Region	1
Site	Beaver Valley
Panel Date	3/20/2018
Participants	DLP: Joylynn Quinones-Navarro, Kevin Roche, Tony Brown DIRS: Tom Hipschman, Aron Lewin NSIR: Eric Schrader R1: Christopher Lally, Justin Hawkins, Marc Ferdas, Frank Arner, Stacey Horvitz, Sherlyn Haney R2: Reinaldo Rodriquez R3: Stuart Sheldon R4: Ryan Alexander, Ray Azua
Details of issue	The inspection identified a vulnerability to extreme cold weather conditions if the Beaver Valley Diesel Flex Fuel powered equipment with fuel filters was exposed to extreme cold weather events down to -20 degrees Fahrenheit. Based on the site fuel cloud point which ranged from (4 degrees Fahrenheit to -7 degrees Fahrenheit), diesel fuel gelling could occur below these temperatures. The Flex program for BV supports extreme cold weather conditions down to -20 degrees Fahrenheit. The Cloud point is the temperature at which paraffin (whitish wax like gel, which is naturally present in #2 diesel fuel, begins to form cloudy wax crystals. At the cloud point, these wax crystals flow with the fuel and coat the filter element and can quickly reduce the fuel flow, potentially challenging the engines. After the ELAP event, the storage building loses power and heating, BV FLEX Procedures begin deployment of the equipment at various times. Once deployed the Diesel driven pumps would be subjected to the harsh ambient conditions, potentially as Low as -20 degrees Fahrenheit prior to their start. The Hard Card procedures to start the equipment had a step to add an additive (anti-gel) when ambient temperatures were below 20 degrees Fahrenheit, but this would not occur until the machines were actually started and they may remain idle for many hours after deployed in the extreme conditions where this would be ineffective. Typical timelines from the final integrated plans and procedures for deployment were as follows: •Deployment of Flex Primary Plant Demineralized Water Storage Tank (PPDWST) Makeup diesel driven pumps to restore water source for TDAFW pump could begin around 2 hours however pump may sit idle for many hours depending on DWST availability to refill PPDWST prior to needing river water for makeup from these pumps. •Deployment for FLEX Diesel Driven AFW pumps would begin

	around 10 hours after the event and they would be started when the TDAFW pump would run out of decay heat for motive steam driving force which could be after 18 to 20 hours. •Diesel Driven spent fuel pump makeup pumps would be deployed in about 16 hours, however would not be required for 72 hours and could be idle and subject to extreme conditions for an extended timeframe. The cloud point of -7 degrees Fahrenheit to 4 degrees Fahrenheit is well above the required worst-case FLEX site ambient temperature of -20 degrees Fahrenheit.
Proposed Resolution	Green
Details of Proposed Resolution	The PD was determined to be More than Minor because it was associated with the cornerstone attribute of protection against external factors and adversely affected the mitigating systems cornerstone objective “To ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage).”
Panel Outcome	Green
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	1
Site	Calvert Cliffs
Panel Date	5/23/2017
Participants	JLD: J. Quinones-Navarro/J. Boska (Acting JOMB BC)/K. Roche DIRS: A. Lewin R1: C. Lally/C. Cahill R2: R. Rodriguez/P. McKenna R3: B. Bartlett/J. Jandovitz R4: R. Alexander NSIR: E. Schrader
Details of issue	The licensee failed to maintain FLEX portable equipment in a manner that ensured its long-term ability to function in extreme environments applicable to the site. Specifically, station procedures specified using lubricating oils that were not rated for the extreme temperature range applicable to the site. In two N+1 set pumps (one SFP makeup pump, and one AFW pump) lubricating oil rated for 1°F - 122°F was installed which does not cover the required range of -9°F - 110°F. No PM was in place at the time to ensure a low temperature oil would be installed during winter months. Additionally, 9 small Pramac generator sets had lubricating oil rated for -17° - 104°F was installed with no PM to ensure high temperature oil was installed prior to the summer months.
Proposed Resolution	Minor
Details of Proposed Resolution	The performance deficiency is minor because site records indicate that since implementation of the FLEX plan at CCNPP, the highest and lowest recorded temperatures have remained within the rated temperature ranges of the lubricating oils installed in the FLEX portable equipment. Additionally, operation of the equipment with oil not rated for ambient temperatures would be a long-term equipment concern and did not cause doubt as to whether the FLEX portable equipment would have functioned when called upon.
Panel Outcome	Minor
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	1
Site	Calvert Cliffs
Panel Date	4/10/2018
Participants	DLP: Joylynn Quinones-Navarro, Kevin Roche, Tony Brown DIRS: Greg Bowman, Aron Lewin NSIR: Milt Murray R1: Christopher Lally, Andrew Rosebrook, Marc Ferdas R2: Reinaldo Rodriquez R3: Ann Marie Stone, Julie Boettcher R4: Ryan Alexander, Mike Stafford, Jason Kozal
Details of issue	Note: Issue identified during performance of baseline inspection program. Many of the pieces of diesel-powered FLEX equipment (e.g. generators, pumps, etc.) are not rated to start over the entire temperature range that is required at Calvert Cliffs Nuclear Power Plant. Equipment and procedures to ensure a reasonable assurance of the FLEX equipment working in extreme cold conditions have not been installed or implemented. Specifically, no method of maintaining FLEX equipment warm enough to reasonably assure starting in extreme cold at the FLEX Robust Storage Building after the building has lost heating during an extended loss of power has been implemented. Instructions were in place to operate deployed equipment for at least 10 minutes of each hour when temperature dropped below 10F; however, once the doors to the FLEX Robust Storage Facility were opened during an event the temperature inside the building would equalize with outside ambient in approximately one hour. There were no instructions to start equipment inside the Robust Storage Facility, or a strategy to restore heating to the building, to ensure the portable diesel equipment inside remained functional.
Proposed Resolution	Green
Details of Proposed Resolution	The performance deficiency is more than minor because it is associated with the “protection against external factors” attribute of the mitigating systems cornerstone, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the licensee had not corrected the problem (including had not implemented compensatory measures) and the temperature at Calvert Cliffs Nuclear Power Plant fell below the 10F limit recommended for cold weather actions in the Sargent and Lundy engineering analysis. Therefore, the reliability and availability of systems designed to mitigate the consequences of an accident were adversely affected.

	This performance deficiency is nearly identical to the example 2.f. and the “not minor if” statement of example 2.f of IMC 0612 Appendix E, “Examples of minor issues.”
Panel Outcome	Minor
Details of Panel Decision	DLP: Minor DIRS: Minor R1: Green R2: Minor R3: Green R4: Minor Discussion focused on actual cold weather conditions experienced & duration of such conditions existing less than 24 hours.

Region	1
Site	Calvert Cliffs
Panel Date	10/30/2018
Participants	DLP: Nathan Sanfilippo DIRS: Tom Hipschman, Aron Lewin NSIR: Milt Murray R1: Christopher Lally, Andrew Rosebrook, Chris Roettgen, Rodney Clagg, Erin Carfang R2: Reinaldo Rodriquez R3: Ann Marie Stone, Stu Sheldon R4: Ryan Alexander
Details of issue	Note: Issue identified during performance of baseline inspection program. Issue was previously discussed at 4/10/18 panel. Equipment and procedures have not been installed or implemented to ensure a reasonable assurance of the FLEX equipment working in extreme cold conditions. Specifically, no method has been implemented to maintain FLEX equipment warm enough to reasonably assure starting in extreme cold after the FLEX Robust Storage Building has lost heating during an extended loss of power or once deployed to the field. Since Calvert's FLEX strategy relies upon installed equipment being repowered via the FLEX Generators, the portable diesel driven equipment would be exposed to extreme cold temperatures for an extended period of time prior to being started. Therefore, this raise concerns related to the starting aids and due to fuel filters being clogged due to fuel oil temperature falling below the cloud point. A vendor analysis of the site's diesel driven FLEX equipment (500 KW Generators, 100KW Generators, AFW pumps, RCS makeup pumps, and other equipment) over the required temperature range was based on the assumption that starting aids (block heaters, or coolant heaters) installed on FLEX diesel driven equipment would be used below 32F as required by the equipment vendor technical manuals. Additionally, the vendor analysis recommended maintaining the FLEX diesel engines warm by running them for 10 minutes each hour in extreme cold (<10F). Finally, the analysis recommended repowering the FLEX robust building heaters in order to maintain equipment warm until deployment. Based on these assumptions the licensee decided not to add fuel additives to FLEX fuel oil for cold weather operation. The FLEX fuel oil was purchased under the Safety-Related Fuel Oil purchase order; however, no record of cloud point testing for the FLEX fuel can be located. Based on cloud point samples from similarly purchased fuel, the cloud point of the FLEX fuel is

