

Table S-1 Plant Modifications

Item	Rank	Unit	Problem Statement	Proposed Modification	Amended Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization																		
S1-1	Med	2	<p>In Fire Area HH, a separation issue was identified on the EFW valves 2CV-1026-2 and 2CV-1076-2. During a fire induced circuit failure the feedwater valves may be impacted by a fire in Fire Zone 2096-M.</p> <p>LAR Source: Attachment C (NEI-04-02 Table B-3) Section for EFW Valves 2CV-1026-2 and 2CV-1076-2 in Fire Area HH Risk Summary</p>	<p>ANO will modify the control wiring for the EFW valves by re-routing the affected cable or other modification. The final method selected will be determined during the project scoping phase.</p>	<p>ANO plans to relocate interposing relays and affected cables associated with 2CV-1026-2 and 2CV-1076-2 from Fire Area HH, Fire Zone 2096-M, to the adjacent room in Fire Area G, Fire Zone 2098-C. Circuits for 2CV-1026-2 and 2CV-1076-2 are currently routed through Fire Area G and no new impacts will be generated by this modification.</p>	Yes	Yes	<p>This modification is specifically credited from a PRA perspective.</p> <p>Modification reduces the risk in Fire Area HH of a fire induced circuit failure for EFW valves 2CV-1026-2 and 2CV-1076-2 in Fire Zone 2096-M.</p> <p>In accordance with station directives, compensatory measures per OP-1003.014 have been established as appropriate.</p>																		
S1-2	High	2	<p>In Fire Area JJ, a separation issue was identified that impacts the DC power cables control wiring on both trains. If a fire event occurred, this could result in the loss of equipment that would otherwise be available. Additional considerations are potential spurious operations at switchgear 2A-3 that may result in a loss of power to the safety bus.</p> <p>LAR Source: Attachment C (NEI-04-02</p> <table border="1"> <thead> <tr> <th>Switchgear/ Table B-3) EFW Valves</th> <th>VFDR(s)</th> </tr> </thead> <tbody> <tr> <td>2A-3</td> <td>JJ-04</td> </tr> <tr> <td>2A-308</td> <td>JJ-04</td> </tr> <tr> <td>2A-309</td> <td>JJ-04</td> </tr> <tr> <td><del>2A-1</del></td> <td><del>JJ-04</del></td> </tr> <tr> <td>2CV-1036-2</td> <td>JJ-01</td> </tr> <tr> <td>2CV-1075-1</td> <td>JJ-01</td> </tr> <tr> <td><del>2H-1</del></td> <td><del>JJ-03</del></td> </tr> <tr> <td><del>2H-2</del></td> <td><del>JJ-03</del></td> </tr> </tbody> </table> <p>Attachment C (NEI 04-02 Table B-3) Fire Area JJ Risk Summary components: 2A-3, 2A-308, 2A-309, 2A-310, 2B-6, 2CV-1036-2, 2CV-1075-1, 2CV-4816, and 2CV-4817.</p>	Switchgear/ Table B-3) EFW Valves	VFDR(s)	2A-3	JJ-04	2A-308	JJ-04	2A-309	JJ-04	<del>2A-1</del>	<del>JJ-04</del>	2CV-1036-2	JJ-01	2CV-1075-1	JJ-01	<del>2H-1</del>	<del>JJ-03</del>	<del>2H-2</del>	<del>JJ-03</del>	<p>ANO will modify the DC power cables by re-routing and/or wrapping the affected cables or other modification. The final method selected will be determined during the project scoping phase.</p>	<p>ANO plans to modify the circuits as described to eliminate impacts in Fire Area JJ associated with these components.</p> <p><u>2A-3, 2A-308, 2A-309, and 2A-310</u> The red train 125V DC panel 2D-23 that supplies control power for 2A-3 and 2B-5 is planned for relocation to Fire Area MM from Fire Area JJ. Control power cables are planned to be routed using embedded conduits from Fire Area MM to Fire Area II to avoid Fire Areas JJ and SS. This allows post-fire control of 2A-3 bus from the control room.</p> <p><u>2CV-1036-2</u> - Auxiliary relays 2CR1036A, B, C, and D are currently installed in MCC 2B-61 and are planned to be relocated to MCC 2B-63. This would eliminate cables that are routed through Fire Area JJ associated with this valve. This eliminates a loss of 2CV-1036-2 due to a fire in Fire Area JJ.</p> <p><u>2CV-1075-1</u> – The reroute of DC control power to bus 2A-3 and load-center 2B-5 listed above assures MCC 2B-53 remains available to power this valve. An embedded conduit between Fire Area G and II is planned to be used to avoid Fire Areas JJ, SS, and TT. New dedicated fuses are planned to be installed in 2C-17 for 2CV-1075-1 control relays so that failure of cables in scheme 2S113 will not impact 2CV-1075-1.