ID:	BR1B - Battery Room 1B, Elevation 253' 6"	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

Component(s)

EAC - 52/EG1A1 - EDG A SUPPLY TO BUS 14 {L0318(P), L0320 (LOC)}
EAC - 52/EG1A2 - EDG A SUPPLY TO BUS 18 {L0318(P), L0510 (LOCI)}
EAC - KDG01A - DIESEL-GENERATOR A {L0530(LCI), L0531(L), L0532(LI), L0536(L), L0537(L), L0554(L), L0560(L) and Cascading Impact}
LAC - 52/14 - SPT SUPPLY BREAKER TO BUS 14 {L0472(LO) and Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery ActionDGHFDMNL-LD-STRT, consisting of locally starting the Diesel Generators per ER-D/G.1 Step 6.1, was credited to help resolve this VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-BR1B-005

VFDR

A MSO concern exists related to spurious DG start without SW cooling. Credited KDG01A can spuriously start due to cable fire damage (L0530). Concurrent fire damage to cables (L0483 and L0487) can trip credited SW Pumps (PSW01A and PSW01C). This results in KDG01A running without cooling water.
This VFDR is associated with the Vital Auxiliaries Function. [OP017, OP503]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

EAC - KDG01A - DIESEL-GENERATOR A {L0530(LCI), L0531(L), L0532(LI), L0536(L), L0537(L), L0554(L), L0560(L) and Cascading Impact
}
SWS - PSW01A - SERVICE WATER PUMP A {L0484(L), L0483(LOCI) and Cascading Impact}
SWS - PSW01C - SERVICE WATER PUMP C {L0484(L), L0487(LOCI) and Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No Recovery Action was credited to resolve this VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-BR1B-006

VFDR

Fire damage to HEMYC wrapped cabling, which is no longer considered "qualified" as a 1-hour rated fire barrier, affects credited KDG01A operation, due to the following separation concerns:
(a) Power to MCCH can be lost as a result of fire damage to cable C0687. Loss of MCCH affects credited Diesel "A" room cooling (ADF01A / ADF01B), DG Fuel Oil Transfer Pump (PDG02A) and DG Fuel Oil Day Tank level transmitter (LIT-2050A).
(b) PDG02A and DG "A" Room cooling fans (ADF01A and ADF01B) are impacted due to fire damage to cable E0022.
(c) Train "A" DC control of credited KDG01A and DG "A" fuel oil day tank SOVs (5907 and 5907A) are impacted due to fire damage to cable E0020.
This VFDR is associated with the Vital Auxiliaries Function. [OE012, OP505, OP507, OP511, OP513]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Fire Area ID: BR1B - Battery Room 1B, Elevation 253' 6" **VFDRs**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Component(s)

DBV - ADF01A - EDG A ROOM COOLING FAN {E0022(P) and Cascading Impact}
DBV - ADF01B - EDG A ROOM COOLING FAN {E0022(P) and Cascading Impact}
DGS - 5907 - DG A FUEL OIL DAY TANK SOV {Cascading Impact}
DGS - 5907A - FOTP A RECIRC SOV {Cascading Impact}
DGS - LIT-2050A - A D/G FUEL OIL DAY TANK ALARM & CONTROL {Cascading Impact}
DGS - PDG02A - DG FO TRANSFER PUMP A {E0022(P) and Cascading Impact}
EAC - KDG01A - DIESEL-GENERATOR A {L0531(L), L0536(L), L0537(L), L0554(L), L0560(L), L0530(LCI), L0532(LI) and Cascading Impact}
LAC - ACPDPDG01 - DIESEL GENERATOR A HEAT TRACE PANEL {Cascading Impact}
LAC - MCCH - MOTOR CONTROL CENTER H {C0687(P), E0022(P) and Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. Plant Modification ESR-12-0142, which provides some fire protection to Cable C0687, was credited to help resolve this VFDR.

VFDR ID VFDR-BR1B-007

VFDR

A SG overfill from the AFW System is postulated when placing credited Train "A" SAFW Pump (PSF01A) in service. AFW Pumps (PAF01B and/or PAF03) can start due to a postulated LOOP. These AFW Pumps cannot be controlled from the MCB due to a loss of Train "B" DC power, while discharge valves from PAF01B (4008), and from PAF03 (3996, 4297 and 4298) fails open on loss of Train "B" power.
This VFDR is associated with the Decay Heat Removal Function. [OP506]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

AFW - 3996 - TDAFWP DISCHARGE MOV {E0093(L) and Cascading Impact}
AFW - 4297 - TDAFWP FCV to S/G A {Cascading Impact}
AFW - 4298 - TDAFWP FCV to S/G B {Cascading Impact}
AFW - PAF01B - AUXILIARY FEEDWATER PUMP B {Cascading Impact}
AFW - PAF03 - TURBINE DRIVEN AUXILIARY FEEDWATER PUMP {Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. The delta risk was qualitatively evaluated as insignificant based on the long time needed for a steam generator to overfill from AFW pumps spuriously running. This long time window ensures that the flow can be stopped before the overfill actually occurs. No recovery action was credited to resolve this VFDR.

VFDR ID VFDR-BR1B-008

VFDR

Cable L0554 is routed through this fire area and is associated with a current transformer located in fire area EDG1A. Fire damage to this cable can cause a secondary fire in EDG1A that would result in KDG01A being unavailable to support SSD.

Fire Area ID:	BR1B - Battery Room 1B, Elevation 253' 6"	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

This VFDR is associated with the Vital Auxiliaries Function. [OP516]
Impacted Component:
* EAC - KDG01A: DIESEL-GENERATOR A {L0530(LCI), L0531(L), L0532(LI), L0536(L), L0537(L), L0554(L), L0560(L) and Cascading Impact }
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. The delta risk was qualitatively evaluated as insignificant based on the consideration that secondary fires due to the fire-induced failure of a current transformer have a low probability of occurrence. No recovery action was credited to resolve this VFDR.

VFDR ID

VFDR-BR1B-012

VFDR

Fire damage to HEMYC wrapped cabling, which is no longer considered "qualified" as a 1-hour rated fire barrier, affects power to credited DC power distribution panel DCPDPAB01A. Loss of cable E0053, results in the loss of control of multiple credited SSD components from the MCB.
This VFDR is associated with the Vital Auxiliaries Function. [OE012, OP512]
This condition represents a variance from the deterministic requirements of Section 4.2.3 of NFPA 805. This is a separation issue.

Component(s)

AFW - PAF01A - AUXILIARY FEEDWATER PUMP A {Cascading Impact}
BDC - DCPDPAB01A - AUX BLDG DC DIST PANEL A {E0053(P) and Cascading Impact}
CCW - PAC02A - CCW PUMP A {Cascading Impact}
CVC - PCH01A - CHRG PUMP A {Cascading Impact}
EAC - 52/EG1A1 - EDG A SUPPLY TO BUS 14 {L0320(LOC), L0318(P) and Cascading Impact}
LAC - 52/14 - SPT SUPPLY BREAKER TO BUS 14 {L0472(LO) and Cascading Impact}
LAC - BUS14 - 480V SWITCHGEAR {L0472(LO), L0320(LOC), L0318(P) and Cascading Impact}
RCS - EHTRRC01A - PRESSURIZER PROPORTIONAL HEATERS {Cascading Impact}
RCS - EHTRRC02A - PRESSURIZER PROPORTIONAL HEATERS {Cascading Impact}
RHR - 700 - RHR PUMP SUCTION FROM RCS MOV {Cascading Impact}
RHR - 720 - RHR DISCHARGE TO LOOP B {Cascading Impact}
RHR - PAC01A - RHR PUMP A {Cascading Impact}
SIS - 841 - ACCUM "A" OUTLET {Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. Plant Modification ESR-12-0142, which provides some fire protection to Cable C0687, was credited to help resolve this VFDR.

VFDR ID

VFDR-BR1B-015

VFDR

On a deterministic assumption of loss of offsite power, a spurious opening of breakers 52/EG1A2 (cable L0510) results in a loss of power to

Fire Area ID:	BR1B - Battery Room 1B, Elevation 253' 6"	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

credited BUS18. The loss of power to BUS18 impacts KDG01A cooling capability from SW pumps PSW01A and PSW01C.
Local action is taken to stop KDG01A, strip the loads off BUS18, start KDG01A, energize BUS18, start SW Pumps, strip loads off of BUS14, and then energize BUS14.
This VFDR is associated with the Vital Auxiliaries Function. [PH504, PH505, PH516, PH523, PH528]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA issue and separation issue.

Component(s)

ABV - AAF04 - AUXILIARY BUILDING EXHAUST FAN G {Cascading Impact}
AFW - PAF01A - AUXILIARY FEEDWATER PUMP A {Cascading Impact}
AFW - PSF01A - SAFW PUMP C {Cascading Impact}
CCW - PAC02A - CCW PUMP A {Cascading Impact}
CSS - PSI02A - CONTAINMENT SPRAY PUMP A {Cascading Impact}
CVC - PCH01A - CHRG PUMP A {Cascading Impact}
EAC - 52/EG1A1 - EDG A SUPPLY TO BUS 14 {L0320(LOC), L0318(P) and Cascading Impact}
EAC - 52/EG1A2 - EDG A SUPPLY TO BUS 18 {L0510(LOCI), L0318(P) and Cascading Impact}
EAC - KDG01A - DIESEL-GENERATOR A {L0531(L), L0536(L), L0537(L), L0554(L), L0560(L), L0530(LCI), L0532(LI) and Cascading Impact}
LAC - 52/14 - SPT SUPPLY BREAKER TO BUS 14 {L0472(LO) and Cascading Impact}
LAC - 52/18 - SPT SUPPLY BREAKER TO BUS 18 {Cascading Impact}
LAC - 52/IH1A - BREAKER FOR EHTRCW01A (CIRCULATING WATER INTAKE HEATER A) {L0760(LO) and Cascading Impact}
LAC - 52/IH1C - BREAKER FOR EHTRCW01C (CIRCULATING WATER INTAKE HEATER C) {L0762(LO) and Cascading Impact}
LAC - BUS14 - 480V SWITCHGEAR {L0472(LO), L0320(LOC), L0318(P) and Cascading Impact}
LAC - BUS18 - 480V SWITCHGEAR {L0472(LC), L0469(LOCI), L0510(LOCI), L0318(P) and Cascading Impact}
LAC - MCCC - MOTOR CONTROL CENTER C {Cascading Impact}
RCS - EHTRRC01A - PRESSURIZER PROPORTIONAL HEATERS {Cascading Impact}
RCS - EHTRRC02A - PRESSURIZER PROPORTIONAL HEATERS {Cascading Impact}
RCV - ACF08A - CONTAINMENT RECIRCULATING FAN A {Cascading Impact}
RCV - ACF08D - CONTAINMENT RECIRCULATING FAN D {Cascading Impact}
RHR - PAC01A - RHR PUMP A {Cascading Impact}
SIS - PSI01A - SI PUMP A {Cascading Impact}
SWS - PSW01A - SERVICE WATER PUMP A {L0484(L), L0483(LOCI) and Cascading Impact}
SWS - PSW01C - SERVICE WATER PUMP C {L0484(L), L0487(LOCI) and Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No Recovery Action was credited to resolve this VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID

VFDR-BR1B-016

VFDR

Prior to placing the credited CHG Pump PCH01A in service, a suction source from the RWST needs to be established and RCP seal injection needs to be isolated to avoid seal damage.
(a) Normal RWST to CHG Pump suction AOV-112B is subject to spurious closure due to a loss of power from non-credited Train "B" (or due

to loss of instrument air); local operator action is required to open manual valve 358 to establish CHG Pump suction from the RWST.
(b) RCP seal cooling can be lost prior to establishing EAC power to BUS14 on a postulated LOOP; local operator action is required to close manual valve 289 to isolate RCP seal injection.
This VFDR is associated with the Reactivity Control Function, and Inventory and Pressure Control Functions. [PH510]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

CVC - 289 - CHARGING PUMPS DISCHARGE ISOL VLV TO RCP SEAL INJECTION {Requires Operator Action}
CVC - 358 - CHARGING PUMP SUCTION FROM RWST MANUAL IV {Requires Operator Action}
CVC - PCH01A - CHRG PUMP A {Cascading Impact}
IAC - ABELIP - AUX BLDG EMERG LOCAL INSTR PANEL {Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDMAKEUP, consisting of locally aligning and starting the new charging system was credited to help resolve this VFDR. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

VFDR ID VFDR-BR1B-017

VFDR

If offsite power is available, a loss of Train "B" Battery and Charger due to a fire in this area results in a loss of control of RCP Pump PRC01B from the MCB. PRC01B may continue to run impacting cooldown control.
Local action is taken to trip the pump at BUS11B.
This VFDR is associated with the Decay Heat Removal Function. [PH512]
Impacted Component:
* RCS - PRC01B: RCP B {E0104(P) and Cascading Impact}
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-BR1B-018

VFDR

Fire damage to instrument air piping can challenge reliance on instrument/service air whether being aligned from the normal air compressors or from the diesel air compressor or a deterministic assumption of a loss of offsite power to BUS13 and BUS15 results in the loss of the normal Service Air and Instrument Air compressors.
Local manual alignment of Diesel Air Compressor (CSA05) to the Service Air and Instrument Air Systems is taken to manipulate air operated SSD components (i.e., 112B, 112C, PCH01A, 625, and 626). However, this action may not be successful due to the integrity of instrument air

Fire Area ID: BR1B - Battery Room 1B, Elevation 253' 6" **VFDRs**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

piping.
This VFDR is associated with the Vital Auxiliaries Function. [OE004, PH515]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA issue.

Component(s)

CVC - 112B - RWST TO CHARGING PUMP SUCTION{Cascading Impact, Loss of IA}
CVC - 112C - VCT OUTLET AOV {Cascading Impact, Loss of IA}
CVC - PCH01A - CHRG PUMP A {Cascading Impact}
LAC - BUS13 - 480V SWITCHGEAR {E0107(P) and Cascading Impact}
LAC - BUS15 - 480V SWITCHGEAR { E0107(P) and Cascading Impact}
PSA - 7000A - IA/SA CROSS-CONNECT {Requires Operator Action}
PSA - 7002D - DIESEL AIR COMPRESSOR SUPPLY ISOLATION VALVE {Requires Operator Action}
PSA - 7195A - BU AIR COMP DISCHARGE INNER ISOL VAL TO SERV AIR HEADER {Requires Operator Action}
PSA - 7203 - SERV AIR ISOL VALVE TO THE TURBINE BUILDING FROM YARD {Requires Operator Action}
PSA - CSA05 - DIESEL AIR COMPRESS (OUTSIDE UNIT) FOR BU SERV AIR/INSTR AIR {Requires Operator Action}
RHR - 625 - RHR HX A OUTLET {Cascading Impact, Loss of IA}
RHR - 626 - RHR HX BYPASS {Cascading Impact, Loss of IA}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

Fire Area ID:	CC - Control Building Complex	**Fire Area Definition**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

Fire Zone ID	**Description**
AHR	253'-6", Air Handling Room
CR	289'-6", Control Room
RR	271'-0", Relay Room (includes MUX and Annex rooms)

Fire Area ID: CC - Control Building Complex **Performance Goals**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Performance Goal	Method of Accomplishment	Comments
1. Reactivity Control Function	Immediate reactor shutdown is achieved by de-energizing all CRDMs which results in control rod negative reactivity insertion into the reactor core.	Shutdown Method R (Success Path "A") Hot Shutdown
2. Inventory Control Function	• RCS inventory depletion control is maintained by closure of all letdown paths, all sample paths, all head vent paths, and both PORVs. • RCS inventory makeup is controlled by train "A" CVCS success path from the RWST to the RCS	Shutdown Method R (Success Path "A") Hot Shutdown
3. Pressure Control Function	• RCS high pressure control is maintained by automatic mechanical operation of all PRZR Code Safety Valves and stopping of both RCPs. • RCS lowering pressure control is maintained by closure of both PRZR PORVs, closure of both PRZR Normal Spray valves or stopping the associated RCP(s), and closure of both SG ARVs.	Shutdown Method R (Success Path "A") Hot Shutdown
4. Decay Heat Removal Function	• RCS high temperature control is maintained by automatic mechanical operation of all SG Code Safety Valves. • RCS lowering temperature control is maintained by closure of both MSIVs, closure of both SG ARVs, stopping both MFW Pumps, stopping AFW System flow to the non-credited SG, and controlling flow to the credited SG. • SG makeup control is maintained by the TDAFW Pump success path from the MSS via MOV-3505A and pump suction from the CST or SWS to SG "A"	Shutdown Method R (Success Path "A") Hot Shutdown
5. Process Monitoring Function	RCS Temperature: TI-409A-2 (RCS LOOP A HL INDICATION) Location: IBELIP, and TI-409B-2 (RCS LOOP A CL INDICATION) Location: IBELIP. RCS Pressure:PI-420B (RCS PRESSURE (0-3000 PSIG)) Location: ABELIP Pressurizer Level:LI-428A (PRZR LEVEL (WR)) Location: ABELIP Steam Generator Level:LI-460AA (S/G "A" LEVEL APPENDIX R [0-520" H2O (WR)) Location: IBELIP, and LI-506A (S/G "B" WIDE RANGE LEVEL) Location: IBELIP.	Shutdown Method R (Success Path "A") Hot Shutdown

Fire Area ID:	CC - Control Building Complex	**Performance Goals**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

Performance Goal	Method of Accomplishment	Comments
	Steam Generator Pressure:PI-469A (S/G "A" PRESSURE) Location: IBELIP, PI-2667 (STM SAMP CLR SG "B" PRESS IND) Location: BOP, and PI-2668 (STM SAMP CLR SG "A" PRESS IND) Location: BOP. Neutron Flux Monitoring: N-32R (APPENDIX R SOURCE RANGE MONITOR) Location: IBELIP Tank Level:PI-2808 (CST LOCAL LEVEL INDICATOR) Location: SB-1WT System Flow Rate:FI-2015A (TDAFW PUMP DISCH FLOW) Location: IBELIP DG Cooling:PI-2103 ("A" DIESEL GEN HX CLNG WTR HDR PRESS IND) Location: EDG1A	
6. Vital Auxiliaries	• DC Power and instrument power availability is maintained by trains “A” and “B” of the BDC/IAC System from “A” and “B” batteries, respectively or the TSC Battery System. • AC Power availability is maintained by train “A” Diesel-Generator and train “A” DBV/DGS support components. • Diesel-Generator engine cooling is maintained by the train “A” SWS success path. • Ventilation systems for the DG components in the Diesel Building and the TSC components in the Technical Support Center are maintained for equipment design limits.	Shutdown Method R (Success Path "A") Hot Shutdown

References	Document ID
	EIR 51-9089546-001 Rev. 001 - R. E. Ginna Nuclear Power Station, Nuclear Safety Capability Assessment

Fire Suppression Activities Effect on Nuclear Safety Performance Criteria

(AHR)

Scenario 1: Suppression Effects in AHR of a Fire Originating In AHR:

Suppression effects (activation of suppression systems and manual firefighting activities) are not expected to extend beyond the area of fire origin. The deluge system in AHR is designed to spray specific cable trays in the Northwest corner of the room.

Scenario 2: Suppression Effects in AHR of a Fire Originating Outside of AHR:

The cable tray deluge system is actuated by the associated fire detection system or manual pull boxes in the basement area which could be vulnerable to a fire originating outside AHR if the detection circuits and/or control panel are routed or located outside the fire zone (e.g., SSA in the Relay Room). However, this system is designed to spray specific cable trays and suppression effects are not expected to extend beyond AHR. Similarly, manual firefighting activities outside of AHR could potentially spray on, and short out an electric manual pull box that could activate the deluge system. However, the system is designed to spray on specific cable trays in the Air Handling Room and suppression effects are not expected to extend beyond AHR.

A floor drain has been provided with backflow protection.

(CR)

Scenario 1: Suppression Effects in CR of a Fire Originating In CR:

There are no suppression systems in CR and the effects of manual firefighting are not expected to extend beyond the area of fire origin.

Scenario 2: Suppression Effects in CR of a Fire Originating Outside of CR:

There are no suppression systems in CR that could be impacted by operation of a fire suppression system or manual firefighting activities outside of CR.

(RR)

Scenario 1: Suppression Effects in RR of a Fire Originating In RR:

Halon 1301 is an electrically non-conductive clean agent that interrupts the chemical reaction of the fire at concentrations of approximately7 5%. At these low concentrations, automatic actuation of a Halon 1301 system would not be expected to negatively impact safe shutdown related equipment. Moreover, Halon 1301 system discharge does not result in appreciably lowered ambient temperatures or oxygen reduction. The deluge systems in RR are designed to spray specific sections of the Relay Room.

Suppression effects of activation of the Halon 1301 system is not expected to extend beyond the area of fire origin.

The deluge systems are a backup to the Relay Room halon system and are normally kept locked closed with the key under the control of the Shift Manager. If needed, these valves may be unlocked, and the systems actuated either locally or from the Control Room. There is a potential for suppression effects (actuation of the deluge systems and/or manual firefighting activities) to impinge upon the SSA which could then initiate automatic and manual suppression systems in other

areas of the plant.

Scenario 2: Suppression Effects in RR of a Fire Originating Outside of RR:

Fire Area ID:	CC - Control Building Complex	**Performance Goals**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

The only impact a fire in the plant could have on a Halon 1301 system would be to activate the detection system discharging Halon 1301 agent. No other components of the system are vulnerable to fire effects. Other than actuating the system, a fire in the plant would not be expected to impair the operability of the Halon 1301 system.

The deluge systems are actuated by manual pull boxes located on the Turbine Building Intermediate Floor which could be vulnerable to a fire originating outside RR if the electrical pull box circuits and/or control panel are routed or located outside the fire zone. However, deluge systems are a backup to the Relay Room halon system and are normally kept locked closed with the key under the control of the Shift Manager. If needed, these valves may be unlocked, and the systems actuated either locally or from the Control Room. It is unlikely this would occur during a fire in the Turbine Building.

Similarly, manual firefighting activities outside of RR could potentially spray on, and short out an electric manual pull box that could activate the Halon 1301 or deluge systems. However, as described above, actuation of a Halon 1301 system would not be expected to negatively impact safe shutdown related equipment, and deluge system valves are normally kept locked closed to inhibit system actuation.

Fire Area ID: CC - Control Building Complex **Fire Risk Evaluation**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
(All)	Area Wide	None	None	R, S	Modifications: R S Procedures/Recovery Actions: R
AHR	253'-6", Air Handling Room	E, R	E, R	E	Combustible Loading Controls: E Detection System, S06: E R Water Suppression, S06: E R
CR	289'-6", Control Room	E, D	E, D	E	Combustible Loading Controls: E Detection System, Z19: E D Water Suppression, S29: E D
RR	271'-0", Relay Room (includes MUX and Annex rooms)	E, D	E, R	None	Detection System, Smoke Detectors for S08: R Detection System, Z18: E R Detection System, Z44: E R Gaseous Suppression, Halon Suppression S08: E D Water Suppression, S09: E D Water Suppression, S10: E D Water Suppression, S11: E D

Title Fire Risk Evaluation for Fire Area CC

Risk Summary The delta CDF and delta LERF results for the fire area are summarized below. At the fire area level, the increase in risk is less than 1E-05/rx-yr for the delta CDF, and less than 1E-06/rx-yr for the delta LERF.

All CCDPs and CLERPs are less than 1, ensuring that low CDF and LERF values are not reached solely because of a low fire scenario frequency.Fire Area CC is a fire area where a fire may lead to control room abandonment. In the Fire PRA, the individual pieces of the main control room abandonment strategy are modeled as distinct human failure events, as opposed to the use of a single number for failing to successfully abandon and bring the plant to safe and stable conditions. Thus, in the Fire PRA, this fire area is addressed in a manner similar to other fire areas.

Δ CDF Redacted

Δ LERF

DID Maintained A qualitative evaluation of defense-in-depth (DID) using insights gained from the Fire PRA was performed for the fire area.

S06, the fire detection (smoke) and suppression system (automatic deluge) installed in Fire Zone AHR is credited in the Fire PRA. S08, the fire detection (smoke) system is credited in the Fire PRA for Fire Zone RR and the associated fire suppression system (halon) is credited in the Fire PRA for Compartment RR-C1 (Relay Room) of Fire Zone RR. Portable extinguishers are credited by the Fire PRA for all fire zones of the fire area. Given the safety significance of the fire zones in the fire area (relay room and control room), the installed fire detection and suppression systems not credited for risk are credited for DID. Existing administrative control are determined adequate given the nature of combustibles in the area and the quantified scenarios captured in the Fire PRA results. Given the relatively low values of CCDP and CLERPs in the fire area, no DID actions are required. In addition, no modifications are required for DID in the fire area.

With the DID requirements above, the evaluation finds that an adequate balance between the DID echelons is maintained.

Safety Margin Maintained

The safety margin for the analyses supporting the fire risk evaluation of the fire area was evaluated and accounted for potential impacts from fire modeling and the plant system performance, including the PRA logic model. All analyses and assessment have been performed utilizing accepted techniques and industry accepted standards. In addition, safety analysis acceptance criteria in the licensing basis (e.g., FSAR, supporting analyses) have been considered and provide sufficient margin to account for analysis and data uncertainty.

Conclusions

Fire Area ID:	CC - Control Building Complex	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

VFDR ID VFDR-CC-001

VFDR

A deterministic assumption of a loss of offsite power (to BUS13 and BUS15) results in the loss of the Service Air and Instrument Air Systems. Local manual alignment of Diesel Air Compressor (CSA05) to the Service Air and Instrument Air Systems is required to manipulate air operated SSD components (i.e., PCH01A, 294, 296).
This VFDR is associated with the Vital Auxiliaries Function. [PH114]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

LAC - BUS13 - 480V SWITCHGEAR {L0327(LO), L0331(LO), L0177(LOCI), L0178(LOCI), L0329(LOCI), L0328(P) and Cascading Impact}
LAC - BUS15 - 480V SWITCHGEAR {L0187(LO), L0317(LO), L0198(LOC), L0004(LOCI), L0005(LOCI), L0024(P), L0079(P), L0197(P) and Cascading Impact}
PSA - 7000A - IA/SA CROSS-CONNECT {Requires Operator Action}
PSA - 7002D - DIESEL AIR COMPRESSOR SUPPLY ISOLATION VALV {Requires Operator Action}
PSA - 7195A - BU AIR COMP DISCHARGE INNER ISOL VAL TO SERV AIR HEADER {Requires Operator Action}
PSA - 7203 - SERV AIR ISOL VALVE TO THE TURBINE BUILDING FROM Yard {Requires Operator Action}
PSA - CSA05 - DIESEL AIR COMPRESS (OUTSIDE UNIT) FOR BU SERV AIR/INSTR AIR {Requires Operator Action}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-CC-002

VFDR

Operator action is taken to locally close Instrument Air Containment Manual Isolation Valve (V-5397) to isolate Instrument Air to Containment. However, this action may not be successful to prevent spurious operation of AOVs in the Containment as the instrument air header is not vented.
This VFDR is associated with the Inventory and Pressure Control Functions. [OE001, PH118]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA issue.

Component(s)

IAS - 5397 - IA CNMT MAN ISOL VLV {Requires Operator Action}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-CC-003

Fire Area ID: CC - Control Building Complex **VFDRs**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

VFDR

Procedure directed local action to 'de-power' circuits to mitigate spurious operation may not be effective.
Local action is taken in Battery Room "A", at MAIN DC DISTRIBUTION PANEL "A" (DCPDPCB03A), to de-energize MCB DC DIST PNL "A" (DCPDPCB04A) at position #14 which fails components to their respective Loss Of Power position. As no additional local action is taken to ensure the components remain in the desired position, subsequent fire-induced shorts to energized conductors of different circuits in conjunction with fire damage (grounds) could result in spurious operations.
Local action is taken in Battery Room "B", at MAIN DC DISTRIBUTION PANEL "B" (DCPDPCB03B), to de-energize MCB DC DIST PNL "B" (DCPDPCB04B) at position #9 which fails components to their respective Loss Of Power position. As no additional local action is taken to ensure the components remain in the desired position, subsequent fire-induced shorts to energized conductors of different circuits in conjunction with fire damage (grounds) could result in spurious operations.

This VFDR is associated with the Reactivity Control Function, Inventory and Pressure Control Functions, Decay Heat Removal Function, and Vital Auxiliaries Function. [OE010, OP017, OP022, OP023, PH102, PH103]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

AFW - 4291 - TURBINE DRIVEN AUXILIARY FEEDWATER PUMP RECIRCULATION AOV {C3537(LC), G0721(LC), G0721B(LC), G0260(LI), G0260A(LI), C3501(P), E0215(P), E0216(P)}
BDC - DCPDPCB03A - MAIN DC DISTRIBUTION PANEL A {Requires Operator Action}
BDC - DCPDPCB03B - MAIN DC DISTRIBUTION PANEL B {Requires Operator Action}
BDC - DCPDPCB04A - MAIN CONTROL BOARD DC DIST PANEL A {E0049(P), Cascading Impact}
BDC - DCPDPCB04B - MAIN CONTROL BOARD DC DIST PANEL B {E0103(P), Cascading Impact}
CCW - 754A - CCW FROM RCP A TB AOV {R0629(LCI)}
CCW - 754B - CCW FROM RCP B TB AOV {R0634(LCI)}
CVC - 110B - RMW FLOW CONTROL VLV AOV-110B {R0037(LO), R0034(LOI), E0103(P)}
CVC - 110C - BLENDER OUTLET TO VCT (AOV) {R0037(LO), R0035(LOI)}
CVC - 111 - RMW TO BA BLENDER FLOW CONTROL VLV HCV-111 {R0037(LO), R0036(LOI), E0049(P)}
CVC - 112B - RWST TO CHARGING PUMP SUCTION {R0046(LO), R0056(LOI), Cascading Impact}
CVC - 112C - VCT OUTLET AOV {R0046(LC), R0056(LC), R0060(LCI)}
CVC - 200A - LTDN ORIFICE AOV {R0498(L), R0499(L), R0500(LOI), E0049(P)}
CVC - 200B - LTDN ORIFICE AOV {R0498(L), R0499(L), R0500(LOI), E0103(P)}
CVC - 202 - LTDN ORIFICE AOV {R0498(L), R0499(L), R0500(LOI), E0049(P)}
CVC - 270A - RCP SEAL OUTLET AOV {R0525(LCI), E0049(P)}
CVC - 270B - RCP SEAL OUTLET AOV {R0530(LCI), E0103(P)}
CVC - 294 - CHRG TO LOOP B CL (AOV) {R0535(LOI), E0049(P)}
CVC - 310 - EXCESS LTDN AOV {R3622(L), R3624(L), R0556(LOI)}
CVC - 312 - EXCESS LETDOWN HX DIVERT TO VCT OR RCDT AOV-312 {R0561(LOI), E0103(P)}
CVC - 371 - RCS LETDOWN ISOLATION {R0567A(LO), R0567B(LO), R0567(LOI), E0103(P)}
CVC - 392A - CHRG TO LOOP B HL (AOV) {R0549(LOI)}
CVC - 427 - RCS LETDOWN ISOLATION {E0103(P), R0214(LC), R0215(LCI), R0505(LC), R3685(LC), R3686((LC)}
RCS - 386 - RCP SEAL RETURN BYPASS {R0572(LOI)}
RCS - 590 - REACTOR HEAD VENT OUTER (SOV) TO 592 {SAC0215(L), SAC0211A(LOI)}
RCS - 591 - REACTOR HEAD VENT OUTER (SOV) TO 593 {SAC0216(L), SAC0214(LOI)}

Fire Area ID:	CC - Control Building Complex	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

RCS - 592 - REACTOR HEAD VENT INNER (SOV) TO 590 {SAC0215(L), SAC0213(LOI)}
RCS - 593 - REACTOR HEAD VENT INNER (SOV) TO 591 {SAC0216(L), SAC0212A(LOI)}
SIS - 835A - ACCUM A FILL AOV {R0639(LOI)}
SIS - 835B - ACCUM B FILL AOV {R0670(LOI)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action FSHFDMCBDC-B, consisting of locally depowering DC loads, was credited to help resolve this VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-CC-004

VFDR

A MSO concern exists related to RWST drain down via Containment Spray actuation. Actuation is possible due to the following separation concerns:
(a) High containment pressure signal from at least two out of three containment pressure transmitters (PT-946, PT-948 and/or PT-950) AND high containment pressure signal from at least two out of three containment pressure transmitters (PT-945, PT-947 and/or PT-949) - OR -
(b) Train "A" Pump (PSI02A) spurious starts and at least one discharge valve (860A or 860B) spuriously opens, OR Train "B" Pump (PSI02B) spurious starts and at least one discharge valve (860C or 860D) spuriously opens
This VFDR is associated with the Inventory and Pressure Control Functions. [OP003, OP017, OP109, OP110]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

CSS - 860A - CS PUMP A DISCHARGE {C0757(LO), C0756(LOCI), Cascading Impact}
CSS - 860B - CS PUMP A DISCHARGE {C0820(LO), C1122(LOCI), Cascading Impact}
CSS - 860C - CS PUMP B DISCHARGE {C0757(LO), C0819(LOCI), Cascading Impact}
CSS - 860D - CS PUMP B DISCHARGE {C0820(LO), C1182(LOCI), Cascading Impact}
CSS - PSI02A - CONTAINMENT SPRAY PUMP A {L0339(LC), L0337(LOCI), Cascading Impact}
CSS - PSI02B - CONTAINMENT SPRAY PUMP B {L0217(LC), L0215(LOCI), Cascading Impact}
ESF - PT-945 - CNMT PRESS XMTR {R0895(I), R1140(I), R1141(I), R0896(L), R0897(L), C2518(P), C2612(P)}
ESF - PT-946 - CNMT PRESS XMTR {R0937(I), R1142(I), R1143(I), R0919(L), R0923(L), R0938(L), R0939(L), C2541(P), C2630(P)}
ESF - PT-947 - CNMT PRESS XMTR {R0984(I), R1144(I), R1145(I), R0985(L), R0986(L), R0988(L), R1007(L), C2565(P), C2648(P)}
ESF - PT-948 - CNMT PRESS XMTR {R0940(I), R1147(I), R1148(I), R0976(L), R0986(L), R0988(L), R0989(L), C2565(P), C2648(P)}
ESF - PT-949 - CNMT PRESSURE {R0987(I), R1146(I), R1149(I), R0928(L), R0933(L), R0941(L), R0942(L), C2541(P), C2630(P)}
ESF - PT-950 - PRESSURE TRANSMITTER CONTAINMENT PRESSURE INSTRUMENT LOOP 95 {R1030(I), R1150(I), R1151(I), R1020(L), R1025(L), R1031(L), R1032(L), R0933A(P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDMAKEUP, consisting of locally aligning and starting the new charging system was credited to help resolve this VFDR. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

VFDR ID VFDR-CC-005

Fire Area ID: CC - Control Building Complex **VFDRs**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

VFDR

A MSO concern exists related to spurious (ESF) Safety Injection Actuation due to fire damaged cabling. Actuation is possible due to the following separation concerns:
(a) Low PZR pressure signal from at least two out of three PZR pressure transmitters (PT-429, PT-430 and/or PT-431) - OR -
(b) Low PZR pressure signal (as above) AND either a low SG-B pressure signal (from at least two out of three SG-B pressure transmitter loops PI-478, PI-479 and/or PT-483) OR a low SG-A pressure signal (from at least two out of three SG -A pressure transmitter loops PT-468, PI-469 and/or PT-482) - OR -
(c) High containment pressure signal from at least two out of the three containment pressure transmitter loops (PT-945, PT-947, and/or PT-949) - OR -
(d) Impact to either Train "A" or "B" SI logic circuits
Local action is taken to mitigate spurious SI actuation by opening breakers at DC power panels. However, operator action to 'de-power' circuits to mitigate spurious operation may not be effective. A short to an energized conductor from another circuit in conjunction with fire damage (grounds) to both circuits can result in a spurious operation defeating de-powering the subject circuit.
This VFDR is associated with the Inventory and Pressure Control Functions. [OE010, OP004, OP005, OP006, OP017, OP106, PH102, PH103]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

BDC - DCPDPCB03A - MAIN DC DISTRIBUTION PANEL A {Requires Operator Action}
BDC - DCPDPCB03B - MAIN DC DISTRIBUTION PANEL B {Requires Operator Action}
BDC - DCPDPCB04A - MAIN CONTROL BOARD DC DIST PANEL A {E0049(P)}
BDC - DCPDPCB04B - MAIN CONTROL BOARD DC DIST PANEL B {E0103(P)}
ESF - PT-945 - CNMT PRESS XMTR {C2518(P), C2612(P), R0895(I), R0896(L), R0897(L), R1140(I), R1141(I)}
ESF - PT-947 - CNMT PRESS XMTR {C2565(P), C2648(P), R0984(I), R0985(L), R0986(L), R0988(L), R1007(L), R1144(I), R1145(I)}
ESF - PT-949 - CNMT PRESSURE {C2541(P), C2630(P), R0928(L), R0933(L), R0941(L), R0942(L), R0987(I), R1146(I), R1149(I)}
ESF - SI-TRAIN-A - SAFEGUARDS INITIATION TRAIN A {E0214(), L0354(), L0354A(), L0772(), R3231(), R3232(),R3232A(), R3233(), and Cascading Impact}
ESF - SI-TRAIN-B - SAFEGUARDS INITIATION TRAIN B {E0211(), L0774(), R3231(), R3233(), R3234(), R3235(), R3235A(), and Cascading Impact}
IAC - CVTA1 - INSTRUMENT BUS B CONSTANT VOLTAGE XFMR {C0640(P)}
IAC - IBPDPCBA - INSTR POWER DISTRIBUTION PANEL A {C2536(P) and Cascading Impact}
IAC - IBPDPCBAR - INSTRUMENT BUS A {C2500(P) and Cascading Impact}
IAC - IBPDPCBB - INSTR POWER DISTRIBUTION PANEL B {C2559(P), Cascading Impact}
IAC - IBPDPCBBW - INSTRUMENT BUS B {C0640(P), C2503(P), Cascading Impact}
IAC - IBPDPCBC - INSTR POWER DISTRIBUTION PANEL C {C2583(P) and Cascading Impact}
IAC - IBPDPCBCB - INSTRUMENT BUS C {C2504(P) and Cascading Impact}
MSS - PI-469 - S/G A PRESSURE (MCB) {A0302(I), C2541(P), C2630(P), R0926(I), R0927(L), R0928(L), R0942(L), R1303(I), R4368(I), R4373(I), Cascading Impact}}
MSS - PI-478 - S/G B PRESSURE (MCB) {C2565(P), C2648(P), R0975(I), R0976(L), R0977(L), R0982(P), R0989(L), R1327(I), R4376(I), Cascading Impact}}
MSS - PI-479 - S/G B PRESSURE (MCB) {R0933A(P), R1024(I), R1025(L), R1026(L), R1031(L), R4387(I), Cascading Impact}}
MSS - PT-468 - STM GEN A PRESS XMTR {C2518(P), C2612(P), R0886(I), R0887(L), R0888(L), R0892(L), R1275(L), R4372(I), Cascading Impact}

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MSS - PT-482 - S/G A STM PRESS XMTR {A0304(I), C2565(P), C2648(P), R0968(L), R0978(I), R0979(L), R0980(L), R1283(I), R1285(I), R1354(I), R4374(I), R4375(I) and Cascading Impact}
MSS - PT-483 - S/G B STM PRESS XMTR {A0303(I), C2630(P), R0931(I), R0932(L), R0933(L), R0941(L), R1335(I), R1337(I), R4386(I), R4389(I), R4410(I) and Cascading Impact}
RPS - PT-429 - PRZR PRESS XMTR {C2517(P), C2566(P), C2613(P), C2651(P), R0809(L), R0907(L), R0908(L), R0909(L), R0910(L), R0913(L), R0914(L), R0915(L), R1069(I), R1070(I), R1071(I), R1073(L), R1082(L), R1083(L), R1086(I), R1087(I), R1088(I), R1089(I), R1090(I) R1090A(I), R1090B(I), R1091(LI), R1092(I), R1093(I), R1094(I), R1095(I), R1095A(I), R1095B(I), R1096(LI), R1097(I), R1099(I), R1100(I), R1100A(I), R1100B(I), R1101(I), R3408(I) and Cascading Impact}
RPS - PT-430 - PRZR PRESS XMTR {C2540(P), C2566(P), C2613(P), C2651(P), R0825(L), R0953(L), R0954(L), R0955(L), R0956(L), R0959(L), R0960(L), R0961(L), R1074(I), R1075(I), R1076(I), R1077(L), R1078(L), R3973(I), R4509(L) and Cascading Impact}
RPS - PT-431 - PRZR PRESS XMTR {C2564(P), 2566(P), 2649(P), C2651(P), R0998(I), R0999(L), R1000(L), R1001(L), R1002(L), R1005(L), R1008(L), R1073(L), R1077(L), R1078(L), R1079(I), R1080(I), R1081(I), R4509(L) and Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID

VFDR-CC-006

VFDR

A MSO concern exists related to inadvertent PORV (430/431C) actuation as follows:
I. PORV opening and spurious operation/failure of block valves
(a) PORVs (430 and 431C) spuriously open--when required closed for HSD--due to fire damage to SOV cables (8616A, 8619A and 8620A for 430; 8616B, 8619B and 8620B for 431C), - AND -
(b) Block valves (515 and 516) fail open or spuriously open after being closed due to cable fire damage
II. PORV opening due to high pressure signal
(a) High PZR pressure signal from PT-429 and a high PZR signal from either channel 2 (PT-430) or channel 3 (PT-431) actuates 430, - OR -
(b) High PZR pressure signal from PT-431 and a high PZR signal from either channel 1 (PT-429) or channel 4 (PT-449) actuates 431C, - OR -
(c) High PZR pressure signal from at least two out of the three transmitters (PT-450, PT-451 and/or PT-452) actuates BOTH 430 and 431C
Local actions are taken to mitigate spurious operation as follows:
(a) Open breakers at DC power panel. However, operator action to "de-power" circuits to mitigate spurious operation may not be effective. A short to an energized conductor from another circuit in conjunction with fire damage (grounds) to both circuits can result in a spurious operation defeating de-powering the subject circuit. - AND -
(b) Isolate IA to Containment causing the valves to fail closed. However, this action may not be successful to prevent spurious operation of AOVs in the Containment as the instrument air header is not vented.
This VFDR is associated with the Inventory and Pressure Control Functions. [OE001, OE010, OP007, OP008, OP009, OP011, OP017, PH102, PH103, PH118]
Impacted Components: :
* BDC - DCPDPCB03A: MAIN DC DISTRIBUTION PANEL A {Requires Operator Action}
* BDC - DCPDPCB03B: MAIN DC DISTRIBUTION PANEL B {Requires Operator Action }
* BDC - DCPDPCB04A: MAIN CONTROL BOARD DC DIST PANEL A {E0049(P), Cascading Impact}
* BDC - DCPDPCB04B: MAIN CONTROL BOARD DC DIST PANEL B {E0103(P), Cascading Impact}
* IAS - 5397: IA CNMT MAN ISOL VLV {Requires Operator Action}
* IAS - 8619A: N2 ARMING SOV FOR PORV 430 {SAC0211(+)(L), SAC0211-2(L), SAC0211-1(LO), SAC0211A(LO), SAC0211B(LO),

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SAC0260(LO), SAC0260A(LO), SAC0260B(LO), SAC0266(LO)}
* IAS - 8619B: N2 ARMING SOV FOR PORV 431C {SAC0212(+)(L), SAC0212-2(L), SAC0212-1(LO), SAC0212A(LO), SAC0212B(LO), SAC0259(LO), SAC0259A(LO), SAC0259B(LO), SAC0265(LO)}
* IAS - 8620A: PORV 430 ACTUATION SOV {R0274(LO), R0275(LO), E0103(P)}
* IAS - 8620B: PORV 431C ACTUATION SOV {R0274(LO), R0275(LO), E0103(P)}
* NAS - 8616A: ACCUM TO SURGE TANK SOV FOR PORV 430 {SAC0213(LO)}
* NAS - 8616B: ACCUM TO SURGE TANK SOV FOR PORV 431C {SAC0214(LO)}
* RCS - 430: PORV (AOV) {R0274(LO), R0275(LOI), SAC0211(+)(L), SAC0211-1(LO), SAC0211-2(L), SAC0211A(LO), SAC0211B(LO), SAC0260(LO), SAC0260A(LO), SAC0260B(LO), SAC0266(LO), Cascading Impact}
* RCS - 431C: PORV (AOV) {R0274(LO), R0275(LOI), SAC0212(+)(L), SAC0212-1(LO), SAC0212-2(L), SAC0212A(LO), SAC0212B(LO), SAC0259(LO), SAC0259A(LO), SAC0259B(LO), SAC0265(LO), Cascading Impact}
* RCS - 515: PORV BLOCK VALVE (MOV) FOR 431C {C1060(LOCI), Cascading Impact}
* RCS - 516: PORV BLOCK VALVE (MOV) FOR 430 {C0694(LOCI), Cascading Impact}
* RPS - PT-429: PRZR PRESS XMTR {C2517(P), C2566(P), C2613(P), C2651(P), R0809(L), R0907(L), R0908(L), R0909(L), R0910(L), R0913(L), R0914(L), R0915(L), R1069(I), R1070(I), R1071(I), R1073(L), R1082(L), R1083(L), R1086(I), R1087(I), R1088(I), R1089(I), R1090(I), R1090A(I), R1090B(I), R1091(LI), R1092(I), R1093(I), R1094(I), R1095(I), R1095A(I), R1095B(I), R1096(LI), R1097(I), R1099(I), R1100(I), R1100A(I), R1100B(I), R1101(I), R3408(I), Cascading Impact}
* RPS - PT-430: PRZR PRESS XMTR {C2540(P), C2566(P), C2631(P), C2651(P), R0825(L), R0953(L), R0954(L), R0955(L), R0956(L), R0959(L), R0960(L), R0961(L), R1074(I), R1075(I), R1076(I), R1077(L), R1078(L), R3973(I), R4509(L)
* RPS - PT-431: PRZR PRESS XMTR {C2564(P), C2566(P), C2651(P), C2649(P), R0998(I), R0999(L), R1000(L), R1001(L), R1002(L), R1005(L), R1008(L), R1073(L), R1077(L), R1078(L), R1079(I), R1080(I), R1080(I), R1081(I), R4509(L), Cascading Impact.
* RPS - PT-449: PRZR PRESS XMTR {C2566(P), C2587(P), C2651(P), C2662(P), R1038(I), R1039(L), R1040(L), R1082(L), R1083(L), R1086(I), R1087(I), R1088(I), R1089(I), R1090(I), R1090A(I), R1090B(I), R1091(LI), R1092(I), R1093(I), R1094(I), R1095(I), R1095A(I), R1095B(I), R1096(LI), R1097(I), R1099(I), R1100(I), R1100A(I), R1100B(I), R1101(I), R1102(I), R1103(I), R1104(I), R1105(I), Cascading Impact}
* RPS - PT-450: RC OVERPRESS PROTECTION XMTR {C2565(P), C2648(P), SAC0219(L), SAC0220(L), SAC0225(L), SAC0226(L), SAI0106(I), Cascading Impact}
* RPS - PT-451: RC OVERPRESS PROTECTION {C2541(P), C2630(P), SAC0221(L), SAC0222(L), SAC0227(L), SAC0228(L), SAI0107(I), Cascading Impact}
* RPS - PT-452: RC OVERPRESS PROTECTION {C2518(P), C2612(P), SAC0223(L), SAC0224(L), SAC0229(L), SAC0230(L), SAI0108(I), Cascading Impact}

This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Disposition	This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action FSHFDMCBDC-B, consisting of locally depowering DC loads, was credited to help resolve this VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.
VFDR ID	VFDR-CC-007
VFDR	480V power cable C5715 that feeds the non-credited Relay Room Annex Unit Heater (AKU02) is impacted by a fire in this area. Fire damage to this cable creates a breaker coordination concern that results in the loss of ACPDPCD02 long term 120/208V AC power supply capability

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for credited safe shutdown Instrumentation/Controls and TSC support system components.
This VFDR is associated with the Vital Auxiliaries Function. [OP018]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

LAC - ACPDPCD02 - TECHNICAL SUPPORT CENTER DISTRIBUTION PANEL - TSC2 {C5715(P)}
LAC - ACPDPCD04 - TSC DISTRIBUTION PANEL TSC-4 {Cascading Impact}
LAC - BYCTSC - TSC BATTERY CHARGER {Cascading Impact}
TSV - AEF15 - TSC UNINTERRUPTED PS ROOM EXHAUST FAN {Cascading Impact}
TSV - AEF22 - TSC DIESEL-GENERATOR ROOM EXHAUST FAN {Cascading Impact}
TSV - AEF25 - TSC BATTERY ROOM ROOF EXHAUST FAN {Cascading Impact}
TSV - AEF27 - TSC BATTERY ROOM HEATING FAN {Cascading Impact}
TSV - AEF28 - TSC DIESEL-GENERATOR ROOM HEATING FAN {Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID

VFDR-CC-008

VFDR

A MSO concern exists related to BUS14 power supply.
With offsite power available, spurious closure of breaker 52/EG1A2 (cable L0510) can take place with KDG01A idle causing a reverse power relay trip signal to 52/EG1A2 (BUS18) and 52/EG1A1 (BUS14). A simultaneous spurious trip of BUS14 offsite infeed breaker 52/14 (cables L0472, L0315, or L0316) results in a loss of both power sources to BUS14.
With offsite power not available, power to BUS14 can be lost due to the following separation concerns:
(a) A spurious trip of breaker 52/EG1A2 (cable L0510) de-energizes BUS18. This results in a loss of KDG01A cooling water which, in turn, results in the loss of EAC power to BUS14; - OR -
(b) Fire damage to cable L0320 or L0319 can spuriously open or prevent breaker 52/EG1A1 from closing which would result in loss of power to BUS14
This VFDR is associated with the Vital Auxiliaries Function [OP017, OP105]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

EAC - 52/EG1A1 - EDG A SUPPLY TO BUS 14 {L0320(LOC), L0319(LOCI), Cascading Impact}
EAC - 52/EG1A2 - EDG A SUPPLY TO BUS 18 {L0511(L), L0510(LOCI), Cascading Impact}
EAC - KDG01A - DIESEL-GENERATOR A {L0365(L), L0523(LC), L0524(LC), L0530(LCI), L0531(L), L0532(LI), L0536(L), L0537(L), L0554(L), L0560(L), L0780(LC), L0782(LC), Cascading Impact}
LAC - 52/14 - SPT SUPPLY BREAKER TO BUS 14 {L0317(L), L0472(LO), L0315(LOCI), L0316(LOCI)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was

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performed.No recovery action was credited to resolve the VFDR. In addition, Plant Modifications ESR-11-0050 (fire protection upgrades to the Standby AFW pumps) and ESR-12-0144, which provides a standby Charging pump in the SB AFW building, were credited to help resolve this VFDR.