	approximately 12F. The FLEX design basis temperature for Calvert Cliffs is -8F Licensee procedures do not include any steps to ensure block heaters or coolant heaters are plugged in and functioning below 32F, nor was this part of the training for operators who would be responsible for deploying and operating FLEX equipment. Additionally, during an ELAP, no AC power would be available for plugging in block heaters until small portable generators are deployed. Deploying the smaller portable generators is not a priority in the FLEX implementing strategy and they are not deployed until 3 to 4 hours into the event. Even when they are deployed, they are intended to be used for charging of communications equipment and no mention of equipment heaters is made. The licensee has now concluded after looking at ways to implement use of block heaters and repowering the FLEX building, that they will instead start using an anti-coagulating fuel additive to ensure proper fuel flow below the -9F required for FLEX at CCNPP. They plan to remove the precaution for running FLEX diesels 10 min of each hour and do not plan to use the equipment heaters. An evaluation for the fuel additive is complete, but an evaluation for the non-use of heaters and intermittent running is still forthcoming.
Proposed Resolution	Green
Details of Proposed Resolution	The performance deficiency is more than minor because it is associated with the “protection against external factors” attribute of the mitigating systems cornerstone, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the licensee had not corrected the problem (including not implementing compensatory measures). The temperature at Calvert Cliffs Nuclear Power Plant fell below the best estimate of the FLEX fuels cloud point (12F) for at least 11 hours this past winter. Additionally, the temperature was below the 32F limit in the Sargent and Lundy engineering analysis at which point the use of cold weather starting aids was assumed for several periods including one period of 12 days and 4 hours. Therefore, the reliability of systems designed to mitigate the consequences of an accident were adversely affected prior to any corrective actions being implemented. This performance deficiency is similar to the example 2.f. and the “not minor if” statement of example 2.f of IMC 0612 Appendix E, “Examples of minor issues.”
Panel Outcome	Green
Details of Panel Decision	Panel agreed with proposed resolution of the issue. New discussion focused on cold additives not being used & confirmation of cloud point test.

Region	1
Site	Fitzpatrick
Panel Date	8/26/2018
Participants	DLP: Kevin Roche DIRS: Greg Bowman R1: Christopher Lally R2: Reinaldo Rodriquez R3: Stuart Sheldon R4: Ryan Alexander
Details of issue	Fitzpatrick FLEX implementing guide FSG-001 Attachment 7, "Refueling of Flex Equipment." Directs the operators to leave the FLEX fuel oil transfer hoses hook up and primed once the transfer pump is primed the first use. Under extreme cold conditions (Fitzpatrick's FLEX Design Basis temperature is -23F) the fuel oil in the exposed 300 foot hose will be cooled to approximately -21F in 6-8 hours (Time between refueling). The approximately 27.5 gallon of fuel oil would be at or below the pour point temperature. The fuel oil will be extremely viscos (Approximately 2000 SSU vice 80 SSU at 40F.) Exelon determined that the FLEX fuel oil transfer pump would be able to pump the high viscosity fluid to either of the Diesel Fire Pumps tanks or the Flex Generator fuel tanks. The concern is that when the high viscosity fuel oil from the hose is pumped to one of these tanks it will collect at the bottom of the tanks and will not mix rapidly with the heated fuel oil in the tank due to the viscosity stratifying the fuel oil immediately, lack of turbulent flow in the tank to aid mixing, and self-insulation effects. 27.5 gallons of high viscosity fuel will likely collect to the point where it covers the fuel pump suction line (sludge would conservatively take up at least ~16.5% of the tank volume not accounting for mounding.) Therefore, it is likely the equipment supported by that tank would either be starved of fuel oil or the waxes from the high viscos fluid would clog the fuel filter rendering that piece of equipment inoperable. The two fluids would eventually equalize at a temp greater than the fuel oil's close point and all wax would go back into solution, so the tank would be recoverable. The addition of warmer fuel from the diesel storage tank would also help mix and heat up the cold high viscosity fuel oil originally in the hose. Once the cold fuel is flushed out of the hose this would no longer be a concern, so at most one piece of redundant FLEX strategy equipment would be disabled during its second refueling. This would likely occur between 21 and 30 hours into the event. Additionally, each time a piece of equipment is refueled the exposure time is reset to zero, Fitzpatrick does have a redundant 300 foot hose and transfer pump and Nine Mile Point's Flex equipment would also be available.

Proposed Resolution	Minor
Details of Proposed Resolution	The performance deficiency is associated with the Procedure Quality Attribute of the Mitigating Systems Cornerstone and adversely affect the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee's procedures used during an ELAP event in cold weather conditions did not ensure that equipment would not be adversely impacted due to refueling issues during a period of extremely low temperatures. However, the region believes the performance deficiency is minor due to the fact that, the issue would only affect one piece of redundant equipment (1 of 2 Diesel Fire Pumps or 1 of 2 Flex Generators) therefore the function would not be lost. The issue would not occur until the second refueling which would not occur until approximately 21-30 hours. By 24 hours Phase III equipment would be available. The issue is recoverable. The fluids will eventually mix and the equalization temperatures will be above the clod point for all waxes will return to solution and the fuel filters can be replaced. Fitzpatrick has an additional 300-foot hose and transfer pump in N+1 storage and Nine Mile Point's FLEX equipment would also be available for use.
Panel Outcome	Minor
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	1
Site	Hope Creek
Panel Date	3/20/2018
Participants	DLP: Joylynn Quinones-Navarro, Kevin Roche, Tony Brown DIRS: Tom Hipschman, Aron Lewin NSIR: Eric Schrader R1: Christopher Lally, Justin Hawkins, Marc Ferdas, Frank Arner, Stacey Horvitz, Sherlyn Haney R2: Reinaldo Rodriquez R3: Stuart Sheldon R4: Ryan Alexander, Ray Azua
Details of issue	Note: Issue identified during performance of baseline inspection program. The inspectors found that PSEG's initial FLEX diesel pump and generator fuel oil samples were taken between March and September 2017, were sent to the incorrect lab, lost before being analyzed, and went unrecognized by PSEG until the inspector's questions in February 19, 2018. PSEG's PM Process and diesel fuel oil testing program procedures, MA-AA-716-210 and CY-AB-140-410, require annual fuel oil sampling of their FLEX diesel generators and pumps in accordance with Hope Creek Generating Station's Final Integrated Plan - Beyond Design Basis FLEX Mitigating Strategies, EM-HC-100-1000.
Proposed Resolution	Green
Details of Proposed Resolution	The performance deficiency is more than minor because it was associated with the equipment performance attribute of the Mitigating Systems cornerstone and adversely affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, because PSEG sent the required FLEX diesel generator and pump fuel oil samples to the incorrect lab, the samples were lost before being analyzed, and went unrecognized by PSEG for approximately 6-8 months. The inspectors also reviewed IMC 0612, Appendix E, Examples of Minor Issues, and found it was sufficiently similar to Example 3.k, in that significant programmatic deficiencies were identified that could have led to worse outcomes.
Panel Outcome	Green
Details of Panel Decision	Consolidate this issue along with the other 3/20/18 Hope Creek issue on tracking FLEX diesel pump unavailability into one performance deficiency with multiple examples of not maintaining FLEX equipment. The single issue will be re-evaluated under IMC 609, Appendix O & Appendix M if needed. Issue likely to screen to green.

Region	1
Site	Hope Creek
Panel Date	3/20/2018
Participants	DLP: Joylynn Quinones-Navarro, Kevin Roche, Tony Brown DIRS: Tom Hipschman, Aron Lewin NSIR: Eric Schrader R1: Christopher Lally, Justin Hawkins, Marc Ferdas, Frank Arner, Stacey Horvitz, Sherlyn Haney R2: Reinaldo Rodriquez R3: Stuart Sheldon R4: Ryan Alexander, Ray Azua
Details of issue	Note: Issue identified during performance of baseline inspection program. Between December 6, 2017, and February 19, 2018, PSEG did not track the unavailability of a FLEX diesel pump (C1FLX-1FLXE42) after it failed to start and did not protect the FLEX mitigation capability performed by the other two pumps onsite in order to allow the failed pump to be unavailable for greater than 45 days (up to 90 days) in accordance with PSEG procedure OP-HC-108-115-1001, Operability Assessment and Equipment Control Program, and EM-HC-100-1000. For the FLEX diesel pumps (H1FLX-10-P-500; SCFLX-1FLXE18; C1FLX-1FLXE42), a loss of two of three represents a loss of FLEX mitigation capability. PSEG's procedure, OP-HC-108-115-1001, states that "When installed equipment which supports FLEX strategies becomes unavailable, then the FLEX strategy affected by this unavailability does not need to be maintained during the unavailability. The required BDB/FLEX equipment may be unavailable for 90 days provided that the site BDB/FLEX capability (N) is met. If the site BDB/FLEX capability is met but not protected for all of the site's applicable hazards (flood, earthquake, high winds from hurricane or tornado, or local intense precipitation), then the allowed unavailability is reduced to 45 days."
Proposed Resolution	Green
Details of Proposed Resolution	The performance deficiency is more than minor because it was associated with the equipment performance attribute of the Mitigating Systems cornerstone and adversely affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage).
Panel Outcome	Green
Details of Panel Decision	Consolidate this issue along with the other 3/20/18 Hope Creek issue on tracking FLEX diesel fuel oil samples into one performance deficiency with multiple examples of not maintaining FLEX equipment. The single issue will be re-evaluated under IMC 609, Appendix O & Appendix M if needed. Issue likely to screen to green.