</p> <p><u>2B-6</u> - Cables are planned to be re-routed to control room panel 2C33-2 from 2B-6 using an embedded conduit between Fire Zone 2100-Z to the cable spreading room Fire Area G. This eliminates an impact in Fire Area JJ.</p> <p><u>2CV-4816 &amp; 2CV-4817</u> – A re-route of cable 2I016N is planned by using embedded conduit C4080 that is located between Fire Area G (cable spreading room) to Fire Area EE-L. Cable 2I016N is also planned to be separately fused in panel C-09 to prevent failure due to a loss of cable 2I016P. This eliminates circuit impacts in Fire Areas TT, JJ, and EE-U.</p>	Yes	Yes	<p>This modification is specifically credited from a PRA perspective and affects multiple fire areas.</p> <p>The modification limits the risk of a potential spurious operation and a loss of DC power to safety bus for switchgear 2A-3 due to a fire induced circuit failure.</p> <p>In accordance with station directives, compensatory measures per OP-1003.014 have been established as appropriate.</p>
Switchgear/ Table B-3) EFW Valves	VFDR(s)																									
2A-3	JJ-04																									
2A-308	JJ-04																									
2A-309	JJ-04																									
<del>2A-1</del>	<del>JJ-04</del>																									
2CV-1036-2	JJ-01																									
2CV-1075-1	JJ-01																									
<del>2H-1</del>	<del>JJ-03</del>																									
<del>2H-2</del>	<del>JJ-03</del>																									

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S1-3	High	2	<p>Fire induced circuit failure could impact DC power cables feeding circuit breakers at switchgear 2A-1, 2A-2, 2H-1, and 2H-2. The failure of 2A-1 and 2A-2 could prevent alignment to an offsite power source. The failure of 2H-1 and 2H-2 could prevent tripping the reactor coolant pumps (RCPs) from the control room.</p> <p>LAR Source:</p> <p style="text-align: right;">Attachment C</p> <p>Switchgear (NEI-04-02 Table B-3)</p> <p style="text-align: right;"><u>VFDR(s)</u></p> <p>2A-1 JJ-04</p> <p>2H-1 JJ-03, MM-04, SS-03</p> <p>2H-2 JJ-03, MM -04, SS-03</p> <p>Attachment C (NEI-04-02 Table B-3) Globally credited in the performance based Risk Summary for all fire areas.</p>	<p>ANO will provide an alternate DC power source or other modification. The final method selected will be determined during the project scoping phase.</p>	<p>ANO plans to install backup DC control power to switchgear 2A-1, 2A-2, 2H-1 and 2H-2 with automatic transfer capability in the event the normal DC control power source is lost.</p> <p>The new backup DC power source will be located completely within Fire Area B-2 in proximity to the switchgear either on elevation 372' or below at elevation 354'. This eliminates impacts to switchgear DC control power due to a fire in any other ANO-2 fire area and allows tripping of the RCPs in those areas.</p> <p>Inclusive in this modification will be changes to the control power circuits for switchgear 2H-1 and 2H-2 to allow tripping the RCPs in a scenario where a fire originates internally to a switchgear cubicle. This design will prevent fire damage to a load cubicle from disabling the ability to trip the line breakers and remove power to the RCPs. The opposite scenario where fire damages the line breakers would not prevent the RCP load breakers from being tripped. This modification will require the line and load breakers be separately fused and fed as described:</p> <p>2H-1: Internal DC control wiring jumpers will be removed to isolate the line and load cubicles. The DC control power for line breakers 2H-13, 2H-14, and 2H-15 will be isolated from the DC control power for the load breakers 2H-10, 2H-11, and 2H-12.</p> <p>2H-2: Internal DC control wiring jumpers will be removed to isolate the line and load cubicles. The DC control power for line breakers 2H-23, 2H-24, and 2H-25 will be isolated from the DC control power for the load breakers 2H-20, 2H-21, and 2H-22.</p>	Yes	Yes	<p>This modification is specifically credited from a PRA perspective and affects multiple fire areas.</p> <p>Modification to install an alternate DC power source reduces the risk of a fire induced circuit failure to the DC power cables feeding RCP circuit breakers 2H-1 and 2H-2 which could prevent tripping the RCPs from the control room.</p> <p>In accordance with station directives, compensatory measures per OP-1003.014 have been established as appropriate.</p>