VFDR ID VFDR-CC-009

VFDR

SG "B" level indication at the PCS (IBELIP) would not be available to support safe shutdown upon postulated fire damage to associated cabling or power supply cabling associated with IBPDPCBAR, IBPDPCBE, and/or RVLMS1.
This VFDR is associated with the Process Monitoring Function. [OP107]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

IAC - IBPDPCBAR - INSTRUMENT BUS A {C2500(P)}
IAC - IBPDPCBE - INSTR POWER DISTRIBUTION PANEL E {C2537(P)}
IAC - RVLMS1 - REACTOR VESSEL LEVEL MONITOR RACK 1 {C3594(P)}
MFW - LI-506A - S/G B WIDE RANGE LEVEL (IBELIP) {R4343(I), R4580(I), C3594(P), Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-CC-010

VFDR

A MSO concern exists related to CHG pump damage. Fire damage to cables (R0046, R0056 and/or R0060) can spuriously close VCT outlet valve (AOV-112C). RWST outlet valve (AOV-112B) would fail closed on a loss of power when DCPDPCB04B is de-energized by OMA (Refer to VFDR-CC-003). This would result in a loss of CHG pump suction source. The capability to stop any running CHG Pump (PCH01A, PCH01B, PCH01C) from the MCB would not be available due to fire damaged cables (L0397/L0399, L0263/L0269, L0269/L0267, respectively). In particular, a hot short or short to ground affecting Cable L0399 could cause Breaker 52/CHP1A to close, leading to the spurious operation of Charging Pump PCH01A. Similarly, Breaker 52/CHP1B could spuriously close due to a hot short or short to ground affecting Cable L0263. Breaker 52/CHP1C could spuriously close due to a hot short or short to ground affecting Cable L0267. An uncontrolled charging flow from any of the charging pumps challenges the reactor pressure and inventory control nuclear safety performance criterion (MSO 21).This VFDR is associated with the Reactivity Control Function, and Inventory and Pressure Control Functions. [OP108, OP017]This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

CVC - 112B - RWST TO CHARGING PUMP SUCTION {R0046(LO), R0056(LOI), Cascading Impact}
CVC - 112C - VCT OUTLET AOV {R0046(LC), R0056(LC), R0060(LCI), Cascading Impact}
CVC - PCH01A - CHRG PUMP A {L0397(LOCI), L0399(LOCI), Cascading Impact}
CVC - PCH01B - CHRG PUMP B {L0263(LOCI), L0269(LOCI), Cascading Impact}
CVC - PCH01C - CHRG PUMP C {L0269(LO), L0267(LOCI), Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Actions RCHFDMAKEUP, consisting of locally aligning and starting the new charging system and CVHFDCHGTRIPFIRE, consisting of locally securing the charging pumps, were credited to help resolve this VFDR. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

VFDR ID

VFDR-CC-011

VFDR

A MSO concern exists related to CST Diversion to the Condenser. Fire damage to cable G1488 could spuriously open main condenser hotwell makeup AOV-4315 which would result in premature draining of the CST and damage the in-service AFW Pump(s) due to loss of suction. Control for this AOV is not provided at a PCS.
Local action is taken to fail AOV-4315 in the closed position.
This VFDR is associated with the Decay Heat Removal Function. [OP017, OP111, PH104]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

CND - 4315 - MAIN CONDENSER B HOTWELL MAKEUP {A0198(L), G0148(L), R4589(LC), G1488(LO), C3584(P), G0284(P), G0286(P), G0300(P), G0300B(P)}

Disposition

Modification ESR-12-0123 (preventing spurious hotwell makeup from CSTs) deterministically resolves this VFDR.

VFDR ID

VFDR-CC-012

VFDR

Cable L0554 is routed through this fire area and is associated with a current transformer located in Fire Area EDG1A. Fire damage to this cable could cause a secondary fire in Fire Area EDG1A that results in KDG01A being unavailable to support achieving safe and stable plant conditions.
This VFDR is associated with the Vital Auxiliaries Function. [OP113]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

EAC - KDG01A - DIESEL-GENERATOR A {L0365(L), L0523(LC), L0524(LC), L0530(LCI), L0531(L), L0532(LI), L0536(L), L0537(L), L0554(L), L0560(L), L0780(LC), L0782(LC), Cascading Impact }

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. The delta risk was qualitatively evaluated as insignificant based on the consideration that secondary fires due to the fire-induced failure of a current transformer have a low probability of occurrence. No recovery action was credited to resolve this VFDR.

VFDR ID

VFDR-CC-013

VFDR

A MSO concern exists related to inadvertent RCS pressure decrease. The scenario is postulated due to the following separation concerns:

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(a) Failure of PZR Heaters (EHTRRC01A, EHTRRC02A, EHTRRC01B, and EHTRRC02B), - AND -
(b) Inability to trip and/or spurious start of at least one RCP (PRC01A and/or PRC01B) with spurious opening of PZR Spray valves (AOV-431A and AOV-431B), - AND -
(c) Inability to trip and/or spurious start of at least one CHG Pump (PCH01A, PCH01B, and/or PCH01C) with spurious opening of Auxiliary Spray valve (AOV-296)
Local actions are taken to mitigate spurious operation as follows:
(a) Open breakers at DC power panel. However, operator action to "de-power" circuits to mitigate spurious operation may not be effective. A short to an energized conductor from another circuit in conjunction with fire damage (grounds) to both circuits can result in a spurious operation defeating de-powering the subject circuit. - AND -
(b) Isolate IA to Containment causing the valves to fail closed. However, this action may not be successful to prevent spurious operation of AOVs in the Containment as the instrument air header is not vented. - AND -
(c) Stop the RCPs - AND -
(d) Stop the CHG Pumps
This VFDR is associated with the Inventory and Pressure Control Functions. [OE001, OE010, OP017, OP114, PH102, PH103, PH118]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

BDC - DCPDPCB03A - MAIN DC DISTRIBUTION PANEL A {Requires Operator Action}
BDC - DCPDPCB03B - MAIN DC DISTRIBUTION PANEL B {Requires Operator Action}
CVC - 296 - AUX SPRAY AOV {R0542(LOI), E0049(P)}
CVC - PCH01A - CHRG PUMP A {L0397(LOCI), L0399(LOCI), Cascading Impact}
CVC - PCH01B - CHRG PUMP B {L0263(LOCI), L0269(LOCI), Cascading Impact}
CVC - PCH01C - CHRG PUMP C {L0269(LO), L0267(LOCI), Cascading Impact}
IAS - 5397 - IA CNMT MAN ISOL VLV {Requires Operator Action}
RCS - 431A - PZR SPRAY VALVE (AOV) {R1091(LOC), C2651(P), Cascading Impact}
RCS - 431B - PZR SPRAY VALVE (AOV) {R1096(LOC), C2651(P), Cascading Impact}
RCS - EHTRRC01A - PRESSURIZER PROPORTIONAL HEATERS {L0200(LO), L0278(LO), L0381(LOCI), R1101(OC), Cascading Impact}
RCS - EHTRRC01B - PRESSURIZER BACKUP HEATERS {L0269(L), L0278(LC), L0277(LOCI)}
RCS - EHTRRC02A - PRESSURIZER PROPORTIONAL HEATERS {L0200(LO), L0278(LO), L0381(LOCI), R1101(OC), Cascading Impact}
RCS - EHTRRC02B - PRESSURIZER BACKUP HEATERS {L0269(L), L0278(LC), L0277(LOCI)}
RCS - PRC01A - RCP A {M0050(LC), M0047(LOCI), E0025(P), M0045(P)}
RCS - PRC01B - RCP B {M0145(LC), M0142(LOCI), E0104(P), M0140(P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action FSHFDMCBDC-B, consisting of locally depowering DC loads, was credited to help resolve this VFDR. Recovery Action CVHFDCHGTRIPFIRE, consisting of locally securing the charging pumps, is also credited. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-CC-014

VFDR

Fire damage to cables (E0036 and E0112) results in spurious operation of both SG MOVs (3504A and 3505A) to the TDAFW Pump. These valves can spuriously close when required open adversely impacting the ability to remove decay heat.

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Local action is taken to de-energize the valve circuits at DCPDPCB03A and DCPDPCB03B. Local action to reposition the MOV is considered unsuccessful due to IN 92-18 concerns ("Hot Short Damaged" due to spurious operation as identified in DA-EE-2000-066 - Attachment G).
This VFDR is associated with the Decay Heat Removal Function. [OP001, OP017, PH102, PH103, PH121]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

AFW - PAF03 - TURBINE DRIVEN AUXILIARY FEEDWATER PUMP {Cascading Impact}
BDC - DCPDPCB03A - MAIN DC DISTRIBUTION PANEL A {Requires Operator Action}
BDC - DCPDPCB03B - MAIN DC DISTRIBUTION PANEL B {Requires Operator Action}
MSS - 3504A - SG B TO TDAFWP {E0039(LO), G0403(LO), E0112(LOCI), E0108(P), Cascading Impact}
MSS - 3505A - SG A TO TDAFWP {E0039(LO), G0403(LO), E0036(LOCI), E0032(P), Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Actions AFHFDSUPPL-3, consisting of supplying alternate sources of water for the AFW system once the initial water supply is depleted, and AXHFDSAFWX-2, consisting of locally aligning the Standby AFW pump were credited to help resolve this VFDR. In addition, Plant Modifications ESR-11-0050 (fire protection upgrades to the Standby AFW pumps) and ESR-12-0143 (supporting diesel generator that can power a standby AFW pump) were credited to help resolve this VFDR.

VFDR ID VFDR-CC-015

VFDR

If offsite power is available, cable fire damage can prevent tripping RCPs (PRC01A and PRC01B) and MFW pumps (PFW01A and PFW01B) from the MCB prior to evacuation. Any of these pumps continuing to run after reactor trip will have an adverse impact on RCS cool-down rate. If the MCR trip is successful, subsequent cable fire damage may cause a pump restart.
Local action is taken at their associated 4kV bus to trip each pump, since none of the pumps are controlled from a PCS.
This VFDR is associated with the Decay Heat Removal Function. [OP017, PH107, PH108, PH109, PH110]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

MFW - PFW01A - MFW PUMP A {M0042(LO), M0043(LO), M0160(LO), M0035(LOI), E0025(P)}
MFW - PFW01B - MFW PUMP B {M0043(LO), M0159(LO), M0160(LO), M0152(LOI), E0104(P)}
RCS - PRC01A - RCP A {M0050(LC), M0047(LOCI), E0025(P), M0045(P)}
RCS - PRC01B - RCP B {M0145(LC), M0142(LOCI), E0104(P), M0140(P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-CC-016

Fire Area ID:	CC - Control Building Complex	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

VFDR

Sampling system isolation valves may spuriously open due to cable fire damage resulting in a minor RCS inventory loss.
Local action is taken to:
(a) Open breaker #11 in Turbine Building DC Distribution Panel DCPDPTB01B to de-energize the Nuclear Sample Panel (NSP) to isolate these valves. This action may be ineffective if the spurious operation(s) was caused by a short to an energized conductor of a different circuit concurrent with fire damage (grounds) to both circuits.
(b) Isolate IA to Containment causing AOVs (951, 953 and 955) to fail closed. However, this action may not be successful to prevent spurious operation of AOVs in the Containment as the instrument air header is not vented.
This VFDR is associated with the Decay Heat Removal Function, and Inventory and Pressure Control Functions. [OE001, OE010, OP017, PH113, PH118]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

BDC - DCPDPTB01B - TURBINE BLDG DC DISTRIBUTION PANEL {Requires Operator Action}
IAS - 5397 - IA CNMT MAN ISOL VLV {Requires Operator Action}
LAC - NSP - NUCLEAR SAMPLING PANEL {Cascading Impact}
PSS - 951 - PZR STEAM SAMPLE AOV {R3151(LO), R3152(LO), R3140(LOI)}
PSS - 953 - PZR WATER SAMPLE AOV {R3151(LO), R3152(LO), R3150(LOI)}
PSS - 955 - LOOP B HL SAMPLE {R3151(LO), R3152(LO), R3150(LOI)}
PSS - 966A - PZR STEAM SAMPLE AOV {R3172(LO), R3173(LO), R3171(LOI)}
PSS - 966B - PZR LIQUID SAMPLE AOV {R3172(LO), R3173(LO), R3171(LOI)}
PSS - 966C - LOOP B HL SAMPLE {R3172(LO), R3173(LO), R3163(LOI)}
SGB - 5737 - SGB B AOV {G0401(LO), M0201(LO), R3194(LO), R3195(LO), R3196(LO), R3197(LO), R3198(LO), R3199(LO), R3192(LOI)}
SGB - 5738 - SGB A AOV {G0403(LO), M0200(LO), R3194(LO), R3195(LO), R3196(LO), R3197(LO), R3198(LO), R3199(LO), R3192(LOI)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID

VFDR-CC-017

VFDR

A MSO concern exists related to inadvertent Steam Dumping as follows:
(a) Cable fire damage can prevent one or both MSIVs from closing - AND -
(b) Loss of power from ACPDPCB03 can fail open MSS valves to moisture separator reheaters (3425, 3425A, 3426, 3426A, 3427, 3427A, 3428, and 3428A) -AND/OR-
(c) Loss of power to solenoid valves 20/AST and 5501S3 disables the turbine trip function of these valves, preventing them from closing Turbine Inlet Valves (3544, 3545, 3462, 3463, 3464, and 3465)
(d) Cable fire damage can spuriously open Steam Dump Valves (3349, 3350, 3351, 3352, 3353, 3354, 3355, 3356)
Local action is taken to mitigate spurious actuation by opening breakers at DC power panels. However, operator action to 'de-power' circuits to mitigate spurious operation may not be effective. A short to an energized conductor from another circuit in conjunction with fire damage (grounds) to both circuits can result in a spurious operation defeating de-powering the subject circuit. Since none of the components can be controlled from a PCS, local action is taken to close both MSIVs.

Fire Area ID:	CC - Control Building Complex	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

This VFDR is associated with the Decay Heat Removal Function. [OE010, OP112, PH101a, PH102, PH103, PH116]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

IAS - 5408A - IA ISOL VALVE to AOV-3517, A MSIV {Requires Operator Action}
IAS - 5409B - IA ISOL VALVE TO S/G B MSIV {Requires Operator Action}
IAS - 5471 - A MSIV EMERG VENT {Requires Operator Action}
IAS - 5472 - B MSIV EMERG VENT {Requires Operator Action}
IAS - 5473 - A MSIV EMERG VENT {Requires Operator Action}
IAS - 5474 - B MSIV EMERG VENT {Requires Operator Action}
LAC - ACPDPCB03 - CONTROL BUILDING 120/208V DISTRIBUTION PANEL B1 {C2066(P), C2066A(P), L0038(P), L0834(LCI), Cascading Impact}
LAC - ACPDPTB07 - TURBINE BUILDING MISCELLANEOUS 120V DISTRIBUTION PANEL A {C2068(P), Cascading Impact}
LAC - ACPDPTB10 - TURBINE BUILDING MISCELLANEOUS 120V DISTRIBUTION PANEL B {Cascading Impact}
MSS - 3349 - STEAM GEN CONDENSER STEAM DUMP VLV {G0797(L), G0834(L), G0764(LI), G0765(LO), G0780(LO), G0799(LO)}
MSS - 3350 - STEAM GEN CONDENSER STEAM DUMP VLV {G0828(L), G0829(L), G0832(L), G0833(L), G0804(LI), G0805(LO), G0819(LO), G0830(LO)}
MSS - 3351 - STEAM GEN CONDENSER STEAM DUMP VLV {G0797(L), G0834(L), G0764(LI), G0765(LO), G0780(LO), G0799(LO)}
MSS - 3352 - STEAM GEN CONDENSER STEAM DUMP VLV {G0828(L), G0829(L), G0832(L), G0833(L), G0804(LI), G0805(LO), G0819(LO), G0830(LO)}
MSS - 3353 - STEAM GEN CONDENSER STEAM DUMP VLV {G0779(L), G0796(L), G0834(L), G0764(LI), G0765(LO), G0780(LO), G0799(LO)}
MSS - 3354 - STEAM GEN CONDENSER STEAM DUMP VLV {G0828(L), G0829(L), G0832(L), G0833(L), G0804(LI), G0805(LO), G0819(LO), G0830(LO)}
MSS - 3355 - STEAM GEN CONDENSER STEAM DUMP VLV {G0779(L), G0796(L), G0834(L), G0764(LI), G0765(LO), G0780(LO), G0799(LO)}
MSS - 3356 - STEAM GEN CONDENSER STEAM DUMP VLV {G0828(L), G0829(L), G0832(L), G0833(L), G0804(LI), G0805(LO), G0819(LO), G0830(LO)}
MSS - 3425 - MAIN STEAM CONTROL AOV TO MSR 1A {G0067(L), Cascading Impact}
MSS - 3425A - MOISTURE SEPARATOR REHEATER 1A MINI WARMUP AIR OPERATED VALV {G0067(L), Cascading Impact}
MSS - 3426 - MAIN STEAM CONTROL AOV TO MSR 1B {G0067(L), Cascading Impact}
MSS - 3426A - MSR 1B MINI WARM-UP AOV {G0067(L), Cascading Impact}
MSS - 3427 - MAIN STEAM CONTROL AOV TO MSR 2A {G0067(L), Cascading Impact}
MSS - 3427A - MSR 2A MINI WARMUP AOV {G0067(L), Cascading Impact}
MSS - 3428 - MAIN STEAM CONTROL AOV TO MSR 2B {G0067(L), Cascading Impact}
MSS - 3428A - MSR 2B MINI WARMUP AOV {G0067(L), Cascading Impact}
MSS - 3516 - MSIV B {G1180(L), G0712(LC), G0714A(LC), G1181(LC), G1184(LC), G1196(LC), G1198(LC), G1197(LI), E0212(P), E0215(P), E0216(P), Cascading Impact}
MSS - 3517 - MSIV A {G1186(L), G0713(LC), G0715(LC), G1184(LC), G1187(LC), G1192(LC), G1196(LC), G1191(LI), E0212(P), E0215(P), E0216(P), Cascading Impact}
MSS - STEAM-DUMP-CONTROL - STEAM DUMP CONTROLS {Pseudo}
TGS - 20/AST - TURBINE AUTO STOP TRIP SOLENOID (20/AST) {E0215(P), E0216(P), G0056(LO), G0057(LO), G0064(LO), G0064A(L),

Fire Area ID:	CC - Control Building Complex	**VFDRs**
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	G1403(LO), Cascading Impact} TGS - 3462 - HP TURB E/H GOV VLV {Cascading Impact} TGS - 3463 - HP TURB E/H GOV VLV {Cascading Impact} TGS - 3464 - HP TURB E/H GOV VLV {Cascading Impact}} TGS - 3465 - HP TURB E/H GOV VLV {Cascading Impact}} TGS - 3544 - HP TURBINE MAIN STEAM STOP VLV {Cascading Impact} TGS - 3545 - HP TURBINE MAIN STEAM STOP VLV {Cascading Impact} TGS - 5501S3 - TURBINE EMERGENCY TRIP SOLENOID VALVE (20/ET) {E0212(P), E0216(P), G0058(LO), G0059(LO), G0064B(LO), G0065(LO), G0065A(LO), G1404(LO), Cascading Impact}
Disposition	Modification ESR-12-0128, which ensures automatic MSIV closure, deterministically resolves this VFDR.
VFDR ID	VFDR-CC-018
VFDR	PCS instrumentation is not available for CST level indication. Local action is taken to monitor local gauge PI-2808 from behind CST "B". This VFDR is associated with the Process Monitoring Function. [PH120] This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA issue.
Component(s)	CND - PI-2808 - CST LOCAL LEVEL INDICATOR {Requires Operator Action}
Disposition	This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action AFHFDSUPPL-3, consisting of supplying alternate sources of water for the AFW system, was credited to help resolve this VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.
VFDR ID	VFDR-CC-019
VFDR	Cable fire damage can prevent supplying AFW to the SGs; adversely impacting the ability to remove decay heat. Fire damage to control cable E0093 can prevent operation of MOV-3996 at the IBELIP. Since it cannot be controlled from the PCS, local action is taken to manually control the valve to establish AFW flow. However, establishing AFW flow may not be possible due to IN 92-18 issues related to MOV-3996. Additionally, SG B FCV 4298 could fail open due to fire damage to power cable (C3548); therefore, manual isolation valve 4002 is closed in order to ensure the success path to SG A is maintained. This VFDR is associated with the Decay Heat Removal Function. [OP001, OP017, PH121, PH136] This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.
Component(s)	AFW - 3996 - TDAFWP DISCHARGE MOV {E0093(L), E0097(LOCI)} AFW - 4002 - AOV-4298 OUTLET BLOCK VALVE {Requires Operator Action} AFW - 4298 - TDAFWP FCV TO S/G B {C3584(P), G0901(LC) and Cascading Impact}

Fire Area ID: CC - Control Building Complex **VFDRs**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Actions AFHFDSUPPL-3, consisting of supplying alternate sources of water for the AFW system once the initial water supply is depleted, and AXHFDSAFWX-2, consisting of locally aligning the Standby AFW pump were credited to help resolve this VFDR. In addition, Plant Modifications ESR-11-0050 (fire protection upgrades to the Standby AFW pumps) and ESR-12-0143 (supporting diesel generator that can power a standby AFW pump) were credited to help resolve this VFDR.

VFDR ID

VFDR-CC-020

VFDR

A MSO concern exists related to BUS14 and BUS18 power supply. The scenario is postulated due to the following separation concerns:
(a) Loss of control of KDG01A (cables L0780 and L0782) can prevent MCB action to start the DG and spurious opening of breaker 52/18 (cable L0206) if offsite power is available, results in a loss of power to credited BUS18
(b) Spurious opening or failure to close of breaker 52/EG1A1 (cable L0319) and spurious opening of breaker 52/14 (cable L0315) if offsite power is available, results in a loss of power to credited BUS14
Local action is taken to control KDG01A, strip the loads off BUS14/BUS18, start KDG01A, start SW Pumps (BUS18) and load BUS14.
This VFDR is associated with the Vital Auxiliaries Function. [OP017, PH111, PH115, PH112, PH122, PH128]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

ABV - AAF04 - AUXILIARY BUILDING EXHAUST FAN G {G0947(LO), L0732(LO), Cascading Impact}
AFW - PAF01A - AUXILIARY FEEDWATER PUMP A {G0401(L), G1401(L), L0374(L), G0409(LC), G0410(LC), L0375(LC), L0373(LOCI)}
AFW - PSF01A - SAFW PUMP C {FWL0010(LI), L0744(LO), Cascading Impact}
CCW - PAC02A - CCW PUMP A {L0386(L), L0862(LC), L0395(LOCI), Cascading Impact}
CSS - PSI02A - CONTAINMENT SPRAY PUMP A {L0339(LO), L0337(LOCI), Cascading Impact}
CVC - PCH01A - CHRG PUMP A {L0397(LOCI), L0399(LOCI), Cascading Impact}
EAC - 52/EG1A1 - EDG A SUPPLY TO BUS 14 {L0320(LOC), L0319(LOCI), Cascading Impact}
EAC - 52/EG1A2 - EDG A SUPPLY TO BUS 18 {L0511(L), L0510(LOCI), Cascading Impact}
EAC - KDG01A - DIESEL-GENERATOR A {L0365(L), L0523(LC), L0524(LC), L0530(LCI), L0531(L), L0532(LI), L0536(L), L0537(L), L0554(L), L0560(L), L0780(LC), L0782(LC), Cascading Impact }
LAC - 52/14 - SPT SUPPLY BREAKER TO BUS 14 {L0317(L), L0472(LO), L0315(LOCI), L0316(LOCI)}
LAC - 52/18 - SPT SUPPLY BREAKER TO BUS 18 {L0317(L), L0206(LO), L0504(LO), L0506(LOCI), Cascading Impact}
LAC - 52/BT14-13 - BKR FOR BUS14 TO BUS13 TIE {L0177(LC), L0327(LO), L0331(LO), L0329(LOCI), L0328(P), Cascading Impact}
LAC - 52/IH1A - BREAKER FOR EHTRCW01A (CIRCULATING WATER INTAKE HEATER A) {L0760(LO), Cascading Impact}
LAC - 52/IH1C - BREAKER FOR EHTRCW01C (CIRCULATING WATER INTAKE HEATER C) {L0762(LO), Cascading Impact}
LAC - 52/MCC1G1 - MOTOR CONTROL CENTER G SUPPLY G1 {L0499(LOCI), Cascading Impact}
LAC - BUS14 - 480V SWITCHGEAR {L0317(L), M0099(L), L0177(LC), L0327(LO), L0331(LO), L0472(LO), L0776(LO), L0320(LOC), L0315(LOCI), L0316(LOCI), L0319(LOCI), L0329(LOCI), M0095(LOCI), E0026(P), L0328(P), M0096(PI), Cascading Impact}
LAC - BUS18 - 480V SWITCHGEAR {L0511(L), M0099(L), L0430(LC), L0472(LC), L0206(LO), L0317(LO), L0504(LO), L0779(LO), L0469(LOCI), L0506(LOCI), L0510(LOCI), M0090(LOCI), E0026(P), M0091(PI), Cascading Impact}
LAC - MCCC - MOTOR CONTROL CENTER C {L0391(LOC), Cascading Impact}
RCS - EHTRRC01A - PRESSURIZER PROPORTIONAL HEATERS {L0200(LO), L0278(LO), L0381(LOCI), R1101(OC), Cascading Impact}
RCS - EHTRRC02A - PRESSURIZER PROPORTIONAL HEATERS {L0200(LO), L0278(LO), L0381(LOCI), R1101(OC), Cascading Impact}

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	RCV - ACF08A - CONTAINMENT RECIRCULATING FAN A {L0355(LC), L0353(LOCI), Cascading Impact} RCV - ACF08D - CONTAINMENT RECIRCULATING FAN D {L0355(LC), L0364(LOCI), Cascading Impact} RHR - PAC01A - RHR PUMP A {L0380(LC), L0378(LOCI), Cascading Impact} SIS - PSI01A - SI PUMP A {L0335(LC), L0333(LOCI)and Cascading Impact} SIS - PSI01C - SI PUMP C {L0201(LC), L0386(LC), L0210(LOCI), L0325(LOCI), Cascading Impact} SWS - PSW01A - SERVICE WATER PUMP A {L0484(L), L0479(LC), L0483(LOCI), L0485(LOCI), Cascading Impact} SWS - PSW01C - SERVICE WATER PUMP C {L0484(L), L0479(LC), L0487(LOCI), L0488(LOCI), Cascading Impact}
Disposition	This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed.No recovery action was credited to resolve the VFDR. In addition, Plant Modifications ESR-11-0050 (fire protection upgrades to the Standby AFW pumps) and ESR-12-0144, which provides a standby Charging pump in the SB AFW building, were credited to help resolve this VFDR.
VFDR ID	VFDR-CC-021
VFDR	Fire damage (line to ground fault or open circuit) to cable L0684 simulates an undervoltage signal which will strip BUS14 loads. Local action is taken to disable circuitry at the UNDERVOLTAGE RELAY CABINET by removing DC fuse blocks FUARA1RC 14/2-P and FUARA1RC 14/3-N for BUS14. This VFDR is associated with the Vital Auxiliaries Function. [PH123] This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.
Component(s)	LAC - UVBUS14 - BUS 14 UV CIRCUITRY {E0274(), E0274A(), E0274B(), E0275(), E0286(), E0287(), L0312(), L0673(), L0681(), L0684(), L0686(), L0687(), L0688(), L0689(), L0876A(), Cascading Impact}
Disposition	This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. In addition, Plant Modifications ESR-11-0050 (fire protection upgrades to the Standby AFW pumps) and ESR-12-0144, which provides a standby Charging pump in the SB AFW building, were credited to help resolve this VFDR.
VFDR ID	VFDR-CC-022
VFDR	Containment sump MOVs (850A and 850B) are subject to spurious opening. MOV-856 is required to be closed to prevent RWST drain down to the sump during HSD. Fire damage to cable C0790 can spuriously open 856, bypassing the control power key switch (1/856-KS on MCB). Local action is taken to open the breaker for 856 at MCCC AND locally close the valve. This VFDR is associated with the Inventory and Pressure Control Functions. [OP010, OP017, OMH001, PH125] This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.
Component(s)	

Fire Area ID:	CC - Control Building Complex	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

LAC - MCCC - MOTOR CONTROL CENTER C {Requires Operator Action}
RHR - 850A - CNMT SUMP TO RHR PUMP MOV {C0705(L), C0704(LOCI)}
RHR - 850B - CNMT SUMP TO RHR PUMP MOV {C1071(L), C1070(LOCI)}
RHR - 856 - RWST TO RHR MOV {C0791(L), C0790(LOCI), Requires Operator Action}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDMAKEUP, consisting of locally aligning and starting the new charging system was credited to help resolve this VFDR. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

VFDR ID VFDR-CC-023

VFDR

CHG Pump FCV-142 is subject to spurious closure due to a hot short to cable R0150.
Local action is taken to open bypass valve 384C.
This VFDR is associated with the Inventory and Pressure Control Functions. [OP017, PH126]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

CVC - 142 - CHRG FCV {R0150(LOC), C3584(P)}
CVC - 384C - AOV 142 BYP VLV {Requires Operator Action}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDMAKEUP, consisting of locally aligning and starting the new charging system was credited to help resolve this VFDR. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

VFDR ID VFDR-CC-024

VFDR

MOV-313 is subject to spurious opening (fire damage to cable C0872).
Local action to reposition the MOV is considered unsuccessful due to IN 92-18 concerns ("Hot Short Damaged" due to spurious operation as identified in DA-EE-2000-066 - Attachment G). Therefore, local action is taken to close manual valves V-315A and V-315C to isolate RCP seal return to the VCT.
This VFDR is associated with the Reactivity Control Function, and Inventory and Pressure Control Functions. [OP001, PH127]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

CVC - 313 - SEAL OR EXCESS LETDOWN RETURN ISOLATION MOV {C0872(LOCI), C0873(LI)}, C0874(LC)}
CVC - 315A - INLET BLOCK VALVE TO SEAL RETURN FILTER {Requires Operator Action}

Fire Area ID:	CC - Control Building Complex	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

CVC - 315C - SEAL RETURN FILTER BYPASS VLV {Requires Operator Action}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDMAKEUP, consisting of locally aligning and starting the new charging system was credited to help resolve this VFDR. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

VFDR ID VFDR-CC-025

VFDR

For a postulated fire in the Control Complex, VCT Outlet AOV-112C can fail open due to:
(a) Loss of instrument air -OR-
(b) Loss of power (either due to fire damage to DCPDPCB04A cable E0049, or when panel is de-energized by OMA to mitigate spurious actuations).
Failure of VCT Outlet AOV-112C to remain closed would result in charging pump failure upon loss of VCT water inventory.
Local action is taken to transfer control of the CVC System as follows:
(a) Align RWST suction source by opening manual valve 358.
(b) Close manual valve 289 to isolate RCP seal injection.
(c) Isolate VCT cover gas (close 261 and 262).
(d) Control PCH01A locally from the ABELIP (PCS).
This VFDR is associated with the Reactivity Control Function, and Inventory and Pressure Control Functions. [PH129, PH130]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

CVC - 112C - VCT OUTLET AOV {R0046(LC), R0056(LC), R0060(LCI), Cascading Impact}
CVC - 261 - VCT H2 INLT MANUAL BLK VLV {Requires Operator Action}
CVC - 262 - VCT NITROGEN INLET MANUAL BLK VLV {Requires Operator Action}
CVC - 289 - CHARGING PUMPS DISCHARGE ISOL VLV TO RCP SEAL INJECTION {Requires Operator Action}
CVC - 358 - CHARGING PUMP SUCTION FROM RWST MANUAL IV {Requires Operator Action}
CVC - PCH01A - CHRG PUMP A {L0397 (LOCI), L0399 (LOCI), PCS Action}
IAC - ABELIP - AUX BLDG EMERG LOCAL INSTR PANEL {Requires Operator Action}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDMAKEUP, consisting of locally aligning and starting the new charging system was credited to help resolve this VFDR. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

VFDR ID VFDR-CC-026

VFDR

If offsite power is available - OR - non-credited KDG01B spuriously starts (due to fire damaged cable(s) L0525, L0784, and/or L0570) -AND-connects to BUS16 (via spurious closure of 52/EG1B1 due to fire damaged cables L0190 and/or L0189), various loads on the non-credited

Fire Area ID:	CC - Control Building Complex	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

bus (i.e., PAF01B, PAC02B, PSI02B, PCH01B, PCH01C, 52/BT16-15, MCCD, EHTRRC01B, EHTRRC02B, PAC01B, PSI01B, PSI01C, etc.) could be in-service or spuriously energize and challenge the controlled shutdown of the plant.
Local action is taken to remove all Supply, Bus Tie, and Load Breaker 125V DC fuses -AND- open all 480V AC breakers at BUS16 to isolate BUS16.
This VFDR is associated with the Vital Auxiliaries Function. [OP017, PH131]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

AFW - PAF01B - AUXILIARY FEEDWATER PUMP B {G0401(L), G1402(L), L0253(L), G0411(LC), G0412(LC), L0254(LC), L0373(LO), L0252(LOCI)}
AFW - PSF01B - SAFW PUMP D {FWL0028(LI), L0723(LO), Cascading Impact}
CCW - PAC02B - CCW PUMP B {L0280(L), L0285(LC), L0282(LOCI), Cascading Impact}
CSS - PSI02B - CONTAINMENT SPRAY PUMP B {L0217(LC), L0215(LOCI), Cascading Impact}
CVC - PCH01B - CHRG PUMP B {L0263(LOCI), L0269(LOCI), Cascading Impact}
CVC - PCH01C - CHRG PUMP C {L0269(LO), L0267(LOCI)}
EAC - 52/EG1B1 - EDG B SUPPLY TO BUS 16 {L0190(LOC), L0189(LOCI), Cascading Impact}
EAC - KDG01B - DIESEL-GENERATOR B {L0576(L), L0577(L), L0594(L), L0600(L), L0786(L), L0525(LC), L0784(LC), L0526(LO), L0571(LO), L0570(LOCI), L0572(LOI) and Cascading Impact}
LAC - 52/16 - SPT SUPPLY BREAKER TO BUS 16 {L0187(L), L0180(LO), L0184(LOCI), L0186(LOCI)}
LAC - 52/BT16-14 - BREAKER FOR BUS 16 TO BUS 14 TIE {L0206(LC), L0204(LOCI)}
LAC - 52/BT16-15 - BREAKER FOR BUS 16 TO BUS 15 TIE {L0004(LC), L0187(LO), L0317(LO), L0198(LOCI), L0197(P), Cascading Impact}
LAC - BUS16 - 480V SWITCHGEAR {L0004(LC), L0206(LC), L0180(LO), L0187(LO), L0777(LO), M0107(LO), M0266(LO), L0190(LOC), L0184(LOCI), L0186(LOCI), L0189(LOCI), L0198(LOCI), L0204(LOCI), M0104(LOCI), E0105(P), M0105(PI)}
LAC - MCCD - MOTOR CONTROL CENTER D {L0289(LOC)}
RCS - EHTRRC01B - PRESSURIZER BACKUP HEATERS {L0269(L), L0278(LC), L0277(LOCI)}
RCS - EHTRRC02B - PRESSURIZER BACKUP HEATERS {L0269(L), L0278(LC), L0277(LOCI)}
RCV - ACF08B - CONTAINMENT RECIRCULATING FAN B {L0366(LC), L0225(LOCI), Cascading Impact}
RCV - ACF08C - CONTAINMENT RECIRCULATING FAN C {L0366(LC), L0240(LOCI), Cascading Impact}
RHR - PAC01B - RHR PUMP B {L0261(LC), L0259(LOCI), Cascading Impact}
SFP - PAC07B - SPENT FUEL POOL RECIRCULATING PUMP B {L0719(LO), Cascading Impact}
SIS - PSI01B - SI PUMP B {L0196(LC), L0194(LOCI), Cascading Impact}
SIS - PSI01C - SI PUMP C {L0201(LC), L0386(LC), L0210(LOCI), L0325(LOCI), Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. In addition, Plant Modifications ESR-11-0050 (fire protection upgrades to the Standby AFW pumps) and ESR-12-0144, which provides a standby Charging pump in the SB AFW building, were credited to help resolve this VFDR.

VFDR ID

VFDR-CC-027

Fire Area ID: CC - Control Building Complex **VFDRs**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

VFDR

The credited TDAFW Pump suction cannot be aligned to SW from MOV-4013 due to cable C1216 fire damage or a loss of AC power to MOV-4013 from non-credited BUS16.
Local actions are required when CST level indicates less than 5 feet on local indicator PI-2808 (normal CST re-fill capability is not credited).
In addition, suction line drain valve 4358D is normally open and required to be closed before normally closed in-series manual isolation valve 4098 and MOV-4013 are opened.
This VFDR is associated with the Decay Heat Removal Function. [OP017, PH134]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

AFW - 4098 - TDAFWP SUCTION FROM SWS MANUAL IV {Requires Operator Action}
AFW - 4358D - TDAFW PUMP SW SUCTION LINE TELLTALE ISOL VLV {Requires Operator Action}
CND - PI-2808 - CST LOCAL LEVEL INDICATOR {Requires Operator Action}
LAC - MCCD - MOTOR CONTROL CENTER D {Requires Operator Action}
SWS - 4013 - TDAFWP SW SUCTION MOV {C1215(LI), C1216(LOCI), Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Actions AFHFDSUPPL-3, consisting of supplying alternate sources of water for the AFW system once the initial water supply is depleted, and AXHFDSAFWX-2, consisting of locally aligning the Standby AFW pump were credited to help resolve this VFDR. In addition, Plant Modifications ESR-11-0050 (fire protection upgrades to the Standby AFW pumps) and ESR-12-0143 (supporting diesel generator that can power a standby AFW pump) were credited to help resolve this VFDR.

VFDR ID VFDR-CC-029

VFDR

Fire damage to Battery Charger “A” (BYCA1) cable C5191, cascading loss of power (deterministic analysis) to Battery Charger “B” (BYCB1), fire damage to TSC 125V DC feeder cables E0277A, E0277B, E0278A, and E0278B to Battery Bus “A”, and fire damage to TSC 125V DC feeder cables E0279A and E0279B to Battery Bus “B” is postulated to cause a loss of long-term 125V DC power for credited Safe Shutdown instrumentation and components.
Local action is taken to repair damaged cables between DCPDPTB02, DCPDPCB05A, DCPDPCB05B, and DCPDPCB02A,--AND- align the TSC DC supply to provide power for long term operation of:
(a) ABELIP and DG “A” Fuel Oil Transfer Pump (PDG02A)from DCPDPCB02A -AND-.
(b) IBELIP and TDAFW Pump DC LUBE OIL Pump (PLO11) from DCPDPCB02B.
This VFDR is associated with the Vital Auxiliaries Function. [OP017, OP101, OP102, OP103, PC122, PC123, PC124, PC125, PC126]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

AFW - PLO11 - TDAFWP DC LUBE OIL PUMP {E0193(LCI), Cascading Impact}
BDC - BYCA1 - BATTERY CHARGER A1 {C5191(P)}
BDC - BYCB1 - BATTERY CHARGER A1 {Cascading Impact}
BDC - DCPDPCB01A - BATTERY A MAIN DISCONNECT {Cascading Impact, Requires Operator Action}

Fire Area ID:	CC - Control Building Complex	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

BDC - DCPDPCB01B - BATTERY B MAIN DISCONNECT {Cascading Impact, Requires Operator Action}
BDC - DCPDPCB02A - BATTERY A MAIN FUSE CABINET {E0278A(P), E0278B(P), Cascading Impact, Requires Operator Action}
BDC - DCPDPCB02B - BATTERY B MAIN FUSE CABINET {Requires Operator Action}
BDC - DCPDPCB05A - TSC BATTERY A FUSED DISCONNECT {E0277A(P), E0277B(P), Cascading Impact, Requires Operator Action}
BDC - DCPDPCB05B - TSC BATTERY B FUSED DISCONNECT {E0279A(P), E0279B(P), Cascading Impact, Requires Operator Action}
BDC - DCPDPCD01 - TSC BATTERY A & B FUSED DISCONNECT {Requires Operator Action}
BDC - DCPDPTB02 - TSC TO BATTERY A & B THROWOVER SWITCH {Requires Operator Action}
DGS - PDG02A - DG FO TRANSFER PUMP A {Cascading Impact}
IAC - ABELIP - AUX BLDG EMERG LOCAL INSTR PANEL {Cascading Impact}
IAC - IBELIP - INTERMEDIATE BLDG EMERG LOCAL INSTR PANEL {Cascading Impact}
LAC - 52/15 - BKR FOR BUS 15 SUPPLY {L0198(LC), L0004(LOCI), L0005(LOCI), Requires Operator Action}
LAC - 52/BT16-15 - BREAKER FOR BUS 16 TO BUS 15 TIE {L0004(LC), L0187(LO), L0317(LO), L0198(LOCI), L0197(P), Requires Operator Action}
LAC - BUS15 - 480V SWITCHGEAR {L0187(LO), L0317(LO), L0198(LOC), L0004(LOCI), L0005(LOCI), L0024(P), L0079(P), L0197(P), Requires Operator Action}
LAC - BUS16 - 480V SWITCHGEAR {L0004(LC), L0206(LC), L0180(LO), L0187(LO), L0777(LO), M0107(LO), M0266(LO), L0190(LOC), L0184(LOCI), L0186(LOCI), L0189(LOCI), L0198(LOCI), L0204(LOCI), M0104(LOCI), E0105(P), M0105(PI)}
LAC - BYCTSC - TSC BATTERY CHARGER {Requires Operator Action}
LAC - KED03 - TSC EMERGENCY DIESEL-GENERATOR {Requires Operator Action}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Actions DCHFDTSCLT and FSHFDTSCLT-DR, respectively consisting of aligning the TSC diesel generator and the TSC battery charger, were credited to help resolve this VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-CC-041

VFDR

A MSO concern exists related to Reactor Trip capability. Fire damaged cabling would result in the Reactor Trip breaker "open" function being unavailable as follows:
(a) 52/RTA: A line-ground fault (to cable L0611 or E0224) would result in the loss of Trip Coil capability AND a hot short (to cable L0610) would result in the loss of UV Trip Coil capability
- AND -
(b) 52/RTB: A line-ground fault (to cable L0631 or E0233) would result in the loss of Trip Coil capability AND a hot short (to cable L0630) would result in the loss of UV Trip Coil capability.
Simultaneous fire damage to cabling as described above would result in automatic and manual Reactor Trip breaker tripping capability being unavailable from the MCB. Local action is taken at the ROD DRIVE MG SET switchgear and REACTOR TRIP BREAKER switchgear.
This VFDR is associated with the Reactivity Control Function. [OP017, OP115, PH105, PH106, PH117]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

LAC - BUS13 - 480V SWITCHGEAR {Requires Operator Action}

Fire Area ID:	CC - Control Building Complex	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

LAC - BUS15 - 480V SWITCHGEAR {Requires Operator Action}
RPS - 52/RTA - REACTOR TRIP BREAKER A {L0618A(L), L0610(LO), L0611(LOC), L0616(LOC), L0617(LOCI)}
RPS - 52/RTB - REACTOR TRIP BREAKER B {L0630(LO), L0638A(LO), L0631(LOC), L0636(LOCI), L0637(LOCI))}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDSCRAM-LCL, consisting of locally tripping the reactor, was credited to help resolve this VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-CC-044

VFDR

Fire damage to cabling affects credited KDG01A operability as follows:
(a) Both "A" (L0780, L0365, L0523, or L0530) and "B" (L0782, L0523, or L0530) DG start circuits are impacted preventing automatic DG start, AND fire damage to common power cable (L0365) prevents the DG from being started locally at the ELCP.
(b) Loss of control of DG-A Fuel Oil Day Tank SOV(s) and DG-A Fuel Oil Transfer Pump are postulated due to an impacted common power supply cable (L0365) routed in this fire area. As a consequence, long-term fuel supply to KDG01A is not available challenging availability of the credited DG.
This VFDR is associated with the Vital Auxiliaries Function. [OP016, OP021]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

DGS - 5907 - DG A FUEL OIL DAY TANK SOV {L0365(L)}
DGS - 5907A - FOTP A RECIRC SOV {L0365(L)}
DGS - PDG02A - DG FO TRANSFER PUMP A {Cascading Impact}
EAC - KDG01A - DIESEL-GENERATOR A {L0365(L), L0523(LC), L0524(LC), L0530(LCI), L0531(L), L0532(LI), L0536(L), L0537(L), L0554(L), L0560(L), L0780(LC), L0782(LC), Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. In addition, Plant Modifications ESR-11-0050 (fire protection upgrades to the Standby AFW pumps) and ESR-12-0144, which provides a standby Charging pump in the SB AFW building, were credited to help resolve this VFDR.