Region	1
Site	Hope Creek
Panel Date	4/06/2018 No formal panel held, members made aware of final disposition. Issue is a consolidation of FLEX diesel fuel oil samples & diesel pump unavailability issues originally paneled on 3/20/2018.
Participants	DLP: Joylynn Quinones-Navarro, Kevin Roche, Tony Brown DIRS: Tom Hipschman, Aron Lewin NSIR: Eric Schrader R1: Christopher Lally, Justin Hawkins, Marc Ferdas, Frank Arner, Stacey Horvitz, Sherlyn Haney R2: Reinaldo Rodriquez R3: Stuart Sheldon R4: Ryan Alexander, Ray Azua
Details of issue	Note: Issue identified during performance of baseline inspection program. Issue was previously discussed at 3/20/18 panel. The inspectors identified multiple examples of PSEG not following the station specific procedures that implement the Salem (SA) and Hope Creek (HC) Final Integrated Plans for Beyond Design Basis FLEX Mitigating Strategies, EM-SA-100-1000 and EM-HC-100-1000, respectively. Specifically, since January 2017, PSEG did not follow the common PSEG fleet PM Process and diesel fuel oil testing program procedures, MA-AA-716-210, CY-AB-140-410, and SC.OP-LB.DF-0001 for the annual fuel oil sampling of FLEX equipment. In addition to this, between December 6, 2017, and February 19, 2018, PSEG did follow site specific procedures for FLEX equipment unavailability and mitigation capability protection in accordance with these procedures, OP-HC-108-115-1001 and OP-SA-108-115-1001, Operability Assessment and Equipment Control Program.
Proposed Resolution	Green
Details of Proposed Resolution	The performance deficiency is more than minor because it was associated with the equipment performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The inspectors also reviewed IMC 0612, Appendix E, Examples of Minor Issues, and found it was sufficiently similar to Example 3.k, in that significant programmatic deficiencies were identified that could have led to worse outcomes.
Panel Outcome	Green
Details of Panel Decision	Issue not brought to panel again based on 3/20/18 panel discussions. On 3/20/18, panel agreed to consolidate Hope Creek FLEX diesel fuel oil samples & diesel pump unavailability issues into one performance deficiency with multiple examples of not maintaining FLEX equipment.

	The single issue was re-evaluated under IMC 609, Appendix O & Appendix M. Panel was ok if issue was screened to green.

Region	1
Site	Indian Point
Panel Date	8/4/2016
Participants	JLD: T. Brown/Mandy Halter/J. Quinones-Navarro DIRS: B. Blusius/S. Campbell R1: C. Lally R2: R. Rodriguez/J. Munday R3: S. Stuart/B. Bartlett/A. Stone/M. Jeffers/E. Sanchez R4: R. Alexander
Details of issue	During a full system alignment inspection on Unit 3 auxiliary feedwater, the inspectors identified that FLEX-PRV-1, PCV-1188 Backup Nitrogen Regulator Valve, was set to 17 psi instead of 35 psi, as required by the alignment procedure and the engineering change. FLEX-PRV-1 and the backup nitrogen bottle were installed as part of the FLEX modifications to provide an automatic replacement air source for PCV-1188 in the event the station air system was lost. PCV-1188 is an air operated valve that opens to allow the turbine driven auxiliary feedwater pump to take a suction on the city water tank in the event the condensate tank is unavailable. Based on conversations with the system engineer, the inspectors determined that the PCV-1188 valve would still be able to perform its function of providing a city water suction source even with the reduced nitrogen pressure. The reduced nitrogen pressure would prevent the valve from going full open, resulting in an increased pressure drop across the valve. Because there is significant margin between the available city water pressure and the lowest allowable net positive suction head of the turbine driven auxiliary feedwater pump, the increased pressure drop would not impact the auxiliary feedwater system. As a result, Entergy wrote condition report CR-IP3-2016-0748 and adjusted FLEX-PRV-1 to the proper pressure setting.
Proposed Resolution	Minor
Details of Proposed Resolution	Even with the reduced nitrogen pressure, PCV-1188 would have opened enough to allow sufficient net positive suction head to the turbine driven auxiliary feedwater pump. Therefore, there is no impact to the Mitigating Systems cornerstone.
Panel Outcome	Minor
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	1
Site	Indian Point
Panel Date	1/2/2018
Participants	JLD: Kevin Roche, Tony Brown DIRS: Greg Bowman, Aron Lewin NSIR: Eric Schrader R1: Christopher Lally, Christopher Cahill R2: Reinaldo Rodriquez R3: Stuart Sheldon R4: Ryan Alexander, John Mateychick
Details of issue	All diesel driven equipment was susceptible run failures due to fuel filter clogging at low temperatures. The FIP states that FLEX temperature range is from -15 to 115 F. Temperatures for FLEX equipment stored in the FLEX storage building have been estimated to drop to -6F. Once the FLEX deployment is begun the area and equipment will be subjected to ambient conditions, potentially as low as -15F. Although the FLEX portable equipment is equipped with cold weather features such as block heaters, glow-plugs and air intake heaters, no provisions have been made to ensure that the diesel fuel oil is maintained above the cloud point and pour point. Initial IPEC fuel oil samples show that the cloud point was approximately -6C (21F) which is substantially above the worst-case temperatures. Failure to meet these specifications could result in fuel system clogging and inability to pump fuel to the engine.
Proposed Resolution	Green
Details of Proposed Resolution	The PD was determined to be a More than Minor because it was associated with the cornerstone attribute of protection against external factors and adversely affected the mitigating systems cornerstone objective “To ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage).”
Panel Outcome	Green
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	1
Site	Indian Point
Panel Date	1/2/2018
Participants	JLD: Kevin Roche, Tony Brown DIRS: Greg Bowman, Aron Lewin NSIR: Eric Schrader R1: Christopher Lally, Christopher Cahill R2: Reinaldo Rodriquez R3: Stuart Sheldon R4: Ryan Alexander, John Mateychick
Details of issue	The portable diesel generators (PDG) breakers were not properly set in accordance with the calculations. Improper set points could result in breaker trips below the required loading and defeating and or complicating the FLEX mitigation strategies.
Proposed Resolution	Minor
Details of Proposed Resolution	The As-Found breaker settings would not have compromised the PDG function to supply power to the U2/U3 EDS. Protection features would have operated as designed. However, the EDS would be exposed to higher overload current than recommended by the calculations but were within the cable ampacities and component ratings. The Instantaneous PU setting was set lower than recommended by the calculation IP-CALC-14-00002. However, the setting would have provided adequate protection but may have tripped sooner.
Panel Outcome	Minor
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	1
Site	Indian Point
Panel Date	1/2/2018
Participants	JLD: Kevin Roche, Tony Brown DIRS: Greg Bowman, Aron Lewin NSIR: Eric Schrader R1: Christopher Lally, Christopher Cahill R2: Reinaldo Rodriquez R3: Stuart Sheldon R4: Ryan Alexander, John Mateychick
Details of issue	The IPEC FIP states that deployed portable diesel driven equipment has sufficient on-hand fuel capacity to function until refueling operations can be accomplished. Refueling operations are required to ensure that equipment functionality can be maintained. Refueling guidance is provided in 0-FSG-2008.08 Flex Fuel Tank Trailer 1 Operator Guide. Section 3.5 states "STOP equipment to be refueled" and 3.6 states "ALLOW equipment to cool". Completing this guidance could have the consequence of terminating critical FLEX functions.
Proposed Resolution	Minor
Details of Proposed Resolution	The critical diesel driven equipment has trailer mounted fuel for approximately 8 hours of continuous run time. Therefore, the event should be fairly well stabilized in the event that the equipment was temporarily secured. Although not specifically delineated in the procedure, the team believes that any manipulation of FLEX equipment in an ELAP situation would be carefully coordinated with the control room. With the exception of the communications generators, the remaining equipment is trailer mounted with adequate design provisions to allow refueling while operating.
Panel Outcome	Minor
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	1
Site	Nine Mile Point
Panel Date	9/12/2017
Participants	JLD: Tony Brown, Joylynn Quinones-Navarro DIRS: Michael Montecalvo, Aron Lewin R1: Christopher Lally, Frank Arner R2: Reinaldo Rodriquez R3: Stuart Sheldon, Bruce Bartlett R4: Ryan Alexander, John Mateychick
Details of issue	NEI standard NEI 12-06, Rev. 0 Section 8.3.2, Deployment of FLEX Equipment, provides the following guidance regarding considerations for extreme cold hazards, “FLEX equipment should be procured to function in extreme conditions applicable to the site and consideration should also be made for any manual operations required by plant personnel in such conditions.” Contrary to NEI 12-06, Rev. 0, Section 8.3.2, the licensee failed to take appropriate consideration of manual operations required by plant personnel in freezing weather. The Issue of concern was that the procedure implementing the strategy for alternate Unit 1 reactor pressure vessel makeup does not clearly eliminate the potential for freezing a portion of the discharge hose from the FLEX pump. The procedure does not ensure a minimum flow path within that section of hose remains to ensure freezing does not take place during Phase 2 RPV injection. Specifically, N1-DRP-FLEX-MECH, step 6.2.9.7, instructs operators to throttle a pump discharge manifold unused valve to provide minimum flow and freeze protection for pump protection and suction hose line protection from the intake structure if RPV injection is through the firewater to feedwater connection and pump flow is at or near zero. However, in this scenario where the Feedwater valve 29-412 is throttled or closed for injection, if the reactor level reaches the top of EOP level control band for steam line protection, then the step would direct the pump operator to either secure the FLEX pump or to provide protection only for the pump and suction hose by creating a min flow path at one of the connections for the pump discharge manifold. The pump discharge manifold has three connections, each individually valved. The discharge hose leading to Feedwater valve 29-412 is connected to one of the pump discharge manifold connections. This would not protect the discharge hose, connected to this manifold used for RPV makeup in all scenarios from freezing at zero flow conditions if flow was secured due to overshoot in level. The steps to provide min flow for the pump and suction hose through a different pump discharge manifold connection could result in stagnated flow in the discharge hose between the pump discharge manifold and Feedwater valve 29 412. The discharge hose affected is a 50-foot section connected directly from the