S1-4	High	2	<p>In Fire Area TT, a separation issue was identified that impacts the power cables for EFW, chemical and volume control system (CVCS), and service water (SW) components 2B-5, 2CV-0789-1, 2CV-1036-2, 2CV-1075-1, 2CV-4816, 2CV-4817, and 2P-7B in the fire PRA model.</p> <p style="text-align: right;">LAR Source: Attachment C</p> <p>EFW/CVCS/SW (NEI-04-02 Table B-3) Components</p> <p style="text-align: right;"><u>VFDR(s)</u></p> <p>2CV-1036-2 TT-01</p> <p>2CV-1075-1 TT-01</p> <p>2P-7B TT-01</p> <p>2CV-0789-1 TT-01</p> <p>2CV-4816 TT-02</p> <p>2CV-4817 TT-02</p> <p>2B-5 TT-03</p> <p>Note: This modification is also discussed in Item S1-2 for Fire Area JJ. Modification resolves impacts in both fire areas.</p>	<p>ANO will modify the components by either cable re-route or circuit modification. The final method selected will be determined during the project scoping phase.</p>	<p>ANO plans to modify the circuits as described to eliminate impacts in Fire Area TT associated with these components.</p> <p><u>2CV-1036-2</u> - Auxiliary relays 2CR1036A, B, C, and D are currently installed in MCC 2B-61 and are planned to be relocated to MCC 2B-63. This would also eliminate cables that are routed through Fire Area TT associated with this valve. This eliminates a loss of 2CV-1036-2 due to a fire in Fire Area TT.</p> <p><u>2CV-1075-1</u> – Cables for this valve between panels 2C-39 to 2C-17 that are currently routed through Fire Area TT are planned to be re-routed to remain exclusively in the cable spreading room. An embedded conduit between Fire Area G and II is planned to be used to avoid Fire Areas JJ, SS, and TT. New dedicated fuses are planned for installation in 2C-17 for 2CV-1075-1 control relays so that failure of cables in scheme 2S113 will not impact 2CV-1075-1.</p> <p><u>2P-7B</u> - Cables for this pump between panels 2C-39 to 2C-17 that are currently routed through Fire Area TT are planned to be re-routed to remain exclusively in the cable spreading room. New conduits are also planned to be installed.</p> <p><u>2CV-0789-1</u> - Cables for this valve between panels 2C-39 to 2C-17 that are currently routed through Fire Area TT are planned to be re-routed to remain exclusively in the cable spreading room. An embedded conduit between Fire Area G and II is planned for use to avoid Fire Areas JJ and SS.</p> <p><u>2CV-4816 &amp; 2CV-4817</u> – A re-route of cable 2I016N is planned by using</p>	Yes	Yes	<p>This modification is specifically credited from a PRA perspective and affects multiple fire areas.</p> <p>The modification reduces the risk of a fire induced circuit failure for EFW/CVCS/SW components and power cables (2B-5, 2CV-0789-1, 2CV-1036-2, 2CV-1075-1, 2CV-4816, 2CV-4817, and 2P-7B) in Fire Area TT.</p> <p>In accordance with station directives, compensatory measures per OP-1003.014 have been established as appropriate.</p>

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					<p>embedded conduit C4080 that goes between Fire Area G (cable spreading room) to Fire Area EE-L. Cable 2I016N is also planned to be separately fused in panel C-09 to prevent failure due to a loss of cable 2I016P of cable. This eliminates circuit impacts in Fire Areas TT, JJ, and EE-U.</p> <p><u>2B-5</u> - Cables for this loadcenter between panels 2C-39 to 2C-33-1 that are currently routed through Fire Area TT are planned to be re-routed to remain exclusively in the cable spreading room.</p>			