VFDR ID VFDR-CC-045

VFDR

A MSO concern exists related to excess Feed-water flow to SGs as follows:
(a) With offsite power available, loss of control of MFW Pumps (PFW01A and PFW01B) and downstream MFW valves due to fire damaged cabling, - AND -
(b) Low SG "A" level signal from at least two out of three level transmitter loops (LI-461, LT-462 and/or LT-463) OR low SG "B" level signal from at least two out of three level transmitter loops (LT-471, LT-472 and/or LT-473) due to fire damaged cabling or loss of instrument power
This VFDR is associated with the Decay Heat Removal Function. [OP013]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Fire Area ID: CC - Control Building Complex **VFDRs**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Component(s)

IAC - CVTA1 - INSTRUMENT BUS B CONSTANT VOLTAGE XFMR {C0640(P) and Cascading Impact}
IAC - IBPDPCBA - INSTR POWER DISTRIBUTION PANEL A {C2536(P) and Cascading Impact}
IAC - IBPDPCBAR - INSTRUMENT BUS A {C2500(P) and Cascading Impact}
IAC - IBPDPCBB - INSTR POWER DISTRIBUTION PANEL B {C2559(P) and Cascading Impact}
IAC - IBPDPCBBW - INSTRUMENT BUS B {C0640(P), C2503(P) and Cascading Impact}
IAC - IBPDPCBC - INSTR POWER DISTRIBUTION PANEL C {C2583(P) and Cascading Impact}
IAC - IBPDPCBCB - INSTRUMENT BUS C {C2504(P) and Cascading Impact}
IAC - IBPDPCBD - INSTR POWER DISTRIBUTION PANEL D {C2607(P) and Cascading Impact}
IAC - IBPDPCBDY - INSTRUMENT BUS D {C0105(P), C2507(P) and Cascading Impact}
MFW - 3976 - MFW PUMP B DISCHARGE MOV {C0507(LC), C0506(LCI), C0505(LOCI) and Cascading Impact}
MFW - 3977 - MFW PUMP A DISCHARGE MOV {C0276(LC), C0275(LCI), C0274(LOCI) and Cascading Impact}
MFW - 3994 - MAIN FW ISOLATION AOV TO S/G B {R4571(LI), R4572(LOI), R4573(LOI), E0212(P), E0216(P) and Cascading Impact}
MFW - 3995 - MAIN FW ISOLATION AOV TO S/G A {R4575(LI), R4576(LOI), R4577(LOI), E0215(P), E0216(P) and Cascading Impact}
MFW - 4269 - MFW FCV TO S/G A {R0760(L), R0778(L), R0779(L), R0780(L), R0781(L), R0782(L), R0784(L), R0785(L), E0215(P), E0216(P) and Cascading Impact}
MFW - 4270 - MFW FCV TO S/G B {R0769(L), R0778(L), R0780(L), R0781(L), R0782(L), R0784(L), R0785(L), E0212(P), E0216(P) and Cascading Impact}
MFW - 4271 - FCV 4269 BYPASS {E0215(P), E0216(P), R0760(L), R0778(L), R0779(L), R0780(L), R0781(L), R0782(L), R0784(L), R0785(L)}
MFW - 4272 - FCV 4270 BYPASS {E0212(P), E0216(P), R0769(L), R0778(L), R0779(L), R0781(L), R0782(L), R0784(L), R0785(L)}
MFW - LI-461 - S/G A LEVEL (NR AT MCB) {R1287(I), R1308(I), R3404(I), R4378(I), R0879(L), R0880(L), R0884(L), R0885(L), C2518(P), C2612(P) and Cascading Impact}
MFW - PFW01A - MFW PUMP A {M0042(LC), M0043(LO), M0160(LO), M0035(LOI), E0025(P) and Cascading Impact}
MFW - PFW01B - MFW PUMP B {M0159(LC), M0043(LO), M0160(LO), M0152(LOI), E0104(P) and Cascading Impact}
RPS - LT-462 - S/G A LEVEL NR XMTR {A0338(I), A0350(I), R0966(I), R0967(I), R0968(I), R0969(I), R0980(I), R1349(I), R4359(I), C2548(P), C2648(P) and Cascading Impact}
RPS - LT-463 - S/G A LEVEL NR XMTR {A0325(I), A0347(I), R1009(I), R1015(I), R1016(I), R1017(I), R1022(I), R1269(I), R4385(I), C2548(P), C2588(P), C2596(P), C2661(P) and Cascading Impact}
RPS - LT-471 - SG-B LEVEL NR XMTR {R1019(I), R1020(I), R1021(I), R1029(I), R1032(I), R1339(I), R4382(I), C2548(P), C2588(P), C2596(P), C2661(P) and Cascading Impact}
RPS - LT-472 - SG-B LEVEL NR XMTR {A0327(I), A0348(I), R0879(I), R0880(I), R0884(I), R0885(I), R1297(I), R3406(I), R4363(I), C2518(P), C2612(P) and Cascading Impact}
RPS - LT-473 - SG-B LEVEL NR XMTR {A0301(I), R0921(I), R0922(I), R0923(I), R0930(I), R0938(I), R4383(I), R4384(I), R4409(I), C2541(P), C2548(P), C2630(P) and Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

Fire Area ID:	CHG - Charging Pump Room, Elevation 235' 6"	**Fire Area Definition**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

Fire Zone ID	**Description**
CHG	235'-8" Auxiliary Building – Charging Pump Room

Fire Area ID: CHG - Charging Pump Room, Elevation 235' 6" **Performance Goals**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Performance Goal	Method of Accomplishment	Comments
1. Reactivity Control Function	Immediate reactor shutdown is achieved by de-energizing all CRDMs which results in control rod negative ractivity insertion into the reactor core.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
2. Inventory Control Function	• RCS inventory depletion control is maintained by closure of all letdown paths, all sample paths, all head vent paths, and both PORVs. • RCS inventory makeup is controlled by either one of the following: o Train "A" CVCS success path from the RWST to the RCS o Train "A" SIS success path from the RWST to the RCS and the PORV associated with the "A" nitrogen surge tank.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
3. Pressure Control Function	• RCS high pressure control is maintained by automatic mechanical operation of all PRZR Code Safety Valves, stopping of both RCPs, and securing all PRZR heaters. • RCS lowering pressure control is maintained by closure of both PRZR PORVs, closure of both PRZR Normal Spray valves or stopping the associated RCP(s), and closure of both SG ARVs.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
4. Decay Heat Removal Function	• RCS high temperature control is maintained by automatic mechanical operation of all SG Code Safety Valves. • RCS lowering temperature control is maintained by closure of both MSIVs, closure of both SG ARVs, stopping both MFW Pumps, stopping AFW System flow to the non-credited SG, and controlling flow to the credited SG. • SG makeup control is maintained by either one of the following to SG "A": o TDAFW Pump success path from the SG "A" MSS and pump suction from the CST or SWS o SAFW Pump "C" success path from the SWS or FPS	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
5. Process Monitoring Function	RCS Temperature:TI-409A-1 (RCS LOOP A HL INDICATION) Location: MCB, and TI-409B-1 (RCS LOOP A CL INDICATION) Location: MCB RCS Pressure:PI-420-2 (RCS HL PRESSURE (0-3000 PSIG)) Location: MCB, and PI-420B (RCS PRESSURE (0-3000 PSIG))	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"

Fire Area ID:	CHG - Charging Pump Room, Elevation 235' 6"	**Performance Goals**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

Performance Goal	Method of Accomplishment	Comments
	Location: ABELIP Pressurizer Level:LI-426 (PRZR LEVEL) Location: MCB, LI-428A (PRZR LEVEL (WR)) Location: ABELIP, and LI-433A (PRZR LEVEL) Location: MCB Steam Generator Level:LI-461 (S/G "A" LEVEL (NR)) Location: MCB, LI-504 (S/G "A" LEVEL [0-520" H2O (WR)) Location: MCB, and LI-506A (S/G "B" WIDE RANGE LEVEL) Location: IBELIP Steam Generator Pressure:PI-469 (S/G "A" PRESSURE) Location: MCB, and PI-479 (S/G "B" PRESSURE) Location: MCB Neutron Flux Monitoring:NI-31B (NIS SOURCE RANGE INDICATION) Location: MCB Tank Level:LI-2022A (CDST "A" LEVEL) Location: MCB, and LI-921 (RWST LEVEL) Location: MCB System Flow Rate:FI-2031 (TDAFW PUMP DISCH FLOW) Location: MCB, FI-4084A (SAFW PUMP "C" <PSF01A> DISCH FLOW) Location: SAF, FI-4084B (SAFW PUMP "C" <PSF01A> DISCH FLOW) Location: MCB DG Cooling:PI-2103 ("A" DIESEL GEN HX CLNG WTR HDR PRESS IND) Location: EDG1A	
6. Vital Auxiliaries	• DC Power and instrument power availability is maintained by train “A” of the BDC/IAC System from Battery “A” or the TSC Battery System. • AC Power availability is maintained by train “A” Diesel-Generator and train “A” DBV/DGS support components. • Diesel-Generator engine cooling is maintained by the train ”A” SWS success path or alignment of alternate cooling from the FPS to the “A” Diesel. • Except for a Control Room fire, train “A” CREATS is maintained for controlling the Control Room environmental conditions within the required specifications for habitability and design limits for equipment operability. Ventilation systems for the SAFW components in the SAFW Building, the DG components in the Diesel Building, and the TSC components in the Technical Support Center are maintained for equipment design limits.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"

References	Document ID
	EIR 51-9089546-001 Rev. 001 - R. E. Ginna Nuclear Power Station, Nuclear Safety Capability Assessment

Fire Area ID:	CHG - Charging Pump Room, Elevation 235' 6"	**Performance Goals**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

Fire Suppression Activities Effect on Nuclear Safety Performance Criteria

Scenario 1: Suppression Effects in CHG of a Fire Originating In CHG:

There are no suppression systems in CHG and the effects of manual firefighting are not expected to extend beyond the area of fire origin.

Scenario 2: Suppression Effects in CHG of a Fire Originating Outside of CHG:

There are no suppression systems in CHG that could be impacted by operation of a fire suppression system or manual firefighting activities outside of CHG.

6" curbs across two doorways leading into the Charging Pump room are installed.

NFPA 805 Ch 4 Compliance (NEI 04-02 Table B-3)

Fire Area ID: CHG - Charging Pump Room, Elevation 235' 6" **Fire Risk Evaluation**

Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
(All)	Area Wide	None	None	S	Modifications: S
CHG	235'-8" Auxiliary Building – Charging Pump Room	None	E, D	None	Detection System, Z01: E D

Title

Fire Risk Evaluation for Fire Area CHG

Risk Summary

The delta CDF and delta LERF results for the fire area are summarized below. At the fire area level, the increase in risk is less than 1E-06/rx-yr for the delta CDF, and less than 1E-07/rx-yr for the delta LERF.

All CCDPs and CLERPs are less than 1, ensuring that low CDF and LERF values are not reached solely because of a low fire scenario frequency.

Δ CDF

Δ LERF

Redacted

DID Maintained

A qualitative evaluation of defense-in-depth (DID) using insights gained from the Fire PRA was performed for the fire area.

The installed fired detection in the fire area is credited in the FPRA to support manual suppression. There is no installed fire suppression in the fire area. Portable extinguishers and hose stations are available in adjacent fire areas and credited in the Fire PRA to support manual suppression in Compartment A1-CHG (charging pump room). No DID enhancements are required. Existing administrative control are determined adequate given the nature of combustibles in the area and the quantified scenarios captured in the Fire PRA results. Given the relatively low values of CCDP and CLERPs in the fire area, no DID actions are required. In addition, no modifications are required for DID in the fire area.

With the DID requirements above, the evaluation finds that an adequate balance between the DID echelons is maintained.

Safety Margin Maintained

The safety margin for the analyses supporting the fire risk evaluation of the fire area was evaluated and accounted for potential impacts from fire modeling and the plant system performance, including the PRA logic model. All analyses and assessment have been performed utilizing accepted techniques and industry accepted standards. In addition, safety analysis acceptance criteria in the licensing basis (e.g., FSAR, supporting analyses) have been considered and provide sufficient margin to account for analysis and data uncertainty.

Conclusions

Fire Area ID:	CHG - Charging Pump Room, Elevation 235' 6"	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

VFDR ID VFDR-CHG-001

VFDR

Fire damage to instrument air piping can challenge reliance on instrument/service air whether being aligned from the normal air compressors or from the diesel air compressor or a deterministic assumption of a loss of offsite power to BUS13 and BUS15 results in the loss of the normal Service Air and Instrument Air compressors.
Local manual alignment of Diesel Air Compressor (CSA05) to the Service Air and Instrument Air Systems is taken to manipulate air operated SSD components (i.e., 625 and 626). However, this action may not be successful due to the integrity of instrument air piping.
This VFDR is associated with the Vital Auxiliaries Function. [OE004, PH003]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

LAC - BUS13 - 480V SWITCHGEAR {Cascading Impact}
LAC - BUS15 - 480V SWITCHGEAR {Cascading Impact}
PSA - 7000A - IA/SA CROSS-CONNECT {Requires Operator Action}
PSA - 7002D - DIESEL AIR COMPRESSOR SUPPLY ISOLATION VALVE {Requires Operator Action}
PSA - 7195A - BU AIR COMP DISCHARGE INNER ISOL VAL TO SERV AIR HEADER {Requires Operator Action}
PSA - 7203 - SERV AIR ISOL VALVE TO THE TURBINE BUILDING FROM YARD {Requires Operator Action}
PSA - CSA05 - DIESEL AIR COMPRESS (OUTSIDE UNIT) FOR BU SERV AIR/INSTR AIR {Requires Operator Action}
RHR - 625 - RHR HX OUTLET 1A {Loss of IA}
RHR - 626 - RHR HX BYPASS {Loss of IA}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-CHG-003

VFDR

Fire damage to cables routed in this area can spuriously start charging pumps.
Local operator action is required to remove power to the charging pumps.
This VFDR is associated with the Reactivity Control Function, and Inventory and Pressure Control Functions. [OMH301, OMH302]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

CVC - PCH01A - CHRG PUMP A {L0400D(LOC), L0399(LOCI), L0400(LOCI)}
CVC - PCH01B - CHRG PUMP B {L0263(LOCI), L0264(LOCI)}
CVC - PCH01C - CHRG PUMP C {L0267(LOCI), L0268(LOCI)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction

for the VFDR.

VFDR ID VFDR-CHG-010

VFDR

A MSO concern exists related to letdown failure to isolate and inventory lost to CVCS. In-Parallel letdown isolation valves (AOV-200A, AOV-200B, and AOV-202) are subject to spuriously open, provided instrument air is available. Although in-series letdown isolation valve (AOV-427) can be closed from the MCB with instrument air available, AOV-427 solenoid valve is powered from the non-credited "B" 125V DC electrical train and would eventually fail AOV-427 open upon the depletion of Battery "B" power.
This VFDR is associated with the Inventory and Pressure Control Functions. [OP891]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

CVC - 200A - LTDN ORIFICE AOV {R0509(LOI)}
CVC – 200B - LTDN ORIFICE AOV {R0502(LOI), Cascading Impact}
CVC - 202 - LTDN ORIFICE AOV {R0503(LOI)}
CVC - 427 - RCS LETDOWN ISOLATION {Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

Fire Area ID: CT - Cable Tunnel, Elevation 260' 6" **Fire Area Definition**

Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description
CT	260'-6" & 260'-10", Cable Tunnel

Fire Area ID: CT - Cable Tunnel, Elevation 260' 6" **Performance Goals**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Performance Goal	Method of Accomplishment	Comments
1. Reactivity Control Function	Immediate reactor shutdown is achieved by de-energizing all CRDMs which results in control rod negative ractivity insertion into the reactor core.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
2. Inventory Control Function	• RCS inventory depletion control is maintained by closure of all letdown paths, all sample paths, all head vent paths, and both PORVs. • RCS inventory makeup is controlled by either one of the following: o Train “A” CVCS success path from the RWST to the RCS o Train “A” SIS success path from the RWST to the RCS and the PORV associated with the “A” nitrogen surge tank.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
3. Pressure Control Function	• RCS high pressure control is maintained by automatic mechanical operation of all PRZR Code Safety Valves, stopping of both RCPs, and securing all PRZR heaters. • RCS lowering pressure control is maintained by closure of both PRZR PORVs, closure of both PRZR Normal Spray valves or stopping the associated RCP(s), and closure of both SG ARVs.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
4. Decay Heat Removal Function	• RCS high temperature control is maintained by automatic mechanical operation of all SG Code Safety Valves. • RCS lowering temperature control is maintained by closure of both MSIVs, closure of both SG ARVs, stopping both MFW Pumps, stopping AFW System flow to the non-credited SG, and controlling flow to the credited SG. • SG makeup control is maintained by either one of the following to SG “A”: o TDAFW Pump success path from the SG “A” MSS and pump suction from the CST or SWS o SAFW Pump “C” success path from the SWS or FPS	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
5. Process Monitoring Function	RCS Temperature:TI-409A-1 (RCS LOOP A HL INDICATION) Location: MCB, and TI-409B-1 (RCS LOOP A CL INDICATION) Location: MCB RCS Pressure:PI-420-2 (RCS HL PRESSURE (0-3000 PSIG))	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"

Fire Area ID: CT - Cable Tunnel, Elevation 260' 6" **Performance Goals**

Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Performance Goal	Method of Accomplishment	Comments
	Location: MCB, and PI-420B (RCS PRESSURE (0-3000 PSIG)) Location: ABELIP Pressurizer Level:LI-426 (PRZR LEVEL) Location: MCB, LI-428A (PRZR LEVEL (WR)) Location: ABELIP, and LI-433A (PRZR LEVEL) Location: MCB Steam Generator Level:LI-461 (S/G "A" LEVEL (NR)) Location: MCB, LI-504 (S/G "A" LEVEL [0-520" H2O (WR)) Location: MCB, and LI-506A (S/G "B" WIDE RANGE LEVEL) Location: IBELIP Steam Generator Pressure:PI-469 (S/G "A" PRESSURE) Location: MCB, and PI-479 (S/G "B" PRESSURE) Location: MCB Neutron Flux Monitoring:NI-31B (NIS SOURCE RANGE INDICATION) Location: MCB Tank Level:LI-2022A (CDST "A" LEVEL) Location: MCB, and LI-921 (RWST LEVEL) Location: MCB System Flow Rate:FI-2031 (TDAFW PUMP DISCH FLOW) Location: MCB, FI-4084A (SAFW PUMP "C" <PSF01A> DISCH FLOW) Location: SAF, FI-4084B (SAFW PUMP "C" <PSF01A> DISCH FLOW) Location: MCB DG Cooling:PI-2103 ("A" DIESEL GEN HX CLNG WTR HDR PRESS IND) Location: EDG1A	
6. Vital Auxiliaries	• DC Power and instrument power availability is maintained by train "A" of the BDC/IAC System from Battery "A" or the TSC Battery System. • AC Power availability is maintained by train "A" Diesel-Generator and train "A" DBV/DGS support components. • Diesel-Generator engine cooling is maintained by the train "A" SWS success path or alignment of alternate cooling from the FPS to the "A" Diesel. • Except for a Control Room fire, train "A" CREATS is maintained for controlling the Control Room environmental conditions within the required specifications for habitability and design limits for equipment operability. Ventilation systems for the SAFW components in the SAFW Building, the DG components in the Diesel Building, and the TSC components in the Technical Support Center are maintained for equipment design limits.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"

Fire Area ID: CT - Cable Tunnel, Elevation 260' 6" **Performance Goals**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

References	Document ID
	EIR 51-9089546-001 Rev. 001 - R. E. Ginna Nuclear Power Station, Nuclear Safety Capability Assessment

Fire Suppression Activities Effect on Nuclear Safety Performance Criteria

Scenario 1: Suppression Effects in CT of a Fire Originating In CT:

Suppression effects (activation of suppression systems and manual firefighting activities) are not expected to extend beyond the area of fire origin.The deluge system in CT is designed to spray specifically within the Cable Tunnel.

Scenario 2: Suppression Effects in CT of a Fire Originating Outside of CT:

The Cable Tunnel deluge system is actuated by the associated fire detection system or manual pull boxes in the Auxiliary Building or Intermediate Building which could be vulnerable to a fire originating outside CT if the detection circuits and/or control panel are routed or located outside the fire area (e.g., SSA in the Relay Room).However, this system is designed to spray specifically within the Cable Tunnel and there are no safe shutdown related components within CT (only cables that are not susceptible to water spray), therefore suppression effects are not expected to extend beyond CT.

Similarly, manual firefighting activities outside of CT could potentially spray on and short out an electric manual pull box that could activate the deluge system.However, the system is designed to spray specifically within the Cable Tunnel and there are no safe shutdown related components within CT and suppression effects are not expected to extend beyond CT.

Fire Area ID: CT - Cable Tunnel, Elevation 260' 6" **Fire Risk Evaluation**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
(All)	Area Wide	None	None	R, S	Modifications: R S Procedures/Recovery Actions: R
CT	260'-6" & 260'-10", Cable Tunnel	E, R	E, R	E	Combustible Loading Controls: E Detection System, Smoke Detectors for S05: E R Detection System, Z05: E R Water Suppression, S05: E R

Title
Fire Risk Evaluation for Fire Area CT

Risk Summary
The delta CDF and delta LERF results for the fire area are summarized below. At the fire area level, the increase in risk is less than 1E-06/rx-yr for the delta CDF, and less than 1E-07/rx-yr for the delta LERF.

All CCDPs and CLERPs are less than 1, ensuring that low CDF and LERF values are not reached solely because of a low fire scenario frequency.

Δ CDF
Δ LERF
Redacted

DID Maintained
A qualitative evaluation of defense-in-depth (DID) using insights gained from the Fire PRA was performed for the fire area.

S05, the fire suppression system (automatic deluge) installed in the fire area is credited in the Fire PRA. The installed detection system is credited for DID. Given that the tunnel entrance is sealed with a metal wall and that the emergency exit hatch to the transformer yard is sealed closed, no enhancement to the existing administrative controls is required. Given the relatively low values of CCDP and CLERPs in the fire area, no DID actions are required. In addition, no modifications are required for DID in the fire area.

With the DID requirements above, the evaluation finds that an adequate balance between the DID echelons is maintained.

Safety Margin Maintained
The safety margin for the analyses supporting the fire risk evaluation of the fire area was evaluated and accounted for potential impacts from fire modeling and the plant system performance, including the PRA logic model. All analyses and assessment have been performed utilizing *accepted techniques and industry accepted standards. In addition, safety analysis acceptance criteria in the licensing basis (e.g.,* FSAR, supporting analyses) have been considered and provide sufficient margin to account for analysis and data uncertainty.

Conclusions

Fire Area ID:	CT - Cable Tunnel, Elevation 260' 6"	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

VFDR ID VFDR-CT-001

VFDR

Fire damage to instrument air piping can challenge reliance on instrument/service air whether being aligned from the normal air compressors or from the diesel air compressor or a deterministic assumption of a loss of offsite power to BUS13 and BUS15 results in the loss of the normal Service Air and Instrument Air compressors.

Local manual alignment of Diesel Air Compressor (CSA05) to the Service Air and Instrument Air Systems is taken to manipulate air operated SSD components (i.e., 112B, 112C, PCH01A, 625, 294, and 296). However, this action may not be successful due to the integrity of instrument air piping.

This VFDR is associated with the Vital Auxiliaries Function. [OE004, PH213]

This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

CVC - 112B - RWST TO CHARGING PUMP SUCTION {R0056(LOI), Cascading Impact, Loss of IA}
CVC - 112C - VCT OUTLET AOV {R0056(LC), R0060(LCI), Cascading Impact, Loss of IA}
CVC - 294 - CHRG TO LOOP B CL (AOV) {R0535(LOI), Loss of IA}
CVC - 296 - AUX SPRAY AOV {R0542(LOI), Loss of IA}
CVC - PCH01A - CHRG PUMP A {L0399(LOCI), Cascading Impact, Loss of IA}
LAC - BUS13 - 480V SWITCHGEAR {Cascading Impact}
LAC - BUS15 - 480V SWITCHGEAR {Cascading Impact}
PSA - 7000A - IA/SA CROSS-CONNECT {Requires Operator Action}
PSA - 7002D - DIESEL AIR COMPRESSOR SUPPLY ISOLATION VALVE {Requires Operator Action}
PSA - 7195A - BU AIR COMP DISCHARGE INNER ISOL VAL TO SERV AIR HEADER {Requires Operator Action}
PSA - 7203 - SERV AIR ISOL VALVE TO THE TURBINE BUILDING FROM YARD {Requires Operator Action}
PSA - CSA05 - DIESEL AIR COMPRESS (OUTSIDE UNIT) FOR BU SERV AIR/INSTR AIR {Requires Operator Action}
RHR - 625 - RHR HX A OUTLET {R0351(I), Loss of IA}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-CT-002

VFDR

A MSO concern exists related to spurious (ESF) Safety Injection Actuation due to fire damaged cabling. Actuation is possible due to the following separation concerns:

(a) Low PZR pressure signal from at least two out of three PZR pressure transmitters (PT-429, PT-430 and/or PT-431) - OR -

(b) Low PZR pressure signal (as above) AND either a low SG "B" pressure signal (from at least two out of three SG "B" pressure transmitter loops PI-478, PI-479 and/or PT-483) OR a low SG "A" pressure signal (from at least two out of three SG "A" pressure transmitter loops PT-468, PI-469 and/or PT-482) - OR -

(c) High containment pressure signal from at least two out of the three containment pressure transmitter loops (PT-945, PT-947, and/or PT-949) - OR -

(d) Impact to either Train "A" or "B" SI logic circuits
Local action is taken to mitigate spurious SI actuation by opening breakers at DC power panels. However, operator action to 'de-power' circuits to mitigate spurious operation may not be effective. A short to an energized conductor from another circuit in conjunction with fire damage (grounds) to both circuits can result in a spurious operation defeating de-powering the subject circuit.
This VFDR is associated with the Inventory and Pressure Control Functions. [OE010, OP004, OP005, OP006, OP015, OP017, OP201, PH202, PH203]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

BDC - DCPDPCB03A - MAIN DC DISTRIBUTION PANEL A {Cascading Impact, Requires Operator Action }
BDC - DCPDPCB03B - MAIN DC DISTRIBUTION PANEL B {Cascading Impact, Requires Operator Action }
BDC - DCPDPCB04A - MAIN CONTROL BOARD DC DIST PANEL A {Cascading Impact, Requires Operator Action }
BDC - DCPDPCB04B - MAIN CONTROL BOARD DC DIST PANEL B {Cascading Impact, Requires Operator Action }
ESF - PT-945 - CNMT PRESS XMTR {R0895(I)}
ESF - PT-947 - CNMT PRESS XMTR {R0984(I)}
ESF - PT-949 - CNMT PRESSURE {R0987(I)}
ESF - SI-TRAIN-A - SAFEGUARDS INITIATION TRAIN A {L0354(), L0772(), Cascading Impact}
ESF - SI-TRAIN-B - SAFEGUARDS INITIATION TRAIN B {L0774(), Cascading Impact}
IAC - CVTA1 - INSTRUMENT BUS B CONSTANT VOLTAGE XFMR {C0640(P)}
IAC - IBPDPCBB - INSTR POWER DISTRIBUTION PANEL B {Cascading Impact}
IAC - IBPDPCBBW - INSTRUMENT BUS B {C0640(P)}
MSS - PI-469 - S/G A PRESSURE (MCB) {R0926(I)}
MSS - PI-478 - S/G B PRESSURE (MCB) {R0975(I)}
MSS - PI-479 - S/G B PRESSURE (MCB) {R1024(I)}
MSS - PT-468 - STM GEN A PRESS XMTR {R0886(I)}
MSS - PT-482 - S/G A STM PRESS XMTR {R0978(I), R1285(I)}
MSS - PT-483 - S/G B STM PRESS XMTR {R0931(I), R1337(I), Cascading Impact}
RPS - PT-429 - PRZR PRESS XMTR {R1101(I), R3408(I), R1091(LI), R1096(LI)}
RPS - PT-430 - PRZR PRESS XMTR {R3973(I), Cascading Impact}
RPS - PT-431 - PRZR PRESS XMTR {R0998(I)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-CT-003

VFDR

A MSO concern exists related to inadvertent PORV (430/431C) actuation as follows:
I. PORV opening and spurious operation/failure of block valves
(a) PORVs (430 and 431C) spuriously open--when required closed for HSD--due to fire damage to SOV cables (8616A, 8619A and 8620A for 430; 8616B, 8619B and 8620B for 431C), - AND -

Fire Area ID:	CT - Cable Tunnel, Elevation 260' 6"	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

(b) Block valves (515 and 516) fail open or spuriously open after being closed due to cable fire damage
II. PORV opening due to high pressure signal
(a) High PZR pressure signal from PT-429 and a high PZR signal from either channel 2 (PT-430) or channel 3 (PT-431) actuates 430, - OR -
(b) High PZR pressure signal from PT-431 and a high PZR signal from either channel 1 (PT-429) or channel 4 (PT-449) actuates 431C, - OR -
(c) High PZR pressure signal from at least two out of the three transmitters (PT-450, PT-451 and/or PT-452) actuates BOTH 430 and 431C
Local actions are taken to mitigate spurious operation as follows:
(a) Open breakers at DC power panel. However, operator action to "de-power" circuits to mitigate spurious operation may not be effective. A short to an energized conductor from another circuit in conjunction with fire damage (grounds) to both circuits can result in a spurious operation defeating de-powering the subject circuit. - AND -
(b) Isolate IA to Containment causing the valves to fail closed. However, this action may not be successful to prevent spurious operation of AOVs in the Containment as the instrument air header is not vented
This VFDR is associated with the Inventory and Pressure Control Functions. [OE001, OE010, OP007, OP008, OP009, OP011, OP017, PH202, PH203, PH217]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

BDC - DCPDPCB03A - MAIN DC DISTRIBUTION PANEL A {Cascading Impact, Requires Operator Action}
BDC - DCPDPCB03B - MAIN DC DISTRIBUTION PANEL B {Cascading Impact, Requires Operator Action }
BDC - DCPDPCB04A - MAIN CONTROL BOARD DC DIST PANEL A {Cascading Impact, Requires Operator Action }
BDC - DCPDPCB04B - MAIN CONTROL BOARD DC DIST PANEL B {Cascading Impact, Requires Operator Action }
IAS - 5397 - IA CNMT MAN ISOL VLV {Requires Operator Action}
IAS - 8619A - N2 ARMING SOV FOR PORV 430 {SAC0211A(LO), SAC0211B(LO), Cascading Impact}
IAS - 8619B - N2 ARMING SOV FOR PORV 431C {SAC0212A(LO), SAC0212B(LO), Cascading Impact}
IAS - 8620A - PORV 430 ACTUATION SOV {R0275(LO), Cascading Impact}
IAS - 8620B - PORV 431C ACTUATION SOV {R0275(LO), Cascading Impact}
NAS - 8616A - ACCUM TO SURGE TANK SOV FOR PORV 430 {SAC0213(LO)}
NAS - 8616B - ACCUM TO SURGE TANK SOV FOR PORV 431C {SAC0214(LO)}
RCS - 430 - PORV (AOV) {SAC0211A(LO), SAC0211B(LO), R0275(LOI), Cascading Impact}
RCS - 431C - PORV (AOV) {SAC0212A(LO), SAC0212B(LO), R0275(LOI), Cascading Impact}
RCS - 515 - PORV BLOCK VALVE (MOV) FOR 431C {C1060(LOCI), Cascading Impact}
RCS - 516 - PORV BLOCK VALVE (MOV) FOR 430 {C0694(LOCI), Cascading Impact}
RPS - PT-429 - PRZR PRESS XMTR {R1101(I), R3408(I), R1091(LI), R1096(LI)}
RPS - PT-430 - PRZR PRESS XMTR {R3973(I)}
RPS - PT-431 - PRZR PRESS XMTR {R0998(I)}
RPS - PT-449 - PRZR PRESS XMTR {R1038(I), R1101(I), R1104(I), R1091(LI), R1096(LI)}
RPS - PT-450 - RC OVERPRESS PROTECTION XMTR {SAI0106(I)}
RPS - PT-451 - RC OVERPRESS PROTECTION {SAI0107(I)}
RPS - PT-452 - RC OVERPRESS PROTECTION {SAI0108(I)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction

for the VFDR.

VFDR ID VFDR-CT-004

VFDR

A MSO concern exists related to RWST drain down via Containment Spray actuation. Actuation is possible due to the following separation concerns:
(a) High containment pressure signal from at least two out of three containment pressure transmitters (PT-946, PT-948 and/or PT-950) AND high containment pressure signal from at least two out of three containment pressure transmitters (PT-945, PT-947 and/or PT-949) - OR -
(b) Train "A" Pump (PSI02A) spurious starts and at least one discharge valve (860A or 860B) spuriously opens, OR Train "B" Pump (PSI02B) spurious starts and at least one discharge valve (860C or 860D) spuriously opens
This VFDR is associated with the Inventory and Pressure Control Functions. [OP003, OP017, OP209, OP211]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

CSS - 860A - CS PUMP A DISCHARGE {C0756(LOCI), Cascading Impact}
CSS - 860B - CS PUMP A DISCHARGE {C1122(LOCI), Cascading Impact}
CSS - 860C - CS PUMP B DISCHARGE {C0819(LOCI), Cascading Impact}
CSS - 860D - CS PUMP B DISCHARGE {C1182(LOCI), Cascading Impact}
CSS - PSI02A - CONTAINMENT SPRAY PUMP A {L0337(LOCI), Cascading Impact}
CSS - PSI02B - CONTAINMENT SPRAY PUMP B {L0215(LOCI), Cascading Impact}
ESF - PT-945 - CNMT PRESS XMTR {R0895(I)}
ESF - PT-946 - CNMT PRESS XMTR {R0937(I)}
ESF - PT-947 - CNMT PRESS XMTR {R0984(I)}
ESF - PT-948 - CNMT PRESS XMTR {R0940(I)}
ESF - PT-949 - CNMT PRESSURE {R0987(I)}
ESF - PT-950 - PRESSURE TRANSMITTER CONTAINMENT PRESSURE INSTRUMENT LOOP 95 {R1030(I)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDMAKEUP, consisting of locally aligning and starting the new charging system was credited to help resolve this VFDR. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

VFDR ID VFDR-CT-005

VFDR

A MSO concern exists related to inadvertent RCS pressure decrease. The scenario is postulated due to the following separation concerns:
(a) Failure of PZR Heaters (EHTRRC01A, EHTRRC02A, EHTRRC01B, and EHTRRC02B), - AND -
(b) Inability to trip and/or spurious start of at least one RCP (PRC01A and/or PRC01B) with spurious opening of PZR Spray valves (AOV-431A and AOV-431B), - AND -
(c) Inability to trip and/or spurious start of at least one CHG Pump (PCH01A, PCH01B, and/or PCH01C) with spurious opening of Auxiliary Spray valve (AOV-296)
Local actions are taken to mitigate spurious operation as follows:

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(a) Open breakers at DC power panel. However, operator action to "de-power" circuits to mitigate spurious operation may not be effective. A short to an energized conductor from another circuit in conjunction with fire damage (grounds) to both circuits can result in a spurious operation defeating de-powering the subject circuit. - AND -
(b) Isolate IA to Containment causing the valves to fail closed. However, this action may not be successful to prevent spurious operation of AOVs in the Containment as the instrument air header is not vented. - AND -
(c) Stop the RCPs (see VFDR-CT-017) - AND -
(d) Stop the CHG Pumps (see VFDR-CT-018 and VFDR-CT-028)
This VFDR is associated with the Inventory and Pressure Control Functions. [OE001, OE010, OP017, OP204, PH202, PH203, PH217]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

BDC - DCPDPCB03A - MAIN DC DISTRIBUTION PANEL A {Cascading Impact, Requires Operator Action}
BDC - DCPDPCB03B - MAIN DC DISTRIBUTION PANEL B {Cascading Impact, Requires Operator Action}
BDC - DCPDPCB04A - MAIN CONTROL BOARD DC DIST PANEL A {Cascading Impact}
BDC - DCPDPCB04B - MAIN CONTROL BOARD DC DIST PANEL B {Cascading Impact}
CVC - 296 - AUX SPRAY AOV {R0542(LOI)}
CVC - PCH01A - CHRG PUMP A {L0399(LOCI), Cascading Impact}
CVC - PCH01B - CHRG PUMP B {L0263(LOCI), Cascading Impact}
CVC - PCH01C - CHRG PUMP C {L0267(LOCI), Cascading Impact}
IAS - 5397 - IA CNMT MAN ISOL VLV {Requires Operator Action}
RCS - 431A - PZR SPRAY VALVE (AOV) {R1091(LOC), Cascading Impact}
RCS - 431B - PZR SPRAY VALVE (AOV) {R1096(LOC), Cascading Impact}
RCS - EHTRRC01A - PRESSURIZER PROPORTIONAL HEATERS {L0381(LOCI), R1101(OC), Cascading Impact}
RCS - EHTRRC01B - PRESSURIZER BACKUP HEATERS {L0276(LOCI), L0277(LOCI), Cascading Impact}
RCS - EHTRRC02A - PRESSURIZER PROPORTIONAL HEATERS {L0381(LOCI), R1101(OC), Cascading Impact}
RCS - EHTRRC02B - PRESSURIZER BACKUP HEATERS {L0276(LOCI), L0277(LOCI), Cascading Impact}
RCS - PRC01A - RCP A {C1281(L), M0050(LC), M0045(P)}
RCS - PRC01B - RCP B {M0145(LC), M0140(P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action CVHFDCHGTRIPFIRE, consisting of locally securing the charging pumps, is credited. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID

VFDR-CT-006

VFDR

A MSO concern exists related to CHG pump damage. Fire damage to cables (R0056 and/or R0060) can spuriously close VCT outlet valve (AOV-112C) AND/OR RWST outlet valve (AOV-112B) can fail closed on a loss of power to Train "B" with the credited charging pump in service. This would result in a loss of CHG pump suction source. The capability to stop any running CHG Pump (PCH01A, PCH01B, PCH01C) from the MCB would not be available due to fire damaged cables (L0399, L0263, L0267; respectively). In particular, a hot short or short to ground affecting Cable L0399 could cause Breaker 52/CHP1A to close, leading to the spurious operation of Charging Pump PCH01A. Similarly, Breaker 52/CHP1B could spuriously close due to a hot short or short to ground affecting Cable L0263. Breaker 52/CHP1C could

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spuriously close due to a hot short or short to ground affecting Cable L0267. An uncontrolled charging flow from any of the charging pumps challenges the reactor pressure and inventory control nuclear safety performance criterion (MSO 21).This VFDR is associated with the Reactivity Control Function, and Inventory and Pressure Control Functions. [OP210]This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

CVC - 112B - RWST TO CHARGING PUMP SUCTION {R0056(LOI), Cascading Impact, Loss of IA}
CVC - 112C - VCT OUTLET AOV {R0056(LC), R0060(LCI), Cascading Impact, Loss of IA}
CVC - PCH01A - CHRG PUMP A {L0399(LOCI), Cascading Impact}
CVC - PCH01B - CHRG PUMP B {L0263(LOCI), Cascading Impact}
CVC - PCH01C - CHRG PUMP C {L0267(LOCI), Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Actions RCHFDMAKEUP, consisting of locally aligning and starting the new charging system and CVHFDCHGTRIPFIRE, consisting of locally securing the charging pumps, were credited to help resolve this VFDR. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

VFDR ID VFDR-CT-007

VFDR

Operator action is taken to close Instrument Air Containment Manual Isolation Valve (V-5397) to isolate Instrument Air to Containment. However, this action may not be successful to prevent spurious operation of AOVs in the Containment as the instrument air header is not vented.
This VFDR is associated with the Inventory and Pressure Control Functions. [OE001, PH217]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s) IAS - 5397 - IA CNMT MAN ISOL VLV {Requires Operator Action}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-CT-008

VFDR

3-Phase proper phase rotation shorts must be considered for high/low pressure interface in-series valves MOV-700 and MOV-701 since power cabling for the valves is routed through this area. Reliance on de-powering to prevent spurious opening requires assurance that no three-phase cabling of the same or higher voltage is routed in the same raceway between the MCC and the valve. Spurious operation of these valves results in a high/low pressure system interface concern. Additionally; an IN 92-18 concern exists, as identified in DA-EE-2000-066 – Attachment G.
This VFDR is associated with the Inventory and Pressure Control Functions, and Decay Heat Removal Function. [OP001, OP002, OP017]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

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Component(s)

RHR - 700 - RHR PUMP SUCTION FROM RCS MOV {C0722(LOCI), C0724(LOCI), C0720(P)}
RHR - 701 - RHR PUMP SUCTION FROM RCS {C1089(LOCI), C1091(LOCI), C1087(P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. The delta risk was qualitatively evaluated as insignificant based on the consideration that 3-phase proper polarity hot short are implausible. No recovery action was credited to resolve this VFDR.

VFDR ID VFDR-CT-011

VFDR

A MSO concern exists related to spurious DG start without SW cooling. Credited KDG01A can spuriously start due to cable fire damage (L0780 and/or L0782). Concurrent fire damage to cables (L0483 and L0487) can trip credited SW Pumps (PSW01A and PSW01C). This results in KDG01A running without cooling water.
This VFDR is associated with the Vital Auxiliaries Function. [OP017, OP206]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

EAC - KDG01A - DIESEL-GENERATOR A {L0365(L), L0780(LC), L0782(LC)}
SWS - PSW01A - SERVICE WATER PUMP A {L0483(LOCI)}
SWS - PSW01C - SERVICE WATER PUMP C {L0487(LOCI)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No Recovery Action was credited to resolve this VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-CT-012

VFDR

A MSO concern exists related to the loss of power to BUS14 as follows:
(a) With offsite power available and KDG01A idle, breaker 52/EG1A1 can spuriously close due to fire damage to cable L0319. This results in a KDG01A reverse power trip signal to 52/EG1A1. A concurrent spurious trip of breaker 52/14 (fire damaged cable L0315) then results in loss of all AC power to BUS14. - OR -
(b) With offsite power available and KDG01A spuriously starting (cables L0780 or L0782), 52/EG1A1 can spuriously close (cable L0319) on an already energized BUS14. This result in both 52/EG1A and 52/14 tripping on an overcurrent signal, causing a loss of power to BUS14.
This VFDR is associated with the Vital Auxiliaries Function. [OP017, OP205]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

EAC - 52/EG1A1 - EDG A SUPPLY TO BUS 14 {L0319(LOCI)}

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EAC - KDG01A - DIESEL-GENERATOR A {L0365(L), L0780(LC), L0782(LC)}
LAC - 52/14 - SPT SUPPLY BREAKER TO BUS 14 {L0315(LOCI), M0094(P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action DGHFDMNL-LD-STRT, consisting of locally starting the Diesel Generators per ER-D/G.1 Step 6.1, was credited to help resolve this VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-CT-013

VFDR

Fire damage to cable (C5618) results in loss of power to MCCN, which in turn impacts credited Train "A" CREATS components. Since the redundant Train "B" components are also considered unavailable (deterministic assumption), a loss of the Safe Shutdown Support function for MCR habitability and MCR equipment operability is postulated.
This VFDR is associated with the Vital Auxiliaries Function. [OP212]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

CBV - AKA05A - CREATS HEATER A {Cascading Impact}
CBV - AKF10A - CREATS TRAIN A FAN {Cascading Impact}
CBV - AKP07A - CREATS COOLING SYSTEM TRAIN A {Cascading Impact}
LAC - ACPDPCB11 - CREATS LIGHTING PANEL A {Cascading Impact}
LAC - MCCN - MOTOR CONTROL CENTER N {C5618(P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-CT-017

VFDR

If offsite power is available, cable fire damage can prevent tripping one or both RCPs (PRC01A and/or PRC01B) from the MCB. The pumps continuing to run will have an adverse impact on controlling RCS cool down rate.
Local action is taken at the 4KV Buses to trip both pumps.
This VFDR is associated with the Decay Heat Removal Function. [OP017, PH206, PH207]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

RCS - PRC01A - RCP A {C1281(L), M0050(LC)}
RCS - PRC01B - RCP B {M0145(LC)}

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Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID

VFDR-CT-018

VFDR

A MSO concern exists related to loss of BUS14 and BUS18. The scenario is postulated due to the following separation concerns:
(a) Loss of control of KDG01A (cables L0780 and L0782) can prevent MCB action to start DG and spurious opening of 52/18 (cable L0206) if offsite power is available, results in a loss of power to credited BUS18
(b) Spurious opening or failure to close of breaker 52/EG1A1 (cable L0319) and spurious opening of 52/14 (cable L0315) if offsite power is available, results in a loss of power to credited BUS14
Local action is taken to control KDG01A, strip the loads off BUS14/BUS18, start KDG01A, start SW Pumps (BUS18) and load BUS14.
This VFDR is associated with the Vital Auxiliaries Function. [OP017, PH210, PH211, PH214, PH221, PH227]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

ABV - AAF04 - AUXILIARY BUILDING EXHAUST FAN G {G0488A(LC), G0490A(LOI), G0947(LO), L0732(LO), Cascading Impact}
AFW - PAF01A - AUXILIARY FEEDWATER PUMP A {L0371(P), L0372(LOCI), L0373(LOCI), L0374(L)}
AFW - PSF01A - SAFW PUMP C {FWL0010(LI), L0744(LO), Cascading Impact}
CCW - PAC02A - CCW PUMP A {L0395(LOCI), Cascading Impact}
CSS - PSI02A - CONTAINMENT SPRAY PUMP A {L0337(LOCI), Cascading Impact}
CVC - PCH01A - CHRG PUMP A {L0399 (LOCI), Cascading Impact}
EAC - 52/EG1A1 - EDG A SUPPLY TO BUS 14 {L0319(LOCI), Cascading Impact}
EAC - 52/EG1A2 - EDG A SUPPLY TO BUS 18 {Requires Operator Action}
EAC - KDG01A - DIESEL-GENERATOR A {L0365(L), L0780(LC), L0782(LC), Requires Operator Action}
LAC - 52/14 - SPT SUPPLY BREAKER TO BUS 14 {L0315 (LOCI), M0094(P)}
LAC - 52/18 - SPT SUPPLY BREAKER TO BUS 18 {L0206(LO), Requires Operator Action}
LAC - 52/BT14-13 - BKR FOR BUS14 TO BUS13 TIE {L0328(P), L0329(LOCI), Cascading Impact}
LAC - 52/IH1A - BREAKER FOR EHTRCW01A (CIRCULATING WATER INTAKE HEATER A) {Requires Operator Action}
LAC - 52/IH1C - BREAKER FOR EHTRCW01C (CIRCULATING WATER INTAKE HEATER C) {Requires Operator Action}
LAC - BUS14 - 480V SWITCHGEAR {L0315 (LOCI), L0319(LOCI), L0328(P), L0329(LOCI), L0776(LO), M0094(P), Cascading Impact, Requires Operator Action}
LAC - BUS18 - 480V SWITCHGEAR {L0206(LO) {Requires Operator Action}
LAC - MCCC - MOTOR CONTROL CENTER C {L0391(LOCI), Requires Operator Action}
RCS - EHTRRC01A - PRESSURIZER PROPORTIONAL HEATERS {L0381(LOCI), R1101(OC), Cascading Impact}
RCS - EHTRRC02A - PRESSURIZER PROPORTIONAL HEATERS {L0381(LOCI), R1101(OC), Cascading Impact}
RCV - ACF08A - CONTAINMENT RECIRCULATING FAN A {L0352(LOCI) L0353(LOCI), Cascading Impact}
RCV - ACF08D - CONTAINMENT RECIRCULATING FAN D {L0363(LOCI), L0364(LOCI), Cascading Impact}
RHR - PAC01A - RHR PUMP A {L0378(LOCI), Cascading Impact}
SIS - PSI01A - SI PUMP A {L0333(LOCI), Cascading Impact}
SIS - PSI01C - SI PUMP C {L0210(LOCI), L0325(LOCI), Cascading Impact}

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SWS - PSW01A - SERVICE WATER PUMP A {L0483(LOCI), Requires Operator Action}
SWS - PSW01C - SERVICE WATER PUMP C {L0487(LOCI), Requires Operator Action}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action DGHFDMNL-LD-STRT, consisting of locally starting the Diesel Generators per ER-D/G.1 Step 6.1, was credited to help resolve this VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-CT-019

VFDR

Sampling system isolation valves may spuriously open due to cable fire damage resulting in a potential minor RCS inventory loss.
Local action is taken to de-energize the Nuclear Sample Panel (NSP) at DC panel DCPDPTB01B. However, operator action to 'de-power' circuits to mitigate spurious operation may not be effective. A short to an energized conductor from another circuit in conjunction with fire damage (grounds) to both circuits can result in a spurious operation defeating de-powering the subject circuit.
This VFDR is associated with the Inventory and Pressure Control Functions. [OE010, PH212]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

BDC – DCPDPTB01B - TURBINE BLDG DC DISTRIBUTION PANEL {Requires Operator Action}
LAC - NSP - NUCLEAR SAMPLING PANEL {Requires Operator Action}
PSS - 966A - PZR STEAM SAMPLE AOV {R03171(LOI), Requires Operator Action}
PSS - 966B - PZR LIQUID SAMPLE AOV {R03171(LOI), Requires Operator Action}
PSS - 966C - LOOP B HL SAMPLE {R3163(LOI), Requires Operator Action}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-CT-020

VFDR

A MSO concern exists related to inadvertent steam dumping as follows:
(a) If Instrument Air is available, cable fire damage can prevent one or both MSIVs from closing - AND -
(b) Downstream steam loads, MSS valves to moisture separator reheaters (3425, 3425A, 3426, 3426A, 3427, 3427A, 3428, and 3428A), can fail open on loss of power
Local action is taken to fail both MSIVs closed by isolating the instrument air supply and venting the downstream instrument air header to each MSIV.
This VFDR is associated with the Decay Heat Removal Function. [OP214, PH215]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

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Component(s)

IAS - 5408A - IA ISOL VALVE to AOV-3517, A MSIV {Requires Operator Action}
IAS - 5409B - IA ISOL VALVE TO S/G B MSIV {Requires Operator Action}
IAS - 5471 - A MSIV EMERG VENT {Requires Operator Action}
IAS - 5472 - B MSIV EMERG VENT {Requires Operator Action}
IAS - 5473 - A MSIV EMERG VENT {Requires Operator Action}
IAS - 5474 - B MSIV EMERG VENT {Requires Operator Action}
LAC - ACPDPCB03 - CONTROL BUILDING 120/208V DISTRIBUTION PANEL B1 {Cascading Impact}
LAC - ACPDPTB07 - TURBINE BUILDING MISCELLANEOUS 120V DISTRIBUTION PANEL A {Cascading Impact}
LAC - ACPDPTB10 - TURBINE BUILDING MISCELLANEOUS 120V DISTRIBUTION PANEL B {Cascading Impact}
MSS - 3425 - MAIN STEAM CONTROL AOV TO MSR 1A {Cascading Impact}
MSS - 3425A - MOISTURE SEPARATOR REHEATER 1A MINI WARMUP AIR OPERATED VALV {Cascading Impact}
MSS - 3426 - MAIN STEAM CONTROL AOV TO MSR 1B {Cascading Impact}
MSS - 3426A - MSR 1B MINI WARM-UP AOV {Cascading Impact}
MSS - 3427 - MAIN STEAM CONTROL AOV TO MSR 2A {Cascading Impact}
MSS - 3427A - MSR 2A MINI WARMUP AOV {Cascading Impact}
MSS - 3428 - MAIN STEAM CONTROL AOV TO MSR 2B {Cascading Impact}
MSS - 3428A - MSR 2B MINI WARMUP AOV {Cascading Impact}
MSS - 3516 - MSIV B {G1180(L), G1181(LC), G1197(LI), G1198(LC), Requires Operator Action}
MSS - 3517 - MSIV A {G1186(L), G1187(LC), G1191(LI), G1192(LC), Requires Operator Action}

Disposition

Modification ESR-12-0128, which ensures automatic MSIV closure, deterministically resolves this VFDR.