	FLEX pump discharge manifold a portion of which is run externally in an area unprotected from the weather before being routed through doors to the Screenhouse and Turbine building. The freezing hazard could also occur without the use of the pump discharge manifold for local min flow freeze protection for the pump if makeup to the Isolation Condensers is being provided in parallel but from a separate pump discharge manifold connection, again potentially resulting in stagnation of flow in the discharge hose to Feedwater valve 29-412.
Proposed Resolution	Minor
Details of Proposed Resolution	The performance deficiency is minor because the performance deficiency could not be viewed as a precursor to a significant event; if left uncorrected, would not have the potential to lead to a more significant safety concern; does not relate to a performance indicator; and did not adversely affect the associated cornerstone attribute for mitigating systems. Specifically, the lack of procedural detail to protect the alternate RPV injection method would have the potential for freezing a portion of the FLEX discharge line if RPV level would raise to the band where injection flow was required to be secured. However, this would be during Phase 2 after the RPV level would have been restored from the initial blowdown by the Isolation Condensers (effect of RPV heat reduction) and assumed leakage through the five Reactor Recirculation pumps including TS leakage. There would be no concern for freezing until AFTER level had been made up to the target RPV level control. The consequence of this is considered minimal based on the following justification. The initial assumed 45 gpm reactor coolant leakage rate at rated pressure will be reduced with decreased reactor pressure (target 100 psig) to approximately 14 gpm. The team independently confirmed via calculation a range of 8 to 14 gpm. Conservatively assuming the RPV level was at the low end of N1-EOP-2 level band of 53 inches, it would take about 24 hours for the level to drop below the top of active fuel. This provides more than ample time to diagnose the problem and locate and connect the spare (N+1) hose, to replace the section of hose that could be affected. The section of hose potentially affected by freezing is a smaller section than any spare hose. Only one 100-foot hose is needed and one of the spare (N+1) hoses could be used to restore injection. The alternate feedwater lineup is not a complicated lineup, so the NRC team determined that recognition of the frozen hose within the feedwater path would not be a complicated recovery and therefore the issue would not adversely affect the mitigating function of RPV supply, given this consideration and the excessive time available.
Panel Outcome	Minor
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	1
Site	Peach Bottom
Panel Date	1/8/2019
Participants	DLP: Nathan Sanfilippo, Kevin Roche DIRS: Aron Lewin R1: Christopher Lally, Christopher Cahill, Louis McKown R2: Reinaldo Rodriquez R3: Ann Marie Stone R4: Ryan Alexander, Geoff Miller, Ray Kellar
Details of issue	The licensee captured in a condition report on April 6, 2018, that the UPS battery status lights on SFPI Channel 'A' (LI-3-19-001A) at PB Unit 3 indicated a problem with the DC backup power source for the channel. The impact upon the FLEX/SFPI function was not evaluated; however, a deficiency tag was hung in the field noting a degraded condition of the battery. Later on, September 3, 2018, the licensee continued to observe the same UPS battery status lights indicating a problem on the SFPI channel. Again, no impact upon the FLEX/SFPI function was evaluated and a second deficiency tag was hung in the field. During field walkdowns of SFPI across both units, the inspectors observed the two deficiency tags and inquired to the impact to the FLEX/SFPI functions. Based upon the questions of the team, the licensee evaluation determined that the Unit 3 SFPI Channel 'A' level indicator would not function following a loss of AC power such as during an extended loss of offsite power. However, upon restoration of power such as by a FLEX generator the channel would function normally. The licensee determined that a replacement battery was not sourced or receipt inspected and therefore the degraded condition was not corrected. FLEX and SFP Instrumentation Program, CC-PB-118 Rev. 000, Attachment 7, Spent Fuel Pool Level Indication, action "A' states that when one of the required channels is not functional, restore the channel to functional status within 90 days. Per action 'C" if the channel cannot be restored within the required time (90 days) the licensee was to "Initiate an IR to enter the condition into the corrective action program. Identify the equipment out of service time is greater than the specified allowed time, develop and implement an alternate method of monitoring, determine the cause of the non-functionality, and plans and schedule for restoring the instrument channel(s) to functional status." Contrary to the above requirements, the licensee did not implement action 'C' when the A SFP channel was out of service after 90 days. Upon discovery by the NRC, the licensee entered this issue into their CAP, initiated compensatory actions to increase monitoring of the non-degraded channel until the replacement of the battery prior to the team's departure from the site.

	(NOTE: Issue is discussed again at 1/29/18 panel due to licensee taking issue with more than minor determination).
Proposed Resolution	Green
Details of Proposed Resolution	This finding was more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated January 1, 2018, as it represented a challenge to the Spent Fuel Pool Cooling System area to measure, System, Structure, or Component Performance attribute of the Reactor Safety – Barrier Integrity cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding) protect the public from radionuclide releases caused by accidents or events. Specifically, since discovery in April 2018, re-identification in September, until evaluation and restoration in December, the Unit 3, 'A' Channel SFPI installed in accordance with Order EA-12-051 commitments would not have been functional during an ELAP until power could be restored to the associated electrical bus. From April through December 2018, the licensee failed to track unavailability or restore the degraded channel in accordance with the unavailability requirements and completion times established in CC-AA-118.
Panel Outcome	Green
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	1
Site	Peach Bottom
Panel Date	1/29/2019
Participants	DLP: Nathan Sanfilippo, Kevin Roche DIRS: Aron Lewin R1: Christopher Lally, Christopher Cahill, Louis McKown R2: Reinaldo Rodriquez R3: Ann Marie Stone R4: Ryan Alexander, Geoff Miller, Ray Kellar
Details of issue	(NOTE: Issue from 1/8/19 brought back to panel due to licensee taking issue with more than minor determination.) The licensee captured in a condition report on April 6, 2018, that the UPS battery status lights on SFPI Channel 'A' (LI-3-19-001A) at PB Unit 3 indicated a problem with the DC backup power source for the channel. The impact upon the FLEX/SFPI function was not evaluated; however, a deficiency tag was hung in the field noting a degraded condition of the battery. Later on, September 3, 2018, the licensee continued to observe the same UPS battery status lights indicating a problem on the SFPI channel. Again, no impact upon the FLEX/SFPI function was evaluated and a second deficiency tag was hung in the field. During field walkdowns of SFPI across both units, the inspectors observed the two deficiency tags and inquired to the impact to the FLEX/SFPI functions. Based upon the questions of the team, the licensee evaluation determined that the Unit 3 SFPI Channel 'A' level indicator would not function following a loss of AC power such as during an extended loss of offsite power. However, upon restoration of power such as by a FLEX generator the channel would function normally. The licensee determined that a replacement battery was not sourced or receipt inspected and therefore the degraded condition was not corrected. FLEX and SFP Instrumentation Program, CC-PB-118 Rev. 000, Attachment 7, Spent Fuel Pool Level Indication, action "A' states that when one of the required channels is not functional, restore the channel to functional status within 90 days. Per action 'C" if the channel cannot be restored within the required time (90 days) the licensee was to "Initiate an IR to enter the condition into the corrective action program. Identify the equipment out of service time is greater than the specified allowed time, develop and implement an alternate method of monitoring, determine the cause of the non-functionality, and plans and schedule for restoring the instrument channel(s) to functional status." Contrary to the above requirements, the licensee did not implement action 'C' when the A SFP channel was out of service after 90 days.