S1-5	High	2	<p>In Fire Area SS, a fire induced circuit failure could impact the DC power on both trains resulting in the loss of the following components.</p> <p style="text-align: right;">LAR Source: Attachment C (NEI-04-02 Switchgear Table B-3)</p> <p style="text-align: right;"><u>VFDR(s)</u> SS-01 <del>SS-03</del> <del>SS-03</del></p> <p>Attachment C (NEI-04-02 Table B-3) Fire Area SS Risk Summary components 2A-4, 2A-409, 2B-6, 2A-310, 2CV-0789-1, 2CV-1040-1, 2D-27, 2K-4A, 2P-16A, 2P-36A, 2PIS-0789-1, 2SV-0724-1, 2SV-2809-1, 2SV-2810-1, and 2SV-2811.</p>	<p>ANO will modify the components by either cable re-route or tray wrap. The final method selected will be determined during the project scoping phase.</p>	<p>ANO plans to modify the circuits as described to eliminate impacts in Fire Area SS associated with these components.</p> <p><u>2A-3 and 2A-310</u> The red train 125V DC panel 2D-23 that supplies control power for 2A-3 and 2B-5 is planned to be relocated from Fire Area JJ to Fire Area MM. Control power cables are planned to be routed using embedded conduits from Fire Area MM to Fire Area II to avoid Fire Areas JJ and SS. This allows post-fire control of 2A-3 bus from the control room.</p> <p><u>2A-4, 2A-409, &amp; 2B-6</u> – Cables are planned to be re-routed to control room panel 2C33-2 from 2A-4 and 2B-6 using an embedded conduit between Fire Zone 2100-Z to the cable spreading room Fire Area G. This eliminates an impact in Fire Zone 2097-X and Fire Area JJ. The 125V DC control power from 2D-24 to 2A-4 is planned to be re-routed using a new conduit to avoid an impact against cables G2D2404A and B in Fire Zone 2097-X.</p> <p><u>2CV-0789-1 &amp; 2PIS-0789-1</u>- The power cable for 2PIS-0789-1 (for 2CV-0789-1) is planned to be re-routed using an embedded conduit from Fire Area G to Fire Area II to avoid Fire Area SS.</p> <p><u>2CV-1040-1</u> – This valve is not directly impacted but is failed due to a loss of AC. The red train 125V DC panel 2D-23 that supplies control power for 2A-3 and 2B-5 is planned to be relocated from Fire Area JJ to Fire Area MM. Control power cables are planned to be routed using embedded conduits from Fire Area MM to Fire Area II to avoid Fire Areas JJ and SS. This assures 2CV-1040-1 will have a source of power and eliminates an impact in Fire Area SS.</p> <p><u>2D-27, 2K-4A, 2P-16A, 2P-36A, 2SV-0724-1, 2SV-2809-1, 2SV-2810-1, and 2SV-2811</u> – The cables associated with these components are planned to be re-routed to avoid Fire Area SS by installing a new raceway in Fire Area B-2 directly under Fire Area SS on elevation 372'. Circuits are planned to be re-routed using the new raceway in Fire Area B-2. The new raceway is planned to be installed above the vertical zone of influence for any postulated fire source. This eliminates impacts for 2D-27, 2K-4A, 2P-16A, 2P-36A, 2SV-0724-1, 2SV-2809-1, 2SV-2810-1, and 2SV-2811 in Fire Area SS.</p>	Yes	Yes	<p>This modification is specifically credited from a PRA perspective and affects multiple fire areas.</p> <p>The modification reduces the risk of a fire induced circuit failure that could result in the loss of DC power for both trains.</p> <p>In accordance with station directives, compensatory measures per OP-1003.014 have been established as appropriate.</p>

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S1-6	Med	2	<p>Motor Operated Valves (MOVs) listed below will be modified to meet requirements per IN 92-18. The NPO assessment determined that any one of the RCS drop line valves can fail in a closed and unrecoverable position resulting in a loss of SDC.</p> <p>LAR Source: Attachment D (NEI-04-02 MOVs Table F-1) (IN 92-18)</p> <p>2CV-5038-1 NPO-RCS-SDC 2CV-5084-1 NPO-RCS-SDC 2CV-5086-2 NPO-RCS-SDC</p>	<p>ANO will modify the affected valve(s) by circuit modification to prevent failure in a non-recoverable position. The final method selected will be determined during the project scoping phase.</p>	<p>ANO plans to modify the control circuit for 2CV-5038-1 to prevent spurious closure. This is planned to be similar to the inhibit circuit modification on CV-1275 for ANO-1. Procedural controls to secure power by opening breakers are planned to be implemented for 2CV-5084-1 and 2CV-5086-2.</p>	No	Yes	<p>The NPO modification reduces the risk of fire induced MOV circuit failures (hot shorts, open circuits and short to ground). This MOV modification can prevent a non-recoverable position failure resulting in the loss of shutdown cooling.</p> <p>In accordance with station directives, compensatory measures per OP-1003.014 have been established as appropriate.</p>