VFDR ID

VFDR-CT-021

VFDR

Loss of control of the TDAFW Pump from the MCB is postulated in this fire area. Cable damage can prevent the TDAFW Pump from supplying SG "A" adversely impacting the ability to effectively remove decay heat.
Local action is taken to transfer TDAFW Pump controls and establish flow to SG "A" from the IBELIP.
This VFDR is associated with the Decay Heat Removal Function. [PH218, PH220]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

AFW - 3996 - TDAFWP DISCHARGE MOV {E0093(L), E0097(LOCI), Requires Operator Action}
AFW - PAF03 - TURBINE DRIVEN AUXILIARY FEEDWATER PUMP {Requires Operator Action}
AFW - PLO11 - TDAFWP DC LUBE OIL PUMP {E0193(LCI), Requires Operator Action}
IAC - IBELIP - INTERMEDIATE BLDG EMERG LOCAL INSTR PANEL {Requires Operator Action}
MSS - 3505A - SG A TO TDAFWP: {E0036(LOCI), E0032(P), Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Actions AFHFDSUPPL-3, consisting of supplying alternate sources of water for the AFW syste once the inital water supply is depleted, and AXHFDSAFWX-2, consisting of locally aligning the Standby AFW pump, were credited to help resolve this VFDR. In addition, Plant Modifications ESR-11-0050 (fire protection upgrades to the Standby AFW pumps) and ESR-12-0143 (supporting diesel generator that can power a standby AFW pump) were credited to help resolve this VFDR.

VFDR ID VFDR-CT-022

VFDR

Both CST level indicators (LI-2022A and LI-2022B) at the MCB are impacted due to fire damaged cable.
Local action is taken to monitor CST level at PI-2808.
This VFDR is associated with the Decay Heat Removal Function. [OP208, PH219]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

CND - LI-2022A - CDST A LEVEL {G0339(I), R3520(I)}
CND - LI-2022B - CDST B LEVEL {R3521(I)}
CND - PI-2808 - CST LOCAL LEVEL INDICATOR {Requires Operator Action}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action AFHFDSUPPL-3, consisting of supplying alternate sources of water for the AFW system, was credited to help resolve this VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-CT-023

VFDR

Fire damage (line to ground fault or open circuit) to cable L0684 simulates an under-voltage signal which will strip BUS14 loads.
Local action is taken to disable circuitry at the UNDERVOLTAGE RELAY CABINET by removing DC fuse blocks FUARA1RC 14/2-P and FUARA1RC 14/3-N for BUS14.
This VFDR is associated with the Vital Auxiliaries Function. [PH222]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

LAC - UVBUS14 - BUS 14 UV CIRCUITRY {E0274B(), L0312(), L0681(), L0684(), L0686(), L0687(), L0688(), L0689(), L0876A(), Requires Operator Action}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery ActionDGHFDMNL-LD-STRT, consisting of locally starting the Diesel Generators per ER-D/G.1 Step 6.1, was credited to help resolve this VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-CT-024

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Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

VFDR

Containment sump MOVs (850A and 850B) are subject to spurious opening. MOV-856 is required to be closed to prevent RWST drain down to the sump during HSD. Fire damage to cable C0790 can spuriously open 856, bypassing the control power key switch (1/856-KS on MCB). Local action is taken to open the breaker for 856 at MCCC AND locally closing the valve.
This VFDR is associated with the Inventory and Pressure Control Functions. [OP010, OP017, OMH001, PH224]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

LAC - MCCC - MOTOR CONTROL CENTER C {Requires Operator Action}
RHR - 850A - CNMT SUMP TO RHR PUMP MOV {C0704(LOCI)}
RHR - 850B - CNMT SUMP TO RHR PUMP MOV {C1070(LOCI)}
RHR - 856 - RWST TO RHR MOV {C0791(L), C0790(LOCI), Requires Operator Action}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-CT-025

VFDR

CHG Pump FCV-142 is subject to spurious closure due to a hot short to cable R0150. This would adversely impact RCS makeup and reactivity control.
Local action is taken to open bypass valve 384C.
This VFDR is associated with the Reactivity Control Function, and Inventory and Pressure Control Functions. [PH225]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

CVC - 142 - CHRG FCV {R0150(LOC)}
CVC - 384C - AOV 142 BYP VLV {Requires Operator Action}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDMAKEUP, consisting of locally aligning and starting the new charging system was credited to help resolve this VFDR. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

VFDR ID VFDR-CT-026

VFDR

MOV-313 is subject to spurious opening (fire damage to cable C0872) which could result in a loss of charging capability. The VCT can fill with high temperature water from RCP seal leakoff, via the Seal Water HX without CCW cooling, flashing steam in the VCT and causing VCT pressure to rise above head pressure of the RWST. When the CHG Pump is restarted, this results in the pump drawing suction from the VCT

(instead of the RWST), introducing saturated water and; thereby, damaging the credited CHG pump.
Local action is taken to close manual valves V-315A and V-315C to isolate RCP seal return to the VCT.
This VFDR is associated with the Reactivity Control Function, and Inventory and Pressure Control Functions. [PH226]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

CVC - 313 - SEAL OR EXCESS LETDOWN RETURN ISOLATION MOV {C0872(LOCI), C0873(LI)}
CVC - 315A - INLET BLOCK VALVE TO SEAL RETURN FILTER {Requires Operator Action}
CVC - 315C - SEAL RETURN FILTER BYPASS VLV {Requires Operator Action}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDMAKEUP, consisting of locally aligning and starting the new charging system was credited to help resolve this VFDR. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

VFDR ID VFDR-CT-027

VFDR

Cable fire damage (L0399) can prevent operating credited CHG pump PCH01A from the MCB.
Local action is taken to (i) align RWST suction source by opening manual valve 358, (ii) close manual valve 289 to isolate RCP seal injection, (iii) isolate VCT cover gas (close 261 and 262), and (iv) control PCH01A locally from the ABELIP.
This VFDR is associated with the Reactivity Control Function, and Inventory and Pressure Control Functions. [PH228, PH229]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

CVC - 261 - VCT H2 INLT MANUAL BLK VLV {Requires Operator Action}
CVC - 262 - VCT NITROGEN INLET MANUAL BLK VLV {Requires Operator Action}
CVC - 289 - CHARGING PUMPS DISCHARGE ISOL VLV TO RCP SEAL INJECTION {Requires Operator Action}
CVC - 358 - RWST MAKEUP AOV BYPASS VALVE {Requires Operator Action}
CVC - PCH01A - CHRG PUMP A {L0399(LOCI), Requires Operator Action}
IAC - ABELIP - AUX BLDG EMERG LOCAL INSTR PANEL {Requires Operator Action}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDMAKEUP, consisting of locally aligning and starting the new charging system was credited to help resolve this VFDR. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

VFDR ID VFDR-CT-028

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VFDR

If offsite power is available or non-credited KDG01B starts and connects to BUS16, various loads on the non-credited bus may spuriously start challenging a controlled shutdown of the plant.
Local action is taken to remove all Supply, Bus Tie, and Load Breaker 125V DC fuses -AND- open all 480V AC breakers at BUS16 to isolate BUS16.
This VFDR is associated with the Vital Auxiliaries Function. [OP017, PH230]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

AFW - PAF01B - AUXILIARY FEEDWATER PUMP B {L0253(L), L0373(LO), L0251(LOCI), L0252(LOCI), L0250(P)}
AFW - PSF01B - SAFW PUMP D {FWL0028(LI), L0723(LO), Cascading Impact}
CCW - PAC02B - CCW PUMP B {L0282(LOCI), Cascading Impact}
CSS - PSI02B - CONTAINMENT SPRAY PUMP B {L0215(LOCI), Cascading Impact}
CVC - PCH01B - CHRG PUMP B {L0263(LOCI), Cascading Impact}
CVC - PCH01C - CHRG PUMP C {L0267(LOCI)}
EAC - 52/EG1B1 - EDG B SUPPLY TO BUS 16 {L0189(LOCI), Cascading Impact, Requires Operator Action}
LAC - 52/16 - SPT SUPPLY BREAKER TO BUS 16 {L0184(LOCI), M0103(P), Requires Operator Action}
LAC - 52/BT16-14 - BREAKER FOR BUS 16 TO BUS 14 TIE {L0206(LC), L0204(LOCI), Requires Operator Action}
LAC - 52/BT16-15 - BREAKER FOR BUS 16 TO BUS 15 TIE {L0198(LOCI), L0197(P), Cascading Impact, Requires Operator Action}
LAC - MCCD - MOTOR CONTROL CENTER D {L0289(LOC), Requires Operator Action}
RCS - EHTRRC01B - PRESSURIZER BACKUP HEATERS {L0276(LOCI), L0277(LOCI), Cascading Impact}
RCS - EHTRRC02B - PRESSURIZER BACKUP HEATERS {L0276(LOCI), L0277(LOCI), Cascading Impact}
RCV - ACF08B - CONTAINMENT RECIRCULATING FAN B {L0224(LOCI), L0225(LOCI), Cascading Impact}
RCV - ACF08C - CONTAINMENT RECIRCULATING FAN C {L0239(LOCI), L0240(LOCI), Cascading Impact}
RHR - PAC01B - RHR PUMP B {L0259(LOCI), Cascading Impact}
SFP - PAC07B - SPENT FUEL POOL RECIRCULATING PUMP B {L0719(LO), Cascading Impact}
SIS - PSI01B - SI PUMP B {L0194(LOCI), Cascading Impact}
SIS - PSI01C - SI PUMP C {L0210(LOCI), L0325(LOCI), Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDMAKEUP, consisting of locally aligning and starting the new charging system was credited to help resolve this VFDR. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

VFDR ID

VFDR-CT-030

VFDR

Credited TDAFW Pump suction cannot be aligned to SW from the MCB due to cable damage or a loss of AC power to Train "B" MOV-4013 and normally closed in-series valve 4098 (normal CST re-fill capability is not credited). In addition, suction line drain valve 4358D is normally open.
Local action is taken to align SW to the TDAFW Pump suction when CST level indicates less than 5 feet on local level indicator PI-2808.
This VFDR is associated with the Decay Heat Removal Function. [OP017, PH233, PH234]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a

separation issue.

Component(s)

AFW - 4098 - TDAFWP SUCTION FROM SWS MANUAL IV {Requires Operator Action}
AFW - 4358D - TDAFW PUMP SW SUCTION LINE TELLTALE ISOL VLV {Requires Operator Action}
CND - PI-2808 - CST LOCAL LEVEL INDICATOR {Requires Operator Action}
LAC - MCCD - MOTOR CONTROL CENTER D {L0289(LOC), Requires Operator Action}
SWS - 4013 - TDAFWP SW SUCTION MOV {C1215(LI), C1216(LOCI), Requires Operator Action}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Actions AFHFDSUPPL-3, consisting of supplying alternate sources of water for the AFW system once the inital water supply is depleted, and AXHFDSAFWX-2, consisting of locally aligning the Standby AFW pump, were credited to help resolve this VFDR. In addition, Plant Modifications ESR-11-0050 (fire protection upgrades to the Standby AFW pumps) and ESR-12-0143 (supporting diesel generator that can power a standby AFW pump) were credited to help resolve this VFDR.

VFDR ID VFDR-CT-031

VFDR

Loss of control of AFW flow from the MCB is postulated in this fire area. TDAFWP flow control valves (4297 and 4298) to both SGs are administratively maintained open. If non-credited Train "B" power is available, TDAFW pump discharge valve MOV-3996 may spuriously close due to cable fire damage.
Local action is taken to close 4298 block valve (4002) to isolate TDAFW flow to SG "B" and locally operate MOV-3996 to control TDAFW flow to SG "A". However, local action to reposition 3996 is considered to be unsuccessful due to IN 92-18 concerns ("Hot Short Damaged" due to spurious operation as identified in DA-EE-2000-066 - Attachment G).
This VFDR is associated with the Decay Heat Removal Function. [OP001, PH236]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

AFW - 3996 - TDAFWP DISCHARGE MOV {E0093(L), E0097(LOCI), Requires Operator Action}
AFW - 4002 - AOV-4298 OUTLET BLOCK VALVE {Requires Operator Action}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Actions AFHFDSUPPL-3, consisting of supplying alternate sources of water for the AFW system once the inital water supply is depleted, and AXHFDSAFWX-2, consisting of locally aligning the Standby AFW pump, were credited to help resolve this VFDR. In addition, Plant Modifications ESR-11-0050 (fire protection upgrades to the Standby AFW pumps) and ESR-12-0143 (supporting diesel generator that can power a standby AFW pump) were credited to help resolve this VFDR.

VFDR ID VFDR-CT-033

VFDR

"A" Battery Charger (BYCA1) is postulated to be unavailable due to fire damaged cable (C5191) and "B" Battery Charger (BYCB1) is

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postulated to be unavailable due to a loss of cascading power from the non-credited train "B" 480V AC system. A long term power supply to the following components is required in support of achieving safe and stable conditions:
(a) ABELIP and DG "A" Fuel Oil Transfer Pump (PDG02A), by aligning DCPDPCB02A
(b) IBELIP and TDAFW Pump DC LUBE OIL Pump (PLO11), by aligning DCPDPCB02B
Local action is taken to align the TSC DC supply to provide power for long term operation of both "A" and "B" Battery Buses.
This VFDR is associated with the Vital Auxiliaries Function. [OP017, PH237, PH238]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

AFW - PLO11 - TDAFWP DC LUBE OIL PUMP {E0193(LCI)}
BDC - BYCA1 - BATTERY CHARGER A1 {C5191(P)}
BDC - BYCB1 - BATTERY CHARGER B1 {Cascading Impact}
BDC - DCPDPCB01A - BATTERY A MAIN DISCONNECT {Cascading Impact, Requires Operator Action}
BDC - DCPDPCB01B - BATTERY B MAIN DISCONNECT {Cascading Impact, Requires Operator Action }
BDC - DCPDPCB02A - BATTERY A MAIN FUSE CABINET {Cascading Impact, Requires Operator Action}
BDC - DCPDPCB02B - BATTERY B MAIN FUSE CABINET {Cascading Impact, Requires Operator Action}
BDC - DCPDPCB05A - TSC BATTERY A FUSED DISCONNECT {Cascading Impact, Requires Operator Action}
BDC - DCPDPCB05B - TSC BATTERY B FUSED DISCONNECT {Cascading Impact, Requires Operator Action}
BDC - DCPDPCD01 - TSC BATTERY A & B FUSED DISCONNECT {Cascading Impact, Requires Operator Action}
BDC - DCPDPTB02 - TSC TO BATTERY A & B THROWOVER SWITCH {Cascading Impact, Requires Operator Action}
DGS - PDG02A - DG FO TRANSFER PUMP A {Cascading Impact}
IAC - ABELIP - AUX BLDG EMERG LOCAL INSTR PANEL {Cascading Impact}
IAC - IBELIP - INTERMEDIATE BLDG EMERG LOCAL INSTR PANEL {Cascading Impact}
LAC - 52/15 - BKR FOR BUS 15 SUPPLY {L0198(LC), Requires Operator Action}
LAC - 52/BT16-15 - BREAKER FOR BUS 16 TO BUS 15 TIE {L0198(LOCI), L0197(P), Requires Operator Action}
LAC - BUS15 - 480V SWITCHGEAR {L0198(LOC), L0024(P), L0079(P), L0197(P), Requires Operator Action}
LAC - BUS16 - 480V SWITCHGEAR {L0206(LC), L0777(LO), L0184(LOCI), L0189(LOCI), L0198(LOCI), L0204(LOCI), Requires Operator Action}
LAC - BYCTSC - TSC BATTERY CHARGER {Cascading Impact, Requires Operator Action}
LAC - KED03 - TSC EMERGENCY DIESEL-GENERATOR {Cascading Impact, Requires Operator Action}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Actions DCHFDTSCLT and FSHFDTSCLT-DR, respectively consisting of aligning the TSC diesel generator and the TSC battery charger, were credited to help resolve this VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-CT-039

VFDR

Instrument Air to the CNMT is isolated (via 5397) by an unrelated operator action to mitigate spurious operation of AOVs inside CNMT. With Instrument Air isolated, and cable fire damage (R0542), credited Aux. Spray valve AOV-296 cannot be controlled from the MCB. Also see VFDR-CT-038 for IN 92-18 issue associated with credited PORV block valve (MOV-516) operation.

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Local action is taken to operate AOVs 294 and 296 for RCS pressure control during cooldown by:
(a) Aligning the Service Air System to supply Instrument Air in the CNMT
(b) Installing a Switch Adapter to control AOVs 294 and 296 from the Aux. Bldg. Mezzanine
This VFDR is associated with the Vital Auxiliaries Function. [PC208, PC209, PC210]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

CVC - 294 - CHRG TO LOOP B CL (AOV) {R0535(LOI)}
CVC - 296 - AUX SPRAY AOV {R0542(LOI)}
PSA - 7141 - SA MIDDLE ISOL VLV TO CONTAINMENT (INTER BLDG) {Requires Operator Action}
PSA - 7222 - SA OUTER ISOL VLV TO CONTAINMENT (INTER BLDG) {Requires Operator Action}
PSA - 7227 - SA ISOL VLV (IN CNMT) {Requires Operator Action}
PSA - 7227A - SA TO IA CROSSTIE ISOLATION VALVE INSIDE CONTAINMENT {Requires Operator Action}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID

VFDR-CT-047

VFDR

A MSO concern exists related to the inability to trip the Reactor from the MCB. Fire damaged cabling would result in Reactor Trip capability function being unavailable as follows:
(a) 52/RTA: A line-ground fault (to cable L0611 or E0224) would result in the loss of Trip Coil capability AND a hot short (to cable L0610) would result in the loss of UV Trip Coil capability - AND -
(b) 52/RTB: A line-ground fault (to cable L0631 or E0233) would result in the loss of Trip Coil capability AND a hot short (to cable L0630) would result in the loss of UV Trip Coil capability -AND -
(c) Fire damage to cables for breakers 52/13 and 52/15 prevents isolating BUS13 and BUS15 and consequently de-energizing both ROD DRIVE MG SETs.
Local action is taken at the switchgear to trip both ROD DRIVE MG SETs.
This VFDR is associated with the Reactivity Control Function. [OP017, OP213, PH204, PH205, PH216]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre transition OMA and a separation issue.

Component(s)

LAC - 52/13 - BKR FOR BUS13 SUPPLY {L0329(LC), Cascading Impact}
LAC - 52/15 - BKR FOR BUS 15 SUPPLY {L0198(LC), Cascading Impact}
LAC - BUS13 - 480V SWITCHGEAR {Requires Operator Action}
LAC - BUS15 - 480V SWITCHGEAR {Requires Operator Action}
RPS - 52/RTA - REACTOR TRIP BREAKER A {L0610(LO), L0611(LOC), E0224(P)}
RPS - 52/RTB - REACTOR TRIP BREAKER B {L0630(LO), L0631(LOC), E0233(P)}

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Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDSCRAM-LCL, consisting of locally tripping the reactor, was credited to help resolve this VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID

VFDR-CT-048

VFDR

Fire damage to cables (E0036 and E0112) results in spurious operation of both SG MOVs (3504A and 3505A) to the TDAFW Pump. These valves can spuriously close when required open adversely impacting the ability to remove decay heat.
Local action is taken to de-energize the valve circuits at DCPDPCB03A and DCPDPCB03B. Local action to reposition the MOV is considered unsuccessful due to IN 92-18 concerns ("Hot Short Damaged" due to spurious operation as identified in DA-EE-2000-066 - Attachment G).
This VFDR is associated with the Decay Heat Removal Function. [OP001, OP017, PH202, PH203]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

BDC - DCPDPCB03A - MAIN DC DISTRIBUTION PANEL A {Cascading Impact, Requires Operator Action}
BDC - DCPDPCB03B - MAIN DC DISTRIBUTION PANEL B {Cascading Impact, Requires Operator Action}
MSS - 3504A - SG B TO TDAFWP: {E0112(LOCI), E0108(P), Cascading Impact}
MSS - 3505A - SG A TO TDAFWP: {E0036(LOCI), E0032(P), Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Actions AFHFDSUPPL-3, consisting of supplying alternate sources of water for the AFW system once the inital water supply is depleted, and AXHFDSAFWX-2, consisting of locally aligning the Standby AFW pump, were credited to help resolve this VFDR. In addition, Plant Modifications ESR-11-0050 (fire protection upgrades to the Standby AFW pumps) and ESR-12-0143 (supporting diesel generator that can power a standby AFW pump) were credited to help resolve this VFDR.

VFDR ID

VFDR-CT-049

VFDR

Fire damage to cabling affects credited KDG01A operability as follows:
(a) Fire damage to cables associated with credited DG can prevent KDG01A from starting. Both "A" (L0780 or L0365) and "B" (L0782) DG start circuits are impacted preventing automatic DG start, AND fire damage to common power cable (L0365) prevents DG from being started locally at the DGAELCP.
(b) Loss of control of DG "A" Fuel Oil Day Tank SOV(s) and DG "A" Fuel Oil Transfer Pump are postulated due to an impacted common power supply cable (L0365) routed in this fire area. As a consequence, long-term fuel supply to KDG01A is not available challenging availability of the credited DG.
This VFDR is associated with the Vital Auxiliaries Function. [OP016, OP021]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

DGS - 5907 - DG A FUEL OIL DAY TANK SOV {L0365(L)}

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DGS - 5907A - FOTP A RECIRC SOV {L0365(L)}
DGS - PDG02A - DG FO TRANSFER PUMP A {Cascading Impact}
EAC - KDG01A - DIESEL-GENERATOR A {L0365(L), L0780(LC), L0782(LC)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery ActionDGHFDMNL-LD-STRT, consisting of locally starting the Diesel Generators per ER-D/G.1 Step 6.1, was credited to help resolve this VFDR. Plant Modification ESR-12-0412, providing fusing to protect against consequences of a hot short on Cable L0365, was credited to help resolve this VFDR.

VFDR ID

VFDR-CT-050

VFDR

Procedure directed local action to "de-power" circuits to mitigate spurious operation may not be effective.
Local action is taken in Battery Room "A", at MAIN DC DISTRIBUTION PANEL "A" (DCPDPCB03A), to de-energize MCB DC DIST PNL "A" (DCPDPCB04A) at position #14 which fails components to their respective Loss Of Power position. As no additional local action is taken to assure the components remain in the desired position, subsequent fire-induced shorts to energized conductors of different circuits in conjunction with fire damage (grounds) could result in spurious operations.
Local action is taken in Battery Room "B", at MAIN DC DISTRIBUTION PANEL "B" (DCPDPCB03B), to de-energize MCB DC DIST PNL "B" (DCPDPCB04B) at position #9 which fails components to their respective Loss Of Power position. As no additional local action is taken to assure the components remain in the desired position, subsequent fire-induced shorts to energized conductors of different circuits in conjunction with fire damage (grounds) could result in spurious operations.

This VFDR is associated with the Reactivity Control Function, Inventory and Pressure Control Functions, Decay Heat Removal Function, and Vital Auxiliaries Function. [OE010, OP017, OP022, OP023, PH202, PH203]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

AFW - 4291 - TURBINE DRIVEN AUXILIARY FEEDWATER PUMP RECIRCULATION AOV {C3537(LC), G0721(LC), G0260(LI), Cascading Impact}
BDC - DCPDPCB03A - MAIN DC DISTRIBUTION PANEL A {Cascading Impact, Requires Operator Action}
BDC - DCPDPCB03B - MAIN DC DISTRIBUTION PANEL B {Cascading Impact, Requires Operator Action}
CCW - 754A - CCW FROM RCP A TB AOV {R0629(LCI), Cascading Impact}
CCW - 754B - CCW FROM RCP B TB AOV {R0634(LCI), Cascading Impact}
CVC - 110B - RMW FLOW CONTROL VLV AOV-110B {R0034(LOI), Cascading Impact}
CVC - 110C - BLENDER OUTLET TO VCT (AOV) {R0035(LOI), Cascading Impact}
CVC - 111 - RMW TO BA BLENDER FLOW CONTROL VLV HCV-111 {R0036(LOI), Cascading Impact}
CVC - 112C - VCT OUTLET AOV {R0056(LC), R0060(LCI), Cascading Impact}
CVC - 200A - LTDN ORIFICE AOV {R0498(L), R0499(L), R0500(LOI), Cascading Impact}
CVC - 200B - LTDN ORIFICE AOV {R0498(L), R0499(L), R0500(LOI), Cascading Impact}
CVC - 202 - LTDN ORIFICE AOV {R0498(L), R0499(L), R0500(LOI), Cascading Impact}
CVC - 270A - RCP SEAL OUTLET AOV {R0525(LCI), Cascading Impact}
CVC - 270B - RCP SEAL OUTLET AOV {R0530(LCI), Cascading Impact}

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CVC - 294 - CHRG TO LOOP B CL (AOV) {R0535(LOI), Cascading Impact}
CVC - 310 - EXCESS LTDN AOV {R0556(LOI)}
CVC - 312 - EXCESS LETDOWN HX DIVERT TO VCT OR RCDT AOV-312 {R0561(LOI), Cascading Impact}
CVC - 371 - RCS LETDOWN ISOLATION {R0567(LOI), Cascading Impact}
CVC - 392A - CHRG TO LOOP B HL (AOV) {R0549(LOI), Cascading Impact}
CVC - 427 - RCS LETDOWN ISOLATION {R0215(LCI), R0505(LC)}
MFW - 3995 - MAIN FW ISOLATION AOV TO S/G A {R4576(LOI), Cascading Impact}
RCS - 386 - RCP SEAL RETURN BYPASS {R0572(LOI), Cascading Impact}
RCS - 590 - REACTOR HEAD VENT OUTER (SOV) TO 592 {SAC0215(L), SAC0211A(LOI), Cascading Impact}
RCS - 591 - REACTOR HEAD VENT OUTER (SOV) TO 593 {SAC0216(L), SAC0214(LOI), Cascading Impact}
RCS - 592 - REACTOR HEAD VENT INNER (SOV) TO 590 {SAC0215(L), SAC0213(LOI), Cascading Impact}
RCS - 593 - REACTOR HEAD VENT INNER (SOV) TO 591 {SAC0216(L), SAC0212A(LOI), Cascading Impact}
SGB - 5737 - SGB B AOV {R3194(LO), R3192(LOI)}
SGB - 5738 - SGB A AOV {R3194(LO), R3192(LOI)}
SIS - 835A - ACCUM A FILL AOV {R0639(LOI), Cascading Impact}
SIS - 835B - ACCUM B FILL AOV {R0670(LOI), Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

Fire Area ID:	EDG1A - Diesel Generator Unit 1A (including EDG Vault 1A), Elevation 253' 6"	**Fire Area Definition**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

Fire Zone ID	**Description**
EDG1A	253'-6", Diesel Generator Unit 1A (including EDG Vault 1A)

Fire Area ID: EDG1A - Diesel Generator Unit 1A (including EDG Vault 1A), Elevation 253' 6" **Performance Goals**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Performance Goal	Method of Accomplishment	Comments
1. Reactivity Control Function	*Immediate reactor shutdown is achieved by de-energizing all CRDMs* which results in control rod negative reactivity insertion into the reactor core.	Method of Accomplishment (Hot Shutdown) Shutdown Method II Success Path "B"
2. Inventory Control Function	• RCS inventory depletion control is maintained by closure of all letdown paths, all sample paths, all head vent paths, and both PORVs. • RCS inventory makeup is controlled byTrain "B" CVCS success path from the RWST to the RCS.	Method of Accomplishment (Hot Shutdown) Shutdown Method II Success Path "B"
3. Pressure Control Function	• RCS high pressure control is maintained by automatic mechanical operation of all PRZR Code Safety Valves, stopping of both RCPs, and securing all PRZR heaters. • RCS lowering pressure control is maintained by closure of both PRZR PORVs, closure of both PRZR Normal Spray valves or stopping the associated RCP(s), and closure of both SG ARVs.	Method of Accomplishment (Hot Shutdown) Shutdown Method II Success Path "B"
4. Decay Heat Removal Function	• RCS high temperature control is maintained by automatic mechanical operation of all SG Code Safety Valves. • RCS lowering temperature control is maintained by closure of both MSIVs, closure of both SG ARVs, stopping both MFW Pumps, stopping AFW System flow to the non-credited SG, and controlling flow to the credited SG. • *SG makeup control is maintained by either one of the following to* SG "B": o TDAFW Pump success path from the SG "B" MSS and pump suction from the CST or SWS o SAFW Pump "D" success path from the SWS or FPS	Method of Accomplishment (Hot Shutdown) Shutdown Method II Success Path "B"
5. Process Monitoring Function	RCS Temperature: TI-409A-2 (RCS LOOP A HL INDICATION) Location: IBELIP, TI-409B-2 (RCS LOOP A CL INDICATION) Location: IBELIP, *TI-410A-1 (RCS LOOP B HL INDICATION* (0-700 F)) Location: MCB, and TI-410B-1 (RCS LOOP B CL INDICATION) Location: MCB RCS Pressure:PI-420A (RCS HL PRESSURE (0-3000 PSIG)) Location: MCB Pressurizer Level:LI-428 (PRZR LEVEL CHANNEL 3) Location: MCB Steam Generator Level:LI-460AA (S/G "A" LEVEL APPENDIX R [0-520" H2O (WR)) Location: IBELIP and LI-507 (S/G "B" LEVEL [0 -	Method of Accomplishment (Hot Shutdown) Shutdown Method II Success Path "B"

Fire Area ID: EDG1A - Diesel Generator Unit 1A (including EDG Vault 1A), Elevation 253' 6"

Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Performance Goals

Performance Goal	Method of Accomplishment	Comments
	520" H20 (WR)) Location: MCB Steam Generator Pressure:PI-469A (S/G "A" PRESSURE) Location: IBELIP, and PI-478 (S/G "B" PRESSURE) Location: MCB Neutron Flux Monitoring:N-32R (APPENDIX R SOURCE RANGE MONITOR) Location: IBELIP, AND NI-32B (NIS SOURCE RANGE INDICATION) Location: MCB Tank Level:LI-2022B (CDST "B" LEVEL) Location: MCB, and LI-920 (RWST LEVEL) Location: MCB System Flow Rate:FI-2015A (TDAFW PUMP DISCH FLOW) Location: IBELIP, FI-4085A (SAFW PUMP "D" <PSF01B> DISCH FLOW) Location: SAF, FI-4085B (SAFW PUMP "D", <PSF01B> DISCH FLOW) Location: MCB DG Cooling:PI-2105 ("B" DIESEL GEN HX OUTLET PRESS IND) Location: EDG1A	
6. Vital Auxiliaries	• DC Power and instrument power availability is maintained by train “B” of the BDC/IAC System from Battery “B” or the TSC Battery System. • AC Power availability is maintained by train “B” Diesel-Generator and train “B” DBV/DGS support components. • Diesel-Generator engine cooling is maintained by the train “B” SWS success path or alignment of alternate cooling from the FPS to the “B” Diesel. • Except for a Control Room fire, train “B” CREATS is maintained for controlling the Control Room environmental conditions within the required specifications for habitability and design limits for equipment operability. Ventilation systems for the SAFW components in the SAFW Building, the DG components in the Diesel Building, and the TSC components in the Technical Support Center are maintained for equipment design limits.	Method of Accomplishment (Hot Shutdown) Shutdown Method II Success Path "B"

References	Document ID
	EIR 51-9089546-001 Rev. 001 - R. E. Ginna Nuclear Power Station, Nuclear Safety Capability Assessment

Fire Suppression Activities Effect on Nuclear Safety Performance Criteria

Fire Area ID:	EDG1A - Diesel Generator Unit 1A (including EDG Vault 1A), Elevation 253' 6"	**Performance Goals**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

Scenario 1: Suppression Effects in EDG1A of a Fire Originating In EDG1A:

Activation of preaction sprinkler system, S12, or manual firefighting activities are not expected to extend beyond the area of fire origin.Preaction sprinkler systems require both, the fusing of a sprinkler head and the opening of the preaction valve as a result of actuation of a heat or smoke detector or manual pull box.The activation of a preaction sprinkler system would only be expected to activate small number of sprinklers.

Scenario 2: Suppression Effects in EDG1A of a Fire Originating Outside of EDG1A:

Actuation device S12M could be wetted by firefighting activities outside EDG1A which could cause the switch to short out, however, since preaction sprinkler systems require both, the fusing of a sprinkler head and the opening of the preaction valve as a result of actuation of a heat or smoke detector or manual pull box, operation of a fire suppression system outside of EDG1A could not impact preaction fire suppression systems within EDG1A.Similarly, manual firefighting activities outside of EDG1A would not be expected to affect equipment/components located within EDG1A.

Watertight manhole covers at the manholes between the diesel generator rooms and the vault below have been provided.Drain sump pumps have been provided along with backflow prevention capability.

Fire Area ID: EDG1A - Diesel Generator Unit 1A (including EDG Vault 1A), Elevation 253' 6" **Fire Risk Evaluation**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
(All)	Area Wide	None	None	R	Modifications: R Procedures/Recovery Actions: R
EDG1A	253'-6", Diesel Generator Unit 1A (including EDG Vault 1A)	R	E, R	None	Detection System, Heat Detectors for S12: E R Detection System, Z20: E R Water Suppression, S12: R

Title Fire Risk Evaluation for Fire Area EDG1A

Risk Summary The delta CDF and delta LERF results for the fire area are summarized below. At the fire area level, the increase in risk is less than 1E-06/rx-yr for the delta CDF, and less than 1E-07/rx-yr for the delta LERF.

All CCDPs and CLERPs are less than 1, ensuring that low CDF and LERF values are not reached solely because of a low fire scenario frequency.

Δ CDF

Δ LERF

Redacted

DID Maintained A qualitative evaluation of defense-in-depth (DID) using insights gained from the Fire PRA was performed for the fire area.

S12, the fire detection (heat) and suppression system (automatic pre-action) installed in the fire area is credited in the Fire PRA, along with manual suppression, in response to fire scenarios that can be sufficiently severe as to include a structural steel fire scenario. Existing administrative control are determined adequate given the nature of combustibles in the area and the quantified scenarios captured in the Fire PRA results. Given the relatively low values of CCDP and CLERPs in the fire area, no DID actions are required. In addition, no modifications are required for DID in the fire area.

With the DID requirements above, the evaluation finds that an adequate balance between the DID echelons is maintained.

Safety Margin Maintained The safety margin for the analyses supporting the fire risk evaluation of the fire area was evaluated and accounted for potential impacts from fire modeling and the plant system performance, including the PRA logic model. All analyses and assessment have been performed utilizing accepted techniques and industry accepted standards. *In addition, safety analysis acceptance criteria in the licensing basis (e.g.,* FSAR, supporting analyses) have been considered and provide sufficient margin to account for analysis and data uncertainty.

Conclusions

Fire Area ID:	EDG1A - Diesel Generator Unit 1A (including EDG Vault 1A), Elevation 253' 6"	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

VFDR ID VFDR-EDG1A-001

VFDR

Fire damage to instrument air piping can challenge reliance on instrument/service air whether being aligned from the normal air compressors or from the diesel air compressor or a deterministic assumption of a loss of offsite power to BUS13 and BUS15 results in the loss of the normal Service Air and Instrument Air compressors.
Local manual alignment of Diesel Air Compressor (CSA05) to the Service Air and Instrument Air Systems is taken to manipulate air operated SSD components (i.e., 112B, 112C, PCH01B, 624, and 626). However, this action may not be successful due to the integrity of instrument air piping.
This VFDR is associated with the Vital Auxiliaries Function. [OE004, PH003]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA issue.

Component(s)

CVC - 112B - RWST TO CHARGING PUMP SUCTION {Loss of IA}
CVC - 112C - VCT OUTLET AOV {Cascading Impact, Loss of IA}
LAC - BUS13 - 480V SWITCHGEAR {Cascading Impact}
LAC - BUS15 - 480V SWITCHGEAR {Cascading Impact}
PSA - 7000A - IA/SA CROSS-CONNECT {Requires Operator Action}
PSA - 7002D - DIESEL AIR COMPRESSOR SUPPLY ISOLATION VALVE {Requires Operator Action}
PSA - 7195A - BU AIR COMP DISCHARGE INNER ISOL VAL TO SERV AIR HEADER {Requires Operator Action}
PSA - 7203 - SERV AIR ISOL VALVE TO THE TURBINE BUILDING FROM YARD {Requires Operator Action}
PSA - CSA05 - DIESEL AIR COMPRESS (OUTSIDE UNIT) FOR BU SERV AIR/INSTR AIR {Requires Operator Action}
RHR - 624 - RHR HX OUTLET 1B {Loss of IA}
RHR - 626 - RHR HX OUTLET 1B {Loss of IA}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-EDG1A-007

VFDR

During postulated fire in this area, power to MCCJ can be lost due to lack of breaker coordination. None of the load feeder breakers from MCCJ are coordinated with the upstream incoming breaker. As a consequence, a fault on associated cable C1960 can result in loss of MCCJ. Loss of MCCJ affects credited "B" Diesel room cooling (ADF02A / ADF02B), DG Fuel Oil Transfer Pump (PDG02B) and DG Fuel Oil Day Tank level transmitter (LIT-2051A). This cascading impact affects credited KDG01B operation.
This VFDR is associated with the Vital Auxiliaries Function. [OP014]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

DBV - ADF02A - EDG B ROOM COOLING FAN {Cascading Impact}
DBV - ADF02B - EDG B ROOM COOLING FAN {Cascading Impact}

Fire Area ID:	EDG1A - Diesel Generator Unit 1A (including EDG Vault 1A), Elevation 253' 6"	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

DGS - LIT-2051A - B D/G FUEL OIL DAY TANK (ALARM & CONTROL) {Cascading Impact}
DGS - PDG02B - DG FO TRANSFER PUMP B {Cascading Impact}
EAC - KDG01B - DIESEL-GENERATOR B {Cascading Impact}
LAC - ACPDPDG02 - DIESEL GENERATOR B HEAT TRACE PANEL {Cascading Impact}
LAC - MCCJ - MOTOR CONTROL CENTER J {C1960(P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID

VFDR-EDG1A-009

VFDR

A MSO concern exists related to spurious (ESF) Safety Injection Actuation due to a cascading loss of Train "A" DC power when Battery "A" is depleted. Actuation is possible due to:
(a) Low PZR pressure signal with two out of three PZR pressure transmitter loops (PT-429 and PT-430) impacted; - OR -
(b) Low PZR *pressure signal* (*as above*) AND *either a low SG "B" pressure signal* (*from two out of three SG "B" pressure transmitter loops* PI-479 and PT-483) OR a low SG "A" pressure signal (from two out of three SG "A" pressure transmitter loops PT-468 and PI-469).
This VFDR is associated with the Inventory and Pressure Control Functions. [OP005, OP006]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

MSS - PI-469 - S/G "A" PRESSURE (MCB){Cascading Impact}
MSS - PI-479 - S/G "B" PRESSURE (MCB) {Cascading Impact}
MSS - PT-468 - STM GEN "A" PRESS XMTR {Cascading Impact}
MSS - PT-483 - S/G "B" STM PRESS XMTR {Cascading Impact}
RPS - PT-429 - PRZR PRESS XMTR {Cascading Impact}
RPS - PT-430 - PRZR PRESS XMTR {Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID

VFDR-EDG1A-010

VFDR

VCT Outlet AOV (112C) fails in the undesired (OPEN) position due to a cascading loss of DC power from Train "A" when Battery "A" is depleted. AOV failing open results in VCT inventory loss and damage to credited charging pumps due to loss of suction source.
This VFDR is associated with the Reactivity Control, and Inventory and Pressure Control Functions. [OMH403]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

Fire Area ID:	EDG1A - Diesel Generator Unit 1A (including EDG Vault 1A), Elevation 253' 6"	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

CVC - 112C - VCT OUTLET AOV {Cascading Impact}
CVC - 261 - VCT H2 INLT MANUAL BLK VLV {Requires Operator Action}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDMAKEUP, consisting of locally aligning and starting the new charging system was credited to help resolve this VFDR. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

Fire Area ID: EDG1B - Diesel Generator Unit 1B (including EDG Vault 1B), Elevation 253' 6" **Fire Area Definition**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description
EDG1B	253'-6", Diesel Generator Unit 1B (including EDG Vault 1B)

Fire Area ID: EDG1B - Diesel Generator Unit 1B (including EDG Vault 1B), Elevation 253' 6" **Performance Goals**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Performance Goal	Method of Accomplishment	Comments
1. Reactivity Control Function	Immediate reactor shutdown is achieved by de-energizing all CRDMs which results in control rod negative ractivity insertion into the reactor core.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
2. Inventory Control Function	• RCS inventory depletion control is maintained by closure of all letdown paths, all sample paths, all head vent paths, and both PORVs. • RCS inventory makeup is controlled by either one of the following: o Train "A" CVCS success path from the RWST to the RCS o Train "A" SIS success path from the RWST to the RCS and the PORV associated with the "A" nitrogen surge tank.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
3. Pressure Control Function	• RCS high pressure control is maintained by automatic mechanical operation of all PRZR Code Safety Valves, stopping of both RCPs, and securing all PRZR heaters. • RCS lowering pressure control is maintained by closure of both PRZR PORVs, closure of both PRZR Normal Spray valves or stopping the associated RCP(s), and closure of both SG ARVs.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
4. Decay Heat Removal Function	• RCS high temperature control is maintained by automatic mechanical operation of all SG Code Safety Valves. • RCS lowering temperature control is maintained by closure of both MSIVs, closure of both SG ARVs, stopping both MFW Pumps, stopping AFW System flow to the non-credited SG, and controlling flow to the credited SG. • SG makeup control is maintained by either one of the following to SG "A": o TDAFW Pump success path from the SG "A" MSS and pump suction from the CST or SWS o SAFW Pump "C" success path from the SWS or FPS	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
5. Process Monitoring Function	RCS Temperature:TI-409A-1 (RCS LOOP A HL INDICATION) Location: MCB, and TI-409B-1 (RCS LOOP A CL INDICATION) Location: MCB RCS Pressure:PI-420-2 (RCS HL PRESSURE (0-3000 PSIG)) Location: MCB, and PI-420B (RCS PRESSURE (0-3000 PSIG)) Location: ABELIP	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"

Fire Area ID: EDG1B - Diesel Generator Unit 1B (including EDG Vault 1B), Elevation 253' 6" **Performance Goals**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Performance Goal	Method of Accomplishment	Comments
	Pressurizer Level:LI-426 (PRZR LEVEL) Location: MCB, LI-428A (PRZR LEVEL (WR)) Location: ABELIP, and LI-433A (PRZR LEVEL) Location: MCB Steam Generator Level:LI-461 (S/G "A" LEVEL (NR)) Location: MCB, LI-504 (S/G "A" LEVEL [0-520" H2O (WR)) Location: MCB, and LI-506A (S/G "B" WIDE RANGE LEVEL) Location: IBELIP Steam Generator Pressure:PI-469 (S/G "A" PRESSURE) Location: MCB, and PI-479 (S/G "B" PRESSURE) Location: MCB Neutron Flux Monitoring:NI-31B (NIS SOURCE RANGE INDICATION) Location: MCB Tank Level:LI-2022A (CDST "A" LEVEL) Location: MCB, and LI-921 (RWST LEVEL) Location: MCB System Flow Rate:FI-2031 (TDAFW PUMP DISCH FLOW) Location: MCB, FI-4084A (SAFW PUMP "C" <PSF01A> DISCH FLOW) Location: SAF, FI-4084B (SAFW PUMP "C" <PSF01A> DISCH FLOW) Location: MCB DG Cooling:PI-2103 ("A" DIESEL GEN HX CLNG WTR HDR PRESS IND) Location: EDG1A	
6. Vital Auxiliaries	• DC Power and instrument power availability is maintained by train “A” of the BDC/IAC System from Battery “A” or the TSC Battery System. • AC Power availability is maintained by train “A” Diesel-Generator and train “A” DBV/DGS support components. • Diesel-Generator engine cooling is maintained by the train ”A” SWS success path or alignment of alternate cooling from the FPS to the “A” Diesel. • Except for a Control Room fire, train “A” CREATS is maintained for controlling the Control Room environmental conditions within the required specifications for habitability and design limits for equipment operability. Ventilation systems for the SAFW components in the SAFW Building, the DG components in the Diesel Building, and the TSC components in the Technical Support Center are maintained for equipment design limits.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"

References	Document ID
	EIR 51-9089546-001 Rev. 001 - R. E. Ginna Nuclear Power Station, Nuclear Safety Capability Assessment

Fire Suppression Activities Effect on Nuclear Safety Performance Criteria

Scenario 1: Suppression Effects in EDG1B of a Fire Originating In EDG1B:

Activation of preaction sprinkler system S13, or manual firefighting activities are not expected to extend beyond the area of fire origin.Preaction sprinkler systems require both, the fusing of a sprinkler head and the opening of the preaction valve as a result of actuation of a heat or smoke detector or manual pull box.The activation of a preaction sprinkler system would only be expected to activate small number of sprinklers.