	Upon discovery by the NRC, the licensee entered this issue into their CAP, initiated compensatory actions to increase monitoring of the non-degraded channel until the replacement of the battery prior to the team's departure from the site.
Proposed Resolution	Green
Details of Proposed Resolution	This finding was more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated January 1, 2018, as, if left uncorrected, the performance deficiency had the potential to lead to a more significant safety concern. Specifically, since discovery in April 2018, re-identification in September, until evaluation and restoration in December, the Unit 3, the 'A' Channel SFPI degraded replaceable batteries used for instrument channel power did not have sufficient capacity to maintain the level indication function until offsite resource availability could be reasonably assured as intended under Order EA-12-051 commitments to ensure reliable spent fuel pool instrumentation. Furthermore, Exelon failed to perform the required actions associated with this condition before the expiration of the completion times established within the licensee's FLEX and SFP Instrumentation Program, CC-PB-118.
Panel Outcome	Green Finding
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	1
Site	Susquehanna
Panel Date	7/23/2019
Participants	DLP: Joshua Miller DIRS: Anthony Masters, Aron Lewin R1: Chris Lally, Chris Cahill, Andrew Siwy R2: Reinaldo Rodriquez R3: None R4: Geoff Miller, Ray Kellar
Details of issue	The issue of concern is that the licensee did not consider using fuel or a fuel additive for five small portable generators (N is two) to mitigate the potential for fuel oil clouding during an extreme low temperature event. The cloud point specification for the onsite diesel fuel oil is 23°F. The inspectors noted that the measured cloud point for the ten most recent fuel oil deliveries to the site was between 8°F-12°F. The Final Integrated Plan and the licensee's program document do not list a specific temperature for extreme cold. However, the licensee has verified that their calculations use a FLEX temperature range of -5 to 101°F. The licensee has a corrective action to revise their program document to include the low temperature (the high temperature is already included). These small portable generators are procedurally directed to be used during Phase 2 of a FLEX event to supply AC power backup during a FLEX event to the 4160V generators and switchgear trailer. There were no issues with cloud point for any other equipment since the licensee has procedural guidance to use a fuel additive for ambient temperatures below 23°F for all other mitigating equipment. This equipment and the equipment it supports are stored at a designed minimum temperature of 50°F in the FLEX Storage Building. The licensee determined that upon initial deployment the small portable generator used to support the switchgear trailer will be started within approximately 15 minutes. The licensee provided a calculation which shows that the temperature of the fuel oil in this generator would be approximately 31.5°F after 15 minutes of exposure to -5°F if the initial temperature was taken to be 50°F. This is above the fuel oil cloud point specification of 23°F. The licensee determined that upon initial deployment the small portable generator used to support the 4160V generators will be started within approximately 41 minutes. The licensee provided a calculation which shows that the temperature of the fuel oil in this generator would be approximately 12.9°F after 41 minutes of exposure to -5°F if the initial temperature was taken to be 50°F. This is below the fuel oil cloud point specification of 23°F, but above the fuel oil cloud point measurement from the ten most recent fuel oil deliveries (8-12°F). The inspectors noted that the

	licensee has small portable generators in excess of N (two additional) and the likelihood of securing another generator if necessary. The licensee stated that the low temperature of -5°F would not render the batteries for the 4160V generators or the switchgear trailer for the respective duration they are exposed prior to being put into service. Although the control panel for the 4160V generators has a low-end operating temperature of -4°F, there is a manual start option which does not require the control panel to function.
Proposed Resolution	Minor
Details of Proposed Resolution	The performance deficiency is minor. Although procedurally directed to be used, the licensee has provided information which demonstrates that mitigating equipment is expected to be available given the conditions of deployment of the equipment as well as the redundancy of the small portable generators and robustness of the support batteries.
Panel Outcome	Minor
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	1
Site	Susquehanna
Panel Date	7/23/2019
Participants	DLP: Joshua Miller DIRS: Anthony Masters, Aron Lewin R1: Chris Lally, Chris Cahill, Andrew Siwy R2: Reinaldo Rodriquez R3: None R4: Geoff Miller, Ray Kellar
Details of issue	The issue of concern is that the licensee lapsed in performing PMs on the two FLEX low pressure/high flow pumps that are pre-staged in the FLEX storage building. These pumps are identified as 0P911 and 0P912 and serve to provide water from the spray pond (ultimate heat sink) for supply to the SFP and the core. This issue was discovered during the initial NRC document request for the TI-191 inspection. The licensee performed the PM upon discovery and did not find any issues with the performance of the pumps. The PM was established and had been performed until December of 2018. The licensee missed five monthly PMs but could have potentially missed up to 14 monthly PMs. This monthly PM ensures the readiness of the pumper trucks. The monthly PM includes the following checks (note, these pumps are part of fire trucks): • Check all fluid levels, lights, and gauges • Engage the pump and recirculate the booster tank • Test drive truck and refuel as necessary
Proposed Resolution	Minor
Details of Proposed Resolution	The performance deficiency is minor. The licensee had established the PM program and would have missed no more than fourteen monthly minor PMs. The PM was performed upon discovery of lapse and no issues were discovered.
Panel Outcome	Minor
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	1
Site	Three Mile Island
Panel Date	8/15/2017
Participants	JLD: Joylynn Quinones-Navarro DIRS: Michael Montecalvo, Aron Lewin R1: Chris Lally, Anne DeFrancisco R2: Reinaldo Rodriquez R3: Stu Sheldon R4: Jeff Sowa, John Mateychick
Details of issue	During field observations, the NRC team identified trip settings of the two FLEX diesel generator output breakers not set in accordance with design specifications. Specifically, the instantaneous pickup was set at approximately 1100 amps for the B' flex diesel breaker and approximately 3200 amps for the A' flex diesel breaker. The design specifications and modification package stated that the instantaneous pickup should be set at 9600 amps for both breakers. The result of the discrepancies could be that the breaker could trip when needed. For instance, when starting a pump, the inrush current could trip the breaker.
Proposed Resolution	Minor
Details of Proposed Resolution	Exelon completed an evaluation of the actually sequencing of the loads and determined that the worst case loading with the inrush current would be 847 amps which is significantly less than the 1100-amp breaker trip setting. Also, if the breaker did trip, operators per Exelon's procedure would start the other redundant flex pump. Due to this, no actual loss of FLEX diesel generator capability existed.
Panel Outcome	Minor
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	1
Site	Three Mile Island
Panel Date	8/15/2017
Participants	JLD: Joylynn Quinones-Navarro DIRS: Michael Montecalvo, Aron Lewin R1: Chris Lally, Anne DeFrancisco R2: Reinaldo Rodriquez R3: Stu Sheldon R4: Jeff Sowa, John Mateychick
Details of issue	The inspectors identified that the FLEX submersible pump PM frequency to perform a functional test was set at a 5-year frequency which is not per Exelon procedure guidance of a 6-month frequency of the functional test. Specifically, Exelon procedure, CC-AA-118, Attachment 3, Diverse and Flexible Coping Strategies (FLEX) Program Document, states in part, submersible pumps PM guidance should be at a 6-month frequency by checking functionality of the pumps.
Proposed Resolution	Minor
Details of Proposed Resolution	Exelon completed initial factory acceptance flow testing and functional test that was performed. Also, the pumps are stored in an environmentally controlled building and therefore maintained functionality. Additionally, the 5-year functional test for the submersible pumps were scheduled and therefore would have been tested.
Panel Outcome	Minor
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	2
Site	Brunswick
Panel Date	02/27/2018
Participants	DLP: Joylynn Quinones-Navarro, Tony Brown, Kevin Roche, Peter Bamford DIRS: Aron Lewin, Alex Garmoe DRA: Michael Montecalvo, Candace Spore R1: Marc Ferdas, Chris Cahill R2: Reinaldo Rodriquez, Michelle Catts, Shane Sandal, Scott Freeman R3: Stu Sheldon, AnnMarie Stone R4: Ryan Alexander, Troy Pruett, Geoffrey Miller, Frances Ramirez, Michael Stafford
Details of issue	The licensee failed to ensure that appropriate programmatic controls were in place for the continued viability and reliability of the FLEX strategies. Specifically, the licensee did not have appropriate programmatic controls relative to configuration management for the removable key for the interlock device that supports operation of the installed FLEX Diesel Generators switchboards. Brunswick has two 480V, 500 kW FLEX DGs that are permanently pre-staged in the FLEX DG Enclosure. Each FLEX DG is installed with the necessary connection capabilities to supply both units' Division II battery chargers and power other equipment necessary for the FLEX strategies. Each FLEX DG is capable of energizing both Division I & II for a single unit, which is the preferred configuration. With both FLEX DGs in operation, Division I 480VAC emergency buses can be powered via cross-tie (with Kirk Key interlocks) to support Division I battery chargers and other loads (e.g., Control Building HVAC) The interlock that prevents both the FLEX DGs in a unit from simultaneously supplying both 480V safety buses utilizes a "Kirk Key" for which the station only has one key per unit. This key is required to be inserted, rotated in the appropriate direction, and remain inserted to allow the cross-tie. However, the team identified that the "Kirk Key" did not have any device or other physical control associated with it to ensure the key remains at the location of the FLEX DG panels. Brunswick indicated that they have backup/spare Kirk Keys controlled in alternative location(s) to be used should the primary key at the device become lost, damaged, or otherwise unusable. However, by the time the inspectors left the site, the backup/spare Kirk Keys could not be located. The licensee entered this issue into their CAP as CR 2181255.
Proposed Resolution	Minor