S1-7	Med	2	<p>MOVs listed below will be modified to meet requirements per IN 92-18. The four EFW discharge valves and two EFW pump steam supply valves can fail in a closed and unrecoverable position.</p> <p>LAR Source: Attachment C (NEI-04-02 Table B-3) Section for EFW MOVs 2CV-1075-1, 2CV-1076-2, 2CV-1036-2, 2CV-1039-1, 2CV-0340-2, and 2CV-0205-2 in Fire Area G Risk Summary</p>	<p>ANO will modify the affected valve(s) by circuit modification to prevent failure in a non-recoverable position. The final method selected will be determined during the project scoping phase.</p>	<p>ANO plans to modify 2CV-1075-1 to prevent spurious closing from a fire in Fire Area G by installing flexible metallic conduit on conductors 1R and 22R of cable scheme 2B53-J2 in control room cabinets 2C-17 and 2C-39.</p> <p>ANO plans to modify 2CV-1076-2 to prevent spurious closing from a fire in Fire Area G by installing flexible metallic conduit on conductors 1R, 22R, 23R of cable scheme 2D-26C1 in control room cabinets 2C-16 and 2C-40.</p> <p>ANO plans to modify 2CV-1036-2 to prevent spurious closing from a fire in Fire Area G by installing flexible metallic conduit on conductors 22R and 23R of cable scheme 2B-63H1 in control room cabinet 2C-40.</p> <p>ANO plans to modify 2CV-1039-1 to prevent spurious closing from a fire in Fire Area G by installing flexible metallic conduit on conductors 1R, 22R, 23R of cable scheme 2D-27B2 in control room cabinets 2C-16 and 2C-39.</p> <p>ANO plans to modify 2CV-0340-2 to prevent spurious closing from a fire in Fire Area G by installing flexible metallic conduit on conductor 1R of cable scheme 2D-26B1 in control room cabinet 2C-16.</p> <p>ANO plans to modify 2CV-0205-2 to prevent spurious closing from a fire in Fire Area G by installing flexible metallic conduit on conductors 1R and 2R of cable scheme 2D-26C2 in control room cabinets 2C-16 and 2C-18</p>	Yes	Yes	<p>This modification is specifically credited from a PRA perspective.</p> <p>The modification reduces the risk of fire induced MOV circuit failures (hot shorts, open circuits and short to ground). This MOV modification can prevent a non-recoverable position failure.</p> <p>In accordance with station directives, compensatory measures per OP-1003.014 have been established as appropriate.</p>
S1-8	Med	2	<p>In Fire Area B-3, spurious opening of MOV 2CV-4698-1 pressurizer low temperature – overpressure (LTOP) relief can result from a fire in motor control center (MCC) 2B-53.</p> <p>LAR Source: Attachment C (NEI-04-02 Table B-3) Section for Fire Area B-3 Risk Summary</p>	<p>ANO will modify the affected valve cable by installing flexible metallic conduit in MCC 2B-53. The final method selected will be determined during the project scoping phase.</p>	<p>ANO plans to modify 2CV-4698-1 to prevent spurious opening from a fire in Fire Area B-3 by installing flexible metallic conduit on conductor 1F of cable R2D27A3J to panel 2D-27. Cable R2D27A3J enters panel 2D-27 via a floor penetration from cable tray EC152 in Fire Zone 2076-HH.</p> <p>Note: CR-ANO-2-2012-1005 was prepared to document the incorrect reference to MCC 2B-53 versus the correct panel 2D-27.</p>	Yes	Yes	<p>This modification is specifically credited from a PRA perspective.</p> <p>The modification in Fire Area B-3 to install flexible metallic conduit protects the valve control cable in MCC 2B-53 which reduces the risk of fire induced circuit failures (such as spurious opening). This modification can prevent a non-recoverable position failure.</p> <p>In accordance with station directives, compensatory measures per OP-1003.014 have been established as appropriate.</p>
S1-9	Med	2	<p>In Fire Area G, spurious opening of valves 2CV-1002 (in cabinet 2C02), 2CV-1052 (in cabinet 2C02), 2CV-0714-1 (in cabinet 2C17), and 2CV-4698-1 (in cabinet 2C09) can result from a fire in the control room.</p> <p>LAR Source:</p>	<p>ANO will modify the affected valve's cable by installing flexible metallic conduit in each valve's</p>	<p>ANO plans to modify 2CV-1002 to prevent spurious opening from a fire in the control room by installing flexible metallic conduit on conductor 1F of cable G2B63A3D in cabinet 2C-02 to 2HS-1002. Cable G2B63A3D enters cabinet 2C-02 via conduit EC2414 from Fire Zone 2098-L.</p>	Yes	Yes	<p>This modification is specifically credited from a PRA perspective.</p> <p>The modification in Fire Area G to install flexible metallic conduit protects the valves</p>