Scenario 2: Suppression Effects in EDG1B of a Fire Originating Outside of EDG1B:

Actuation device S13M could be wetted by firefighting activities outside EDG1B which could cause the switch to short out, however, since preaction sprinkler systems require both, the fusing of a sprinkler head and the opening of the preaction valve as a result of actuation of a heat or smoke detector or manual pull box, operation of a fire suppression system outside of EDG1B could not impact preaction fire suppression systems within EDG1B.Similarly, manual firefighting activities outside of EDG1B would not be expected to affect equipment/components located within EDG1B.

Watertight manhole covers at the manholes between the diesel generator rooms and the vault below have been provided.Drain sump pumps have been provided along with backflow prevention capability.

NFPA 805 Ch 4 Compliance (NEI 04-02 Table B-3)

Fire Area ID: EDG1B - Diesel Generator Unit 1B (including EDG Vault 1B), Elevation 253' 6" **Fire Risk Evaluation**

Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
(All)	Area Wide	None	None	R, S	Modifications: R S Procedures/Recovery Actions: R
EDG1B	253'-6", Diesel Generator Unit 1B (including EDG Vault 1B)	R	E, R	E	3hr rated barrier: E Combustible Loading Controls: E Detection System, Heat Detectors for S13: E R Detection System, Z21: E R Full height sheet metal enclosure: E Water Suppression, S13: R

Title

Fire Risk Evaluation for Fire Area EDG1B

Risk Summary

The delta CDF and delta LERF results for the fire area are summarized below. At the fire area level, the increase in risk is less than 1E-06/rx-yr for the delta CDF, and less than 1E-07/rx-yr for the delta LERF.

All CCDPs and CLERPs are less than 1, ensuring that low CDF and LERF values are not reached solely because of a low fire scenario frequency.

Δ CDF

Redacted

Δ LERF

DID Maintained

A qualitative evaluation of defense-in-depth (DID) using insights gained from the Fire PRA was performed for the fire area.

S13, the fire detection (heat) and suppression system (automatic pre-action) installed in the fire area is credited in the Fire PRA, along with manual suppression, in response to fire scenarios that can be sufficiently severe as to include a structural steel fire scenario. Existing administrative control are determined adequate given the nature of combustibles in the area and the quantified scenarios captured in the Fire PRA results. Given the relatively low values of CCDP and CLERPs in the fire area, no DID actions are required. In addition, no modifications are required for DID in the fire area.

With the DID requirements above, the evaluation finds that an adequate balance between the DID echelons is maintained.

Safety Margin Maintained

The safety margin for the analyses supporting the fire risk evaluation of the fire area was evaluated and accounted for potential impacts from fire modeling and the plant system performance, including the PRA logic model. All analyses and assessment have been performed utilizing accepted techniques and industry accepted standards. In addition, safety analysis acceptance criteria in the licensing basis (e.g., FSAR, supporting analyses) have been considered and provide sufficient margin to account for analysis and data uncertainty.

Conclusions

Fire Area ID:	EDG1B - Diesel Generator Unit 1B (including EDG Vault 1B), Elevation 253' 6"	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

VFDR ID VFDR-EDG1B-002

VFDR

During postulated fire in this area, power to MCCH can be lost due to lack of breaker coordination. None of the load feeder breakers from MCCH are coordinated with the upstream incoming breaker. As a consequence, a fault on associated cables (C1910 or C1950) can result in loss of MCCH. Loss of MCCH affects credited Diesel "A" room cooling (ADF01A / ADF01B), DG Fuel Oil Transfer Pump (PDG02A) and DG Fuel Oil Day Tank level transmitter (LIT-2050A). This cascading impact affects credited KDG01A operation.
This VFDR is associated with the Vital Auxiliaries Function. [OP014]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

DBV - ADF01A - EDG A ROOM COOLING FAN {Cascading Impact}:
DBV - ADF01B - EDG A ROOM COOLING FAN {Cascading Impact}
DGS - LIT-2050A - A D/G FUEL OIL DAY TANK (ALARM & CONTROL) {Cascading Impact}
DGS - PDG02A - DG FO TRANSFER PUMP A {Cascading Impact}
EAC - KDG01A - DIESEL-GENERATOR A {E0018(P), L0365(L), L0475(L), and Cascading Impact}
LAC - ACPDPDG01 - DIESEL GENERATOR A HEAT TRACE PANEL {Cascading Impact}
LAC - MCCH - MOTOR CONTROL CENTER H {C1910(P), C1950(P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-EDG1B-003

VFDR

A MSO concern exists related to BUS14 power supply. With offsite power available, spurious closure of breaker 52/EG1A2 (cable L0510) can take place with KDG01A idle causing the reverse power relay trip signal to 52/EG1A2 (BUS18) and 52/EG1A1 (BUS14). A simultaneous spurious trip of BUS14 offsite infeed breaker 52/14 (cable L0472) results in a loss of both power sources to BUS14.
With offsite power not available, a spurious trip of breaker 52/EG1A2 (cable L0510) de-energizes BUS18. This results in a loss of KDG01A cooling water which, in turn, results in the loss of EAC power to BUS14.
This VFDR is associated with the Vital Auxiliaries Function. [OP017, OP602]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

EAC - 52/EG1A1 - EDG A SUPPLY TO BUS 14 {Cascading Impact}
EAC - 52/EG1A2 - EDG A SUPPLY TO BUS 18 {L0510(LOCI)}
EAC - KDG01A - DIESEL-GENERATOR A: {E0018(P), L0365(L), L0475(L), and Cascading Impact}
LAC - 52/14 - SPT SUPPLY BREAKER TO BUS 14 {L0472(LO)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action DGHFDMNL-LD-STRT, consisting of locally starting the Diesel Generators per ER-D/G.1 Step 6.1, was credited

Fire Area ID:	EDG1B - Diesel Generator Unit 1B (including EDG Vault 1B), Elevation 253' 6"	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

to help resolve this VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-EDG1B-004

VFDR

A MSO concern exists related to flow diversion of the service water system. MOV-4780 is postulated to fail As-Is (Open) upon the loss of Train "B" AC electrical system; additionally, fire damage to cable C1956 would spuriously open in-series MOV-4609. This diverts Service Water flow from credited heat loads. Simultaneous cable damage (cable L0483 for PSW01A or cable L0487 for PSW01C) can cause a spurious trip of at least one credited Service Water pump reducing overall Service Water flow. With both valves open and at least one credited Service Water pump impacted, the resulting flow diversion reduces total Service Water flow to credited essential heat loads.
This VFDR is associated with the Vital Auxiliaries Function. [OP017, OMH741]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

SWS - 4609 - SCREEN HOUSE SW MOV {C1955(LI), C1956(LOC)}
SWS - 4780 - SCREEN HOUSE SW MOV {C5077(L), C2005(LI), C2006(LOC), C2004(P), E0091(P)}
SWS - PSW01A - SERVICE WATER PUMP A {L0483(LOCI), L0484(L)}
SWS - PSW01C - SERVICE WATER PUMP C {L0484(L), L0487(LOCI)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-EDG1B-005

VFDR

MOV-4613 fails As-Is (Open) upon loss of the Train "B" electrical system and in-series MOV-4670 located in the affected fire area fails As-Is (Open). Simultaneous cable damage (cable L0483 for PSW01A, or cable L0487 for PSW01C) can cause a spurious trip of at least one credited Service Water pump. Turbine Generator Area isolation is required with less than two Service Water pumps running. With both valves open and at least one credited Service Water pump impacted, the resulting flow diversion reduces total Service Water flow to credited essential heat loads to less than required.
This VFDR is associated with the Vital Auxiliaries Function. [OP017, OMH742]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

SWS - 4613 - TGA ISOLATION MOV {Cascading Impact}
SWS - 4670 - TGA ISOLATION MOV {C1951(LI), C1950(P)}
SWS - PSW01A - SERVICE WATER PUMP A {L0483(LOCI), L0484(L)}
SWS - PSW01C - SERVICE WATER PUMP C {L0484(L), L0487(LOCI)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was

Fire Area ID:	EDG1B - Diesel Generator Unit 1B (including EDG Vault 1B), Elevation 253' 6"	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-EDG1B-010

VFDR

The RWST is the credited source for Charging Pump suction. A loss of Train "B" 125V DC power or a loss of instrument air to AOV-112B *causes the valve to fail closed isolating Charging Pump suction from the RWST resulting in pump damage.*
This VFDR is associated with the Reactivity Control Function, and Inventory and Pressure Control Functions. [OMH002]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

CVC - 112B - RWST TO CHARGING PUMP SUCTION {Cascading Impact}
CVC - 358 - CHARGING PUMP SUCTION FROM RWST MANUAL IV {Requires Operation}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDMAKEUP, consisting of locally aligning and starting the new charging system was credited to help resolve this VFDR. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

VFDR ID VFDR-EDG1B-012

VFDR

A MSO concern exists related to BUS18 power supply. Spurious opening of breakers 52/EG1A2 (cable L0510) and 52/18 (cable L0505, if offsite power is available) results in a loss of power to credited BUS18. The loss of power to BUS18 impacts KDG01A cooling capability from SW pumps PSW01A and PSW01C.
Local action is taken to align alternate cooling to KDG01A, strip the loads off BUS18, start KDG01A, and then load BUS18.
This VFDR is associated with the Vital Auxiliaries Function. [OP017, PH601, PH602, PH603, PH604, PH605]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

EAC - 52/EG1A2 - EDG A SUPPLY TO BUS 18 {L0510(LOCI)}
EAC - KDG01A - DIESEL-GENERATOR A {E0018(P), L0365(L), L0475(L), Requires Operator Action}
FPS - 8588A - A D/G EMERGENCY COOLING FEED {Requires Operator Action}
LAC - 52/18 - SPT SUPPLY BREAKER TO BUS 18 {L0505(LOCI)}
LAC - 52/BT17-18 - BREAKER FOR BUS 17 TO BUS 18 TIE {L0429(LC), L0469(LOCI)}
LAC - 52/IH1A - BREAKER FOR EHTRCW01A (CIRCULATING WATER INTAKE HEATER A) {Cascading Impact}
LAC - 52/IH1C - BREAKER FOR EHTRCW01C (CIRCULATING WATER INTAKE HEATER C) {Cascading Impact}
LAC - 52/MCC1G1 - MOTOR CONTROL CENTER G SUPPLY G1 {L0499(LOCI)}
LAC - BUS18 - 480V SWITCHGEAR {L0429(LC), L0472(LC), L0504(LO), L0469(LOCI), L0505(LOCI), L0510(LOCI), Requires Operator Action}

Fire Area ID:	EDG1B - Diesel Generator Unit 1B (including EDG Vault 1B), Elevation 253' 6"	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

SWS - 4667 - SW INLE BLOCK VLV TO D/G A HXS {Requires Operator Action}
SWS - 4667F - HOSE CONNECTION ISOL VLV TO D/G A HXS {Requires Operator Action}
SWS - PSW01A - SERVICE WATER PUMP A {L0484(L), L0483(LOCI)}
SWS - PSW01C - SERVICE WATER PUMP C {L0484(L), L0487(LOCI)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action DGHFDMNL-LD-STRT, consisting of locally starting the Diesel Generators per ER-D/G.1 Step 6.1, was credited to help resolve this VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID

VFDR-EDG1B-014

VFDR

Loss of control of DG "A" Fuel Oil Day Tank SOV(s) and DG "A" Fuel Oil Transfer Pump are postulated due to impacted common power supply cables (L0365 and L0475) routed in this fire area. As a consequence, long-term fuel supply to KDG01A is not available challenging availability of the credited DG.
This VFDR is associated with the Vital Auxiliaries Function. [OP016]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

DGS - 5907 - DG A FUEL OIL DAY TANK SOV {L0365(L), L0475(L)}
DGS - 5907A - FOTP A RECIRC SOV {L0365(L), L0475(L)}
DGS - PDG02A - DG FO TRANSFER PUMP A {Cascading Impact}

Disposition

Modification ESR-12-0412, which protects Cable L0365 from fire damages, is credited to deterministically resolve this VFDR.

VFDR ID

VFDR-EDG1B-015

VFDR

Fire damage to instrument air piping can challenge reliance on instrument/service air whether being aligned from the normal air compressors or from the diesel air compressor or a deterministic assumption of a loss of offsite power to BUS13 and BUS15 results in the loss of the normal Service Air and Instrument Air compressors.
Local manual alignment of Diesel Air Compressor (CSA05) to the Service Air and Instrument Air Systems is taken to manipulate air operated SSD components (i.e., 112B, 112C, PCH01A, 625, and 626). However, this action may not be successful due to the integrity of instrument air piping.
This VFDR is associated with the Vital Auxiliaries Function. [OE004, PH003]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA issue.

Component(s)

CVC - 112B - RWST TO CHARGING PUMP SUCTION {Loss of IA}
CVC - 112C - VCT OUTLET AOV{Loss of IA}
CVC - PCH01A - CHRG PUMP A (Loss of IA)
LAC - BUS13 - 480V SWITCHGEAR {Cascading Impact}

Fire Area ID:	EDG1B - Diesel Generator Unit 1B (including EDG Vault 1B), Elevation 253' 6"	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

LAC - BUS15 - 480V SWITCHGEAR {Cascading Impact}
PSA - 7000A - IA/SA CROSS-CONNECT {Requires Operator Action}
PSA - 7002D - DIESEL AIR COMPRESSOR SUPPLY ISOLATION VALVE {Requires Operator Action}
PSA - 7195A - BU AIR COMP DISCHARGE INNER ISOL VAL TO SERV AIR HEADER {Requires Operator Action}
PSA - 7203 - SERV AIR ISOL VALVE TO THE TURBINE BUILDING FROM YARD {Requires Operator Action}
PSA - CSA05 - DIESEL AIR COMPRESS (OUTSIDE UNIT) FOR BU SERV AIR/INSTR AIR {Requires Operator Action}
RHR - 625 - RHR HX OUTLET 1A {Cascading Impact, Loss of IA}
RHR - 626 - RHR HX BYPASS {Cascading Impact, Loss of IA}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

Fire Area ID: INTAKE - Intake Structure, Tunnel, Disch Canal, Screen House forebay **Fire Area Definition**
Compliance Basis: Not Applicable

Fire Zone ID	Description
INTAKE	228'-0", Intake Structure and Intake Tunnel

Fire Area ID:	INTAKE - Intake Structure, Tunnel, Disch Canal, Screen House forebay	**Performance Goals**
Compliance Basis:	Not Applicable	

Performance Goal	Method of Accomplishment	Comments
Not Applicable		

Fire Suppression Activities Effect on Nuclear Safety Performance Criteria

Not Applicable

Fire Area ID: INTAKE - Intake Structure, Tunnel, Disch Canal, Screen House forebay
Compliance Basis: Not Applicable

Fire Zone ID	Description	Required *Suppression* System	Required *Detection* System	Required Fire *Protection* Feature	Required Fire Protection Feature and System Details
INTAKE	228'-0", Intake Structure and Intake Tunnel	None	None	None	None

Fire Area ID:	OFFSITE - RG&E Cntrld Area South of Lake Rd other than Control House	**Fire Area Definition**
Compliance Basis:	Not Applicable	

Fire Zone ID	**Description**
OFFSITE	RG&E Controlled Area South of Lake Road Station 13A Outside Area

Fire Area ID: OFFSITE - RG&E Cntrld Area South of Lake Rd other than Control House **Performance Goals**
Compliance Basis: Not Applicable

Performance Goal	Method of Accomplishment	Comments
Not Applicable		

Fire Suppression Activities Effect on Nuclear Safety Performance Criteria

Not Applicable

Fire Area ID: OFFSITE - RG&E Cntrld Area South of Lake Rd other than Control House
Compliance Basis: Not Applicable

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
OFFSITE	RG&E Controlled Area South of Lake Road Station 13A Outside Area	None	None	None	None

Fire Area ID: ONSITE - Site Area North of Lake Road outside of the Protected Area **Fire Area Definition**
Compliance Basis: Not Applicable

Fire Zone ID	Description
ONSITE	Owner Controlled Area North of Lake Road outside the Protected Area

Fire Area ID:	ONSITE - Site Area North of Lake Road outside of the Protected Area	**Performance Goals**
Compliance Basis:	Not Applicable	

Performance Goal	Method of Accomplishment	Comments
Not Applicable		

Fire Suppression Activities Effect on Nuclear Safety Performance Criteria

Not Applicable

NFPA 805 Ch 4 Compliance (NEI 04-02 Table B-3)

Fire Area ID: ONSITE - Site Area North of Lake Road outside of the Protected Area
Compliance Basis: Not Applicable

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
ONSITE	Owner Controlled Area North of Lake Road outside the Protected Area	None	None	None	None

Fire Area ID:	PA - Protected Area	**Fire Area Definition**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

Fire Zone ID	**Description**
PA-NE	271'-0" Protected Area NE Quadrant
PA-NW	271'-0" Protected Area NW Quadrant
PA-SE	271'-0" Protected Area SE Quadrant
PA-SW	271'-0" Protected Area SW Quadrant

Fire Area ID: PA - Protected Area **Performance Goals**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Performance Goal	Method of Accomplishment	Comments
1. Reactivity Control Function	Immediate reactor shutdown is achieved by de-energizing all CRDMs which results in control rod negative ractivity insertion into the reactor core.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
2. Inventory Control Function	• RCS inventory depletion control is maintained by closure of all letdown paths, all sample paths, all head vent paths, and both PORVs. • RCS inventory makeup is controlled by either one of the following: o Train "A" CVCS success path from the RWST to the RCS o Train "A" SIS success path from the RWST to the RCS and the PORV associated with the "A" nitrogen surge tank.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
3. Pressure Control Function	• RCS high pressure control is maintained by automatic mechanical operation of all PRZR Code Safety Valves, stopping of both RCPs, and securing all PRZR heaters. • RCS lowering pressure control is maintained by closure of both PRZR PORVs, closure of both PRZR Normal Spray valves or stopping the associated RCP(s), and closure of both SG ARVs.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
4. Decay Heat Removal Function	• RCS high temperature control is maintained by automatic mechanical operation of all SG Code Safety Valves. • RCS lowering temperature control is maintained by closure of both MSIVs, closure of both SG ARVs, stopping both MFW Pumps, stopping AFW System flow to the non-credited SG, and controlling flow to the credited SG. • SG makeup control is maintained by either one of the following to SG "A": o TDAFW Pump success path from the SG "A" MSS and pump suction from the CST or SWS o SAFW Pump "C" success path from the SWS or FPS	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
5. Process Monitoring Function	RCS Temperature:TI-409A-1 (RCS LOOP A HL INDICATION) Location: MCB, and TI-409B-1 (RCS LOOP A CL INDICATION) Location: MCB RCS Pressure:PI-420-2 (RCS HL PRESSURE (0-3000 PSIG))	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"

Fire Area ID: PA - Protected Area **Performance Goals**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Performance Goal	Method of Accomplishment	Comments
	Location: MCB, and PI-420B (RCS PRESSURE (0-3000 PSIG)) Location: ABELIP Pressurizer Level:LI-426 (PRZR LEVEL) Location: MCB, LI-428A (PRZR LEVEL (WR)) Location: ABELIP, and LI-433A (PRZR LEVEL) Location: MCB Steam Generator Level:LI-461 (S/G "A" LEVEL (NR)) Location: MCB, LI-504 (S/G "A" LEVEL [0-520" H2O (WR)) Location: MCB, and LI-506A (S/G "B" WIDE RANGE LEVEL) Location: IBELIP Steam Generator Pressure:PI-469 (S/G "A" PRESSURE) Location: MCB, and PI-479 (S/G "B" PRESSURE) Location: MCB Neutron Flux Monitoring:NI-31B (NIS SOURCE RANGE INDICATION) Location: MCB Tank Level:LI-2022A (CDST "A" LEVEL) Location: MCB, and LI-921 (RWST LEVEL) Location: MCB System Flow Rate:FI-2031 (TDAFW PUMP DISCH FLOW) Location: MCB, FI-4084A (SAFW PUMP "C" <PSF01A> DISCH FLOW) Location: SAF, FI-4084B (SAFW PUMP "C" <PSF01A> DISCH FLOW) Location: MCB DG Cooling:PI-2103 ("A" DIESEL GEN HX CLNG WTR HDR PRESS IND) Location: EDG1A	
6. Vital Auxiliaries	• DC Power and instrument power availability is maintained by train "A" of the BDC/IAC System from Battery "A" or the TSC Battery System. • AC Power availability is maintained by train "A" Diesel-Generator and train "A" DBV/DGS support components. • Diesel-Generator engine cooling is maintained by the train "A" SWS success path or alignment of alternate cooling from the FPS to the "A" Diesel. • Except for a Control Room fire, train "A" CREATS is maintained for controlling the Control Room environmental conditions within the required specifications for habitability and design limits for equipment operability. Ventilation systems for the SAFW components in the SAFW Building, the DG components in the Diesel Building, and the TSC components in the Technical Support Center are maintained for equipment design limits.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"

Fire Area ID:	PA - Protected Area	**Performance Goals**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

References	**Document ID**
	EIR 51-9089546-001 Rev. 001 - R. E. Ginna Nuclear Power Station, Nuclear Safety Capability Assessment

Fire Suppression Activities Effect on Nuclear Safety Performance Criteria

Not Applicable. This Fire Area is only considered in view of the Fire PRA.

Fire Area ID: PA - Protected Area **Fire Risk Evaluation**

Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
(All)	Area Wide	None	None	R	Modifications: R *Procedures/Recovery Actions: R*
PA-NE	271'-0" Protected Area NE Quadrant	None	None	rr	Floor drains plugged: rr Procedural Controls Regarding Securing Ventilation: rr
PA-NW	271'-0" Protected Area NW Quadrant	None	None	None	None
PA-SE	271'-0" Protected Area SE Quadrant	None	None	None	None
PA-SW	271'-0" Protected Area SW Quadrant	None	None	rr	Floor drains plugged: rr

Title Fire Risk Evaluation for Fire Area PA

Risk Summary The delta CDF and delta LERF results for the fire area are summarized below. At the fire area level, the increase in risk is less than 1E-06/rx-yr for the delta CDF, and less than 1E-07/rx-yr for the delta LERF.

All CCDPs and CLERPs are less than 1, ensuring that low CDF and LERF values are not reached solely because of a low fire scenario frequency.

Δ CDF

Δ LERF

Redacted

DID Maintained A qualitative evaluation of defense-in-depth (DID) using insights gained from the Fire PRA was performed for the fire area.

The Fire PRA credits manual suppression in Fire Zone PA-NE, in response to transient fires. Given the relatively insignificant ignition frequencies and risk (CDF, LERF) in this fire area, no fire detection or suppression systems are required for DID. Hydrants are available in the fire area for fire brigade use and do not require additional DID enhancement. Existing administrative control are determined adequate given the nature of combustibles in the area and the quantified scenarios captured in the Fire PRA results. Given the relatively low values of CCDP and CLERPs in the fire area, no DID actions are required. In addition, no modifications are required for DID in the fire area.

With the DID requirements above, the evaluation finds that an adequate balance between the DID echelons is maintained.

Safety Margin Maintained The safety margin for the analyses supporting the fire risk evaluation of the fire area was evaluated and accounted for potential impacts from fire modeling and the plant system performance, including the PRA logic model. All analyses and assessment have been performed utilizing accepted techniques and industry accepted standards. In addition, safety analysis acceptance criteria in the licensing basis (e.g., FSAR, supporting analyses) have been considered and provide sufficient margin to account for analysis and data uncertainty.

Conclusions

Fire Area ID: PA - Protected Area **VFDRs**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

VFDR ID VFDR-PA-001

VFDR

A deterministic analysis assumption of a loss of offsite power and fire damage to the diesel air compressor (CSA05) would cause a loss of the Instrument Air and Service Air System. The loss of instrument air would result in the inability to manipulate air operated SSD components from the MCB (i.e., 112B, 112C, 625, 626, and PCH01A).
This VFDR is associated with the Vital Auxiliaries Function. [OP935]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

CVC - 112B - RWST TO CHARGING PUMP SUCTION {Loss of IA}
CVC - 112C - VCT OUTLET AOV {Loss of IA)
CVC - PCH01A - CHRG PUMP A {Loss of IA}
LAC - BUS13 - 480V SWITCHGEAR {Cascading Impact}
LAC - BUS15 - 480V SWITCHGEAR {Cascading Impact}
PSA - CSA05 - DIESEL AIR COMPRESSOR (OUTSIDE UNIT) FOR BU SERV AIR/INSTR AIR {Located in Fire Area}
RHR - 625 - RHR HX A OUTLET {Loss of IA}
RHR - 626 - RHR HX BYPASS {Loss of IA}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-PA-008

VFDR

The RWST is the credited source for Charging Pump suction. A loss of Train "B" 125V DC power or a loss of instrument air to AOV-112B causes the valve to fail closed isolating Charging Pump suction from the RWST resulting in pump damage.
This VFDR is associated with the Reactivity Control Function, and Inventory and Pressure Control Functions. [OMH002]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

CVC - 112B - RWST TO CHARGING PUMP SUCTION {Cascading Impact}
CVC - 358 - CHARGING PUMP SUCTION FROM RWST MANUAL IV {Requires Operator Action}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDMAKEUP, consisting of locally aligning and starting the new charging system was credited to help resolve this VFDR. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

Fire Area ID: RC - Reactor Containment Building **Fire Area Definition**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description
RC-1	235'-8" Basement Floor
RC-2	253'-3" Intermediate Floor
RC-3	274'-6", 278'-4" Operating Floor
T-LOOPA	235'-8", 253'-3", 274'-6", 278'-4" 1A Steam Generator
T-LOOPB	235'-8", 253'-3", 274'-6", 278'-4" 1B Steam Generator
T-PRZR	253'-3", 274'-6" Pressurizer
TREACTOR	205'-10", 210'-0" Reactor

Fire Area ID: RC - Reactor Containment Building **Performance Goals**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Performance Goal	Method of Accomplishment	Comments
1. Reactivity Control Function	Immediate reactor shutdown is achieved by de-energizing all CRDMs which results in control rod negative ractivity insertion into the reactor core.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
2. Inventory Control Function	• RCS inventory depletion control is maintained by closure of all letdown paths, all sample paths, all head vent paths, and both PORVs. • RCS inventory makeup is controlled by either one of the following: o Train "A" CVCS success path from the RWST to the RCS o Train "A" SIS success path from the RWST to the RCS and the PORV associated with the "A" nitrogen surge tank.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
3. Pressure Control Function	• RCS high pressure control is maintained by automatic mechanical operation of all PRZR Code Safety Valves, stopping of both RCPs, and securing all PRZR heaters. • RCS lowering pressure control is maintained by closure of both PRZR PORVs, closure of both PRZR Normal Spray valves or stopping the associated RCP(s), and closure of both SG ARVs.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
4. Decay Heat Removal Function	• RCS high temperature control is maintained by automatic mechanical operation of all SG Code Safety Valves. • RCS lowering temperature control is maintained by closure of both MSIVs, closure of both SG ARVs, stopping both MFW Pumps, stopping AFW System flow to the non-credited SG, and controlling flow to the credited SG. • SG makeup control is maintained by either one of the following to SG "A": o TDAFW Pump success path from the SG "A" MSS and pump suction from the CST or SWS o SAFW Pump "C" success path from the SWS or FPS	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
5. Process Monitoring Function	RCS Temperature:TI-409A-1 (RCS LOOP A HL INDICATION) Location: MCB, and TI-409B-1 (RCS LOOP A CL INDICATION) Location: MCB RCS Pressure:PI-420-2 (RCS HL PRESSURE (0-3000 PSIG))	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"

Fire Area ID: RC - Reactor Containment Building **Performance Goals**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Performance Goal	Method of Accomplishment	Comments
	Location: MCB, and PI-420B (RCS PRESSURE (0-3000 PSIG)) Location: ABELIP Pressurizer Level:LI-426 (PRZR LEVEL) Location: MCB, LI-428A (PRZR LEVEL (WR)) Location: ABELIP, and LI-433A (PRZR LEVEL) Location: MCB Steam Generator Level:LI-461 (S/G "A" LEVEL (NR)) Location: MCB, LI-504 (S/G "A" LEVEL [0-520" H2O (WR)) Location: MCB, and LI-506A (S/G "B" WIDE RANGE LEVEL) Location: IBELIP Steam Generator Pressure:PI-469 (S/G "A" PRESSURE) Location: MCB, and PI-479 (S/G "B" PRESSURE) Location: MCB Neutron Flux Monitoring:NI-31B (NIS SOURCE RANGE INDICATION) Location: MCB Tank Level:LI-2022A (CDST "A" LEVEL) Location: MCB, and LI-921 (RWST LEVEL) Location: MCB System Flow Rate:FI-2031 (TDAFW PUMP DISCH FLOW) Location: MCB, FI-4084A (SAFW PUMP "C" <PSF01A> DISCH FLOW) Location: SAF, FI-4084B (SAFW PUMP "C" <PSF01A> DISCH FLOW) Location: MCB DG Cooling:PI-2103 ("A" DIESEL GEN HX CLNG WTR HDR PRESS IND) Location: EDG1A	
6. Vital Auxiliaries	• DC Power and instrument power availability is maintained by train “A” of the BDC/IAC System from Battery “A” or the TSC Battery System. • AC Power availability is maintained by train “A” Diesel-Generator and train “A” DBV/DGS support components. • Diesel-Generator engine cooling is maintained by the train ”A” SWS success path or alignment of alternate cooling from the FPS to the “A” Diesel. • Except for a Control Room fire, train “A” CREATS is maintained for controlling the Control Room environmental conditions within the required specifications for habitability and design limits for equipment operability. Ventilation systems for the SAFW components in the SAFW Building, the DG components in the Diesel Building, and the TSC components in the Technical Support Center are maintained for equipment design limits.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"

Fire Area ID:	RC - Reactor Containment Building	**Performance Goals**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

References	**Document ID**
	EIR 51-9089546-001 Rev. 001 - R. E. Ginna Nuclear Power Station, Nuclear Safety Capability Assessment

Fire Suppression Activities Effect on Nuclear Safety Performance Criteria

(RC-1)

Scenario 1: Suppression Effects in RC-1 of a Fire Originating In RC-1:

There are no fixed suppression systems in RC-1 and the effects of manual firefighting are not expected to extend beyond the area of fire origin.

Scenario 2: Suppression Effects in RC-1 of a Fire Originating Outside of RC-1:

There are no suppression systems in RC-1 that could be impacted by operation of a fire suppression system or manual firefighting outside of RC-1.

Float valves have been provided in drain boxes to minimize backflow.

(RC-2)

Scenario 1: Suppression Effects in RC-2 of a Fire Originating In RC-2:

There are no fixed suppression systems in RC-2 and the effects of manual firefighting are not expected to extend beyond the area of fire origin.

Scenario 2: Suppression Effects in RC-2 of a Fire Originating Outside of RC-2:

There are no suppression systems in RC-2 that could be impacted by operation of a fire suppression system or manual firefighting outside of RC-2.

The Reactor Coolant Pumps are provided with spillage oil collection systems.

(RC-3)

Scenario 1: Suppression Effects in RC-3 of a Fire Originating In RC-3:

There are no fixed suppression systems in RC-3 and the effects of manual firefighting are not expected to extend beyond the area of fire origin.

Scenario 2: Suppression Effects in RC-3 of a Fire Originating Outside of RC-3:

Fire Area ID:	RC - Reactor Containment Building	**Performance Goals**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

There are no suppression systems in RC-3 that could be impacted by operation of a fire suppression system or manual firefighting outside of RC-3.

Fire Area ID: RC - Reactor Containment Building **Fire Risk Evaluation**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
(All)	Area Wide	None	None	R, S	Modifications: R S Procedures/Recovery Actions: R
RC-1	235'-8" Basement Floor	None	E, D	rr	Detection System, Z08: E D Floor drains/sump: rr *Procedural Controls Regarding Securing Ventilation: rr*
RC-2	253'-3" Intermediate Floor	None	E, D	D, rr	Detection System, Z13: E D Detection System, Z14: E D Detection System, Z15: E D Floor drains/sump: rr Procedural Controls Regarding Securing Ventilation: rr Radiant Energy Shield: D
RC-3	274'-6", 278'-4" Operating Floor	None	E, D	rr	Detection System, Z06: E D Detection System, Z07: E D Detection System, Z09: E D Detection System, Z10: E D Detection System, Z12: E D Detection System, Z13: E D Detection System, Z14: E D Detection System, Z16D1: E D Detection System, Z16D2: E D Floor drains/sump: rr Procedural Controls Regarding Securing Ventilation: rr
T-LOOPA	235'-8", 253'-3", 274'-6", 278'-4" 1A Steam Generator	None	D	None	Detection System, Z54: D
T-LOOPB	235'-8", 253'-3", 274'-6", 278'-4" 1B Steam Generator	None	D	None	Detection System, Z55: D
T-PRZR	253'-3", 274'-6" Pressurizer	None	D	None	Detection System, Z56: D
TREACTOR	205'-10", 210'-0" Reactor	None	None	None	None

Fire Area ID: RC - Reactor Containment Building **Fire Risk Evaluation**

Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Title

Fire Risk Evaluation for Fire Area RC

Risk Summary

The delta CDF and delta LERF results for the fire area are summarized below. At the fire area level, the increase in risk is less than 1E-06/rx-yr for the delta CDF, and less than 1E-07/rx-yr for the delta LERF.

All CCDPs and CLERPs are less than 1, ensuring that low CDF and LERF values are not reached solely because of a low fire scenario frequency.

Δ CDF

Redacted

Δ LERF

DID Maintained

A qualitative evaluation of defense-in-depth (DID) using insights gained from the Fire PRA was performed for the fire area.

The Fire PRA credits manual suppression in Fire Zone RC-2, in response to transient fires. Given the relatively high fire frequency in the fire area, installed fire detection systems are credited for DID. There are no fire suppression systems in the fire area and no enhancements are required for DID. Existing administrative control are determined adequate given the nature of combustibles in the area and the quantified scenarios captured in the Fire PRA results.

With the DID requirements above, the evaluation finds that an adequate balance between the DID echelons is maintained.

Safety Margin Maintained

The safety margin for the analyses supporting the fire risk evaluation of the fire area was evaluated and accounted for potential impacts from fire modeling and the plant system performance, including the PRA logic model. All analyses and assessment have been performed utilizing accepted techniques and industry accepted standards. In addition, safety analysis acceptance criteria in the licensing basis (e.g., FSAR, supporting analyses) have been considered and provide sufficient margin to account for analysis and data uncertainty.

Conclusions

Fire Area ID: RC - Reactor Containment Building **VFDRs**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

VFDR ID VFDR-RC-001

VFDR

A deterministic analysis assumption of a loss of offsite power to BUS13 and BUS15 results in the loss of the Service Air and Instrument Air Systems.
Local manual alignment of Diesel Air Compressor (CSA05) to the Service Air and Instrument Air Systems is required to manipulate air operated SSD components from the MCB (i.e. 4297, 4298, 112B, 112C, PCH01A, 625, and 626).
This VFDR is associated with the Vital Auxiliaries Function. [PH003]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

LAC - BUS13 - 480V SWITCHGEAR {Cascading Impact}
LAC - BUS15 - 480V SWITCHGEAR {Cascading Impact}
PSA - 7000A - IA/SA CROSS-CONNECT {Requires Operator Action}
PSA - 7002D - DIESEL AIR COMPRESSOR SUPPLY ISOLATION VALVE {Requires Operator Action}
PSA - 7195A - BU AIR COMP DISCHARGE INNER ISOL VAL TO SERV AIR HEADER {Requires Operator Action}
PSA - 7203 - SERV AIR ISOL VALVE TO THE TURBINE BUILDING FROM YARD {Requires Operator Action}
PSA - CSA05 - DIESEL AIR COMPRESS (OUTSIDE UNIT) FOR BU SERV AIR/INSTR AIR {Requires Operator Action}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-RC-002

VFDR

An inadvertent RCS pressure decrease and loss of sub-cooling is postulated due to spurious opening of Auxiliary Spray valve 296 (cables R0543, R0544, R0545) when a CHG Pump (PCH01A) is in service and pressurizer heaters (located in the fire area) are unavailable to be energized from the MCB due to fire damaged cables.
Local operator action is taken to:
(a) Close Instrument Air Containment Manual Isolation Valve (V-5397) to isolate Instrument Air to Containment. However, this action may not be successful to prevent spurious operation as the instrument air header is not vented.
(b) De-energize AOV-296 by opening breaker #6 at DCPDPCB04A in the MCR. However, operator action to "de-power" circuits to mitigate spurious operation may not be effective. A short to an energized conductor from another circuit in conjunction with fire damage (grounds) to both circuits can result in a spurious operation defeating de-powering the subject circuit.
This VFDR is associated with the Inventory and Pressure Control Functions. [OE001, OE010, OP017, OP957, PH903, PH908, PH911]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

BDC - DCPDPCB04A - MAIN CONTROL BOARD DC DIST PANEL A {Requires Operator Action}

Fire Area ID:	RC - Reactor Containment Building	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

CVC - 296 - AUX SPRAY AOV {R0546(LI), R0547(LI), R0548(LI), R0544(LO), R0545(LO), R0543(LOI)}
IAS - 5397 - IA CNMT MAN ISOL VLV {Requires Operator Action}
RCS - EHTRRC01A - PRESSURIZER PROPORTIONAL HEATERS {C2205A(P), C2206A(P), C2207A(P), C2208A(P), C2209A(P), C2210A(P), C2211A(P), Cascading Impact}
RCS - EHTRRC01B - PRESSURIZER BACKUP HEATERS {C2223A(P), C2224A(P), C2225A(P), C2226A(P), C2227A(P), C2228A(P), C2229(P)}
RCS - EHTRRC02A - PRESSURIZER PROPORTIONAL HEATERS {C2212A(P), C2213A(P), C2214A(P), C2215A(P), C2216A(P), C2217A(P), Cascading Impact}
RCS - EHTRRC02B - PRESSURIZER BACKUP HEATERS {C2230A(P), C2231A(P), C2232A(P), C2233A(P), C2234A(P), C2235A(P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID

VFDR-RC-003

VFDR

A MSO concern exists related to Normal Letdown failing to isolate. Fire damage to cables for AOV-200A (R0506 or R0515) or AOV-200B (R0512 or R0508) or AOV-202 (R0516 or R0501); and AOV-427 (R0216, R0217, R0218, or R0219) spuriously opens the Normal Letdown line.
Operator action is taken at the MCB to mitigate the spurious actuations by opening breakers at DC power panels and removing fuses. However, operator action to "de-power" circuits to mitigate spurious operation may not be effective. A short to an energized conductor from another circuit in conjunction with fire damage (grounds) to both circuits can result in a spurious operation defeating de-powering the subject circuit.
This VFDR is associated with the Inventory and Pressure Control Functions. [OE010, OP017, OP023, PH901, PH902, PH912, PH913, PH914]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

BDC - DCPDPCB04A - MAIN CONTROL BOARD DC DIST PANEL A {Requires Operator Action}
BDC - DCPDPCB04B - MAIN CONTROL BOARD DC DIST PANEL B {Requires Operator Action}
CVC - 200A - LTDN ORIFICE AOV {R0507(LI), R0507A(LI), R0506(LO), R0515(LOI)}
CVC - 200B - LTDN ORIFICE AOV {R0513(LI), R0513A(LI), R0512(LO), R0508(LOI)}
CVC - 202 - LTDN ORIFICE AOV {R0517(LI), R0518(LI), R0516(LO), R0501(LOI)}
CVC - 427 - RCS LETDOWN ISOLATION {R0216(LCI), R0217(LC), R0218(LI), R0219(LI)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID

VFDR-RC-004

Fire Area ID:	RC - Reactor Containment Building	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

VFDR

A MSO concern exists relating to RCS Inventory Loss. Spurious operation of RCS Head Vent SOVs (590, 591, 592, and 593) is postulated in this fire area due to fire damaged cabling challenging RCS inventory control.
Operator action is taken to de-energize SOVs by opening breakers at DCPDPCB04A and DCPDPCB04B. However, operator action to "de-power" circuits to mitigate spurious operation may not be effective. A short to an energized conductor from another circuit in conjunction with fire damage (grounds) to both circuits can result in a spurious operation defeating de-powering the subject circuit.
This VFDR is associated with the Inventory and Pressure Control Functions. [OE010, OP017, OP022, PH905, PH907]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

BDC - DCPDPCB04A - MAIN CONTROL BOARD DC DIST PANEL A {Requires Operator Action}
BDC - DCPDPCB04B - MAIN CONTROL BOARD DC DIST PANEL B {Requires Operator Action}
RCS - 590 - REACTOR HEAD VENT OUTER (SOV) TO 592 {R3592(LOI), R3592A(LOI), R3593(LOI), R3593A(LOI)}
RCS - 591 - REACTOR HEAD VENT OUTER (SOV) TO 593 {R3598(LOI), R3598A(LOI), R3599(LOI)}
RCS - 592 - REACTOR HEAD VENT INNER (SOV) TO 590 {R3594(LOI), R3594A(LOI), R3595(LOI), R3595A(LOI)}
RCS - 593 - REACTOR HEAD VENT INNER (SOV) TO 591 {R3596(LOI), R3596A(LOI), R3597(LOI)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID

VFDR-RC-005

VFDR

3-Phase proper phase rotation shorts must be considered for high/low pressure interface in-series valves MOV-700, MOV-701, MOV-720, and MOV-721 since power cabling for the valves is routed through this area. Reliance on de-powering to prevent spurious opening requires assurance that no three-phase cabling of the same or higher voltage is routed in the same raceway between the MCC and the valve.
Spurious operation of these valves results in a high/low pressure system interface concern. Additionally; an IN 92-18 concern exists, as identified in DA-EE-2000-066 – Attachment G.
This VFDR is associated with the Inventory and Pressure Control Functions, and Decay Heat Removal Function. [OP017, OP001, OP002, PC953]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

RHR - 700 - RHR PUMP SUCTION FROM RCS MOV {C0723(LOCI), C0721(P)}
RHR - 701 - RHR PUMP SUCTION FROM RCS {C1090(LOCI), C1088(P)}
RHR - 720 - RHR DISCHARGE TO LOOP B {C0716(LI), C0714(P)}
RHR - 721 - RHR DISCHARGE TO LOOP B {C1082(LI), C1080(P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. The delta risk was qualitatively evaluated as insignificant based on the consideration that 3-phase proper polarity hot short are implausible. No recovery action was credited to resolve this VFDR.

VFDR ID VFDR-RC-006

VFDR

A MSO concern exists related to spurious (ESF) Safety Injection Actuation due to fire damage to instrument sensing lines and cables. Actuation is possible due to a low PZR pressure signal with two out of three PZR pressure transmitters loops (PT-429, PT-430 and PT-431) impacted.
This VFDR is associated with the Inventory and Pressure Control Functions. [OP017, OP005]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

RPS - PT-429 - PRZR PRESS XMTR {PT-429-LINE(I), R3407A(I), I/P-431A-LINE(L), I/P-431B-LINE(L), R1091A(LI), R1096A(LI)}
RPS - PT-430 - PRZR PRESS XMTR {PT-430-LINE(I), R3972(I)}
RPS - PT-431 - PRZR PRESS XMTR {PT-431-LINE(I), R0997(I)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-RC-007

VFDR

A MSO concern exists related to inadvertent PORV (430/431C) actuation as follows:
I. PORV opening and spurious operation/failure of block valves
(a) PORVs (430 and 431C) spuriously open (when required closed for HSD) due to fire damaged SOV cables (8616A, 8619A and 8620A for 430; 8616B, 8619B and 8620B for 431C) - AND -
(b) Block valves (515 and 516) fail as-is (open)
II. PORV opening due to high pressure signal
(a) High PZR pressure signals from PT-429 and either channel 2 (PT-430) or channel 3 (PT-431) actuates 430, - OR -
(b) High PZR pressure signals from PT-431 and either channel 1 (PT-429) or channel 4 (PT-449) actuates 431C, - OR -
(c) High PZR pressure signal from at least two out of the three transmitters (PT-450, PT-451 and/or PT-452) actuates BOTH 430 and 431C
Operator action is taken to mitigate spurious actuation by opening breakers at DC power panels in the MCR. However, operator action to "de-power" circuits to mitigate spurious operation may not be effective. A short to an energized conductor from another circuit in conjunction with fire damage (grounds) to both circuits can result in a spurious operation defeating de-powering the subject circuit.
This VFDR is associated with the Inventory and Pressure Control Functions. [OE010, OP007, OP008, OP009, OP011, OP017, PH904, PH906]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

Fire Area ID:	RC - Reactor Containment Building	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

BDC - DCPDPCB04A - MAIN CONTROL BOARD DC DIST PANEL A {Requires Operator Action}
BDC - DCPDPCB04B - MAIN CONTROL BOARD DC DIST PANEL B {Requires Operator Action}
IAS - 8619A - N2 ARMING SOV FOR PORV 430 {SAC0201A(LO), SAC0201B(LO), SAC0201C(LO)}
IAS - 8619B - N2 ARMING SOV FOR PORV 431C {SAC0202A(LO), SAC0202B(LO), SAC0202C(LO)}
IAS - 8620A - PORV 430 ACTUATION SOV {R0276(LO), R0278(LO), SAC0203(LO)}
IAS - 8620B - PORV 431C ACTUATION SOV {R0277(LO), R0279(LO), SAC0204(LO)}
NAS - 8616A - ACCUM TO SURGE TANK SOV FOR PORV 430 {SAC0205A(LO), SAC0205B(LO)}
NAS - 8616B - ACCUM TO SURGE TANK SOV FOR PORV 431C {SAC0206A(LO), SAC0206B(LO)}
RCS - 430 - PORV (AOV) {R0278(LO), SAC0201A(LO), SAC0201B(LO), SAC0201C(LO), SAC0203(LO), R0276(LOI)}
RCS - 431C - PORV (AOV) {R0279(LO), SAC0202A(LO), SAC0202B(LO), SAC0202C(LO), SAC0204(LO), R0277(LOI)}
RCS - 515 - PORV BLOCK VALVE (MOV) FOR 431C {C1057(P), C1057A(P), C1059(LI), C0169A(LI)}
RCS - 516 - PORV BLOCK VALVE (MOV) FOR 430 {C0691(P), C0691A(P), C0693(LI), C0693A(LI)}
RPS - PT-429 - PRZR PRESS XMTR {PT-429-LINE(I), R3407A(I), I/P-431A-LINE(L), I/P-431B-LINE(L), R1091A(LI), R1096A(LI)}
RPS - PT-430 - PRZR PRESS XMTR {PT-430-LINE(I), R3972(I)}
RPS - PT-431 - PRZR PRESS XMTR {PT-431-LINE(I), R0997(I)}
RPS - PT-449 - PRZR PRESS XMTR {PT-449-LINE(I), R1037(I), I/P-431A-LINE(L), I/P-431B-LINE(L), R1091A(LI), R1096A(LI)}
RPS - PT-450 - RC OVERPRESS PROTECTION XMTR {PT-450-LINE(I), SAI0101(I)}
RPS - PT-451 - RC OVERPRESS PROTECTION {PT-451-LINE(I), SAI0102(I)}
RPS - PT-452 - RC OVERPRESS PROTECTION {PT-452-LINE(I), SAI0103(I)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID

VFDR-RC-008

VFDR

A separation concern exists for a postulated fire in this area impacting all four channels of MCB PRZR level instrumentation (LI-426, LI-428, LI-428A, and LI-433A). These components are considered unavailable to support SSD as a result of fire damage to HEMYC wrapped cabling.
This VFDR is associated with the Process Monitoring Function. [OE012, OP952, OP017]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

RCS - LI-426 - PRZR LEVEL (MCB) {LT-426-LINE(I), R3409A(I)}
RCS - LI-428 - PRZR LEVEL CHANNEL 3 (MCB) {LT-428-LINE(I), R1003(I)}
RCS - LI-428A - PRZR LEVEL (ABELIP) {LT-428A-LINE(I), R4085(I)}
RCS - LI-433A - PRZR LEVEL (MCB) {LT-433-LINE(I), R1133(I)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

Fire Area ID:	RC - Reactor Containment Building	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

VFDR ID VFDR-RC-010

VFDR

A separation concern exists for a postulated fire in this area impacting all three channels of MCB RCS pressure instrumentation (PI-420-2, PI-420A, and PI-420B). These components are considered unavailable to support SSD as a result of fire damage to HEMYC wrapped cabling. This VFDR is associated with the Process Monitoring Function. [OE012, OP954, OP017]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

RCS - PI-420-2 - RCS HL PRESSURE (0-3000 PSIG at MCB) {PT-420-LINE(I), R0244(I)}
RCS - PI-420A - RCS PRESSURE (0-3000 PSIG at MCB) {PT-420A-LINE(I), R0877A(I)}
RCS - PI-420B - RCS PRESSURE (0-3000 PSIG at ABELIP) {PT-420B-LINE(I), R4087(I)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-RC-011

VFDR

A separation concern exists for a postulated fire in this area impacting RCP seal cooling as follows:
(a) Fire damage to cables for RCP Seal Outlet Isolation valves AOV-270A (R0526 and R0527) and AOV-270B (R0531 and R0532) results in spurious valve closure AND fire damage to cable for RCP Seal Return Bypass valve AOV-386 (R0573 and R0574) results in spurious opening loss of control of this valve from the MCB.
(b) Fire damage to cables for RCP Thermal Barrier Outlet Isolation valves AOV-754A (R0630 or R0631) and AOV-754B (R0635 or R0636) results in spurious valve closure.
This VFDR is associated with the Inventory and Pressure Control Functions. [OP017, OMH504, OMH505, OMH509, OMH510, OMH511]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

CCW - 754A - CCW FROM RCP A TB AOV {R0631(LC), R0630(LCI), R0632(LI), R0633(LI)}
CCW - 754B - CCW FROM RCP B TB AOV {R0636(LC), R0635(LCI), R0637(LI), R0638(LI)}
CVC - 270A - RCP SEAL OUTLET AOV {R0527(LC), R0526(LCI), R0528(LI), R0529(LI)}
CVC - 270B - RCP SEAL OUTLET AOV {R0532(LC), R0531(LCI), R0533(LI), R0534(LI)}
RCS - 386 - RCP SEAL RETURN BYPASS {R0573(LOI), R0574(LOI)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. Plant Modification ESR-11-0305, which provides the RCP pumps with shutdown seals, was credited to help resolve this VFDR.