Details of Proposed Resolution	The inspectors were not able to answer yes to any of the four more than minor questions. Specifically, the team did not find any instances where any of the Kirk Keys became lost, damaged, or otherwise unusable.
Panel Outcome	Minor.
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	2
Site	Brunswick
Panel Date	02/27/2018
Participants	DLP: Joylynn Quinones-Navarro, Tony Brown, Kevin Roche, Peter Bamford DIRS: Aron Lewin, Alex Garmoe DRA: Michael Montecalvo, Candace Spore R1: Marc Ferdas, Chris Cahill R2: Reinaldo Rodriquez, Michelle Catts, Shane Sandal, Scott Freeman R3: Stu Sheldon, AnnMarie Stone R4: Ryan Alexander, Troy Pruett, Geoffrey Miller, Frances Ramirez, Michael Stafford
Details of issue	The Brunswick FIP states that operators will align supplementary Control Room ventilation if only one FLEX DG is available. This supplementary ventilation consists of portable ducting, fans, small diesel-driven generators, and additional equipment stored on a trailer in the FLEX storage building. 0EOP-01-SBO-02, Attachment 1, "Control Room Alternate Ventilation," Rev 6, Step 3.2 directs operators to block open doors in the control room. However, the rope and door chocks required to do this are not obtained until later in the procedure (Steps 3.4 and 3.5) when the operators are directed to obtain the alternate ventilation equipment trailer for the FLEX Storage building.
Proposed Resolution	Minor
Details of Proposed Resolution	The alternate Control Room ventilation strategy would only be needed if one of the FLEX DGs is out of service. If both diesels are in service, the installed Control Room ventilation can be reenergized. Additionally, the operators have 4 hours to establish ventilation so they most likely would have been able to implement the strategy to maintain Control Room habitability given the time constraints. Lastly, operators could possibly locate alternate equipment to block open the doors without using the credited FLEX equipment.
Panel Outcome	Minor.
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	2
Site	Brunswick
Panel Date	02/27/2018
Participants	DLP: Joylynn Quinones-Navarro, Tony Brown, Kevin Roche, Peter Bamford DIRS: Aron Lewin, Alex Garmoe DRA: Michael Montecalvo, Candace Spore R1: Marc Ferdas, Chris Cahill R2: Reinaldo Rodriquez, Michelle Catts, Shane Sandal, Scott Freeman R3: Stu Sheldon, AnnMarie Stone R4: Ryan Alexander, Troy Pruett, Geoffrey Miller, Frances Ramirez, Michael Stafford
Details of issue	The team identified a performance deficiency for the failure to identify a realistic response timeline for hurricane driven flood and high winds which are applicable to the site as required by NEI 12-06, section 4.2.
Proposed Resolution	Minor
Details of Proposed Resolution	The inspectors were not able to answer yes to any of the four more than minor questions. Specifically, after questions form the team, Brunswick develop an ELAP synopsis/timeline of action required to implement the FLEX strategies with realistic assumptions for the Probable Maximum Hurricane. The strategies to respond to the flooding event previously developed by the licensee would realistically address the synopsis/timeline. The licensee documented this issue as CR 2181431.
Panel Outcome	Minor.
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	2
Site	McGuire
Panel Date	08/18/2016
Participants	JLD: T. Brown/J. Quinones-Navarro. DIRS: B. Blusius/S. Campbell/C. Regan R1: C. Lally R2: R. Rodriguez/A. Masters/J. Hanna R3: S. Sheldon/A. Stone R4: R. Alexander
Details of issue	The licensee did not reasonably assure that the connection point for feed water makeup would allow a successful deployment of FLEX strategies during a high wind scenario. Specifically, FSG-03, Attachment 2 calls for the installation of a flange with a 3” hose connection to feed SG A and D using the FLEX Hale Medium Pressure Pump. However, the location of the connection point did not allow sufficient clearance for a hose to be connected without exceeding the vendor recommended bend radius. The licensee believes that the flange connection can be made. However, the combined length of the flange connection and the Storz connection on the 3" hose left only a few inches of remaining distance between the connection and the catwalk. This configuration would result in an unacceptable bend radius of the hose. The impact of the unacceptable bend radius would be a “kinked” hose and restricted/obstructed flow to the ‘A’ and ‘D’ steam generators. This would cause the operators/craft to either 1) assemble appropriate fittings in order to improve the bend radius, or 2) attempt to feed using another alternate strategy.
Proposed Resolution	Minor
Details of Proposed Resolution	The inspectors were not able to answer yes to any of the four more than minor questions. Specifically, this connection point is used at about 24 hours after the ELAP event initiation. The connections are used at that time to establish feedwater from the FLEX Hale Medium Pressure Pump before securing the turbine driven auxiliary feedwater pump in order to continue the RCS cooldown. When the inspectors raised this concern, the licensee was able to assemble a new connection piece with a 45 degrees Storz elbow and a 90 degrees Storz elbow to reduce the hose bend within a couple of hours. All of the required parts were obtained from a FLEX spare parts bin in FLEX building #2. The licensee contends that adequate time would have been available to correct the condition because the turbine driven auxiliary feedwater pump water source is available for 48 hours and the operators do not have to necessarily continue the RCS cooldown. It is worth mentioning that while the connection in question for alternate low-pressure feedwater is protected from all hazards, they are not the preferred connections. The preferred connections are the A and D S/G Auxiliary Feedwater Nozzles Alternate supply Isolation due to its ease of access and

	pre-installed Storz connection. These connections are located outside above the roof of the D/G building. While not fully protected from all wind-borne hazards, they are very well protected by surrounding Class 1 structures and Class 2 piping. These connections are robust for all other hazards.
Panel Outcome	Minor
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	2
Site	North Anna
Panel Date	03/23/2016
Participants	JLD: G. Bowman/J. Davis/T. Brown/J. Quinones/M. Franovich DIRS: D. Willis/ S. Campbell R1: Marc Ferdas R2: M. Franke/A. Masters/R. Rodriguez/G. MacDonald/J. Hanna R3: A. Stone/B. Bartlett R4: R. Alexander/T. Pruett
Details of issue	The licensee's staffing assessment shows that they will likely not be able to meet the 15-minute time requirement for notifying the state and local authorities following declaration of an unusual event.
Proposed Resolution	No PD
Details of Proposed Resolution	The issue was not associated with an actual event and it is difficult to determine the availability of equipment without knowing the specific hazard and its effect to be able to determine if all normal methods of communications would be affected. We are assuming all methods would be affected however that might not be the case. The licensee might choose to start notification in parallel with the event declaration, it has the ability to direct use of personnel as the individual in charge decides. The assessment with the minimum staffing shows delayed notification completion, but supposing that this would represent the actual way that the licensee uses its resources is conjecture. The cognizant NRC staff with jurisdiction of the BDB/TI communications capability requirements has indicated that the backup means to maintain onsite and offsite communications during a prolonged station blackout are not subject to the 10CFR50 Appendix E notification timeliness requirements.
Panel Outcome	No PD
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Site	North Anna
Region	2
Panel Date	03/23/2016
Participants	G. Bowman/J. Davis/T. Brown/J. Quinones (JLD), M. Franovich/M. Franke/A. Masters/R. Rodriguez/G. MacDonald/J. Hanna, (R2), D. Willis/ S. Campbell (DIRS), M. Ferdas (R1) A. Stone/B. Bartlett (R3)/ R. Alexander/T. Pruett (R4)
Details of issue	Service Water Pumphouse temperatures were not analyzed as stated in the licensee's Final Integrated Plan.
Proposed Resolution	Minor
Details of Proposed Resolution	The licensee failed to meet a requirement or standard (Order) and the issue of concern was reasonably within the licensee's ability to foresee, correct and prevent. However, the issue was not viewed as a precursor to a significant event, issue did not have the potential to lead to a more significant safety concern, the issue did not relate to a PI, and issue was not associated with affected cornerstone.
Panel Outcome	Minor
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Site	North Anna
Region	2
Panel Date	03/23/2016
Participants	JLD: G. Bowman/J. Davis/T. Brown/J. Quinones/M. Franovich DIRS: D. Willis/ S. Campbell R1: M. Ferdas R2: M. Franke/A. Masters/R. Rodriguez/G. MacDonald/J. Hanna, R3: A. Stone/B. Bartlett R4: R. Alexander/T. Pruett
Details of issue	The licensee removed both the “N” and the “N+1” RCS injection pumps from the credited storage facility. Licensee fleet procedure CM-AA-BDB-102, Revision 3, “Beyond Design Basis FLEX Equipment Unavailability Tracking,” had in Attachment 2 that, “If the site FLEX (N) is met but NOT fully protected for the site’s applicable hazards, then the allowed unavailability is reduced to 45 days (from 90 days).” The procedure allowed both sets of equipment to be left unprotected for 45 days.
Proposed Resolution	Green
Details of Proposed Resolution	Issue of concern was a PD because the licensee failed to meet a requirement or standard (Order) and the issue of concern was reasonably within the licensee’s ability to foresee, correct and prevent. It was MTM because the PD did have the potential to lead to a more significant safety concern since the procedure allowed both sets of equipment to be left unprotected for 45 days. Also, the PD affected the Reactor Safety – Mitigating Systems Cornerstone, Procedure Quality attribute. In addition, the PD adversely affected the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage).
Panel Outcome	Minor
Details of Panel Decision	Outcome: 4 votes for the issue to be minor (R1, R4, IRIB and JLD) and 2 votes for the issue to be MTM (R2 and R3). Majority of panel members believe issue is minor since the equipment was left outside for a few hours (5 hours) and did not exceed the 24-hour or 45-day action statements.