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			Attachment C (NEI-04-02 Table B-3) Section for MOVs 2CV-1002, 2CV-1052, 2CV-0714-1, and 2CV-4698-1 in Fire Area G Risk Summary	control panel. The final method selected will be determined during the project scoping phase.	<p>ANO plans to modify 2CV-1052 to prevent spurious opening from a fire in the control room by installing flexible metallic conduit on conductor 1F of cable R2B53D3D in cabinet 2C-02 to 2HS-1052. Cable R2B53D3D enters cabinet 2C-02 via conduit EC1389 from Fire Zone 2098-L.</p> <p>ANO plans to modify 2CV-0714-1 (2SV-0714-1) to prevent spurious opening from a fire in the control room by installing flexible metallic conduit on conductor 14 of cable R2S066E in cabinet 2C-17 to 2HS-0714-1. Cable R2S066E enters cabinet 2C-17 via a penetration from cable tray EC169 in Fire Zone 2098-L.</p> <p>ANO plans to modify 2CV-4698-1 to prevent spurious opening from a fire in the control room by installing flexible metallic conduit on conductor 1F of cable R2D27A3J in cabinet 2C-09 to 2HS-4698-1. Cable R2D27A3J enters cabinet 2C-09-1 via conduit EC1052 from Fire Zone 2098-L.</p>			control cable which reduces the risk of fire induced circuit failures (such as spurious opening). This modification can prevent a non-recoverable position failure.  In accordance with station directives, compensatory measures per OP-1003.014 have been established as appropriate.
S1-10	Med	2	<p>In Fire Area B-4 an incipient fire detection system is not installed in control element drive mechanism (CEDM) room panels 2C70, 2C71, 2C72, 2C73, and 2C80.</p> <p>However an early warning fire detection system in accordance with NFPA 72, Fire Alarm Detection Code, is required by the PRA in accordance with FRE CALC-09-E-0008-05.</p> <p>LAR Source: Attachment C (NEI-04-02 Table B-3) Section for CEDM Room Panels 2C70, 2C71, 2C72, 2C73, and 2C80 in Fire Area B-4 Risk Summary</p>	ANO will provide a modification to install incipient detection in CEDM room panels 2C70, 2C71, 2C72, 2C73, and 2C80.	<p>ANO plans to provide a modification for CEDM room cabinets 2C-70, 2C-71, 2C-72, 2C-73, 2C-80 and 2C-409 that will require an air sampling tubing entry hole drilled in each cabinet to gain access to the air sampling port connection location inside each cabinet. Air sample tubing is planned to be routed, with supports/hangers, to meet design requirements. Sampling ports are planned to be monitored by UL listed incipient air sampling detector panels. Within each detector panel, a UL listed power supply with battery backup is planned to be installed.</p> <p>Fire detection signal cable is planned to be routed from each air sampling detector panel to the control room fire panel 2C-343-3.</p>	Yes	Yes	<p>This modification is specifically credited from a PRA perspective.</p> <p>The early warning fire detection system modification in Fire Area B-4 reduces the risk of a fire induced circuit and equipment failures that could result in the loss of CEDM room panels 2C70, 2C71, 2C72, 2C73, and 2C80.</p> <p>In accordance with station directives, compensatory measures per OP-1003.014 have been established as appropriate.</p>

Table S-1 Plant Modifications

Item	Rank	Unit	Problem Statement	Proposed Modification	Amended Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
S1-11	High	2	<p>At ANO the availability of feedwater to ANO-2 SGs was identified as an issue by PRA. Also identified by PRA was ANO's inability to perform high risk and time sensitive actions, such as control of auxiliary feedwater (AFW), outside of the ANO-2 control room.</p> <p>LAR Source: Attachment C (NEI-04-02 Table B-3) Fire Area G Risk Summary and VFDR G-01</p>	<p>ANO will provide a modification to assure a source of AFW to one of the SGs. The plant change will resolve multiple issues for existing areas where EFW is impacted.</p> <p>ANO will provide a modification for a local control panel to perform critical operator actions outside the ANO-2 control room. As a minimum, the panel will permit control of AFW.</p>	<p>ANO plans to install a new Auxiliary Feedwater Pump (AFW) in ANO-1 capable of feeding the ANO-2 steam generators.