VFDR ID VFDR-RC-013

Fire Area ID:	RC - Reactor Containment Building	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

VFDR

A separation concern exists for a postulated fire in this area impacting (a) both SG "A" and "B" level indications, and (b) RCS Loop "A" and "B" (Hot and Cold Leg) temperature indications. The instruments are considered unavailable to support SSD as a result of fire damaged cabling. This VFDR is associated with the Process Monitoring Function. [OP017, OP955]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

MFW - LI-460AA - S/G A LEVEL APPENDIX R (0-520 H2O)(WR at IBELIP) {LT-460A-LINE(I), R4081(I)}
MFW - LI-461 - S/G A LEVEL (NR AT MCB): {LT-461-LINE(I), R0876(I), R3403(I)}
MFW - LI-504 - S/G A LEVEL (WR) (0-520 H2O)(MCB): {LT-504-LINE(I), R4295(I)}
MFW - LI-506A - S/G B WIDE RANGE LEVEL (IBELIP): {LT-506-LINE(I), R4297(I)}
MFW - LI-507 - S/G B LEVEL (WR) (0-520 H2O)(MCB): {LT-507-LINE(I), R4298(I)}
RCS - TI-409A-1 - RCS LOOP A HL INDICATION (MCB): {R0225(I)}
RCS - TI-409A-2 - RCS LOOP A HL INDICATION (IBELIP): {R3557(I)}
RCS - TI-409B-1 - RCS LOOP A CL INDICATION (MCB): {R3993(I)}
RCS - TI-409B-2 - RCS LOOP A CL INDICATION (IBELIP): {R0222(I)}
RCS - TI-410A-1 - RCS LOOP B HL INDICATION (0-700 °F at MCB)): {R0231A(I)}
RCS - TI-410B-1 - RCS LOOP B CL INDICATION (MCB): {R3968(I)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID

VFDR-RC-015

VFDR

A MSO concern exists related to Excess Letdown failing to isolate. Fire damage to cables for AOV-123 (R0078), AOV-310 (R0558 or R0557) and AOV-312 (R0562 or R0563) spuriously opens the Excess Letdown Heat Exchanger line.
Local action is taken to mitigate spurious actuation by opening breakers at DC power panels. However, operator action to "de-power" circuits to mitigate spurious operation may not be effective. A short to an energized conductor from another circuit in conjunction with fire damage (grounds) to both circuits can result in a spurious operation defeating de-powering the subject circuit.
This VFDR is associated with the Inventory and Pressure Control Functions. [OE010, OP017, OMH503]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

CVC - 123 - EXCESS LTDN FCV {R0078(LOC)}
CVC - 310 - EXCESS LTDN AOV {R0559(LI), R0560(LI), R0558(LO), R0557(LOI)}
CVC - 312 - EXCESS LETDOWN HX DIVERT TO VCT OR RCDT AOV-312 {R0564(LI), R0565(LI), R0562(LOI), R0563(LOI)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

Fire Area ID:	RC - Reactor Containment Building	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

VFDR ID VFDR-RC-018

VFDR

A MSO concern exists related to inadvertent RCS pressure decrease and loss of sub-cooling. The scenario is postulated due to the following separation concerns:
(a) Failure of PZR Heaters (EHTRRC01A, EHTRRC02A, EHTRRC01B, and EHTRRC02B), - AND -
(b) Inability to trip RCPs (PRC01A and PRC01B) from the MCB with spurious opening of PZR Spray valves (AOV-431A and AOV-431B)
Local operator action is taken to:
(a) Open the 4KV breakers to stop RCP 'A' (PRC01A) and RCP 'B' (PRC01B) - AND -
(b) Close Instrument Air Containment Manual Isolation Valve (V-5397) to isolate Instrument Air to Containment and prevent spurious PZR spray actuation. However, this action may not be successful to prevent spurious operation as the instrument air header is not vented.
This VFDR is associated with the Inventory and Pressure Control Functions. [OE001, OP017, OP957, PH903, PH909, PH910]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA issue and a separation issue.

Component(s)

IAS - 5397 - IA CNMT MAN ISOL VLV {Requires Operator Action}
RCS - 431A - PZR SPRAY VALVE (AOV) {R1091A(LOC)}
RCS - 431B - PZR SPRAY VALVE (AOV) {R1096A(LOC)}
RCS - EHTRRC01A - PRESSURIZER PROPORTIONAL HEATERS {C2205A(P), C2206A(P), C2207A(P), C2208A(P), C2209A(P), C2210A(P), C2211A(P) and Cascading Impact}
RCS - EHTRRC01B - PRESSURIZER BACKUP HEATERS {C2223A(P), C2224A(P), C2225A(P), C2226A(P), C2227A(P), C2228A(P), C2229(P)}
RCS - EHTRRC02A - PRESSURIZER PROPORTIONAL HEATERS {C2212A(P), C2213A(P), C2214A(P), C2215A(P), C2216A(P), C2217A(P) and Cascading Impact}
RCS - EHTRRC02B - PRESSURIZER BACKUP HEATERS {C2230A(P), C2231A(P), C2232A(P), C2233A(P), C2234A(P), C2235A(P)}
RCS - PRC01A - RCP A {C1282(L), C1283(L), M0046(P)}
RCS - PRC01B - RCP B {C1371(L), C1372(L), M0141(P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No Recovery Action was credited to help resolve this VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

Fire Area ID:	SAF - Standby Auxiliary Feedwater Pump Building, Elevation 271' 0"	**Fire Area Definition**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

Fire Zone ID	Description
SAF	271'-0", Stand-by AFW Building

Fire Area ID: SAF - Standby Auxiliary Feedwater Pump Building, Elevation 271' 0" **Performance Goals**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Performance Goal	Method of Accomplishment	Comments
1. Reactivity Control Function	Immediate reactor shutdown is achieved by de-energizing all CRDMs which results in control rod negative ractivity insertion into the reactor core.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
2. Inventory Control Function	• RCS inventory depletion control is maintained by closure of all letdown paths, all sample paths, all head vent paths, and both PORVs. • RCS inventory makeup is controlled by either one of the following: o Train "A" CVCS success path from the RWST to the RCS o Train "A" SIS success path from the RWST to the RCS and the PORV associated with the "A" nitrogen surge tank.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
3. Pressure Control Function	• RCS high pressure control is maintained by automatic mechanical operation of all PRZR Code Safety Valves, stopping of both RCPs, and securing all PRZR heaters. • RCS lowering pressure control is maintained by closure of both PRZR PORVs, closure of both PRZR Normal Spray valves or stopping the associated RCP(s), and closure of both SG ARVs.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
4. Decay Heat Removal Function	• RCS high temperature control is maintained by automatic mechanical operation of all SG Code Safety Valves. • RCS lowering temperature control is maintained by closure of both MSIVs, closure of both SG ARVs, stopping both MFW Pumps, stopping AFW System flow to the non-credited SG, and controlling flow to the credited SG. • SG makeup control is maintained by either one of the following to SG "A": o TDAFW Pump success path from the SG "A" MSS and pump suction from the CST or SWS o SAFW Pump "C" success path from the SWS or FPS	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
5. Process Monitoring Function	RCS Temperature:TI-409A-1 (RCS LOOP A HL INDICATION) Location: MCB, and TI-409B-1 (RCS LOOP A CL INDICATION) Location: MCB RCS Pressure:PI-420-2 (RCS HL PRESSURE (0-3000 PSIG)) Location: MCB, and PI-420B (RCS PRESSURE (0-3000 PSIG))	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"

Fire Area ID: SAF - Standby Auxiliary Feedwater Pump Building, Elevation 271' 0" **Performance Goals**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Performance Goal	Method of Accomplishment	Comments
	Location: ABELIP Pressurizer Level:LI-426 (PRZR LEVEL) Location: MCB, LI-428A (PRZR LEVEL (WR)) Location: ABELIP, and LI-433A (PRZR LEVEL) Location: MCB Steam Generator Level:LI-461 (S/G "A" LEVEL (NR)) Location: MCB, LI-504 (S/G "A" LEVEL [0-520" H2O (WR)) Location: MCB, and LI-506A (S/G "B" WIDE RANGE LEVEL) Location: IBELIP Steam Generator Pressure:PI-469 (S/G "A" PRESSURE) Location: MCB, and PI-479 (S/G "B" PRESSURE) Location: MCB Neutron Flux Monitoring:NI-31B (NIS SOURCE RANGE INDICATION) Location: MCB Tank Level:LI-2022A (CDST "A" LEVEL) Location: MCB, and LI-921 (RWST LEVEL) Location: MCB System Flow Rate:FI-2031 (TDAFW PUMP DISCH FLOW) Location: MCB, FI-4084A (SAFW PUMP "C" <PSF01A> DISCH FLOW) Location: SAF, FI-4084B (SAFW PUMP "C" <PSF01A> DISCH FLOW) Location: MCB DG Cooling:PI-2103 ("A" DIESEL GEN HX CLNG WTR HDR PRESS IND) Location: EDG1A	
6. Vital Auxiliaries	• DC Power and instrument power availability is maintained by train “A” of the BDC/IAC System from Battery “A” or the TSC Battery System. • AC Power availability is maintained by train “A” Diesel-Generator and train “A” DBV/DGS support components. • Diesel-Generator engine cooling is maintained by the train ”A” SWS success path or alignment of alternate cooling from the FPS to the “A” Diesel. • Except for a Control Room fire, train “A” CREATS is maintained for controlling the Control Room environmental conditions within the required specifications for habitability and design limits for equipment operability. Ventilation systems for the SAFW components in the SAFW Building, the DG components in the Diesel Building, and the TSC components in the Technical Support Center are maintained for equipment design limits.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"

References	Document ID

Fire Suppression Activities Effect on Nuclear Safety Performance Criteria

Scenario 1: Suppression Effects in SAF of a Fire Originating In SAF:

There are no suppression systems in SAF and the effects of manual firefighting are not expected to extend beyond the area of fire origin.

Scenario 2: Suppression Effects in SAF of a Fire Originating Outside of SAF:

There are no suppression systems in SAF that could be impacted by operation of a fire suppression system or manual firefighting activities outside of SAF.

Fire Area ID: SAF - Standby Auxiliary Feedwater Pump Building, Elevation 271' 0" **Fire Risk Evaluation**

Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
(All)	Area Wide	None	None	R	Modifications: R Procedures/Recovery Actions: R
SAF	271'-0", Stand-by AFW Building	None	E, D	None	Detection System, Z25: E D

Title

Fire Risk Evaluation for Fire Area SAF

Risk Summary

The delta CDF and delta LERF results for the fire area are summarized below. At the fire area level, the increase in risk is less than 1E-06/rx-yr for the delta CDF, and less than 1E-07/rx-yr for the delta LERF.

All CCDPs and CLERPs are less than 1, ensuring that low CDF and LERF values are not reached solely because of a low fire scenario frequency.

Δ CDF

Δ LERF

Redacted

DID Maintained

A qualitative evaluation of defense-in-depth (DID) using insights gained from the Fire PRA was performed for the fire area.

Given the absence of automatic fire suppression system in the fire area, it is prudent to credit the installed fire detection system for DID. Existing administrative control are determined adequate given the nature of combustibles in the area and the quantified scenarios captured in the Fire PRA results. Given the relatively low values of CCDP and CLERPs in the fire area, no DID actions are required. In addition, no modifications are required for DID in the fire area.

With the DID requirements above, the evaluation finds that an adequate balance between the DID echelons is maintained.

Safety Margin Maintained

The safety margin for the analyses supporting the fire risk evaluation of the fire area was evaluated and accounted for potential impacts from fire modeling and the plant system performance, including the PRA logic model. All analyses and assessment have been performed utilizing accepted techniques and industry accepted standards. In addition, safety analysis acceptance criteria in the licensing basis (e.g., FSAR, supporting analyses) have been considered and provide sufficient margin to account for analysis and data uncertainty.

Conclusions

Fire Area ID:	SAF - Standby Auxiliary Feedwater Pump Building, Elevation 271' 0"	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

VFDR ID VFDR-SAF-003

VFDR

Fire damage to instrument air piping can challenge reliance on instrument/service air whether being aligned from the normal air compressors or from the diesel air compressor or a deterministic assumption of a loss of offsite power to BUS13 and BUS15 results in the loss of the normal Service Air and Instrument Air compressors.
Local manual alignment of Diesel Air Compressor (CSA05) to the Service Air and Instrument Air Systems is taken to manipulate air operated SSD components (i.e., 4298, 112B, 112C, PCH01A, 625, and 626). However, this action may not be successful due to the integrity of instrument air piping.
This VFDR is associated with the Vital Auxiliaries Function. [OE004, PH003]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA issue.

Component(s)

AFW - 4298 - TDAFWP FCV TO S/G B {Cascading Impact, Loss of IA}
CVC - 112B - RWST TO CHARGING PUMP SUCTION {Cascading Impact, Loss of IA}
CVC - 112C - VCT OUTLET AOV{Loss of IA}
CVC - PCH01A - CHRG PUMP A {Loss of IA}
LAC - BUS13 - 480V SWITCHGEAR {Cascading Impact}
LAC - BUS15 - 480V SWITCHGEAR {Cascading Impact}
PSA - 7000A - IA/SA CROSS-CONNECT {Requires Operator Action}
PSA - 7002D - DIESEL AIR COMPRESSOR SUPPLY ISOLATION VALVE {Requires Operator Action}
PSA - 7195A - BU AIR COMP DISCHARGE INNER ISOL VAL TO SERV AIR HEADER {Requires Operator Action}
PSA - 7203 - SERV AIR ISOL VALVE TO THE TURBINE BUILDING FROM YARD {Requires Operator Action}
PSA - CSA05 - DIESEL AIR COMPRESS (OUTSIDE UNIT) FOR BU SERV AIR/INSTR AIR {Requires Operator Action}
RHR - 625 - RHR HX OUTLET 1A {Loss of IA}
RHR - 626 - RHR HX BYPASS {Loss of IA}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

Fire Area ID: SH - Screen House Building **Fire Area Definition**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description
INTAKE (Tunnel)	212'-6" Intake Tunnel
SH-1	243'-6" and 239'-6", Screen House Basement
SH-2	253'-6", Screen House Operating Floor
SH-3	237'-0", SH CIRC Water Pump Area

Fire Area ID: SH - Screen House Building **Performance Goals**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Performance Goal	Method of Accomplishment	Comments
1. Reactivity Control Function	Immediate reactor shutdown is achieved by de-energizing all CRDMs which results in control rod negative reactivity insertion into the reactor core.	Method of Accomplishment (Hot Shutdown) Shutdown Method II Success Path "B"
2. Inventory Control Function	• RCS inventory depletion control is maintained by closure of all letdown paths, all sample paths, all head vent paths, and both PORVs. • RCS inventory makeup is controlled byTrain "B" CVCS success path from the RWST to the RCS.	Method of Accomplishment (Hot Shutdown) Shutdown Method II Success Path "B"
3. Pressure Control Function	• RCS high pressure control is maintained by automatic mechanical operation of all PRZR Code Safety Valves, stopping of both RCPs, and securing all PRZR heaters. • RCS lowering pressure control is maintained by closure of both PRZR PORVs, closure of both PRZR Normal Spray valves or stopping the associated RCP(s), and closure of both SG ARVs.	Method of Accomplishment (Hot Shutdown) Shutdown Method II Success Path "B"
4. Decay Heat Removal Function	• RCS high temperature control is maintained by automatic mechanical operation of all SG Code Safety Valves. • RCS lowering temperature control is maintained by closure of both MSIVs, closure of both SG ARVs, stopping both MFW Pumps, stopping AFW System flow to the non-credited SG, and controlling flow to the credited SG. • SG makeup control is maintained by either one of the following to SG "B": o TDAFW Pump success path from the SG "B" MSS and pump suction from the CST or SWS o SAFW Pump "D" success path from the SWS or FPS	Method of Accomplishment (Hot Shutdown) Shutdown Method II Success Path "B"
5. Process Monitoring Function	RCS Temperature: TI-409A-2 (RCS LOOP A HL INDICATION) Location: IBELIP, TI-409B-2 (RCS LOOP A CL INDICATION) Location: IBELIP, TI-410A-1 (RCS LOOP B HL INDICATION (0-700 F)) Location: MCB, and TI-410B-1 (RCS LOOP B CL INDICATION) Location: MCB RCS Pressure:PI-420A (RCS HL PRESSURE (0-3000 PSIG))	Method of Accomplishment (Hot Shutdown) Shutdown Method II Success Path "B"

Fire Area ID: SH - Screen House Building **Performance Goals**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Performance Goal	Method of Accomplishment	Comments
	Location: MCB Pressurizer Level:LI-428 (PRZR LEVEL CHANNEL 3) Location: MCB Steam Generator Level:LI-460AA (S/G "A" LEVEL APPENDIX R [0-520" H2O (WR)) Location: IBELIP and LI-507 (S/G "B" LEVEL [0 - 520" H20 (WR)) Location: MCB Steam Generator Pressure:PI-469A (S/G "A" PRESSURE) Location: IBELIP, and PI-478 (S/G "B" PRESSURE) Location: MCB Neutron Flux Monitoring:N-32R (APPENDIX R SOURCE RANGE MONITOR) Location: IBELIP, AND NI-32B (NIS SOURCE RANGE INDICATION) Location: MCB Tank Level:LI-2022B (CDST "B" LEVEL) Location: MCB, and LI-920 (RWST LEVEL) Location: MCB System Flow Rate: FI-2015A (TDAFW PUMP DISCH FLOW) Location: IBELIP, FI-4085A (SAFW PUMP "D" <PSF01B> DISCH FLOW) Location: SAF, FI-4085B (SAFW PUMP "D", <PSF01B> DISCH FLOW) Location: MCB DG Cooling: PI-2105 ("B" DIESEL GEN HX OUTLET PRESS IND) Location: EDG1A	
6. Vital Auxiliaries	• DC Power and instrument power availability is maintained by train “B” of the BDC/IAC System from Battery “B” or the TSC Battery System. • AC Power availability is maintained by train “B” Diesel-Generator and train “B” DBV/DGS support components. • Diesel-Generator engine cooling is maintained by the train “B” SWS success path or alignment of alternate cooling from the FPS to the “B” Diesel. • Except for a Control Room fire, train “B” CREATS is maintained for controlling the Control Room environmental conditions within the required specifications for habitability and design limits for equipment operability. Ventilation systems for the SAFW components in the SAFW Building, the DG components in the Diesel Building, and the TSC components in the Technical Support Center are maintained for equipment design limits.	Method of Accomplishment (Hot Shutdown) Shutdown Method II Success Path "B"

References **Document ID**

Fire Suppression Activities Effect on Nuclear Safety Performance Criteria

(SH-1)

Scenario 1: Suppression Effects in SH-1 of a Fire Originating In SH-1:

Suppression effects (activation of suppression systems and manual firefighting) are not expected to extend beyond the area of fire origin.Deluge system S17 in SH-1 is designed to spray cable trays in the Screenhouse basement.

Scenario 2: Suppression Effects in SH-1 of a Fire Originating Outside of SH-1:

The Screenhouse basement deluge system is actuated by the associated fire detection system in the area which could be vulnerable to a fire originating outside SH-1 if the detection circuits and/or control panel are routed or located outside the fire zone (e.g., SSA in the Relay Room).However, this system is designed to spray on cable trays in the Screenhouse basement and suppression effects are not expected to extend beyond SH-1.Similarly, manual firefighting activities outside of SH-1 could potentially spray on, and short out a control panel that could activate the deluge system.However, the system is designed to spray on cable trays in the Screenhouse basement and suppression effects are not expected to extend beyond SH-1.

(SH-2)

Scenario 1: Suppression Effects in SH-2 of a Fire Originating In SH-2:

Suppression effects (activation of wet-pipe sprinkler system S18 or manual firefighting activities) are not expected to extend beyond the area of fire origin.Activation of an automatic sprinkler system would only be expected to activate small number of sprinklers.

Scenario 2: Suppression Effects in SH-2 of a Fire Originating Outside of SH-2:

Since automatic sprinkler systems are not electrically activated, operation of a fire suppression system outside of SH-2 could not impact the automatic sprinkler system within SH-2 that could have an impact on the nuclear safety performance criteria.Similarly, manual firefighting activities outside of SH-2 would not be expected to affect equipment/components located within SH-2.

A curb is installed around the diesel fire pump and the diesel oil storage tank to prevent the spread of flammable liquid.The curbed area is equipped with drains to a holding tank buried outside the Screenhouse.

Curbs are also provided to prevent water and flammable liquids from flowing into the basement area.

(SH-3)

Fire Area ID: SH - Screen House Building **Performance Goals**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Scenario 1: Suppression Effects in SH-3 of a Fire Originating In SH-3:

There are no fixed suppression systems in SH-3 and the effects of manual firefighting are not expected to extend beyond the area of fire origin.

Scenario 2: Suppression Effects in SH-3 of a Fire Originating Outside of SH-3:

There are no suppression systems in SH-3 that could be impacted by operation of a fire suppression system or manual firefighting outside of SH-3.

Fire Area ID: SH - Screen House Building **Fire Risk Evaluation**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
(All)	Area Wide	None	None	R	Modifications: R Procedures/Recovery Actions: R
INTAKE (Tunnel)	212'-6" Intake Tunnel	None	None	None	None
SH-1	243'-6" and 239'-6", Screen House Basement	E, D	E, R	E	Combustible Loading Controls: E Detection System, Smoke Detectors for S17: E R Physical separation greater than 20 ft.: E Water Suppression, S17: E D
SH-2	253'-6", Screen House Operating Floor	E, D	E, R	E	Combustible Loading Controls: E Detection System, Z26: E R Physical separation greater than 20 ft.: E Water Suppression, S18: E D
SH-3	237'-0", SH CIRC Water Pump Area	None	None	E	Combustible Loading Controls: E Physical separation greater than 20 ft.: E

Title Fire Risk Evaluation for Fire Area SH

Risk Summary The delta CDF and delta LERF results for the fire area are summarized below. At the fire area level, the increase in risk is less than 1E-06/rx-yr for the delta CDF, and less than 1E-07/rx-yr for the delta LERF.

All CCDPs and CLERPs are less than 1, ensuring that low CDF and LERF values are not reached solely because of a low fire scenario frequency.

Δ CDF

Δ LERF

Redacted

DID Maintained A qualitative evaluation of defense-in-depth (DID) using insights gained from the Fire PRA was performed for the fire area.

The installed fire detection system is credited in the Fire PRA for Fire Zones SH-1 and SH-2 to support manual suppression. There are no installed fire detection and suppression systems in Fire Zone SH-3. Given that a structural steel fire scenario was identified for Fire Zone SH-2 and that such scenario could cause widespread damage, it is prudent to credit for DID the fire suppression systems installed in the fire area. Portable extinguishers and hose stations are available for fire brigade use and do not require additional DID enhancement. Existing administrative control are determined adequate given the nature of combustibles in the area and the quantified scenarios captured in the Fire PRA results. Given the relatively low values of CCDP and CLERPs in the fire area, no DID actions are required. In addition, no modifications are required for DID in the fire area.

Fire Area ID:	SH - Screen House Building	**Fire Risk Evaluation**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

With the DID requirements above, the evaluation finds that an adequate balance between the DID echelons is maintained.

Safety Margin Maintained

The safety margin for the analyses supporting the fire risk evaluation of the fire area was evaluated and accounted for potential impacts from fire modeling and the plant system performance, including the PRA logic model. All analyses and assessment have been performed utilizing accepted techniques and industry accepted standards. In addition, safety analysis acceptance criteria in the licensing basis (e.g., FSAR, supporting analyses) have been considered and provide sufficient margin to account for analysis and data uncertainty.

Conclusions

Fire Area ID:	SH - Screen House Building	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

VFDR ID VFDR-SH-001

VFDR

Fire damage to instrument air piping can challenge reliance on instrument/service air whether being aligned from the normal air compressors or from the diesel air compressor or a deterministic assumption of a loss of offsite power to BUS13 and BUS15 results in the loss of the normal Service Air and Instrument Air compressors.
Local manual alignment of Diesel Air Compressor (CSA05) to the Service Air and Instrument Air Systems is taken to support manipulation of air operated SSD components from the MCB (i.e., 4297, 4298, 112B, 112C, 9710A, 9710B, PCH01B). However, this action may not be successful due to the integrity of instrument air piping.
This VFDR is associated with the Vital Auxiliaries Function. [OE004, PH003]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

AFW - 4297 - TDAFWP FCV TO S/G A {Cascading Impact}
AFW - 4298 - TDAFWP FCV TO S/G B {Cascading Impact}
AFW - 9710A - SAFW PUMP "C" RECIRC TO CONDENSATE TEST TANK {Cascading Impact}
AFW – 9710B - SAFW PUMP "D" RECIRC TO CONDENSATE TEST TANK {Cascading Impact}
CVC - 112B - VCT OUTLET AOV {Cascading Impact}
CVC - 112C - RWST TO CHARGING PUMP SUCTION {Cascading Impact}
CVC - PCH01B - CHRG PUMP B {Cascading Impact}
LAC - BUS13 - 480V SWITCHGEAR {Cascading Impact}
LAC - BUS15 - 480V SWITCHGEAR {Cascading Impact}
PSA - 7000A - IA/SA CROSS-CONNECT: {Requires Operator Action}
PSA - 7002D - DIESEL AIR COMPRESSOR SUPPLY ISOLATION VALVE: {Requires Operator Action}
PSA - 7195A - BU AIR COMP DISCHARGE INNER ISOL VAL TO SERV AIR HEADER: {Requires Operator Action}
PSA - 7203 - SERV AIR ISOL VALVE TO THE TURBINE BUILDING FROM YARD: {Requires Operator Action}
PSA - CSA05 - DIESEL AIR COMPRESS (OUTSIDE UNIT) FOR BU SERV AIR/INSTR AIR: {Requires Operator Action}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-SH-003

VFDR

A MSO concern exists related to BUS16 power supply. With offsite power available, spurious closure of breaker 52/EG1B2 (cables L0434 or L0435) can take place with KDG01B idle causing the reverse power relay trip signal to 52/EG1B2 (BUS17) and 52/EG1B1 (BUS16). A simultaneous spurious trip of BUS16 offsite infeed breaker 52/16 (cables L0180 or L0701) results in a loss of both power sources to BUS16.
With offsite power not available, a spurious trip of breaker 52/EG1B2 (cables L0434 or L0435) de-energizes BUS17. This results in a loss of KDG01B cooling water which, in turn, results in the loss of EAC power to BUS16.
This VFDR is associated with the Vital Auxiliaries Function. [OP017, OP701]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Fire Area ID: SH - Screen House Building **VFDRs**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Component(s)

EAC - 52/EG1B1 - EDG B SUPPLY TO BUS 16 {Cascading Impact}
EAC - 52/EG1B2 - EDG B SUPPLY TO BUS 17 {L0434(LOC), L0435(LOCI) and Cascading Impact}
LAC - 52/16 - SPT SUPPLY BREAKER TO BUS16 {L0180(LO), L0701(LO)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-SH-005

VFDR

A MSO concern exists related to spurious DG start without SW cooling. Credited KDG01B can spuriously start due to cable (L0785).fire damage
Local action is taken to establish alternate cooling.
This VFDR is associated with the Vital Auxiliaries Function. [OP706, PH701, PH702, PH704]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA and a separation issue.

Component(s)

EAC - KDG01B - DIESEL-GENERATOR B {L0787(L), L0785(LC) and Cascading Impact}
FPS - 8589A - B D/G EMERGENCY COOLING FEED {Requires Operator Action}
SWS - 4668A - SW INLET BLOCK VLV TO D/G B HXS {Requires Operator Action}
SWS - 4668F - HOSE CONNECTION ISOL VLV TO D/G B HXS {Requires Operator Action}
SWS - PI-2105 - B DIESEL GEN OUTLET PRESS IND {Requires Operator Action}
SWS - PSW01B - SERVICE WATER PUMP B {E0031(P), E0031A(P), L0459A(L), L0461(P), L0462(LOCI), L0463(L), L0755(LOI)}
SWS - PSW01D - SERVICE WATER PUMP D {E0031(P), E0031A(P), L0459A(L), L0463(L), L0465(P), L0466(LOCI), L0756(LOI)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No Recovery Action was credited to resolve this VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-SH-006

VFDR

Normal cooling capability to credited TDAW Pump (PAF03) is challenged on loss of SW Pumps. SW Pumps are located in this fire.
This VFDR is associated with the Decay Heat Removal Function. [OP704]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s) AFW - PAF03 - TURBINE DRIVEN AUXILIARY FEEDWATER PUMP: {Cascading Impact}

Fire Area ID:	SH - Screen House Building	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Actions AFHFDSUPPL-3, consisting of supplying alternate sources of water for the AFW system once the initial water supply is depleted, and AXHFDSAFWX-2, consisting of locally aligning the Standby AFW pump were credited to help resolve this VFDR. In addition, Plant Modifications ESR-11-0050 (fire protection upgrades to the Standby AFW pumps) and ESR-12-0143 (supporting diesel generator that can power a standby AFW pump) were credited to help resolve this VFDR.

VFDR ID

VFDR-SH-009

VFDR

During postulated fire in this area, power to MCCJ can be lost due to lack of breaker coordination. None of the load feeder breakers from MCCJ are coordinated with the upstream incoming breaker. As a consequence, a fault on associated cable C2004 can result in loss of MCCJ. Loss of MCCJ affects credited "B" Diesel room cooling, DG Fuel Oil Transfer Pump (PDG02B) and DG Fuel Oil Day Tank level indicator (LIT-2051A). This cascading impact affects KDG01B operation.
This VFDR is associated with the Vital Auxiliaries Function. [OP014]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

DBV - ADF02A - EDG B ROOM COOLING FAN {Cascading Impact}
DBV - ADF02B - EDG B ROOM COOLING FAN {Cascading Impact}
DGS - LIT-2051A - B D/G FUEL OIL DAY TANK (ALARM & CONTROL) {Cascading Impact}
DGS - PDG02B - DG FO TRANSFER PUMP B {Cascading Impact}
EAC - KDG01B - DIESEL-GENERATOR B {L0787(L), L0785(LC) and Cascading Impact}
LAC - ACPDPDG02 - DIESEL GENERATOR B HEAT TRACE PANEL {Cascading Impact}
MCC - MCCJ - MOTOR CONTROL CENTER J {C2004(P)}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID

VFDR-SH-011

VFDR

A MSO concern exists related to spurious (ESF) Safety Injection Actuation due to cascading loss of Train "A" DC power. Actuation is possible due to:
(a) Low PZR pressure signal with two out of three PZR pressure transmitter loops (PT-429 and PT-430) impacted - OR -
(b) Low PZR pressure signal (as above) AND either a low SG "B" pressure signal (from two out of three SG "B" pressure transmitter loops PI-479 and PT-483) OR a low SG "A" pressure signal (from two out of three SG "A" pressure transmitter loops PT-468 and PI-469).
This VFDR is associated with the Inventory and Pressure Control Functions. [OP005, OP006]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

MSS - PI-479 - S/G "B" PRESSURE (MCB) {Cascading Impact}

Fire Area ID:	SH - Screen House Building	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

MSS - PT-483 - S/G "B" STM PRESS XMTR {Cascading Impact}
RPS - PI-469 - S/G "A" PRESSURE (MCB){Cascading Impact}
RPS - PT-429 - PRZR PRESS XMTR {Cascading Impact}
RPS - PT-430 - PRZR PRESS XMTR {Cascading Impact}
RPS - PT-468 - STM GEN "A" PRESS XMTR {Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID

VFDR-SH-013

VFDR

VCT Outlet AOV (112C) fails in the undesired (OPEN) position due to a cascading loss of DC power from Train "A". The AOV failing open results in VCT inventory loss and charging pumps drawing suction from the VCT cover gas instead of the RWST. This would damage the credited charging pumps.
This VFDR is associated with the Reactivity Control, and Inventory and Pressure Control Functions. [OMH706]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

CVC - 112C - VCT OUTLET AOV {Cascading Impact}
CVC - 261 - VCT H2 INLT MANUAL BLK VLV {Requires Operator Action}
CVC - PCH01B - CHRG PUMP B {Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDMAKEUP, consisting of locally aligning and starting the new charging system was credited to help resolve this VFDR. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

VFDR ID

VFDR-SH-014

VFDR

A loss of charging capability is possible. The VCT can fill with high temperature water from RCP seal leakoff, via the Seal Water HX without CCW cooling, flashing steam in the VCT and causing VCT pressure to rise above head pressure of the RWST. When the CHG Pump is restarted, this result in the pump drawing suction from the VCT (instead of the RWST), introducing saturated water and thereby damaging the CHG pump. This scenario is postulated due to the following separation concerns:
(a) Total loss of RCP seal cooling (Thermal Barrier AND Seal Injection) due to a LOOP (deterministic assumption) and loss of EAC power (SW pumps located in this fire area requires KDG01B to be stopped until alternate cooling is established, while KDG01A is deterministically assumed to be unavailable), - AND -
(b) VCT isolation valve (AOV-112C) fails open on a loss of instrument/service air OR loss of Train "A" DC power when Battery "A" is depleted, - AND -
(c) RCP seal leak-off isolation valve (MOV-313) fails open on loss of Train "A" AC power.
This VFDR is associated with the Reactivity Control, and Inventory and Pressure Control Functions. [OE003]

Fire Area ID:	SH - Screen House Building	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

CVC - 112C - VCT OUTLET AOV {Cascading Impact}
CVC - 313 - SEAL OR EXCESS LETDOWN RETURN ISOLATION MOV {Cascading Impact}
CVC - PCH01B - CHRG PUMP B {Cascading Impact}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDMAKEUP, consisting of locally aligning and starting the new charging system was credited to help resolve this VFDR. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

Fire Area ID:	STA13ACH - Station 13A Control House in RG&E Controlled Area	**Fire Area Definition**
Compliance Basis:	Not Applicable	

Fire Zone ID	Description
STA13ACH	Station 13A Control House All Areas

Fire Area ID:	STA13ACH - Station 13A Control House in RG&E Controlled Area	Performance Goals
Compliance Basis:	Not Applicable	

Performance Goal	Method of Accomplishment	Comments
Not Applicable		

Fire Suppression Activities Effect on Nuclear Safety Performance Criteria

Not Applicable

NFPA 805 Ch 4 Compliance (NEI 04-02 Table B-3)

Fire Area ID: STA13ACH - Station 13A Control House in RG&E Controlled Area
Compliance Basis: Not Applicable

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
STA13ACH	Station 13A Control House All Areas	None	None	None	None

Fire Area ID: WS - Contaminated Storage Building, Elevation 271' 0" **Fire Area Definition**
Compliance Basis: Not Applicable

Fire Zone ID	**Description**
WS	271'-0", Contaminated Storage building

Fire Area ID:	WS - Contaminated Storage Building, Elevation 271' 0"	**Performance Goals**
Compliance Basis:	Not Applicable	

Performance Goal	Method of Accomplishment	Comments
Not Applicable		

Fire Suppression Activities Effect on Nuclear Safety Performance Criteria

Not Applicable

NFPA 805 Ch 4 Compliance (NEI 04-02 Table B-3)

Fire Area ID: WS - Contaminated Storage Building, Elevation 271' 0"
Compliance Basis: Not Applicable

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
WS	271'-0", Contaminated Storage building	None	None	rr	Procedural Controls Regarding Flood Barriers: rr

Fire Area ID:	YARD - Transformer Yard General Area	**Fire Area Definition**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

Fire Zone ID	**Description**
YARD	271'-0" Transformer Yard General Area

Fire Area ID: YARD - Transformer Yard General Area **Performance Goals**
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Performance Goal	Method of Accomplishment	Comments
1. Reactivity Control Function	Immediate reactor shutdown is achieved by de-energizing all CRDMs which results in control rod negative ractivity insertion into the reactor core.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
2. Inventory Control Function	• RCS inventory depletion control is maintained by closure of all letdown paths, all sample paths, all head vent paths, and both PORVs. • RCS inventory makeup is controlled by either one of the following: o Train "A" CVCS success path from the RWST to the RCS o Train "A" SIS success path from the RWST to the RCS and the PORV associated with the "A" nitrogen surge tank.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
3. Pressure Control Function	• RCS high pressure control is maintained by automatic mechanical operation of all PRZR Code Safety Valves, stopping of both RCPs, and securing all PRZR heaters. • RCS lowering pressure control is maintained by closure of both PRZR PORVs, closure of both PRZR Normal Spray valves or stopping the associated RCP(s), and closure of both SG ARVs.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
4. Decay Heat Removal Function	• RCS high temperature control is maintained by automatic mechanical operation of all SG Code Safety Valves. • RCS lowering temperature control is maintained by closure of both MSIVs, closure of both SG ARVs, stopping both MFW Pumps, stopping AFW System flow to the non-credited SG, and controlling flow to the credited SG. • SG makeup control is maintained by either one of the following to SG "A": o TDAFW Pump success path from the SG "A" MSS and pump suction from the CST or SWS o SAFW Pump "C" success path from the SWS or FPS	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"
5. Process Monitoring Function	RCS Temperature:TI-409A-1 (RCS LOOP A HL INDICATION) Location: MCB, and TI-409B-1 (RCS LOOP A CL INDICATION) Location: MCB RCS Pressure:PI-420-2 (RCS HL PRESSURE (0-3000 PSIG)) Location: MCB, and PI-420B (RCS PRESSURE (0-3000 PSIG)) Location: ABELIP	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"

Fire Area ID: YARD - Transformer Yard General Area **Performance Goals**

Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Performance Goal	Method of Accomplishment	Comments
	Pressurizer Level:LI-426 (PRZR LEVEL) Location: MCB, LI-428A (PRZR LEVEL (WR)) Location: ABELIP, and LI-433A (PRZR LEVEL) Location: MCB Steam Generator Level:LI-461 (S/G "A" LEVEL (NR)) Location: MCB, LI-504 (S/G "A" LEVEL [0-520" H2O (WR)) Location: MCB, and LI-506A (S/G "B" WIDE RANGE LEVEL) Location: IBELIP Steam Generator Pressure:PI-469 (S/G "A" PRESSURE) Location: MCB, and PI-479 (S/G "B" PRESSURE) Location: MCB Neutron Flux Monitoring:NI-31B (NIS SOURCE RANGE INDICATION) Location: MCB Tank Level:LI-2022A (CDST "A" LEVEL) Location: MCB, and LI-921 (RWST LEVEL) Location: MCB System Flow Rate:FI-2031 (TDAFW PUMP DISCH FLOW) Location: MCB, FI-4084A (SAFW PUMP "C" <PSF01A> DISCH FLOW) Location: SAF, FI-4084B (SAFW PUMP "C" <PSF01A> DISCH FLOW) Location: MCB DG Cooling:PI-2103 ("A" DIESEL GEN HX CLNG WTR HDR PRESS IND) Location: EDG1A	
6. Vital Auxiliaries	• DC Power and instrument power availability is maintained by train “A” of the BDC/IAC System from Battery “A” or the TSC Battery System. • AC Power availability is maintained by train “A” Diesel-Generator and train “A” DBV/DGS support components. • Diesel-Generator engine cooling is maintained by the train ”A” SWS success path or alignment of alternate cooling from the FPS to the “A” Diesel. • Except for a Control Room fire, train “A” CREATS is maintained for controlling the Control Room environmental conditions within the required specifications for habitability and design limits for equipment operability. Ventilation systems for the SAFW components in the SAFW Building, the DG components in the Diesel Building, and the TSC components in the Technical Support Center are maintained for equipment design limits.	Method of Accomplishment (Hot Shutdown) Shutdown Method I Success Path "A"

References	Document ID
	EIR 51-9089546-001 Rev. 001 - R. E. Ginna Nuclear Power Station, Nuclear Safety Capability Assessment

Fire Area ID:	YARD - Transformer Yard General Area	**Performance Goals**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

Fire Suppression Activities Effect on Nuclear Safety Performance Criteria

Scenario 1: Suppression Effects in YARD of a Fire Originating In YARD:

Suppression effects (activation of suppression systems and manual firefighting) are not expected to extend beyond the area of fire origin.Deluge systems in the YARD are designed to spray their associated transformer.

Scenario 2: Suppression Effects in YARD of a Fire Originating Outside of YARD:

The transformer deluge systems are actuated by the associated fire detection system or manual pull boxes which could be vulnerable to afire originating outside YARD and to automatic and manual firefighting activities if the detection circuits, electric manual pull boxes, or control panel are routed or located outside the fire zone (e.g., SSA in the Relay Room).However, these systems are designed to spray on their respective transformer and suppression effects are not expected to extend beyond YARD.

NFPA 805 Ch 4 Compliance (NEI 04-02 Table B-3)

Fire Area ID: YARD - Transformer Yard General Area **Fire Risk Evaluation**

Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
(All)	Area Wide	None	None	R	Modifications: R Procedures/Recovery Actions: R
YARD	271'-0" Transformer Yard General Area	D	D	None	Detection System, Heat Detectors for S20: D Detection System, Heat Detectors for S21: D Detection System, Heat Detectors for S22: D Detection System, Heat Detectors for S23: D Water Suppression, S20: D Water Suppression, S21: D Water Suppression, S22: D Water Suppression, S23: D

Title

Fire Risk Evaluation for Fire Area YARD

Risk Summary

The delta CDF and delta LERF results for the fire area are summarized below. At the fire area level, the increase in risk is less than 1E-06/rx-yr for the delta CDF, and less than 1E-07/rx-yr for the delta LERF.

All CCDPs and CLERPs are less than 1, ensuring that low CDF and LERF values are not reached solely because of a low fire scenario frequency.

Δ CDF

Δ LERF

Redacted

DID Maintained

A qualitative evaluation of defense-in-depth (DID) using insights gained from the Fire PRA was performed for the fire area.

None of the installed fire detection and suppression systems present in the fire area are credited in the Fire PRA. Given the moderately high frequency of fires in that fire area, it is prudent to credit the installed fire detection and suppression systems for DID. Existing administrative control are determined adequate given the nature of combustibles in the area and the quantified scenarios captured in the Fire PRA results. Given the relatively low values of CCDP and CLERPs in the fire area, no DID actions are required. In addition, no modifications are required for DID in the fire area.

With the DID requirements above, the evaluation finds that an adequate balance between the DID echelons is maintained.

Safety Margin Maintained

The safety margin for the analyses supporting the fire risk evaluation of the fire area was evaluated and accounted for potential impacts from fire modeling and the plant system performance, including the PRA logic model. All analyses and assessment have been performed utilizing accepted techniques and industry accepted standards. In addition, safety analysis acceptance criteria in the licensing basis (e.g., FSAR, supporting analyses) have been considered and provide sufficient margin to account for analysis and data uncertainty.

Conclusions

Fire Area ID:	YARD - Transformer Yard General Area	**VFDRs**
Compliance Basis:	NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions	

VFDR ID VFDR-YARD-001

VFDR

A deterministic analysis assumption of a loss of offsite power (to BUS13 and BUS15) results in the loss of the Service Air and Instrument Air Systems.
Local manual alignment of diesel air compressor (CSA05) to the Service Air and Instrument Air Systems is required to manipulate air operated SSD components from the MCB (i.e., 112B, 112C, PCH01A, 625, and 626).
This VFDR is associated with the Vital Auxiliaries Function. [PH003]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a pre-transition OMA issue.

Component(s)

LAC - BUS13 - 480V SWITCHGEAR {Cascading Impact}
LAC - BUS15 - 480V SWITCHGEAR {Cascading Impact}
PSA - 7000A - IA/SA CROSS-CONNECT {Requires Operator Action}
PSA - 7002D - DIESEL AIR COMPRESSOR SUPPLY ISOLATION VALVE {Requires Operator Action}
PSA - 7195A - BU AIR COMP DISCHARGE INNER ISOL VAL TO SERV AIR HEADER {Requires Operator Action}
PSA - 7203 - SERV AIR ISOL VALVE TO THE TURBINE BUILDING FROM YARD {Requires Operator Action}
PSA - CSA05 - DIESEL AIR COMPRESS (OUTSIDE UNIT) FOR BU SERV AIR/INSTR AIR {Requires Operator Action}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. No recovery action was credited to resolve the VFDR. No plant modification was credited to provide a specific delta risk reduction for the VFDR.

VFDR ID VFDR-YARD-008

VFDR

The RWST is the credited source for Charging Pump suction. A loss of Train "B" 125V DC power or a loss of instrument air to AOV-112B causes the valve to fail closed isolating Charging Pump suction from the RWST resulting in pump damage.
This VFDR is associated with the Reactivity Control Function, and Inventory and Pressure Control Functions. [OMH002]
This condition represents a variance from the deterministic requirements of NFPA 805, Section 4.2.3. This is a separation issue.

Component(s)

CVC - 112B - RWST TO CHARGING PUMP SUCTION {Cascading Impact}
CVC - 358 - CHARGING PUMP SUCTION FROM RWST MANUAL IV {Requires Operation}

Disposition

This VFDR was evaluated for compliance using the performance-based approach of NFPA 805, Section 4.2.4.2. A delta risk evaluation was performed. Recovery Action RCHFDMAKEUP, consisting of locally aligning and starting the new charging system was credited to help resolve this VFDR. In addition, Plant Modification ESR-12-0144, which provides a standby Charging pump in the SB AFW building, was credited to help resolve this VFDR.