Region	2
Site	H.B. Robinson Unit 2
Panel Date	05/12/2016
Participants	JLD: G. Bowman/J. Davis/T. Brown/J. Quinones/M. Franovich DIRS: D. Willis/ S. Campbell R1: M. Ferdas R2: M. Franke/A. Masters/R. Rodriguez/G. MacDonald/J. Hanna, R3: A. Stone/B. Bartlett/J. Boettcher R4: R. Alexander/G. Werner/J. Mateychick
Details of issue	The issue of concern is that the licensee failed to perform Preventive Maintenance on the two FLEX low pressure/high flow pumps that are pre-staged in the turbine building. These pumps are identified as FLEX-PMP-LP-A and FLEX-PMP-LP-B and serve to provide water from the condenser water box to the suction of the steam driven auxiliary feedwater (SDAFW) pump and are used during high wind scenarios when the CST is vulnerable to tornado missiles.
Proposed Resolution	Minor
Details of Proposed Resolution	The inspectors determined a performance deficiency existed because the issue was within the licensee's ability to foresee and correct. Subsequent to the prompting of the team, the licensee tested the two pumps FLEX-PMP-LP-A and FLEX-PMP-LP-B and they passed the quarterly start tests on April 21, 2016. The test results demonstrated that the pumps met the quarterly start requirements and the lack of PMs has not caused appreciable degradation to the equipment. The quarterly surveillance performed consisted of the following checks: • Battery voltage check prior to cranking • Fluid check • Primer function test • Engine start • 30-minute engine run with >20% flow • Battery voltage check after start • Monitor gauges for proper operation • Shutdown pump and return to standby This proposed dispositioning as minor is similar to examples l and m of section 4 "Insignificant Procedural Errors" of NRC IMC 01612 Appendix E.
Panel Outcome	Green
Details of Panel Decision	Outcome: Four votes for the issue to be more than minor (R1, R3, R4 and JLD) and 2 votes for the issue to be Minor (R2 and IRIB). Majority of panel members believe issue is more than minor since the PM schedules for the FLEX was never established, and there was a potential to never conduct a PM.

Region	2
Site	Sequoyah
Panel Date	04/12/2017
Participants	JLD: /J. Quinones-Navarro/J. Boska (Acting JOMB BC)/K. Roche DIRS: S. Campbell R1: B. Cook R2: R. Rodriguez (presenter)/S, Freeman R3: S. Sheldon R4: R. Alexander
Details of issue	The licensee did not account for the hose bend radius that would result after deploying two 6" hoses to pressurize the Essential Raw Cooling Water System. Specifically, 0-MI-FMI-360-029.0 Rev 4 (FLEX – Hose Deployment for Essential Raw Cooling Water System) Attachment 2 directs the installation of 6-inch FLEX hoses at the Intake Pumping Station that will result in hose bend radiuses that are less than that recommended by the hose manufacturer. This may result in lower flow/pressure available to the ERCW system during a Beyond Design Basis event. CR 1269879 was initiated to address this issue.
Proposed Resolution	Minor
Details of Proposed Resolution	The inspectors were not able to answer yes to any of the four more than minor questions. Specifically, the licensee performed an analysis and determined that the reduced hose bend radius would still provide adequate flow/pressure to the ERCW system. The hose manufacturer recommends a bend radius of 20 times the diameter or 10 feet. Routing of the hoses at the Intake Pumping Station places the hose in a configuration where the bend radius 8 ½ feet on the inside radius of the hose. The licensee contacted the vendor of the hose for their evaluation of the hose configuration. They determined that the flow required through the 6-inch hoses would not be affected by the configuration in which the hose would be placed. Additionally, on 3/24/2017, the licensee performed a demonstration of a 6" hose in a similar configuration to that required at the Intake Pumping Station (bend radius of 8.54 feet). The pump discharge pressure was set at 100 psi and a flow of 1280 gpm was measured. This is higher than the 1250 gpm required by the strategy.
Panel Outcome	Minor
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	2
Site	Summer
Panel Date	03/27/2018
Participants	DLP: Joylynn Quinones-Navarro, Kevin Roche, Tony Brown, Eric Bowman DIRS: Aron Lewin, Chris Cowdrey NSIR: Milt Murray, Eric Schrader R1: Christopher Lally R2: Reinaldo Rodriquez, Phil McKenna R3: Stuart Sheldon R4: Ryan Alexander
Details of issue	The licensee did not account for the hose bend radius that would result after deploying two 6" hoses to pressurize the Essential Raw Cooling Water System. Specifically, 0-MI-FMI-360-029.0 Rev 4 (FLEX – Hose Deployment for Essential Raw Cooling Water System) Attachment 2 directs the installation of 6-inch FLEX hoses at the Intake Pumping Station that will result in hose bend radiuses that are less than that recommended by the hose manufacturer. This may result in lower flow/pressure available to the ERCW system during a Beyond Design Basis event. CR 1269879 was initiated to address this issue.
Proposed Resolution	Minor
Details of Proposed Resolution	The licensee failed to perform a loss of ventilation analysis for the service water (SW) pump house. As part of the licensee's strategy for Phase I and II they relied on two permanently installed alternate emergency feedwater pumps mounted in the SW pump house. These pumps are used to transfer water from the SW pond to the SW pump discharge crosstie header in the SW pump house. Each pump can provide 15 feet absolute head pressure, at a rated flow of 500 gpm to prevent cavitation of the turbine driven auxiliary feedwater (TDAFW) pump and the motor driven auxiliary feedwater (MDAFW) pumps. The pumps are powered from either of two 80 KW diesel generators stored (DG) in the FLEX DG building. The pumps are required if the condensate storage tank is lost during a tornado or high wind event. The licensee did not perform a calculation of the heat load produced in the FLEX modification package and did not discuss this heat load in their FLEX Equipment Ventilation and Habitability Report (TR00080-003) or the Final Integrated Plan (FIP) section 2.11.1 (Ventilation). Section 2.11.1 (Ventilation), of the licensee's FIP stated, in part, "An engineering evaluation was performed to identify a bounding scenario for time constraints and ventilation flow requirements." The licensee's loss of ventilation analysis was performed in accordance with NEI 12-06, Revision 2, which states that a loss of ventilation assessment is performed in accordance with NUMARC 87-00. On March 8, 2018, the inspectors determined that the licensee had failed to perform a loss of ventilation