</p> <p>The AFW would be designed to meet or exceed the flow requirements of Unit 2 Emergency Feedwater Pump 2P-7B (380 gpm @ 1100 psig).</p> <p>The new pump, controls and motor operated valves would be designed to be installed in ANO-1. The preferred source of suction for the new pump is planned to be from Unit 1. The discharge piping is planned to be routed through the Unit 1 and Unit 2 Turbine Buildings to Unit 2 Auxiliary Building Rooms 2081 and 2084 for the tie-ins to the EFW System piping. The AFW tie-ins are planned to discharge into the Unit 2 Emergency Feedwater System (EFW) downstream of all EFW injection valves. There are no fire impacts to ANO-2.</p> <p>The AFW pump would be designed to have the capability to be operated from the Unit 2 Control Room and locally in ANO-1.</p> <p>The AFW pump and associated motor operated valves would be designed to be powered by diverse ANO-1 non-safety related power sources to prevent a single failure from disabling equipment operation.</p> <p>The AFW pump would be designed to include controls and monitoring instrumentation to ensure proper water flow to the steam generators. The local controls and monitoring instrumentation are planned to be located in ANO-1, powered from ANO-1 sources and have backup DC power.</p>	Yes	Yes	<p>The AFW modification is specifically credited from a PRA perspective to provide a reliable additional source of feedwater.</p> <p>The local control panel modification is specifically credited from a PRA perspective to provide an alternate means to perform required actions outside the ANO-2 control room.</p> <p>This modification reduces the risk of not being able to perform necessary operator actions to shutdown the plant, if either Control Room can't be manned.</p> <p>Also the local control panel modification reduces the risk of availability issue with of feedwater supply to the ANO-2 SGs.</p> <p>Manual actions are credited in fire areas that contain redundant safe shutdown equipment. These actions have been demonstrated feasible and are therefore considered adequate compensatory measures until compliance can be achieved by transitioning to a 10CFR50.48(c) licensing basis.</p>
S1-12	Low	2	<p>In Fire Area B-3, excessive temperatures have been identified in Fire Zone 2091-BB following a loss of ventilation.</p> <p>LAR Source: Attachment C (NEI-04-02 Table B-3) Fire Area B-3</p>	<p>ANO will modify the control wiring for fans 2VEF-63 and 2VEF-64 to reduce excessive temperatures in Fire Zone 2091-BB. The final method selected will be determined during the project scoping phase.</p>	<p>ANO plans to modify the control wiring for fans 2VEF-63 and 2VEF-64 to isolate control from the control room and allow the local controls to override a "stop" signal generated from within Fire Area G, either from hand-switch positioning or fire-induced circuit damage. This eliminates fire impacts in Fire Area G and assures either 2VEF-63 or 2VEF-64 will remain available except for a fire in Fire Area B-3, Fire Zone 2091-BB.</p>	No	No	<p>This modification supports a basic assumption from a PRA perspective.</p>

Table S-1 Plant Modifications

Item	Rank	Unit	Problem Statement	Proposed Modification	Amended Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
S1-13	Low	2	In Fire Area MM, excessive temperatures have been identified in Fire Zone 2099-W following a loss of ventilation. LAR Source: Attachment C (NEI-04-02 Table B-3) Fire Area MM	ANO will modify fire door DR 265 to allow normally open positioning with automatic closure features in the event of a fire. The modification will open Fire Zone 2099-W to Fire Zone 2109-U in Fire Area JJ allowing natural circulation to reduce post fire temperatures. The final method selected will be determined during the project scoping phase.	ANO plans to provide a modification to fire door DR 265 to allow normally open positioning with automatic closure features in the event of a fire. This allows natural circulation to prevent long term room overheating impact on equipment located in Fire Zone 2099-W, West DC Equipment Room, by allowing an opening to Fire Zone 2109-U, Corridor, in Fire Area JJ.	No	No	This modification supports a basic assumption from a PRA perspective.