Fire Area ID: ABBM - Auxiliary Building Basement/Mezzanine
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
(All)	Area Wide	None	None	R, S	Modifications: R S Procedures/Recovery Actions: R
ABB	235'-8" Auxiliary Bldg Basement Floor	E	E, R	E, rr	Combustible Loading Controls: E Detection System, Z01: E R Detection System, Z02: E R Detection System, Z02D1: E R Floor drains/sump: rr Procedural Controls Regarding Securing Ventilation: rr Water Suppression, S01: E
ABM	253'-0" Auxiliary Bldg Mezzanine Floor	E, R	E, R	E, rr	Combustible Loading Controls: E Detection System, Z03: E R Floor drains/sump: rr Procedural Controls Regarding Securing Ventilation: rr Water Suppression, S02: E R Water Suppression, S03: E R Water Suppression, S04: E R Water Suppression, S35: E R Water Suppression, S36: E R

Fire Area ID: ABI - Auxiliary Building Operating Floor and Intermediate Building
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
(All)	Area Wide	None	None	R, S	Modifications: R S Procedures/Recovery Actions: R
ABO	271'-0", 278'-4" & 281'-10", AB Operating Floor	E, D	E, D	rr	Detection System, Z04: E D Detection System, Z35: E D Floor drains/sump: rr Procedural Controls Regarding Flood Barriers: rr Procedural Controls Regarding Securing Ventilation: rr Water Suppression, S35: E D Water Suppression, S36: E D
CPB	269'-2", Canister Preparation Building	D	None	rr	Procedural Controls Regarding Securing Ventilation: rr Trenches and floor drains: rr Water Suppression, S51: D
IB-0	237' and 238'-0", Intermediate Bldg Sub-Basement	None	E, D	rr	Detection System, Z36: E D Floor drains/sump: rr

Fire Area ID: ABI - Auxiliary Building Operating Floor and Intermediate Building
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
IBN-1	253'-6" Intermediate Building North	E, D	E, R	E	Combustible Loading Controls: E Detection System, Z22: E R Physical separation greater than 20 ft.: E Water Suppression, S14: E D Water Suppression, S15: E D
IBN-2	278'-4" Intermediate Building North	None	E, D	E	Combustible Loading Controls: E Detection System, Z37D1: E D Physical separation greater than 20 ft.: E
IBN-3	298'-4" Intermediate Building North	None	E, D	E	Combustible Loading Controls: E Detection System, Z37D2: E D Physical separation greater than 20 ft.: E
IBN-4	293'-0" Intermediate Building North	None	E, D	E, rr	Combustible Loading Controls: E Detection System, Z23: E D Detection System, Z24: E D Detection System, Z37D3: E D Floor drains/sump: rr Physical separation greater than 20 ft.: E Procedural Controls Regarding Securing Ventilation: rr
IBS-1	253'-6" Intermediate Building South	None	E, D	rr	Detection System, Z38D1: E D Floor drains/sump: rr Procedural Controls Regarding Securing Ventilation: rr
IBS-2	271'-0" Intermediate Building South	None	E, D	rr	Detection System, Z38D2: E D Floor drains/sump: rr Procedural Controls Regarding Securing Ventilation: rr
IBS-3	293'-0" Intermediate Building South	None	E, D	rr	Detection System, Z38D3: E D Floor drains/sump: rr Procedural Controls Regarding Securing Ventilation: rr
N2	271'-0" Nitrogen Storage Building	None	None	None	None

Attachment C
Table C-2 - NFPA 805 Ch 4 Required FP Systems/Features

Fire Area ID: BOP - Balance of Plant (Bldgs CD, TSC, H2, Srv, TB, TO)
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
(All)	Area Wide	None	None	R, S	Modifications: R S Procedures/Recovery Actions: R
AVT	253'-6", Condensate Demineralizer Building	None	None	None	None
GAB	271'-0" Ginna Admin Building	D	D	None	Detection System, Z45: D Water Suppression, S40: D Water Suppression, S40C: D
H2	253'-6", Hydrogen Storage Bdlg	None	None	None	None
SB-1	253'-6" Service Building Basement	D	None	rr	Floor drains: rr Water Suppression, S39: D
SB-1HS	253'-6" Service Building Hot Shop	E, D	None	rr	Floor drains: rr Water Suppression, S19: E D
SB-1WT	253'-6" & 271'-0" Service Building Water Treatment Room	E, D	None	rr	Floor drains: rr Water Suppression, S19: E D
SB-2	271'-0", SB General Offices Area (excludes SB-1WT)	E, D	None	rr	Floor drains: rr Water Suppression, S19: E D
TB-1	253'-6", Turbine Building Basement	E, D	E, R	None	Detection System, Heat Detectors for S27: R Detection System, Z32: E R Detection System, Z33: E R Detection System, Z40: E R Water Suppression, S24: E D Water Suppression, S25: E D Water Suppression, S26: E D Water Suppression, S27: E D Water Suppression, S45: E D
TB-1FP	253'-6" Turbine Building Feedpump Room	None	E, R	None	Detection System, Z32: E R
TB-2	271'-0" Turbine Building Intermediate Floor	E, D	E, R	None	Detection System, Heat Detectors for S27: R Detection System, Z34: E R Detection System, Z41: E R Water Suppression, S26: E D Water Suppression, S27: E D Water Suppression, S38: E D
TB-3	289'-6", Turbine Building Operating Floor	D	E, D	None	Detection System, S29: E D Water Suppression, S29: D
TO	253'-6" Turbine Building Turbine Oil Storage Building	D	D	None	Detection System, S16: D Water Suppression, S16: D

Fire Area ID: BOP - Balance of Plant (Bldgs CD, TSC, H2, Srv, TB, TO)
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
TSC-1M	271'-0"Technical Support Center (Mechanical Equipment Room and Administrative Computer)	D	D	None	Detection System, Heat Detectors for S31: D Detection System, S34D1: D Detection System, S34D2: D Detection System, Smoke Detectors for S33: D Detection System, Z29: D Water Suppression, S31: D Water Suppression, S33: D
TSC-1N	271'-0" Technical Support Center	D	D	None	Detection System, Smoke Detectors for S33: D Detection System, Smoke Detectors for S37: D Detection System, Z28: D Detection System, Z31: D Detection System, Z39: D Water Suppression, S30: D Water Suppression, S33: D Water Suppression, S37: D
TSC-1S	271'-0" Technical Support Center (South of Corridor) and includes TSC D-G, Inverter & Battery Rooms	D	D	None	Detection System, Z27: D Detection System, Z30: D Water Suppression, S30: D

Fire Area ID: BR1A - Battery Room 1A, Elevation 253' 6"
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
(All)	Area Wide	None	None	R, S	Modifications: R S Procedures/Recovery Actions: R
BR1A	253'-6", Control Building Complex Battery Room 1A	None	E, R	E	Combustible Loading Controls: E Detection System, Z42: E R

Fire Area ID: BR1B - Battery Room 1B, Elevation 253' 6"
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
(All)	Area Wide	None	None	R	Modifications: R Procedures/Recovery Actions: R
BR1B	253'-6", Control Building Complex Battery Room 1B	None	E, R	E	Combustible Loading Controls: E Detection System, Z43: E R Fire-proofing material on structural steel: E

Fire Area ID: CC - Control Building Complex
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
(All)	Area Wide	None	None	R, S	Modifications: R S Procedures/Recovery Actions: R
AHR	253'-6", Air Handling Room	E, R	E, R	E	Combustible Loading Controls: E Detection System, S06: E R Water Suppression, S06: E R
CR	289'-6", Control Room	E, D	E, D	E	Combustible Loading Controls: E Detection System, Z19: E D Water Suppression, S29: E D
RR	271'-0", Relay Room (includes MUX and Annex rooms)	E, D	E, R	None	Detection System, Smoke Detectors for S08: R Detection System, Z18: E R Detection System, Z44: E R Gaseous Suppression, Halon Suppression S08: E D Water Suppression, S09: E D Water Suppression, S10: E D Water Suppression, S11: E D

Fire Area ID: CHG - Charging Pump Room, Elevation 235' 6"
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
(All)	Area Wide	None	None	S	Modifications: S
CHG	235'-8" Auxiliary Building – Charging Pump Room	None	E, D	None	Detection System, Z01: E D

Fire Area ID: CT - Cable Tunnel, Elevation 260' 6"
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
(All)	Area Wide	None	None	R, S	Modifications: R S Procedures/Recovery Actions: R
CT	260'-6" & 260'-10", Cable Tunnel	E, R	E, R	E	Combustible Loading Controls: E Detection System, Smoke Detectors for S05: E R Detection System, Z05: E R Water Suppression, S05: E R

Fire Area ID: EDG1A - Diesel Generator Unit 1A (including EDG Vault 1A), Elevation 253' 6"
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
(All)	Area Wide	None	None	R	Modifications: R Procedures/Recovery Actions: R
EDG1A	253'-6", Diesel Generator Unit 1A (including EDG Vault 1A)	R	E, R	None	Detection System, Heat Detectors for S12: E R Detection System, Z20: E R Water Suppression, S12: R

Attachment C

Table C-2 - NFPA 805 Ch 4 Required FP Systems/Features

Fire Area ID: EDG1B - Diesel Generator Unit 1B (including EDG Vault 1B), Elevation 253' 6"
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
(All)	Area Wide	None	None	R, S	Modifications: R S Procedures/Recovery Actions: R
EDG1B	253'-6", Diesel Generator Unit 1B (including EDG Vault 1B)	R	E, R	E	3hr rated barrier: E Combustible Loading Controls: E Detection System, Heat Detectors for S13: E R Detection System, Z21: E R Full height sheet metal enclosure: E Water Suppression, S13: R

Fire Area ID: INTAKE - Intake Structure, Tunnel, Disch Canal, Screen House forebay
Compliance Basis: Not Applicable

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
INTAKE	228'-0", Intake Structure and Intake Tunnel	None	None	None	None

Fire Area ID: OFFSITE - RG&E Cntrld Area South of Lake Rd other than Control House
Compliance Basis: Not Applicable

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
OFFSITE	RG&E Controlled Area South of Lake Road Station 13A Outside Area	None	None	None	None

Fire Area ID: ONSITE - Site Area North of Lake Road outside of the Protected Area
Compliance Basis: Not Applicable

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
ONSITE	Owner Controlled Area North of Lake Road outside the Protected Area	None	None	None	None

Fire Area ID: PA - Protected Area
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
(All)	Area Wide	None	None	R	Modifications: R Procedures/Recovery Actions: R
PA-NE	271'-0" Protected Area NE Quadrant	None	None	rr	Floor drains plugged: rr Procedural Controls Regarding Securing Ventilation: rr
PA-NW	271'-0" Protected Area NW Quadrant	None	None	None	None
PA-SE	271'-0" Protected Area SE Quadrant	None	None	None	None
PA-SW	271'-0" Protected Area SW Quadrant	None	None	rr	Floor drains plugged: rr

Fire Area ID: RC - Reactor Containment Building
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
(All)	Area Wide	None	None	R, S	Modifications: R S Procedures/Recovery Actions: R
RC-1	235'-8" Basement Floor	None	E, D	rr	Detection System, Z08: E D Floor drains/sump: rr Procedural Controls Regarding Securing Ventilation: rr
RC-2	253'-3" Intermediate Floor	None	E, D	D, rr	Detection System, Z13: E D Detection System, Z14: E D Detection System, Z15: E D Floor drains/sump: rr Procedural Controls Regarding Securing Ventilation: rr Radiant Energy Shield: D

Fire Area ID: RC - Reactor Containment Building
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
RC-3	274'-6", 278'-4" Operating Floor	None	E, D	rr	Detection System, Z06: E D Detection System, Z07: E D Detection System, Z09: E D Detection System, Z10: E D Detection System, Z12: E D Detection System, Z13: E D Detection System, Z14: E D Detection System, Z16D1: E D Detection System, Z16D2: E D Floor drains/sump: rr Procedural Controls Regarding Securing Ventilation: rr
T-LOOPA	235'-8", 253'-3", 274'-6", 278'-4" 1A Steam Generator	None	D	None	Detection System, Z54: D
T-LOOPB	235'-8", 253'-3", 274'-6", 278'-4" 1B Steam Generator	None	D	None	Detection System, Z55: D
T-PRZR	253'-3", 274'-6" Pressurizer	None	D	None	Detection System, Z56: D
TREACTOR	205'-10", 210'-0" Reactor	None	None	None	None

Fire Area ID: SAF - Standby Auxiliary Feedwater Pump Building, Elevation 271' 0"
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
(All)	Area Wide	None	None	R	Modifications: R Procedures/Recovery Actions: R
SAF	271'-0", Stand-by AFW Building	None	E, D	None	Detection System, Z25: E D

Attachment C

Table C-2 - NFPA 805 Ch 4 Required FP Systems/Features

Fire Area ID: SH - Screen House Building
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
(All)	Area Wide	None	None	R	Modifications: R Procedures/Recovery Actions: R
INTAKE (Tunnel)	212'-6" Intake Tunnel	None	None	None	None
SH-1	243'-6" and 239'-6", Screen House Basement	E, D	E, R	E	Combustible Loading Controls: E Detection System, Smoke Detectors for S17: E R Physical separation greater than 20 ft.: E Water Suppression, S17: E D
SH-2	253'-6", Screen House Operating Floor	E, D	E, R	E	Combustible Loading Controls: E Detection System, Z26: E R Physical separation greater than 20 ft.: E Water Suppression, S18: E D
SH-3	237'-0", SH CIRC Water Pump Area	None	None	E	Combustible Loading Controls: E Physical separation greater than 20 ft.: E

Fire Area ID: STA13ACH - Station 13A Control House in RG&E Controlled Area
Compliance Basis: Not Applicable

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
STA13ACH	Station 13A Control House All Areas	None	None	None	None

Fire Area ID: WS - Contaminated Storage Building, Elevation 271' 0"
Compliance Basis: Not Applicable

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
WS	271'-0", Contaminated Storage building	None	None	rr	Procedural Controls Regarding Flood Barriers: rr

Table C-2 - NFPA 805 Ch 4 Required FP Systems/Features

Fire Area ID: YARD - Transformer Yard General Area
Compliance Basis: NFPA 805 Section 4.2.4.2 Performance-Based Approach - Fire Risk Evaluation with simplifying deterministic assumptions

Fire Zone ID	Description	Required Suppression System	Required Detection System	Required Fire Protection Feature	Required Fire Protection Feature and System Details
(All)	Area Wide	None	None	R	Modifications: R Procedures/Recovery Actions: R
YARD	271'-0" Transformer Yard General Area	D	D	None	Detection System, Heat Detectors for S20: D Detection System, Heat Detectors for S21: D Detection System, Heat Detectors for S22: D Detection System, Heat Detectors for S23: D Water Suppression, S20: D Water Suppression, S21: D Water Suppression, S22: D Water Suppression, S23: D

G. Recovery Actions Transition

9 Pages Attached

In accordance with the guidance provided in NEI 04-02, FAQ 07-0030, Revision 5, and RG 1.205, the following methodology was used to determine recovery actions required for compliance (i.e., determining the population of post-transition recovery actions). The methodology consisted of the following steps:

- Step 1: Define the primary control station(s) and determine which pre-transition OMAs are taken at primary control station(s) (Activities that occur in the Main Control Room are not considered pre-transition OMAs). Activities that take place at primary control station(s) or in the Main Control Room are not recovery actions, by definition.
- Step 2: Determine the population of recovery actions that are required to resolve VFDRs (to meet the risk acceptance criteria or maintain a sufficient level of defense-in-depth).
- Step 3: Evaluate the additional risk presented by the use of recovery actions required to demonstrate the availability of a success path
- Step 4: Evaluate the feasibility of the recovery actions
- Step 5: Evaluate the reliability of the recovery actions

An overview of these steps and the results of their implementation are provided below.

Step 1 - Clearly define the primary control station(s) and determine which pre-transition OMAs are taken at primary control station(s)

The first task in the process of determining the post-transition population of recovery actions was to apply the NFPA 805 definition of recovery action and the RG 1.205 definition of primary control station to determine those activities that are taken at primary control station(s).

Results of Step 1:

Based on the definition provided in RG 1.205 and the additional guidance provided in FAQ 07-0030, the following locations outside the Ginna Main Control Room (MCR) are considered Primary Control Stations:

- ABELIP – Auxiliary Building Emergency Local Instrument Panel
- IBELIP – Intermediate Building Emergency Local Instrument Panel

The ABELIP is required for local control and operating of Charging Pump 1A. An existing transfer switch and local start/stop switches for Charging Pump 1A are utilized in conjunction with independent primary pressure and pressurizer level indication. Additionally, Emergency DC Control Power Transfer Switch for charging pump 1A is installed in the ABELIP. Control circuits between Bus 14 and the Control Room can be isolated from the charging pump room to prevent fire-induced damage to the local control circuits. The indications are supplied with 120VAC from an inverter supplied from the local control circuit DC power supply.

The IBELIP is required for operation of the Turbine-Driven AFW pump. The DC motor-operated steam admission valves located one level directly above the pump are locally opened to initiate turbine and pump operation. The pump discharge valve is locally throttled to control steam generator level. Indications routed to this location include

RCS loop A hot and cold leg temperatures, steam generator A level and pressure, Steam Generator B level, and Turbine- Driven AFW flow. These indications provide adequate monitoring information to the secondary plant operator stationed at this location. These independent instrument loops are powered from an inverter supplied from a spare DC power feed from the Turbine Building DC distribution panel.

It should be noted that Ginna has committed to install new equipment (including a dedicated diesel generator, powering an existing standby auxiliary feedwater pump and a new charging pump) as part of the NFPA 805 project that will be utilized instead of charging pump 1A and the TDAFW as the primary equipment to address VFDRs associated with loss of feedwater and loss of charging. That is, the safe shutdown strategy has changed to utilize this new equipment. The operation of this equipment is much simpler and quicker to perform than the current actions, and thus is an enhancement to fire safety. Further, as it is isolated from the rest of the plant it will remain free from fire damage for all fire scenarios of concern. This shutdown strategy does not require the use of the ABELIP and IBELIP, but Ginna has chosen not to pursue designating the control stations for this new equipment as a PCS.

For the reasons stated above, Table G-1 - Recovery Actions does not include any required activities that occur at the primary control stations (i.e., PCS actions are no longer required in order to address any VFDRs), because with the installation of the new equipment, there are none required. Since the new equipment is not controlled from a PCS, all actions associated with it are considered RAs. Activities that are identified as Recovery Actions that are necessary to address risk are identified as RA in the G-1 Table.

Step 2 – Determine the population of recovery actions that are required to resolve VFDRs (to meet the risk or defense-in-depth criteria)

On a fire area basis all VFDRs were identified in the NEI 04-02 Table B-3 (See Attachment C). Each VFDR not brought into compliance with the deterministic approach was evaluated using the performance-based approach of NFPA 805 Section 4.2.4. The performance-based evaluations resulted in the need for recovery actions to meet the risk acceptance criteria or maintain a sufficient level of defense-in-depth).

Results of Step 2:

The final set of recovery actions are provided in Table G-1 - Recovery Actions and Activities Occurring at the Primary Control Station(s). Also included in this table are the actions that occur at the Primary Control Station.

Step 3: Evaluate the Additional Risk of the Use of Recovery Actions

NFPA 805 Section 4.2.3.1 does not allow recovery actions when using the deterministic approach to meet the nuclear safety performance criteria. However, the use of recovery actions is allowed by NFPA 805 using a risk informed, performance-based, approach, provided that the additional risk presented by the recovery actions is evaluated in accordance with NFPA 805 Section 4.2.4.

Results of Step 3:

The set of recovery actions that are necessary to demonstrate the availability of a success path for the nuclear safety performance criteria (See Table G-1) were evaluated for additional risk using the process described in NEI 04-02, FAQ 07-0030, Revision 5, and RG 1.205 and compared against the guidelines of RG 1.174 and RG 1.205. The additional risk is provided in Attachment W.

All of the recovery actions were reviewed for adverse impact and dispositioned in the FIRE PRA Notebook, G1-HRA-F001, and "Human Reliability Analysis (HRA)". None of the recovery actions were found to have an adverse impact on the Fire PRA.

Step 4: Evaluate the Feasibility of Recovery Actions

Recovery actions were evaluated against the feasibility criteria provided in the NEI 04-02, FAQ 07-0030, Revision 5, and RG 1.205. Note that since actions taken at the primary control station are not recovery actions their feasibility is evaluated in accordance with procedures for validation of off normal procedures.

Results of Step 4:

The feasibility criteria in FAQ 07-0030 were assessed for the recovery actions listed in Table G-1. Each action identified in Table G-1 is feasible. The results of the assessment are included in the Fire PRA Notebook, G1-HRA-F001, and "Human Reliability Analysis (HRA)". This calculation also references the thermal-hydraulic analysis used to evaluate the timing of actions

The following implementation items resulted from the feasibility evaluation:

- Develop / revise post-fire response procedures to reflect NSCA,
- Identify required tools during the procedure validation and verification,
- Document staffing requirements for revised post-fire response procedures. Note: The number of operator actions has been reduced significantly from the number required to comply with Appendix R. Therefore adequate staffing is assured.
- Train operators on revised post-fire response procedures, and
- Revise training requirements for post-fire response procedures to include periodic drills.
- Ensure the fire HRA documents contain clear evidence of how each the feasibility criteria of FAQ 07-0030 were assessed. Specific discussion of each of the FAQ 07-0030 criteria shall be documented for each recovery action credited.

See implementation items 10, 11, 12, 13, and 14 in Table S-3 of Attachment S.

Step 5: Evaluate the Reliability of Recovery Actions

The evaluation of the reliability of recovery actions depends upon its characterization.

- The reliability of recovery actions that were modeled specifically in the Fire PRA were addressed using Fire PRA methods (i.e., HRA).
- The reliability of recovery actions not modeled specifically in the Fire PRA are bounded by the treatment of additional risk associated with the applicable VFDR. In calculating the additional risk of the VFDR, the compliant case recovers the

fire-induced failure(s) as if the variant condition no longer exists. The resulting delta risk between the variant and compliant condition bounds any additional risk for the recovery action even if that recovery action were modeled.

Results of Step 5:

The reliability of recovery actions that were modeled specifically in the Fire PRA were addressed using Fire PRA methods, as documented in the Fire PRA Notebook, G1-HRA-F001, and "Human Reliability Analysis (HRA)".

The reliability of recovery actions not modeled specifically in the Fire PRA is bounded by the treatment of additional risk associated with the applicable VFDR. These results are included in Attachment W Table W-2 and W-3.

An implementation item has been created to update the Fire PRA upon completion of the modification item. See implementation item 9 in Table S-3 of Attachment S.

An implementation item is identified to update the Fire HRA upon completion of procedure updates, modifications and training. See implementation item 15 in Table S-3 of Attachment S.

Table G-1 Recovery Actions

Fire Area	Recovery Action ID	Component Description	Actions	VFDR	RA/PCS
ABBM	ABBM-RSKRA-1	New DG and new bus related to ESR-12-0143	Operators locally align and start SB AFW pump powered from dedicated diesel generator associated with Plant Modifications ESR-11-0050 and ESR-12-0143.	VFDR-ABBM-030	RA
ABBM	ABBM-RSKRA-2	Bus 15 and 16 supply breaker, 43/TSC manual switch	Operators locally align the TSC Diesel Generator.	VFDR-ABBM-014	RA
ABBM	ABBM-RSKRA-3	TSC Battery, Battery room disconnect panel switch, TSC/Battery A/B manual throwover panel	Operators locally align the TSC battery charger.	VFDR-ABBM-014	RA
ABBM	ABBM-RSKRA-4	DG1A ELCP panel, DG1B local start	Operators locally start an EDG.	VFDR-ABBM-009	RA
ABBM	ABBM-RSKRA-5	New charging system related to Plant Modification ESR-12-0144	Operators locally align and start the new charging system associated with Plant Modification ESR-12-0144.	VFDR-ABBM-007, VFDR-ABBM-008, VFDR-ABBM-010, VFDR-ABBM-011, VFDR-ABBM-012, VFDR-ABBM-025	RA
ABBM	ABBM-RSKRA-6	New large tank related to ESR-11-0050.	Operators provide alternate sources of water to the AFW system by aligning fire water to CST.	VFDR-ABBM-030	RA
ABBM	ABBM-RSKRA-7	Charging pumps	Operators locally secure charging pumps.	VFDR-ABBM-011	RA
ABI	ABI-RSKRA-1	New DG and new bus related to ESR-12-0143, SB AFW pump	Operators locally align and start SB AFW pump powered from dedicated diesel generator associated with Plant Modifications ESR-11-0050 and ESR-12-0143.	VFDR-ABI-013, VFDR-ABI-036	RA
ABI	ABI-RSKRA-2	DG1A ELCP panel, DG1B local start	Operators locally start an EDG.	VFDR-ABI-020	RA

Table G-1 Recovery Actions

Fire Area	Recovery Action ID	Component Description	Actions	VFDR	RA/PCS
ABI	ABI-RSKRA-3	New charging system related to Plant Modification ESR-12-0144	Operators locally align and start the new charging system associated with Plant Modification ESR-12-0144.	VFDR-ABI-002, VFDR-ABI-006, VFDR-ABI-022, VFDR-ABI-023, VFDR-ABI-028	RA
ABI	ABI-RSKRA-4	New large tank related to ESR-11-0050.	Operators provide alternate sources of water to the AFW system by aligning fire water to CST.	VFDR-ABI-13, VFDR-ABI-36	RA
ABI	ABI-RSKRA-5	Reactor trip breakers	Operator locally trips the reactor	VFDR-ABI-031	RA
ABI	ABI-RSKRA-6	Charging pumps	Operators locally trip charging pumps.	VFDR-ABI-022, VFDR-ABI-023, VFDR-ABI-028	RA
BOP	BOP-RSKRA-1	DG1A ELCP panel, DG1B local start	Operators locally start an EDG.	VFDR-BOP-003, VFDR-BOP-013	RA
BOP	BOP-RSKRA-2	New charging system related to Plant Modification ESR-12-0144	Operators locally align and start the new charging system associated with Plant Modification ESR-12-0144.	VFDR-BOP-004	RA
BR1A	BR1A-RSKRA-1	DG1A ELCP panel, DG1B local start	Operators locally start an EDG.	VFDR-BR1A-009, VFDR-BR1A-018	RA
BR1A	BR1A-RSKRA-2	New charging system related to Plant Modification ESR-12-0144	Operators locally align and start the new charging system associated with Plant Modification ESR-12-0144.	VFDR-BR1A-007, VFDR-BR1A-020	RA
BR1B	BR1B-RSKRA-1	DG1A ELCP panel, DG1B local start	Operators locally start an EDG.	VFDR-BR1B-004	RA
BR1B	BR1B-RSKRA-2	New charging system related to Plant Modification ESR-12-0144	Operators locally align and start the new charging system associated with Plant Modification ESR-12-0144.	VFDR-BR1B-016	RA

Table G-1 Recovery Actions

Fire Area	Recovery Action ID	Component Description	Actions	VFDR	RA/PCS
CC	CC-RSKRA-1	CST	Operators provide alternate sources of water to the AFW system by aligning fire water to CST.	VFDR-CC-014, VFDR-CC-018, VFDR-CC-019, VFDR-CC-027	RA
CC	CC-RSKRA-2	New DG and new bus related to ESR-12-0143, SB AFW pump	Operators locally align and start SB AFW pump powered from dedicated diesel generator associated with Plant Modifications ESR-11-0050 and ESR-12-0143.	VFDR-CC-014, VFDR-CC-019, VFDR-CC-027	RA
CC	CC-RSKRA-3	Bus 15 and 16 supply breaker, 43/TSC manual switch	Operators locally align the TSC Diesel Generator.	VFDR-CC-029	RA
CC	CC-RSKRA-4	TSC Battery, Battery room disconnect panel switch, TSC/Battery A/B manual throwover panel	Operators locally align the TSC battery charger.	VFDR-CC-029	RA
CC	CC-RSKRA-6	POS #14 MCB DC Distribution Panel A, POS#9 MCB DC Distribution Panel B	Operators locally depower DC loads.	VFDR-CC-003, VFDR-CC-006, VFDR-CC-013	RA
CC	CC-RSKRA-7	New charging system related to Plant Modification ESR-12-0144	Operators locally align and start the new charging system associated with Plant Modification ESR-12-0144.	VFDR-CC-004, VFDR-CC-010, VFDR-CC-022, VFDR-CC-023, VFDR-CC-024, VFDR-CC-025	RA
CC	CC-RSKRA-8	Charging pumps	Operators locally trip charging pumps.	VFDR-CC-010, VFDR-CC-013	RA
CC	CC-RSKRA-9	Reactor Trip Push Button and 52/13 & 52/15 feeder breakers	Operator locally trip the reactor	VFDR-CC-041	RA

Table G-1 Recovery Actions

Fire Area	Recovery Action ID	Component Description	Actions	VFDR	RA/PCS
CT	CT-RSKRA-1	CST	Operators provide alternate sources of water to the AFW system by aligning fire water to CST.	VFDR-CT-021, VFDR-CT-022, VFDR-CT-030, VFDR-CT-031, VFDR-CT-048	RA
CT	CT-RSKRA-2	New DG and new bus related to ESR-12-0143, SB AFW pump	Operators locally align and start SB AFW pump powered from dedicated diesel generator associated with Plant Modifications ESR-11-0050 and ESR-12-0143.	VFDR-CT-021, VFDR-CT-030, VFDR-CT-031, VFDR-CT-048	RA
CT	CT-RSKRA-3	Bus 15 and 16 supply breaker, 43/TSC manual switch	Operators locally align the TSC Diesel Generator.	VFDR-CT-033	RA
CT	CT-RSKRA-4	TSC Battery, Battery room disconnect panel switch, TSC/Battery A/B manual throwover panel	Operators locally align the TSC battery charger.	VFDR-CT-033	RA
CT	CT-RSKRA-5	DG1A ELCP panel, DG1B local start	Operators locally start an EDG.	VFDR-CT-012, VFDR-CT-018, VFDR-CT-023, VFDR-CT-049	RA
CT	CT-RSKRA-6	New charging system related to Plant Modification ESR-12-0144	Operators locally align and start the new charging system associated with Plant Modification ESR-12-0144.	VFDR-CT-004, VFDR-CT-006, VFDR-CT-025, VFDR-CT-026, VFDR-CT-027, VFDR-CT-028	RA
CT	CT-RSKRA-7	Charging pumps	Operators locally trip charging pumps	VFDR-CT-006, VFDR-CT-005	RA
CT	CT-RSKRA-8	Reactor Trip Push Button and 52/13 & 52/15 feeder breakers	Operators locally trip the reactor	VFDR-CT-047	RA
EDG1A	EDG1A-RSKRA-1	New charging system related to Plant Modification ESR-12-	Operators locally align and start the new charging system associated with Plant	VFDR-EDG1A-010	RA

Table G-1 Recovery Actions

Fire Area	Recovery Action ID	Component Description	Actions	VFDR	RA/PCS
		0144	Modification ESR-12-0144.		
EDG1B	EDG1B-RSKRA-1	DG1A ELCP panel, DG1B local start	Operators locally start an EDG.	VFDR-EDG1B-003, VFDR-EDG1B-012	RA
EDG1B	EDG1B-RSKRA-2	New charging system related to Plant Modification ESR-12-0144	Operators locally align and start the new charging system associated with Plant Modification ESR-12-0144.	VFDR-EDG1B-010	RA
PA	PA-RSKRA-1	New charging system related to Plant Modification ESR-12-0144	Operators locally align and start the new charging system associated with Plant Modification ESR-12-0144.	VFDR-PA-008	RA
SH	SH-RSKRA-1	New DG and new bus related to ESR-12-0143, SB AFW pump	Operators locally align and start SB AFW pump powered from dedicated diesel generator associated with Plant Modifications ESR-11-0050 and ESR-12-0143.	VFDR-SH-006	RA
SH	SH-RSKRA-2	New tank TCD05, installed as part of ESR-11-0050	Operators provide alternate sources of water to the AFW system by aligning fire water to CST.	VFDR-SH-006	RA
SH	SH-RSKRA-3	New charging system related to Plant Modification ESR-12-0144	Operators locally align and start the new charging system associated with Plant Modification ESR-12-0144.	VFDR-SH-013, VFDR-SH-014	RA
YARD	YARD-RSKRA-1	New charging system related to Plant Modification ESR-12-0144	Operators locally align and start the new charging system associated with Plant Modification ESR-12-0144.	VFDR-YARD-008	RA

J. Fire Modeling V&V

9 Pages Attached

J.1 Fire Models

Fire modeling tools are used in the R.E. Ginna NFPA 805 transition process in the Fire PRA only. The fire models listed in Table J-1 of the LAR were used within the Fire PRA to assess the extent of fire generated conditions for the different fire scenarios postulated and quantified for CDF and LERF. Table J-1 includes the model identification, the technical references for the model, and the validation work available for it. The selected models are listed in NEI 04-02 (Revision 2 Section 5.1.2), and are considered acceptable by the NRC if each model is shown to have been appropriately applied within the range of its applicability and V&V (RG 1.205 Revision 1, Section 4.2). The appropriate use of each model listed in Table J-1 of the LAR is demonstrated in the document titled "Verification and Validation of Fire Models Supporting the Fire PRA at R.E. Ginna" (G1-FSS-F006).

J.2 Verification and Validation

Section 2.4.1.2.3 in NFPA 805 states that fire models "shall be verified and validated." The fire modeling analysis in support of the Ginna Fire PRA has been subjected to the Verification and Validation (V&V) process documented in NUREG-1824.

J.3 Model Application Range

The V&V study documented in NUREG-1824 and NUREG-1934 specify a range of applicability for the validation results. This range of applicability is expressed in terms of dimensionless parameters. The range of model input parameters from the validation study are expressed in dimensionless terms so that fire modeling analysts can compare them with plant specific scenarios of different scales.

Engineering Calculations (i.e. Hand Calculations)

For the use of engineering calculations (i.e., hand calculations used for screening and/or determining near-field fire generated conditions), Section 2.2.2 of the Verification and Validation of Fire Models Supporting the Fire PRA FSS Analysis, G1-FSS-F006 provides an overview of the V&V considerations in the Fire PRA. Specifically, Section 6.3 of G1-FSS-F006 evaluates the dimensionless parameters for a range of typically used input values in the Fire PRA. The objective is to provide an evaluation that demonstrates the models are appropriate for the practical range of inputs used for these engineering calculations. The engineering calculations were used for the most part in determining:

- The heat release rate required for generating damage to targets located in the fire plume or exposed to flame radiation. This is the fire intensity required to generate fire conditions exceeding the generic damage criteria specified in Appendix H of NUREG/CR-6850 as applicable to the targets for the scenarios defined in the Ginna Fire PRA,

- The temperature of the fire plume at a given location above the fire, and
- The incident heat flux to targets horizontally aligned with the fire source.

The V&V process provides reasonable assurance that the models are used within the validation range and over-predict fire generated conditions or produce conservative (i.e. bounding) results.

Zone Modeling (CFAST)

The zone model CFAST was used for determining hot gas layer temperatures for selected fire zones within the scope of the Fire PRA. These calculations are documented in Appendices Q through AS in the Detailed Fire Modeling Notebook (G1-FSS-F001). The dimensionless parameters for the CFAST files were evaluated against the available V&V criteria in NUREG-1824. It should be noted that in some calculations, particularly those associated with relatively large fire zones, there are relatively complex configurations not explicitly covered by the V&V criteria in NUREG-1824. However, these calculations are necessary in order to ensure that the contribution from fire scenarios involving damaging hot gas layer conditions in the fire zones are not excluded from the fire risk model. In order to address in part the scope limitations of the V&V study, all hot gas layer calculations were conducted using heat release rate values consisting of the combination of fixed ignition source and intervening combustibles that bound all the potential scenarios in the fire zone. In addition, sensitivity analyses were conducted assuming that natural ventilation, forced ventilation, and room dimensions fall within the validation ranges suggested in NUREG 1824. Section 7 of the Verification and Validation of Fire Models Supporting the Fire PRA FSS Analysis, G1-FSS-F006 evaluates the dimensionless parameters for a range of typically used input values in the Fire PRA. The fire modeling approach/results and the V&V process ensures that the CFAST predictions are consistent with the V&V guidance.

Field Modeling (FDS)

The field model FDS was used for determining main control room abandonment conditions. These calculations are documented in the Main Control Room Analysis calculation, 32-9073294-002. The dimensionless parameters for the FDS files were evaluated against the available V&V criteria in NUREG-1824 in Appendix C of the MCR calculation.

J.4 Summary of Fire Modeling Verification and Validation

Table J-1 provides a detailed listing of the fire models used in support of the Ginna Fire PRA, applicable technical references and V&V information. The table is organized as follows:

- The "Calculation" column identifies the specific fire model used in support of the Ginna Fire PRA.

- The “Application” column describes the type of calculation done in Fire PRA with the fire model.
- The “V&V Basis” column lists the references where V&V information for the fire modeling is found and the V&V was conducted for the fire model in the Ginna Fire PRA.
- The “Discussion” column lists references documenting the technical basis for the fire model and provides additional technical information.

Table J-1 - V & V Basis for Fire Models / Model Correlations Used

Calculation	Application	V & V Basis	Discussion
Flame Height (Method of Heskestad)	Calculates the vertical extension of the flame region of a fire.	• NUREG-1805, Chapter 3, 2004 • NUREG-1824, Volume 3, 2007 • NUREG-1934, 2012 • Society of Fire Protection Engineers (SFPE) Handbook, 4th Edition, Chapter 2-1, Heskestad, 2008	• The correlation is used in the NUREG-1805 fire model, for which V&V was documented in NUREG-1824. • The correlation is documented in an authoritative publication of the SFPE Handbook of Fire Protection Engineering. • The correlation is used consistent with the verification and validation available as documented in G1-FSS-F006.
Plume Centerline Temperature (Method of Heskestad)	Calculates the vertical separation distance, based on temperature, to a target in order to determine the vertical extent of the Zone of Influence (ZOI) or severity factor Heat Release Rate (HRR).	• NUREG-1805, Chapter 9, 2004 • NUREG-1824, Volume 3, 2007 • NUREG-1934, 2012 • SFPE Handbook, 4th Edition, Chapter 2-1, Heskestad, 2008 • NUREG/CR-6850, Appendix H - Damage Criteria, 2005	• The correlation is used in the NUREG-1805 fire model, for which V&V was documented in NUREG-1824. • The correlation is documented in an authoritative publication of the SFPE Handbook of Fire Protection Engineering. • The correlation is used within the limits of its range of applicability as documented in G1-FSS-F006 or it has been justified that bounding conservative results are produced. • NUREG/CR-6850 generic screening damage criteria is used, which is considered conservative.

Table J-1 - V & V Basis for Fire Models / Model Correlations Used

Calculation	Application	V & V Basis	Discussion
Radiant Heat Flux (Point Source Method)	Calculates the horizontal separation distance, based on heat flux, to a target in order to determine the horizontal extent of the ZOI or severity factor HRR.	• NUREG-1805, Chapter 5. 2004 • NUREG-1824, Volume 4, 2007 • NUREG-1934, 2012 • SFPE Handbook, 4th edition, Chapter 3-10, Beyler, C., 2008 • NUREG/CR-6850, Appendix H - Damage Criteria, 2005	• The correlation is used in the NUREG-1805 fire model, for which V&V was documented in NUREG-1824. • The correlation is documented in an authoritative publication of the SFPE Handbook of Fire Protection Engineering. • The correlation is used within the limits of its range of applicability as documented in G1-FSS-F006 or it has been justified that bounding conservative results are produced. • NUREG/CR-6850 generic screening damage criteria is used, which is considered conservative.

Table J-1 - V & V Basis for Fire Models / Model Correlations Used

Calculation	Application	V & V Basis	Discussion
Hot Gas Layer Calculations using Fire Dynamics Simulator (Version 5)	Evaluates the time at which control room abandonment is necessary based on smoke obscuration and average HGL temperature.	• FDS • NIST Special Publication 1018-5, Volume 2: Verification • NIST Special Publication 1018-5, Volume 3: Validation • NUREG-1824, Volume 7, 2007 • NUREG-1934, 2012	• V&V of the FDS is documented in NIST Special Publication 1018-5. • The V&V of FDS specifically for Nuclear Power Plant applications has also been documented in NUREG-1824. • It was concluded that FDS models the radiant heat and gas temperature in an appropriate manner. Furthermore, the predictions of radiant heat and temperature are deemed to be within the bounds of experimental uncertainty. • NUREG/CR-6850 generic screening damage criteria is used, which is considered conservative or it has been justified that bounding conservative results are produced. • The model is used within the limits of its range of applicability as documented in report 32-9073294. For relevant scenarios where the input parameters are outside of the limits, control room abandonment conditions are still predicted.

Table J-1 - V & V Basis for Fire Models / Model Correlations Used

Calculation	Application	V & V Basis	Discussion
Hot Gas Layer Calculations using CFAST (Version 6)	Calculates the upper and lower layer temperatures for various compartments, the layer height, and smoke obscuration.	• NIST Special Publication 1086, 2008 • CFAST • NUREG-1824, Volume 5, 2007 • NUREG-1934, 2012	• V&V of the CFAST code is documented in the NIST Special Publication 1086. • The V&V of CFAST specifically for Nuclear Power Plant applications has also been documented in NUREG-1824. • It was concluded that CFAST models the hot gas layer height, temperature and smoke concentration in an appropriate manner. Furthermore, the predictions of HGL height and temperature are deemed to be within the bounds of experimental uncertainty. • CFAST is used within the limits of its range of applicability as documented in G1-FSS-F001 and G1-FSS-F006 or it has been justified that bounding conservative results are produced.

Table J-1 References:

1. NUREG-1805, "Fire Dynamics Tools (FDT[s]) Quantitative Fire Hazard Analysis Methods for the U. S. Nuclear Regulatory Commission Fire Protection Inspection Program," U.S. Nuclear Regulatory Commission, Washington, DC, December 2004.

2. NUREG-1824, "Verification & Validation of Selected Fire Models for Nuclear Power Plant Applications," U.S. Nuclear Regulatory Commission, Washington, DC, May 2007.

3. NUREG-1934 and EPRI 1023259, *Nuclear* Power *Plant Fire Modeling Analysis Guidelines (NPP FIRE MAG)*. U.S. Nuclear Regulatory Commission, Office of Nuclear Regulatory Research (RES), Washington, DC and Electric Power Research Institute (EPRI), Palo Alto, CA: 2012.

4. The SFPE Handbook of Fire Protection Engineering, 4th Edition, P. J. DiNenno, Editor-in-Chief, National Fire Protection Association, Quincy, MA, 2008.

5. NUREG/CR-6850, "EPRI/NRC-RES Fire PRA Methodology for Nuclear Power Facilities," U.S. Nuclear Regulatory Commission, Washington, DC, September 2005.

6. "Fire Modeling Guide for Nuclear Power Plant Applications", EPRI 1002981, FINAL REPORT, August 2002.

7. NIST Special Publication 1018-5, "Fire Dynamics Simulator (Version 5) Technical Reference Guide, Volume 2: Verification", National Institute of Standards and Technology, October 29, 2010.

8. NIST Special Publication 1018-5, "Fire Dynamics Simulator (Version 5) Technical Reference Guide, Volume 3: Validation", National Institute of Standards and Technology, October 29, 2010.

9. NIST Special Publication 1086, "CFAST – Consolidated Model of Fire Growth and Smoke Transport (Version 6): Software Development and Model Evaluation Guide," December 2008.

10. IMC 0609, Appendix F, "Fire Protection Significance Determination Process," Issue Date February 28, 2005.

11. NUREG/CR-7010, "Cable Heat Release, Ignition, and Spread in Tray Installations during Fire (CHRISTIFIRE) Volume 1: Horizontal Trays," Final Report, McGrattan, K., Office of Nuclear Regulatory Research, Nuclear Regulatory Commission, Washington, DC, July 2012.

12. G1-FSS-F001, "Fire PRA Notebook Fire Scenario Selection and Analysis (FSS) Detailed Fire Modeling"

13. G1-FSS-F006, "Verification and Validation of Fire Models Supporting the Fire PRA Notebook Fire Scenario Selection and Analysis (FSS) Detailed Fire Modeling at R.E. Ginna"

14. 32-9073294-0002, "R.E. Ginna Fire PRA-MCR Calculation"

S. Modifications and Implementation Items

19 Pages Attached

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 Fire PRA,
- Compensatory Measure in place, and
- A risk-informed characterization of the modification and compensatory measure.

The following legend should be used when reviewing the table:

- 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.

These modifications will be completed prior to startup from the second Refueling Outage greater than 12 months after receipt of the SE.

The *Proposed Modification* statement provides 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 Exelon Engineering processes, hence implementation details may vary.

Table S-1 Plant Modifications Completed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
18	Low	1	A potential fire in the Turbine Building could cause the Diesel Fire Pump to fail due to fire effects on the remote start circuit.	ESR-11-0421: Modify the Diesel Fire Pump Control Panel circuit to isolate the remote start circuit from the Diesel Fire Pump Control Panel Microcontroller.	No	Yes	Not applicable.

Compensatory measures are required due to identified vulnerabilities associated with either, 10 CFR 50 Appendix R compliance or NFPA 805 compliance. Appropriate compensatory measures needed for 10 CFR 50, Appendix R related compliance modifications are currently in place and will be maintained until associated modifications are complete. Appropriate compensatory measures needed for any outstanding NFPA 805 related compliance modifications will be in place at the time of NFPA 805 program implementation and will be maintained until associated modifications are complete.

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
Redacted							

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
Redacted							

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization

Redacted

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization

Redacted

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
Redacted							

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
Redacted							

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
Redacted							

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
Redacted							

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
Redacted							

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
Redacted							

Table S-2 Plant Modifications Committed

Item	Rank	Unit	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization

Redacted

Table S-3, Items provided below are those items (procedure changes, process updates, and training to affected plant personnel) that will be completed prior to the implementation of the new NFPA 805 fire protection program. This will occur 180 days after NRC approval. Note that Implementation Items 9, 15 and 19 are associated with modifications in Table S-2 and will be completed following completion of the modification process for the Table S-2 committed modifications. Also note that item 21 will be completed following the NRC approval of the Westinghouse RCP Seal Topical Report.