S1-14	Low	C	With regard to NFPA 50A, Gaseous Hydrogen Systems, code non-compliance issues were identified in the Hydrogen Gas Bottle Storage Room related to inadequate vent piping and room ventilation. The hydrogen storage room light switch was identified as not meeting Article 501 for Class I, Division II locations of the National Electric Code (NEC). LAR Source: Attachment A (NEI-04-02 Table B-1) Section 3.3.7.1	ANO will provide a modification to remove the hydrogen bottles and manifold outside the room.	ANO plans to provide a modification to move the hydrogen bottles and manifold outside of the Hydrogen Gas Bottle Storage Room to a concrete slab located outside this room and open to atmosphere. The primary advantage of this modification is that it removes the potential discharge of hydrogen into a confined space. The new hydrogen pipe is planned to be buried from manifold location on the outside slab and routed to the existing hydrogen piping inside the Hydrogen Gas Bottle Storage Room. This modification would relocate the manifold and bottles and would include adding a roof over the new outside slab location for weather protection.	No	No	The subject hydrogen gas system bottle storage area is not credited by the PRA. This modification will be completed to meet NFPA 805 code requirements.
S1-15	Med	C	NFPA 805 non-compliance issues were encountered when smaller fire areas were defined such that multiple walls, dampers, penetration seals, and doors were credited and used in the PRA model as rated fire barriers in the NRC regulatory basis for NFPA 805. Multiple walls and doors barriers will require upgrading to comply with NFPA 805. LAR Source: Attachment A (NEI-04-02 Table B-1) Section 3.11.2	ANO will provide a modification to upgrade multiple walls, dampers, penetration seals, and doors to rated barriers. These barriers will be identified as NRC regulatory basis to ensure compliance with NFPA 805. These barriers will be upgraded as required.	ANO plans to provide an adequate-for-the-hazard evaluation or a modification to upgrade fire barrier walls, dampers, penetration seals, and doors to rated barriers for those barriers credited for deterministic compliance and subsequently credited in the Fire PRA analysis. These barriers have been previously identified as NRC regulatory basis to ensure compliance with NFPA 805 and have compensatory measures established. The barriers to be addressed as identified by EC-1956 are 2005-2, 2005-3, 2067-4, 2082-3, 2091-1, 2091-2, 2091-3, 2091-4, 2107-4, 2110-2, 2110-4, 2110-7, 2112-2, 2112-8, 2112-10, 2133-5, 2133-6, 2147-8, 2148-4, 2148-5, 2149-5, 2152-2, 2154-2, 2154-3, 2154-5, 2158-10, 2224-2, 2224-3, 2228-10, 2239-4, 2239-5, 2256-4, 2256-5, 2256-6, 2256-8, 2134-1 and 2155-1.	Yes	Yes	This modification will be completed to meet NFPA 805 code requirements. In accordance with station directives, compensatory measures per OP-1003.014 have been established as appropriate.

Table S-1 Plant Modifications

Item	Rank	Unit	Problem Statement	Proposed Modification	Amended Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
S1-16	Low	C	NFPA 10 non-compliance issues (such as incorrect number of fire extinguishers for travel distance, incorrect type and size for the hazard area) were identified with ANO portable fire extinguishers. LAR Source: Attachment A (NEI-04-02 Table B-1) Section 3.7	ANO will provide a modification to install proper number of fire extinguishers to meet travel distance requirement in coverage areas. ANO will install adequately sized fire extinguishers and correct type that are rated for the fire hazard to meet NFPA 10 requirements.	<b>ANO plans to provide a modification to resolve the NFPA 10 code deficiencies identified in CALC-ANOC-FP-09-00009.</b> <b>In general, this modification would involve portable fire extinguisher physical relocation, substitution of existing extinguishers, and documentation updates to reflect these plant changes. The results will ensure the proper number of fire extinguishers to meet travel distance requirements in coverage areas, adequately sized fire extinguishers, and the correct type of extinguisher that is rated for the fire hazard in each area.</b>	No	No	The subject fire extinguishers are not credited in the Fire PRA. This modification will be completed to meet NFPA 805 code requirements.

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