Table S-3 Implementation Items

Item	Unit	Description	LAR Section / Source
1	1	Outage Planning to incorporate the following recommendations from the 'pinch point' evaluations into appropriate plant procedures: ▪ Limiting/prohibiting hot work in the Fire Zones. ▪ Detection/Suppression systems should be verified to be functional, i.e., not tagged out, etc. ▪ Limiting/prohibiting the hazard of combustible materials. ▪ Using alternate equipment and/or the equipment's position whenever removing power. ▪ Appropriate compensatory measures required during periods of increased vulnerability. ▪ Activities that may impact KSFs should be limited and strictly controlled to mitigate losses. ▪ Consider the hazards from the introduction of combustible materials and sources of fire precursors. ▪ Limiting work during periods of HRE conditions.	4.3.2 and Attachment D
2	1	The monitoring program required by NFPA 805 Section 2.6 will be implemented after the LAR approval as part of the fire protection program transition to NFPA 805, in accordance with NFPA 805 FAQ 10-0059, and will include a process that reviews the fire protection performance and trends in performance.	4.6.2
3	1	Incorporate the NFPA 805 monitoring program into assessment procedures such that a periodic assessment will be performed (e.g., at a frequency of approximately every two to three operating cycles), taking into account, where practical, industry wide operating experience.	4.6.2

Table S-3 Implementation Items

Item	Unit	Description	LAR Section / Source
4	1	Several NFPA 805 document types such as: NSCA Supporting Information, Non-Power Mode NSCA Treatment, etc., generally require new control procedures and processes to be developed since they are new documents and databases created as a result of the transition to NFPA 805. The new procedures will be modeled after the existing processes for similar types of documents and databases. Design basis documents will be revised to reflect the NFPA 805 role that the system components now play.	4.7.2
5	1	Review plant changes during the NFPA 805 implementation period to ensure that changes are appropriately evaluated for potential impact on the PRA model. This is done per CNG-CM-1.01-3004, "PRA Process for Internal Evaluations," and CNG-CM-1.01-1003, "Design Engineering and Configuration Control." Update, if applicable, Ginna procedures EP-3-P-0132, A-202 and CNG-CM-1.01-1003 to address the NFPA 805 Change Evaluation Process. Additionally, a comprehensive update of the NFPA 805 analyses is planned as part of the NFPA 805 implementation period to reflect the current plant configurations. The update will include review of plant configuration changes along with changes that may have occurred from RAI responses, updates from industry groups for MSO configurations, new or revised FAQs, and development of modifications. This final review will ensure current plant configurations are appropriately reflected and evaluated in the NFPA 805 documentation prior to full implementation of NFPA 805.	4.7.2
6	1	Configuration control of the Fire PRA model will be maintained by integrating the Fire PRA model into the existing processes used to ensure configuration control of the internal events PRA model.	4.7.2

Table S-3 Implementation Items

Item	Unit	Description	LAR Section / Source
7	1	The existing Ginna QA program will be utilized with the following changes: ▪ In addition to editorial and administrative changes (i.e. replacing references to previous NRC guidelines with those associated with the NFPA 805 transition and ensuring the features required for a performance based program under NFPA 805 are addressed), the components and systems currently considered within the scope of the Ginna QA Program will be expanded to include those components and systems that are in the power block and are required by Chapter 4 of NFPA 805. This means that certain Fire Protection systems and features in some buildings not currently considered under the QA Program that are required by NFPA 805 Chapter 4 will now fall under the QA program. As such, any future modifications to these systems will be conducted under the design controls required by the QA program. ▪ The audit requirements will be revised to include the periodic review of the Monitoring Program.	4.7.3
8	1	Post-transition, for personnel performing fire modeling or Fire PRA development and evaluation, Ginna will develop and maintain qualification requirements for individuals assigned various tasks. Position Specific Guides will be developed to identify and document required training and mentoring to ensure individuals are appropriately qualified per the requirements of NFPA 805 Section 2.7.3.4 to perform assigned work.	4.7.3

Table S-3 Implementation Items

Item	Unit	Description	LAR Section / Source
9	1	Incorporate as built risk related modifications and any other additional refinements that may be needed into the Fire PRA and Internal Events Model and verify the risk results are not appreciably changed. The credited modifications will be tracked through the design input and the engineering configuration control process. The PRA model will be updated as necessary to reflect the final change package, and impacts to the risk estimates will be verified. As the actual engineering implementation of each modification is developed in concert with Fire PRA evaluations of the proposed change, if the Fire PRA indicates that the as-built change in risk would not meet the acceptance criteria as described in LAR Section 4.5.2.2, the modification under development or its representation in the Fire PRA will be refined to ensure that the acceptance criteria are satisfied.	4.8.2 and Attachment G
10	1	The following implementation item resulted from the feasibility evaluation: Develop / revise post-fire response procedures to reflect the NSCA.	Attachment G
11	1	The following implementation item resulted from the feasibility evaluation: Identify required tools during the procedure validation and verification.	Attachment G
12	1	The following implementation item resulted from the feasibility evaluation: Document staffing requirements for revised post-fire response procedures. Note: The number of operator actions has been reduced significantly from the number required to comply with Appendix R. Therefore adequate staffing is assured.	Attachment G
13	1	The following implementation item resulted from the feasibility evaluation: Train operators on revised post-fire response procedures.	Attachment G
14	1	The following implementation item resulted from the feasibility evaluation: Revise training requirements for post-fire response procedures to include periodic drills.	Attachment G

Table S-3 Implementation Items

Item	Unit	Description	LAR Section / Source
15	1	An implementation item has been created to update the fire HRA upon completion of procedure updates, modifications, and training.	Attachment G
16	1	The following procedure change to be implemented as part of the NFPA 805 transition provides a reduction in risk: Procedure Change PCR-12-07132: This is a change to E-0 Step 2, calling for the local trip of the turbine in case of MSIV closure or Main Control Room Trip fail. Currently, E-0 Step 2 simply directs operators to manually trip the turbine.	Attachment C
17	1	The following procedure change to be implemented as part of the NFPA 805 transition provides a reduction in risk: Procedure Change PCR-12-06655: This change consists of adding a section to the ER-D/G.1 Procedure to support removing control power to 480 VAC Buses 14 or 16 and locally load an AFW pump and a charging pump.	Attachment C
18	1	The following procedure change to be implemented as part of the NFPA 805 transition provides a reduction in risk: Procedure Change PCR-13-00869: This change directs operations to use ATT-3 for containment isolation regardless of the status of the bright lights, given that there is indication of a fire and any of the following conditions: high pressurizer pressure, low pressurizer pressure, or low steam generator water level.	Attachment C
19	1	The following procedure change to be implemented as part of the NFPA 805 transition provides a reduction in risk: A procedural change, not to be implemented until all required modifications are installed, will eliminate ER-Fire 2, 3, 4, 5, and 6.	Attachment C
20	1	The following procedure change to be implemented as part of the NFPA 805 transition provides a reduction in risk: Procedure Change PCR-12-01317: This change consists of adding steps under "Reactor Trip Response Not Obtained (RNO)" to locally pull the MG Set control fuses and locally trip the MG Set breakers if there is no indication of a reactor trip once hand switches for 52/13 and 52/15 are open.	Attachment C

Table S-3 Implementation Items

Item	Unit	Description	LAR Section / Source
21	1	Upon NRC approval of the Westinghouse topical report for the Reactor Coolant Pump (RCP) seals and related PRA model, the Ginna PRA model shall be reviewed using the final version of the topical report as well as any exceptions/clarifications included in the NRC approval to determine if the internal events and Fire PRA require a revision. The Ginna internal events and Fire PRA will be updated, if applicable, with the latest RCP seal information. If the updates show that the transition change-in-risk estimates will exceed RG 1.205 guidelines, Ginna will take action to reduce the risk results to within the RG 1.205 guidelines. Compensatory measures established prior to the RCP seal replacement (Table S-2, commitment item #11) shall remain in place until this noted review of transition change-in-risk estimates show within RG 1.205 guidelines using the accepted Shutdown Seal (SDS) failure models. Self-approved changes which rely on the SDS failure model to meet the self-approval criteria will not be undertaken before acceptable models have been implemented into the Ginna Internal and Fire PRAs.	N/A
22	1	PCR-15-00820 to add new recovery action (LAR Attachment G addition) – Change the response not obtained (RNO) in E-0 Step 1 such that a fluctuating Microprocessor Rod Position Indication (MRPI) status display or a dark MRPI status display causes the RNO to be selected. The fire also could cause a NO answer to at least one train of reactor trip breakers being open or flux lowering. Either condition would then require the RNO to be selected. Add to the RNO that if there is a fire in the power block the Bus 13 and 15 feed breakers (52/13 and 52/15, respectively) will be opened. In most cases, this is not a recovery action as breakers 52/13 and 52/15 can be opened from the Main Control Room (MCR); however, if the 52/13 and 52/15 indication lights are extinguished or do not indicate both breakers open (i.e., if the breaker controls are impacted by the fire), then local action to shed the Motor-Generator (MG) Set breakers is required. It is for this reason that this is considered a recovery action as the local breaker manipulation is outside the MCR.	Attachment G

Table S-3 Implementation Items

Item	Unit	Description	LAR Section / Source
23	1	PCR-15-00839 to add new recovery action (LAR Attachment G addition) – Change any post-reactor trip procedures that could be entered due to a fire and that do not result in a confirmed Safety Injection (SI) actuation (i.e., Charging pumps tripped with Operations confirming that the pumps are tripped) to require tripping the Charging pumps (placed in pull stop) and starting the new injection pumps that will connect in the Stand-By AFW (SBAFW) Building (LAR Attachment S, Table S-2, Modification Item 9 and FLEX portable injection pump) given there is a confirmed fire in the Power Block with confirmed equipment damage. In most scenarios, this is not a recovery action as the Charging pumps can be placed in pull stop in the Main Control Room (MCR); however, the Charging pump trip must be confirmed locally if the indicating lights are extinguished or do not indicate a secured pump. It is for this reason that this is considered a recovery action.	Attachment G
24	1	PCR-15-00825 to add new Main Control Room (MCR)-based action – Change any post-reactor trip procedures that could be entered due to a fire related to isolating the power operated relief valves (PORVs). Add additional instructions such that PORV control fuses are pulled given there is a confirmed fire in the Power Block with confirmed equipment damage and a new pressurizer (PZR) pressure instrument (LAR Attachment S, Table S-2, Modification Item 2) indicates a lowering PZR pressure.	N/A

V. FIRE PRA QUALITY

19 Pages Attached

In accordance with RG 1.205 position 4.3:

> *"The licensee should submit the documentation described in Section 4.2 of Regulatory Guide 1.200 to address the baseline PRA and application-specific analyses. For PRA Standard "supporting requirements" important to the NFPA 805 risk assessments, the NRC position is that Capability Category II is generally acceptable. Licensees should justify use of Capability Category I for specific supporting requirements in their NFPA 805 risk assessments, if they contend that it is adequate for the application. Licensees should also evaluate whether portions of the PRA need to meet Capability Category III, as described in the PRA Standard."*

The Ginna Fire PRA Peer Review was performed June 18 to 22, 2012 using the NEI 07-12 Fire PRA peer review process, the ASME PRA Standard (ASME/ANS RA-Sa-2009) and Regulatory Guide 1.200, Rev. 2. The purpose of this review was to establish the technical adequacy of the Fire PRA for the spectrum of potential risk-informed plant licensing applications for which the Fire PRA may be used. The 2012 Ginna FPRA Peer Review was a full-scope review of all of the technical elements of the Ginna at-power Fire PRA (2012 Model of Record) against all technical elements in Section 4 of the ASME/ANS Combined PRA Standard, including the referenced internal events Supporting Requirements (SRs). The Peer Review noted a number of facts and observations (F&Os). The Findings and their dispositions are provided in Table V-1. All Findings are being provided and have been dispositioned. All F&Os that were defined as suggestions have been dispositioned and will be available for NRC review. The Fire PRA is adequate to support the NFPA 805 Licensing Basis.

The Fire PRA meets at least Capability Category II in all cases. Four ASME/ANS SRs were identified by the peer review team as meeting Capability Category I only requirements or a level of "not met" for the requirement. The capability categories are defined in ASME/ANS RA-Sa-2009. An evaluation of the impact of those areas where only the Capability Category I requirement was met or the requirement was "not met" is provided in Table V-2 along with the basis for now meeting Capability Category II.

Table V-1 Fire PRA Peer Review – Facts and Observations - Findings

Table V-1 Fire PRA Peer Review – Facts and Observations - Findings

SR	Topic	Status	Finding	Disposition
CS-A1-01	Cable Selection	Closed	There is an issue concerning current transformers and the potential for CT fires that may require additional cables to be included in the fire PRA. The licensee is aware of the CT fire issue and is tracking the industry response to the issue prior to addressing it in the fire PRA at Ginna.	Section 4.2.22 of the cable selection notebook (G1-CS-F001, Rev 1) addresses this finding. Another common enclosure concern is that an open circuit on a high voltage (e.g., 4.16 kV) ammeter current transformer (CT) circuit may result in secondary damage, possibly resulting in the occurrence of an additional fire in the location of the CT itself. (per NEI 00-01 section 3.5.2.1) This issue was evaluated in CA-2012-002216 (See CA-2012-002216 in Ginna CR Report CR-2012-005254) and CA-2012-000439 (See HoldCo CR Report CR-2012-000311), and it was concluded that the phenomenon can be considered statistically insignificant and the associated cables do not need to be included in the PRA model. Per NUREG/CR-7150, JACQUE-FIRE Volume 1: Phenomena Identification and Ranking Table (PIRT), the PIRT panel concluded that secondary fire for CTs with a turns ratio of 1200:5 or lower were not a credible risk and for CTs with higher turn ratio is unlikely. PIRT concluded that the phenomenon of CT secondary initiating a fire can be considered statistically insignificant and the associated cables do not need to be included in the PRA model. REG will continue to monitor the industry information on this phenomena and *update the FPRA as needed.*

Table V-1 Fire PRA Peer Review – Facts and Observations - Findings

SR	Topic	Status	Finding	Disposition
CS-B1-01	Cable Selection	Closed	Based on the Cable Selection Report, the existing coordination analyses were reviewed, but not all Fire PRA modeled buses were analyzed. Therefore, CC-I is met, but CC-II requires that all Fire PRA modeled buses be analyzed for over current coordination.	Section 4.2.7 of the cable selection notebook (G1-CS-F001, Rev 1) addresses this finding. The scope of Coordination Study 32-9183379-001 includes all NFPA 805 power sources, which includes all PRA required power sources. The power sources in the scope of the study are identified in Attachment 5 of the Coordination Study, as well as section 4.0 of the Table of Contents. No coordination issues were identified with DC fuses. However, coordination issues were identified with AC circuit breakers. The Fire PRA analysis includes power source cable selection of uncoordinated cables identified in Coordination study 32-9183379-001 Appendix H, by selecting "Cable of Concern" for "Highest Upstream PSID Affected by Cable" where "Highest Upstream PSID Affected by Cable" are PRA power sources (listed in the BE Table). Power source cable selection also includes cables not listed in the Coordination Study which are connected to the "Cable of Concern", if they are within the "Minimum Cable length required to coordinate" listed for the power source (PSID) and breaker compartment (CMPT) in Coordination Study Appendices F and G. Connected cables within the "Minimum Cable length required to coordinate" also includes cables of applicable downstream non-NFPA 805 power sources listed in Attachment 8 of the Coordination Study, where "PPNL Required for Coordination" is "Maybe-for PRA only". Note that where "PPNL Required for Coordination" is listed as "NO", the Attachment 8 "Comments" states that there is "Sufficient upstream cable length" such that the load cables of the listed Non-NFPA 805 power source (PSID) are coordinated and therefore do not require cable selection as uncoordinated cables. (Reference CA-2012-000440 in HoldCo CR Report 2012-000311). Section 4.1.10 describes the cable selection methodology for uncoordinated cables (identified as described above) that are not routed in TRACK2000. This includes "Cable of Concern" in Coordination Study 32-9183379-001 Appendix H that do not have a designated cable ID and are uniquely identified in Appendix H as "NONUM" followed by the hyphenated PSID and CMPT. The Fire PRA analysis also includes all power and control cables of 4KV switchgear buses BUS11A, BUS11B, BUS12A and BUS12B which are the only buses that require control power to trip on overcurrent. For these buses, the Fire PRA fault tree models the loss of the entire bus if the same fire faults a power cable of the bus and causes the loss of control power to the breaker feeding the power cable. This is discussed further in section 4.2.8.

Table V-1 Fire PRA Peer Review – Facts and Observations - Findings

SR	Topic	Status	Finding	Disposition
FQ-E1-01	Fire Quantification	Closed	1. Notebook G1-FQ-F001, Rev. 0, Appendix B does not discuss "nonsignificant accident cutsets". This was also confirmed by discussions with the Ginna plant personnel. 2. In addition, the SR (FQ-E1) states that "DEVELOP a defined basis to support the claim of nonapplicability of any of the requirements under *these sections in Section 2." A basis for non-applicability of QU-D5 was* not developed.	The current set of dominant cutsets is reviewed. Further, the non-dominant cutsets review was performed and documented in FQ to address finding FQ-F1-01.
FQ-F1-02	Fire Quantification	Closed	FQ-F1-02 - QU-F6: DOCUMENT the quantitative definition used for significant basic event, significant cutset, and significant accident sequence. If it is other than the definition used in Part 2, JUSTIFY the alternative. NOT MET. The definition used for significant basic event, cutset, or accident sequence is not documented.	The FQ Notebook now outlines the definitions for a significant basic event, cutset, or accident sequence. A significant cutset or accident sequence is defined as the top 95% of the CDF/LERF per Regulatory guide 1.200, Rev. 2. The FQ notebook has been updated to include accident sequences and cutsets that contribute 95% or the CDF and LERF
FQ-F1-03	Fire Quantification	Closed	QU-F1 (g) - Document equipment or human actions that are the key factors in causing the accidents to be nondominant. Equipment or human actions that are key factors in causing accidents to be nondominant are not discussed.	The FQ Notebook (G1-FQ-F001, Rev1) includes a table documenting the importance of significant basic events including equipment, human actions, and circuit failure likelihoods. This notebook will also include a summary of these results which discusses key factors such as human actions that are critical for risk reduction.
FSS-A3-01	Fire Scenario Selection	Closed	Circuit routing in cable trays is not always known, but have been characterized in the Fire PRA as being known. Therefore, the Fire PRA needs to be adjusted to account for assumptions that are needed for cable routing in trays.	Section 5.2 of the cable selection notebook (G1-CS-F001, Rev1) addresses this finding. If raceway information and/or Fire Zone/Room locations were not available, reviews of plant layout/partitioning drawings and, when necessary, field walkdowns were conducted to gather the missing data, which was subsequently added to the TRAK2000 database. Cable routings have been justified such that there are no assumed cable routings, as discussed in CA-2012-000441 (See HoldCo CR Report CR-2012-000311). Therefore, uncertainty analysis is not required as actual cable routing and bounding routes are used and there are no assumed cable routings. Bounding routes were used for all cables where actual routing was not known, including the "NONUM" cables for PRA power sources identified in Coordination Study Appendix H and the cables identified in CA-2012-000441. Bounding routes conservatively include all rooms in all credible routings of a cable.

Table V-1 Fire PRA Peer Review – Facts and Observations - Findings

SR	Topic	Status	Finding	Disposition
FSS-A4-01	Fire Scenario Selection	Closed	Functional impacts are not being represented in all cases because of data inconsistency between the plant's cable databases and the Fire Modeling database. Consistency between all plant documents describing actual plant conditions must be coordinated in order to be used for the Fire PRA.	Section 4.1.6 of the cable selection notebook (G1-CS-F001, Rev1) addresses this finding. 6. The Cable Selection Worksheets (CSWs) or equivalent reports were prepared and verified to document the cables that could impact proper operation or could cause mal-operation of the FPRA components. CSWs generated from the vendor's custom database and the associated document packages provide documentation of the cable selection that was performed by vendor prior to June 23, 2009. Cable Selection Worksheets are not currently available from TRAK2000 (the Ginna cable database) and are replaced by equivalent reports of manually prepared spreadsheet data in document packages for cable selection performed at Ginna since 2009. Data cleanup packages generated at Ginna provide documentation of component and/or cable data changes. Therefore the manual documentation of cable selection for a component is comprised of the Cable Selection Worksheet (or equivalent) applicable to the component and all data cleanup packages applicable to the component. An index cross-reference of data cleanup packages to applicable components is maintained by the Ginna Cable Selection Group. Based on this index, TRAK2000 component notes reference applicable data cleanup package numbers. (Closure Basis for CRMP 1019 listed in Appendix A): TRAK2000 data entry has been completed, reviewed and documented to be consistent with these Cable Selection Worksheets (or equivalent) and data cleanup packages as part of the cable selection process. The TRAK2000 data has been provided to Fleet PRA and has been incorporated into the Fire PRA and Fire Modeling Database. Therefore the PRA databases are now consistent with TRAK2000. (Reference CA-2012-000442 in HoldCo CR Report CR-2012-000311).

Table V-1 Fire PRA Peer Review – Facts and Observations - Findings

SR	Topic	Status	Finding	Disposition
FSS-A6-01	Fire Scenario Selection	Closed	Justification for the 3 minute and 10 minute progression of the event in *the event tree is not justified and documented. Reference simply to* NUREG/CR-6850 is not adequate.	Section 1.6 of the Main Control Room report (G1-FSS-F004, Rev 2) addresses *the use of 3 minutes and 10 minutes progression. The event tree model includes* a sequence for promptly suppressed fires. This sequence captures events associated with very small fires that are promptly suppressed that may produce a plant trip and affect a single plant component that is conservatively selected to be the "worst impact" in the panel. The model assumes that prompt suppression must occur within three minutes after the ignition for the fire to be localized at one component. Since main control room is constantly occupied, there is an assumption that detection of a fire would occur near to the ignition time. From Chapter 14 of Supplement 1 NUREG/CR-6850 (see Table 14-2), the suppression curve constant λ is 0.33 min-1 for the main control room. By taking the inverse of λ, an average value of 3 minutes for time needed to suppress a fire in the main control room. The non suppression probability calculated at three minutes is =EXP(-□ x t) = EXP(-0.33 x 3) = 0.37. This probability of 0.37 is the value used to characterize the first sequence in the event tree. This probability is considered conservative because it is associated with a very small fire damaging only a *single component in a control board panel. Appendix L of NUREG/CR-6850* suggests values (see Figure L-1) in the order of 5.5E-3 to 8.5E-3 for representing the multiplication of non suppression probability and severity factor for small fires propagating distances of 0 to 0.5 m. In contrast, the Ginna Fire PRA conservatively represents these fires with a probability of 0.37 and impacts associated to the worst single target within each panel. A propagation time from panel to panel of 10 minutes is used in the analysis based on the guidance available in Appendix S of NUREG/CR-6850, page S-2. It should be noted that not all the panels in the main control room have the ability to propagate. The probability for branches 3 and 4 is given by the manual suppression curve for the control room evaluated at 10 minutes. Specifically, the probability for this branch is calculated as Pr(t > tprop) = EXP(-0.33 x 10) = 0.037. This represents the probability that suppression fails by the propagation time, generating a propagation scenario. The probability for branches 5 and 6, is calculated as Pr(tp-supp < t < tprop) = EXP(-0.33 x 1/0.33) – EXP(-0.33 x 10) = 0.33, which is the probability that suppression is successful sometime between prompt suppression and time to propagation.

Table V-1 Fire PRA Peer Review – Facts and Observations - Findings

SR	Topic	Status	Finding	Disposition
FSS-C1-01	Fire Scenario Selection	Closed	FSS Detailed Fire Modeling notebook G1-FSS-F001 states that a peak HRR probability distribution curve is calculated, and the area under the curve to the right of the critical heat release rate (based on HRR required to damage the closest target) is determined to be the severity factor. The severity factor calculated for the critical heat release rate was then multiplied by the ignition frequency to determine the frequencies of fires that could generate damage. This is considered to be a bounding type of analysis and not a true 2-point analysis. Per Note FSS-C1-(2) of the Standard, the third variation is to screen fires that are below the minimum damage threshold, and use a 2-point analysis for evaluating the fires with HRR's above the damage threshold.	Section 6.1.3.8 of G1-FSS-F001, detailed fire modeling notebook, describes the disposition of finding FSS-C1-01. The two point HRR model implemented in the Ginna Fire PRA is based on the guidance available in Appendix E and Appendix F of NUREG/CR-6850. That is, the two points are derived from characterizing the peak heat release rate of an ignition source with a probability distribution.
FSS-D1-01	Fire Scenario Selection	Closed	Fire PRA software requires a verification & validation process to make sure the output are accurate.	The Ginna Fire Modeling Database was subjected to an independent verification and validation process. Ginna Fire PRA notebook G1-FSS-F005, Verification and Validation (V&V) of the Ginna Fire Modeling Database, documents the V&V in detail. The scope of the V&V includes the quantification of fire ignition frequencies and the data manipulation associated with the preparation of the input tables for quantification. The independent V&V results concluded that the Ginna Fire Modeling Database is processing the data and information for scenario input correctly
FSS-D7-01	Fire Scenario Selection	Closed	An unavailability analysis for the plant specific situation has not yet been performed.	Total system failure probabilities for credited systems are documented in Table 6-1 of G1-FSS-F001 Rev 2, Detailed Fire Modeling Notebook. To address plant specific system unavailability, Ginna Key Input 76 identifies unavailability factors for selected fire systems using control room log data from January 1st, 2007 to December 31st, 2011. The unavailability time for each system was summed and divided by the total time period for specific factors. These factors are added to the generic estimates of total system unavailability and applied in the Ginna Fire Modeling Database. For example, system S19, an automatic sprinkler system, has an unavailability factor of 3.78E-03. The generic estimate for an automatic sprinkler system to fail on demand is 0.02 (2E-02), therefore the total failure likelihood (failure on demand plus unavailability) used in the PRA is 2.37E-02 (2.37E-02 = 2E-02 + 3.78E-03). The credited systems are installed and maintained under the Ginna Fire Protection Program, EPM-FPPR. Based on the review in Key Input 76, there is no outlier behavior of the credited systems. The availability factors for the specific credited systems are added to the generic estimates to account for systems unavailability during plant operations. This approach meets capability category II for FSS-D7.

Table V-1 Fire PRA Peer Review – Facts and Observations - Findings

SR	Topic	Status	Finding	Disposition
FSS-F1-01	Fire Scenario Selection	Closed	Structural steel considerations related to the Hydrogen Storage Room, Turbine Lube Oil Storage Room, and the Diesel Generator rooms have not been addressed.	Areas where the fire sources are considered to be high-hazard and capable of structural damage to multiple areas were analyzed for the hydrogen storage room, the turbine lube oil storage room, and the two diesel generator rooms. Due to the hazard in these areas, scenarios were analyzed given a fire that may extend through the adjacent compartment to additional compartments. The results of this analysis are included in Appendix B and Appendix C of G1-FSS-F003, Multi-Compartment Analysis.
FSS-G5-01	Fire Scenario Selection	Closed	A unique wall between the Control Room and the Turbine Building exists, and it has not been quantified from a failure standpoint. The metal wall with water curtain sprinklers is a very unique installation.	EWR-1833-CALC-1 r0364862.pdf documents the heat transfer analysis of the turbine building control room wall water spray system. Design verification S2906928490, documents the design of the water spray system installed to protect the control room wall. The EWR-1833-CALC-1 document indicates the heat transfer analysis results in R.E. Ginna Nuclear Plant meeting the guidelines in the Branch Technical Position APCSB 9.5-1. This analysis serves as a justification for an acceptable boundary in the Fire PRA.

Table V-1 Fire PRA Peer Review – Facts and Observations - Findings

SR	Topic	Status	Finding	Disposition
HRA-C1-01	Human Reliability Analysis	Closed	There was no explicit assessment of manpower resources documented in the dependency analysis.	Appendix E of the HRA Notebook (G1-HRA-F001) describes the closure of this finding. This is addressed through the interview process. Operations is interviewed on dependent action based on the status of the preceding actions. This can push back the Tdelay or median response time if other actions would be attempted first. If operations feels that an action cannot be done due to inadequate resources then that action is not credited. An item that was not addressed in the original interview process is the impact of the fire brigade. Although it would be ideal to maintain independence of the fire brigade and operations, manning the fire brigade is not considered to significantly degrade operations response. In the worst case circumstance, there is at least one auxiliary operator (AO) available given the brigade is fully manned (i.e. 5 operators) and the operations communicator position is staffed (i.e. during an unusual event). For the vast majority of dependent operator actions sequences, one thing at a time is attempted. For example, first the AO might be required to align a turbine driven AFW pump, if that fails, then the operator might be required to locally close a breaker. If the first item is successful, then the second item is not needed. It is only when the attempt is completed that the AO is directed to the next task. The second consideration is the fire development itself. A risk significant fire would normally be detected with the brigade on the way before main feedwater is lost and a reactor trip is demanded. Following the trip, it normally takes some time to declare an unusual event. Therefore, it is highly likely that a second AO will be available to respond to the early set of actions before the communicator position is required. The last consideration is that the nature of the dependency analysis aligns well with degradations due to early cue timing of actions. There are 2703 dependent combinations evaluated. Of these 2503 have a second HFE that receives a cue within one hour of the trip. If it is beyond one hour it is likely that the brigade will be done fighting the fire. Of these 2503 combinations, only 413 of these are not already a high dependency. Further, only a sub-set of these 413 involve both actions being performed outside the control room which are the only actions of importance for this brigade issue. Given a high dependency is already a 50% failure likelihood or more of the second action, high dependency would easily cover any degradation due to the fire brigade. As the main driver in the dependency is timing of the cue, this means the lower the dependency level the longer the time between the cues occurring. The longer the time between the cues the more likely the fire brigade has contained the fire and can continue with AO duties.

Table V-1 Fire PRA Peer Review – Facts and Observations - Findings

SR	Topic	Status	Finding	Disposition
HRA-E1-03	Human Reliability Analysis	Closed	The HRA notebook report says that the HRAcalculator is used to document the HRA results, but some fields in the HRAcalculator are not populated for each HRA. See also 2009 IE peer review finding on HR-G7.	The key HRA Calculator parameters used to preform the risk evaluation are Tdelay, T1/2, Tm, Tsw, the CBDT parameters, the stress level, and the location. The remaining parameters (e.g. cues, procedures, and man power) are covered during the interview process (documented under scenario description) to address the feasibility of the action. The minimum set of required information for the evaluation used is populated. For details on the parameters used for dependency analysis process, see Appendix E of the HRA notebook (G1-HRA-F001).
IGN-B2-01	Ignition Frequency	Closed	The data sources for three of the ignition frequencies (bins 5, 6 and 19) are not referenced in the IGN Report, G1-IGN-F001.	Data source reference have been added to section 4 of the ignition frequency report (G1-IGN-F001). Additionally, section 2.0 of G1-IGN-F001 indicates, by bin #, the reference for the generic frequency. For bins 5, 11, and 31 (Cable Fires Caused by Welding and Cutting), and bins 6 and 24 (Transient fires caused by welding and cutting), the data comes from Attachment A of Reference 8. This data was endorsed for use by the NRC in Reference 9...The data for Bin 19 (Misc. Hydrogen Fires) was taken from Section 10.2.1 of Reference 3. However, per the guidance of Appendix N (section N.2.4) of NUREG/CR-6850, only 10% of *miscellaneous hydrogen fires* (Bin 19) *lead to a damaging fire outside of the* ignition source. Therefore, a reduction factor of 0.1 was applied to the generic ignition frequency to account for miscellaneous hydrogen fire explosions damaging additional targets separate from the ignition source.
QNS-C1-01	Quantitative Screening	Closed	In Index No QNS-C1, Table A-4, Appendix A of RG 1.200 Revision 2, NRC provided a clarification and resolution related to use of "fire" hazard versus "internal events" hazard total CDF and LERF in SR QNS-C1 of the 2009 combined PRA Standard. The screening criteria used by the licensee did not address the staff position (clarification) on this SR.	Section 2.4 of the quantitative screening notebook (G1-QNS-F001) addresses the finding. The quantitative screening criteria are established with guidance from Tables 7-2 and 7-3 of NUREG-CR/6850 and Section 4-2.8 of ASME/ANS RA-Sa-2009, as updated by Index No. QNS-C1 of Table A-4 of Appendix A of RG 1.200 Revision 2. To screen a compartment, the criteria for both CDF and LERF must be met. There are two sets of criteria for both CDF and LERF: individual criteria that apply to each fire compartment separately and cumulative criteria to ensure that the sum of the CDF or LERF of the screened out compartments do not exceed 10 percent of the CDF or LERF for fire events.

Table V-1 Fire PRA Peer Review – Facts and Observations - Findings

SR	Topic	Status	Finding	Disposition
SF-A1-01	Seismic Fire	Closed	The walk down scope (fire compartments) listed in Appendix B of G1-SF-F001, Revision 0 is approximately 50 as compared to 91 fire compartments scoped in the Global Analysis Boundary as listed in Appendix B of G1-PP-F001, Revision 1.	Seismic-Fire Notebook (G1-SF-F001, Rev 1) Table 1 provides an assessment for each fire compartment that was not walked down. The assessments include review of the IPEEE walkdowns as well as consideration of the CDF/LERF for the compartment. Overall, 37 fire compartments were not walked down. For 26 of the 37 compartments, there are no fire scenarios developed, only full compartment burn. Any incremental increase in ignition frequency that may result from a seismically induced fire is more than offset in the risk calculation by assuming a full compartment burn for any fire. Of the 11 remaining fire compartments, seven are inside containment. The Plant Area Summary Sheets from the seismic IPEEE walkdowns were reviewed for *these fire areas. All ignition sources in the fire areas are accounted for in the* Fire PRA. Per the seismic IPEEE, all components in these areas were found to be well-anchored and there were no concerns with falling hazards. Based on this review, it is concluded that no unique seismic-fire sources exist in these areas inside containment and all ignition sources are captured in the Fire PRA. Two of the remaining four fire compartments are low fire risk, with CCDP less than 1.0E-04 and CLERP less than 1.0E-05. Assessments of the remaining two fire compartments are as follows: Control Room. The Control Room (CR) is a unique fire compartment that is analyzed separately in Task 11 of the Fire PRA. The rigorous examination of ignition sources and estimate of CR fire frequency ensures that all potential ignition sources are captured, even those that might result from a seismic event. Cable Tunnel. The Cable Tunnel (CT) contains cable trays and conduit. There are no fixed ignition sources in the tunnel. Per the seismic IPEEE, all trays and conduits are rigidly mounted and/or anchored and there are no concerns with falling hazards. Based on review, it is concluded that no unique seismic-fire sources exist in the tunnel.

Table V-1 Fire PRA Peer Review – Facts and Observations - Findings

SR	Topic	Status	Finding	Disposition
SF-A2-01	Seismic Fire	Closed	The licensee sufficiently addressed (assessed) the potential impact of a seismically induced failure or spurious operation of fire protection features on the PERFORMANCE OF POST-EARTHQUAKE FIRE PROTECTION EQUIPMENT AND FIRE BRIGADE.. However judging from a statement in Section 2.4 (.. "in selected safety related areas" .. ..) and lack of procedure guidance in the Earthquake Emergency Plan (ER-SC.4) as implied in Section 2.5, the licensee did not fully assess the potential on the POST-EARTHQUAKE PLANT RESPONSES.	Section 2.4 of the Seismic-Fire Notebook (G1-SF-F001, Rev 1) provides a detailed assessment of the performance of fire protection features following a seismic event. The assessment includes review of the following: ▪ Compliance with NRC Standards and industry codes to ensure that seismically induced failures do not adversely impact safety-related equipment ▪ Previous fire protection system walkdowns during the IPEEEE seismic evaluation ▪ Spurious operation of suppressions systems that could impact the response to post earthquake fires ▪ Potential diversion of gaseous and water-based suppression systems ▪ Loss of common suppression systems ▪ Seismic impact on manual hose stations The assessments determined that there are no deviations from the installation standards which might adversely impact safe shutdown. In addition, current fire emergency procedures are adequate to respond to spurious operation of alarms and/or suppression systems, loss of suppression systems, or diversion of suppressants from areas where they might be needed..

Table V-2 Fire PRA – Category I and Not Met Summary

Table V-2 Fire PRA– Category I Summary

SR	Topic	Status
CS-B1	MET CAT I during the 2012 Peer Review : Now MET CAT II/II Based on the Cable Selection Report, the existing coordination analyses were reviewed, but not all Fire PRA modeled buses were analyzed. Therefore, CC-I is met, but CC-II requires that all Fire PRA modeled buses be analyzed for overcurrent coordination.	The scope of Coordination Study 32-9183379-001 includes all NFPA 805 power sources, which includes all PRA required power sources. The power sources in the scope of the study are identified in Attachment 5 of the Coordination Study, as well as section 4.0 of the Table of Contents. No coordination issues were identified with DC fuses. However, coordination issues were identified with AC circuit breakers. The Fire PRA analysis includes power source cable selection of uncoordinated cables identified in Coordination study 32-9183379-001 Appendix H, by selecting "Cable of Concern" for "Highest Upstream PSID Affected by Cable" where "Highest Upstream PSID Affected by Cable" are PRA power sources (listed in the BE Table). Power source cable selection also includes cables not listed in the Coordination Study which are connected to the "Cable of Concern", if they are within the "Minimum Cable length required to coordinate" listed for the power source (PSID) and breaker compartment (CMPT) in Coordination Study Appendices F and G. Connected cables within the "Minimum Cable length required to coordinate" also includes cables of applicable downstream non-NFPA 805 power sources listed in Attachment 8 of the Coordination Study, where "PPNL Required for Coordination" is "Maybe-for PRA only". Note that where "PPNL Required for Coordination" is listed as "NO", the Attachment 8 "Comments" states that there is "Sufficient upstream cable length" such that the load cables of the listed Non-NFPA 805 power source (PSID) are coordinated and therefore do not require cable selection as uncoordinated cables. (Reference CA-2012-000440 in HoldCo CR Report 2012-000311). Section 4.1.10 describes the cable selection methodology for uncoordinated cables (identified as described above) that are not routed in TRACK2000. This includes "Cable of Concern" in Coordination Study 32-9183379-001 Appendix H that do not have a designated cable ID and are uniquely identified in Appendix H as "NONUM" followed by the hyphenated PSID and CMPT. The Fire PRA analysis also includes all power and control cables of 4KV switchgear buses BUS11A, BUS11B, BUS12A and BUS12B which are the only buses that require control power to trip on overcurrent. For these buses, the Fire PRA fault tree models the loss of the entire bus if the same fire faults a power cable of the bus and causes the loss of control power to the breaker feeding the power cable. This is discussed further in section 4.2.8. (F&O CS-B1-01).
FSS-G5	MET CAT I during the 2012 Peer Review : Now MET CAT II/II SELF-ASSESSMENT: See Multi-Compartment analysis Fire PRA notebook, FSS Multi-Compartment Screening and Analysis, G1-FSS-F003, Revision 0. --- MET CAT I. Active fire barriers at R.E. GINNA credited in the analysis are dampers and fire doors, al listed in Table . The credited partitioning elements are part of the fire protection programmed and monitored in accordance with Surveillance Procedures in Reference 3. These routine monitoring programs ensure that impairments are quickly identified and corrected so that the generic values bound the actual availability of the systems.	The wall between the control room and turbine building has been quantified from a failure standpoint. G1-FSS-F003 Rev 2, multi-compartment report addresses this finding. EWR-1833-CALC-1 r0364862.pdf documents the heat transfer analysis of the turbine building control room wall water spray system. Design verification S2906928490, documents the design of the water spray system installed to protect the control room wall. The EWR-1833-CALC-1 document indicates the heat transfer analysis results in R.E. Ginna Nuclear Plant meeting the guidelines in the Branch Technical Position APCSB 9.5-1. This analysis serves as a justification for an acceptable boundary in the Fire PRA. In addition, the gas house, turbine lube oil storage, and the two diesel rooms have been analyzed for large area, high intensity

Table V-2 Fire PRA– Category I Summary

SR	Topic	Status
	Peer Review Comments: A unique wall between the Control Room and the Turbine Building exists, and it has not been quantified from a failure standpoint. The metal wall with water curtain sprinklers is a very unique installation. This wall should not be screened - it should be retained in the Fire PRA model and further analyzed. NOTE: The Gas House, Turbine Lube Oil Storage, and the two Diesel Rooms that are adjacent and inline with each other should be further analyzed for a large area, high intensity fire scenario. This scenario has not yet been defined and addressed.	fire scenarios. Section 2.2 of the multi-compartment report (G1-FSS-F003, Rev. 2) addresses the finding. Large area high challenge fires were considered for the hydrogen storage room, the turbine lube oil storage room, and the two diesel generator rooms. Due to the hazard in these areas, consideration is given to a fire that may extend through the adjacent compartment to additional compartments. The results of this analysis is included in Appendix B (table 2.1 and 2.2) and Appendix C. The ignition frequencies for these fire scenarios were below 1E-8 and therefore screened from the analysis. (F&O FSS-G5-01)
FQ-F1	NOT MET during the 2012 Peer Review : Now MET The FQ notebook is written to facilitate applications, upgrades, and peer reviews. However, a suggestion F&O is provided to facilitate peer reviews. This suggestion is to document, in the FQ notebook, Appendix B, Cutset Review Meeting Notes, (G1-FQ-F001, Rev. 0, Appendix B), the actual cutsets that were reviewed during the cutset review meeting. An assessment of QU-F and LE-G are provided below: QU-F1: DOCUMENT *the model quantification in a manner that facilitates* PRA applications, upgrades, and peer review. MET. Refer to G1-FQ-001, Rev. 0. QU-F2: DOCUMENT the model integration process including any recovery analysis, and the results of the quantification including uncertainty and sensitivity analyses. For example, documentation typically includes (a) records of the process/results when adding non-recovery terms as part of the final quantification. MET. Refer to G1-FQ-001, Rev. 0, sections 5.2.3 and 5.2.4. (b) records of the cutset review process. MET. Refer to G1-FQ-001, Rev. 0, Appendix B. (c) a general description of the quantification process including accounting for systems successes, the truncation values used, how recovery and post-initiator HFEs are applied. MET. Refer to G1-FQ-F001, Rev. 0, section 5.1 (d) the process and results for establishing the truncation screening values for final quantification demonstrating that convergence towards a stable result was achieved. MET. Refer to G1-FQ-F001, Rev. 0, section 5.2.5. (e) the total plant CDF and contributions from the different initiating events and accident classes. MET. Only one initiator (Plant Trip) was used, however, Fire Areas contribution was provided. Refer to G1-FQ-F001, Rev. 0, section 6.1. (f) the accident sequences and their contributing cutsets. NOT MET. Documentation of the cutsets and sequences is covered in a Suggestion to document the cutsets in the Fire PRA Cutset Review Meetings (Suggestion FQ-F1-01) (g) equipment or human actions that are the key factors in causing the accidents to be nondominant. NOT MET. Equipment or human actions that are key factors in causing accidents to be nondominant are not discussed. NOT MET. Equipment and/or human actions that are key factors in causing accidents to be	The final quantification notebook addresses the findings associated with this SR not met assessment. The current set of dominant cutsets is reviewed. Further, the non-dominant cutsets review was performed and documented in FQ to address finding FQ-F1-01. F&O FQ-F1-02The FQ Notebook now includes the definition for a significant basic event, cutset, or accident sequence is not documented. Risk significant basic event is defined as FV>=0.005 or a RAW>=2. A significant cutset or accident sequence is defined as the top 90% of the CDF/LERF. This finding remains open until the final quantification latest revision is issued. F&O FQ-F1-03: *The FQ Notebook* (G1-FQ-F001, Rev1) *includes a table documenting the* importance of significant basic events including equipment, human actions, and circuit failure likelihoods. This notebook includes a summary of these results which discusses key factors such as human actions that are critical for risk reduction.

Table V-2 Fire PRA– Category I Summary

SR	Topic	Status
	nondominant are not documented.. (h) the results of all sensitivity studies. MET. Refer to G1-UNC-F001, Rev. 0. (i) the uncertainty distribution for the total CDF. MET. Refer to G1-UNC-F001, Rev. 0. (j) importance measure results. MET. Refer to G1-FQ-F001, Rev. 0, section 6.3 (k) a list of mutually exclusive events eliminated from the resulting cutsets and their bases for elimination. MET. Refer to G1-FQ-F001, Rev. 0, section 5.2.2. (l) asymmetries in quantitative modeling to provide application users the necessary understanding of the reasons such asymmetries are present in the *model*. N/A. (m) the process used to illustrate the computer code(s) used to perform the quantification will yield correct results process. MET. Refer to G1-FQ-F001, Rev. 0, section 5.2.7. QU-F3: DOCUMENT the significant contributors (such as initiating events, accident sequences, basic events) to CDF in the PRA results summary. PROVIDE A DETAILED DESCRIPTION OF SIGNIFICANT ACCIDENT SEQUENCES OR FUNCTIONAL FAILURE GROUPS. MET. Refer to G1-FQ-F001, Rev. 0, section 6.0. QU-F4: DOCUMENT the characterization of the sources of model uncertainty and related assumptions (as identified in QU-E4). N/A. Refer to SR FQ-E1. QU-F5: DOCUMENT limitations in the quantification process that would impact applications. MET. Refer to G1-FQ-F001, Rev. 0, section 5.2.8. QU-F6: DOCUMENT the quantitative definition used for significant basic event, significant cutset, and significant accident sequence. If it is other than the definition used in Part 2, JUSTIFY the alternative. NOT MET. The definition used for significant basic event, cutset, or accident sequence was not documented. (Finding FSS-C1-01) LE-G1: DOCUMENT the LERF analysis in a manner that facilitates PRA applications, upgrades, and peer review. MET. Refer to G1-FQ-F001, Rev. 0. LE-G2: DOCUMENT the process used to identify plant damage states and accident progression contributors, define accident progression sequences, evaluate accident progression analyses of containment capability, and quantify and review the LERF results. For example, this documentation typically includes (a) the plant damage states and their attributes, as used in the analysis (b) the method used to bin the accident sequences into plant damage states © the containment failure modes, phenomena, equipment failures, and human actions considered in the development of the accident progression sequences and the justification for their inclusion or exclusion from the accident progression analysis (d) the treatment of factors influencing containment challenges and containment capability, as appropriate for the level of detail of the analysis € the basis for the containment capacity analysis including the identification of containment failure location(s), if applicable (f) the accident progression analysis sequences considered in the containment	

Table V-2 Fire PRA– Category I Summary

SR	Topic	Status
	event trees (g) the basis for parameter estimates (h) the model integration process including the results of the quantification including uncertainty and sensitivity analyses, as appropriate for the level of detail of the analysis. MET. Refer to G1-FQ-F001, Rev. 0. LE-G3: DOCUMENT the relative contribution of contributors (i.e., plant damage states, accident progression sequences, phenomena, containment challenges, containment failure modes) to LERF. MET. Refer to G1-FQ-F001, Rev. 0, section 6.2. LE-G4: DOCUMENT the sources of model uncertainty and related assumptions (as identified in LE-F3) associated with the LERF analysis, including results and important insights from sensitivity studies. N/A. Refer to SR FQ-E1. LE-G5: IDENTIFY limitations in the LERF analysis that would impact applications. MET. Refer to G1-FQ-F001, Rev. 0, section 5.2.8. LE-G6: DOCUMENT the quantitative definition used for significant accident progression sequence. If other than the definition used in Section 2, JUSTIFY the alternative. MET. Refer to Refer to G1-FQ-F001, Rev. 0.	
FQ-F2	NOT MET during the 2012 Peer Review : Now MET As documented in the Basis for Assessment contained in FQ-D1: QU-D5: REVIEW a sampling of nonsignificant accident cutsets or sequences to determine they are reasonable and have physical meaning. NOT MET. Notebook G1-FQ-F001, Rev. 0, Appendix B does not discuss "nonsignificant accident cutsets". This was also confirmed by discussions with the Ginna plant personnel. In addition, the SR (FQ-E1) states that "DEVELOP a defined basis to support the claim of nonapplicability of any of the requirements under these sections in Section 2." A basis for non-applicability of QU-D5 was not developed. As documented in the Basis for Assessment contained in FQ-F1: QU-F2 (g) Document equipment or human actions that are the key factors in causing the accidents to be nondominant. NOT MET. Equipment or human actions that are key factors in causing accidents to be nondominant are not discussed. NOT MET. Equipment and/or human actions that are key factors in causing accidents to be nondominant are not documented.. A new F&O was not written, as an F&O under FQ-E1-01 and FQ-F1-03 is sufficient to document the issue.	The final quantification notebook, revision 1 addresses the findings associated with the SR resulting in an assessment of not met. F&O F1-E1-01: The current set of dominant cutsets is reviewed. Further, the non-dominant cutsets review was performed and documented in FQ to address finding FQ-F1-01. F&O FQ-F1-03: The FQ Notebook (G1-FQ-F001, Rev1) includes a table documenting the importance of significant basic events including equipment, human actions, circuit failure likelihoods. This notebook includes a summary of these results which discusses key factors such as human actions that are critical for risk reduction.

W. Fire PRA Insights

18 Pages Attached

Redacted Attachment W in its entirety.

Attachment 4

Revised Section 5.5

51.22(c). That evaluation is discussed in Attachment R. The evaluation confirms that this LAR meets the criteria set forth in 10 CFR 51.22(c)(9) for categorical exclusion from the need for an environmental impact assessment or statement.

5.4 Revision to the UFSAR

After the approval of the LAR, in accordance with 10 CFR 50.71(e), the Ginna UFSAR will be revised. The format and content will be consistent with NEI 04-02 and FAQ 12-0062.

5.5 Transition Implementation Schedule

The following schedule for transitioning Ginna to the new fire protection licensing basis requires NRC approval of the LAR in accordance with the following schedule:

- Implementation of the new NFPA 805 fire protection program will include procedure changes, process updates, and training to affected plant personnel. This will occur 180 days after NRC approval unless that date falls within a scheduled refueling outage. Then, implementation will occur 60 days after startup from that scheduled refueling outage. See Table S-3 of Attachment S. Note that Implementation Items 9 and 15 are associated with modifications in Table S-2 and will be completed in accordance with the modification process.
- Tables S-1 and S-2 of Attachment S provide a listing of plant modifications associated with the transition to NFPA 805. Table S-1 contains the list of completed modifications associated with NFPA 805. There are none for Ginna. Table S-2 contains the list of committed modifications associated with NFPA 805. Ginna will complete implementation of the modifications in Table S-2 prior to startup from the second Refueling Outage greater than 12 months after receipt of the Safety Evaluation. Appropriate compensatory measures will be maintained until modifications are complete.