	analyses to quantify the maximum steady state temperature expected in the SW pump house, a key are of concern. The licensee entered this issue into their CAP as CR-18-01021. The inspectors were not able to answer yes to any of the four more than minor questions. The licensee did have pump run heat data which when applied in an appropriate calculation would show that no supplemental ventilation was required in the SW pump house during a FLEX event.
Panel Outcome	Minor
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	2
Site	Summer
Panel Date	03/27/2018
Participants	DLP: Joylynn Quinones-Navarro, Kevin Roche, Tony Brown, Eric Bowman DIRS: Aron Lewin, Chris Cowdrey NSIR: Milt Murray, Eric Schrader R1: Christopher Lally R2: Reinaldo Rodriquez, Phil McKenna R3: Stuart Sheldon R4: Ryan Alexander
Details of issue	The issue of concern is that the licensee changed a commitment in the VC Summer FLEX Safety Evaluation (SE) without prior NRC approval. The SE indicated that the FLEX Spent Fuel Pool Level Indication (SFPLI) Function, battery capability, and Lithium C cell battery replacement would be verified/performed on a six-month PM Frequency. The licensee changed the frequency of the FLEX SFPLI function, battery capability, and Lithium C cell battery replacement activity from six months to once per cycle without prior NRC approval. The licensee entered this issue into their CAP as CR-18-01018.
Proposed Resolution	Minor
Details of Proposed Resolution	The licensee initiated a condition report for this issue and is in the process of completing the determination if prior NRC approval would have been required for the change. Summer Licensing performed a preliminary commitment change evaluation. The results of the preliminary evaluation indicate that the change could be made without NRC approval and the NRC can be notified about the revised commitment in the station's annual commitment reduction report. Summer Licensing is waiting for the final technical justification from Summer Engineering. This is due on March 30th. The next time the activity is due is in June of 2018, so there is no impact on FLEX SFPLI function, battery capability, or Lithium battery C cell replacement until then.
Panel Outcome	Minor
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	2
Site	Watts Bar
Panel Dates	4/30/2015 & 5/07/2015
Participants	JLD: T. Brown/M. Halter/J. Quinones DIRS: S. Rose (Acting IRIB BC)/ S. Campbell (DIRS) R1: R. Powell/A. DeFrancisco/W. Cook R2: A. Masters/R. Rodriguez/G. Koontz, R. Bernhard R3: A. Stone/B. Bartlett/J. Boettcher R4: D. Allen/B. Hagar
Details of issue	The subject breakers have UNIDs but were labeled with noun name of “spare” for the two trains of Spent Fuel Level Instrumentation on 120V AC Vital Instrument Boards 2-III and 2-IV. The associated breaker number was 20 for both boards. These breakers are normally maintained in the on position, except during maintenance.
Proposed Resolution	Minor
Details of Proposed Resolution	The licensee indicates that breaker operation is performed utilizing UNIDs rather than the noun names on the labels. The load shed FLEX procedure does not direct that these breakers be opened. However, in the event that the breakers were inadvertently opened, battery backup would power the instruments for approximately four days, after which the instrumentation would become inoperable.
Panel Outcome	Minor
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	2
Site	Watts Bar
Panel Date	4/30/2015 & 5/07/2015
Participants	JLD: T. Brown/M. Halter/J. Quinones (JLD), DIRS: S. Rose (Acting IRIB BC)/ S. Campbell R1: R. Powell/A. DeFrancisco/W. Cook R2: A. Masters/R. Rodriguez/G. Koontz, R. Bernhard R3: A. Stone/B. Bartlett/J. Boettcher R4: D. Allen/B. Hagar
Details of issue	During walkdown of aligning the battery chargers to the 480V FLEX EDGs, it was noted that the procedure directed the operator to place the individual disconnects on Fuse Panels 0-PNL-360-FP/A and 0-PNL-360-FP/B to open or closed positions. The Disconnects did not have a position labeled Open and Closed, only Off and On, respectively.
Proposed Resolution	Minor
Details of Proposed Resolution	While the difference in the disconnect positon names may cause a review of the procedural section to validate correct panel and disconnect, there is reasonable assurance the AUO would have correctly performed the action in an acceptable time period.
Panel Outcome	Minor
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	2
Site	Watts Bar
Panel Date	4/30/2015 & 5/07/2015
Participants	JLD: T. Brown/M. Halter/J. Quinones DIRS: S. Rose (Acting IRIB BC)/S. Campbell R1: R. Powell/A. DeFrancisco/W. Cook R2: A. Masters/R. Rodriguez/G. Koontz, R. Bernhard R3: A. Stone/B. Bartlett/J. Boettcher R4: D. Allen/B. Hagar
Details of issue	Use of FLEX Strategies in All Modes (Specifically Modes 5 and 6). The issue of concern is that the procedure directs the availability and consideration of use of FLEX equipment but does not direct the incorporation of FLEX equipment (i.e. specific FLEX equipment to use for specific situations).
Proposed Resolution	No initial proposal made.
Details of Proposed Resolution	Team sought panel opinion on this issue.
Panel Outcome	Minor
Details of Panel Decision	The specific FLEX procedure was only needed when the plant was in Modes 5 and 6 and not beforehand. Since the plant was not in Modes 5 and 6 during the TI inspection, the issue was ultimately determined to be minor

Region	2
Site	Watts Bar
Panel Date	4/30/2015 & 5/07/2015
Participants	JLD: T. Brown/M. Halter/J. Quinones DIRS: S. Rose (Acting IRIB BC)/ S. Campbell R1: R. Powell/A. DeFrancisco/W. Cook R2: A. Masters/R. Rodriguez/G. Koontz, R. Bernhard R3: A. Stone/B. Bartlett/J. Boettcher R4: D. Allen/B. Hagar
Details of issue	0-FSI-4 directs the AUO to the Vital Battery Charger Transfer Switches in the EMER position. However, the switches in the field do not have the EMER and NORMAL positions labeled. The only labels on the switch read ON-OFF-ON.
Proposed Resolution	Green
Details of Proposed Resolution	The team recommended that this issue be dispositioned as More-Than-Minor because in the end the licensee would probably deviate from the primary strategy of powering the battery chargers from the 480V diesels. However, it will be categorized as Green because assuming that no one could determine how the switch should be aligned, the most likely recovery strategy would be after the 6.9KV Shutdown boards are reenergized, then the normal battery chargers would be placed in service.
Panel Outcome	Minor
Details of Panel Decision	Noted on 09/01/2019 that panel details were not provided.

Region	2
Site	Watts Bar
Panel Date	4/30/2015 & 5/07/2015
Participants	JLD: T. Brown/M. Halter/J. Quinones DIRS: S. Rose (Acting IRIB BC)/ S. Campbell R1: R. Powell/A. DeFrancisco/W. Cook R2: A. Masters/R. Rodriguez/G. Koontz, R. Bernhard R3: A. Stone/B. Bartlett/J. Boettcher R4: D. Allen/B. Hagar
Details of issue	Recent procedure revisions to 1-ECA-0.0 and 2-ECA-0.0 deleted a step and resulted in renumbering subsequent steps. This renumbering resulted in three cases where procedure steps referred to Step 29h which no longer existed. I. Potential exists that crew would miss direction to perform 0-FSI-10, which is the procedure that provides direction of isolation of the accumulators. The step referenced verifies that accumulators are isolated prior to proceeding. II. Potential exists that crew would not arrest cooldown and restore SG level if level were to fall below trigger point. III. The crew would potentially cooldown further than the specified 160 psig.
Proposed Resolution	Minor
Details of Proposed Resolution	I. It is reasonable to assume that crew would identify that this has not occurred and quickly diagnose that 0-FSI-10 should be performed. The crew might also note that there is no step h, but this would only help in diagnosing that the RNO is not pointed at the appropriate step. II. The step is a continuous action step and is a repeat occurrence from Step 21. The crews are trained to track continuous action steps after they have been directed in the procedure and take the appropriate action should the trigger value be reached. Additionally, even if the crew neglected the previous continuous action step, the limits established in step e for maintaining cooldown less than 100 degrees per hour make it very unlikely that steam will be removed at a rate at which AFW cannot maintain SG level above the setpoint. III. During the period of time that the crew is cooling down to the 160 psig SG plateau (From RCS temp of approx. 425 to RCS temp of approx. 350), the crew will most likely perform the loop through ECA-0.0 at least two times. This would mean they have exercised kicking out to 160 psig at the normal response in sub step f and realize that the plateau that is trying to be achieved. This is supported by the fact that the high-level step 29 directs the crew to DEPRESSURIZE intact S/Gs to 160 psig for long term cooling. It is very unlikely the crew would not know the target of their cooldown prior to commencing.

Panel Outcome	Minor
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	3
Site	Clinton
Panel Date	08/4/2016
Participants	JLD: T. Brown/Mandy Halter/Joylynn Quinones-Navarro DIRS: B. Blusius/ S. Campbell R1: C. Lally R2: R. Rodriguez/J. Munday R3: S. Stuart/B. Bartlett/A. Stone/M. Jeffers /E. Sanchez R4: R. Alexander
Details of issue	The permanently installed FLEX diesel generator (D/G) 1FX01KA and the trailer mounted N+1 FLEX D/G 1FX01KB did not have their phase rotation checked at the factory or by the licensee. No records of a phase rotation check could be found by the vendor or by the licensee. Subsequent to the team inspection the licensee performed a phase rotation check of 1FX01KA during a routine surveillance and determined that the generator rotated in the correct direction A-B-C. The licensee does not have phase rotation meters provided as part of their FLEX strategies. A fleet sister site (Byron) had failed to check their rotation and subsequently determined that the rotation of their FLEX generators and their site did not match. Clinton had not taken advantage of this internal Operating Experience
Proposed Resolution	Green
Details of Proposed Resolution	The performance deficiency was determined to be more than minor, and therefore a finding, because, it was associated with the equipment performance attribute of the mitigating systems cornerstone and affects the associated objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Additionally, if left uncorrected the performance deficiency has the potential to lead to a more significant safety concern in that the failure to verify the phase rotation could have left equipment that would have been relied upon to perform a FLEX strategy incapable of performing its intended function until necessary corrective action had been taken assuming no significant damage had taken place.
Panel Outcome	Minor
Details of Panel Decision	Outcome: Four votes for Minor (JLD, DIRS, RII, RIV) Two votes Green (RI, RIII). The panel collectively determined that the performance deficiency was minor because the licensee eventually determined the phases were connected correctly.

Region	3
Site	Clinton
Panel Date	08/4/2016
Participants	JLD: T. Brown/Mandy Halter/Joylynn Quinones-Navarro DIRS: B. Blusius/S. Campbell R1: C. Lally R2: R. Rodriguez/J. Munday R3: S. Stuart/B. Bartlett/A. Stone/ M. Jeffers/E. Sanchez R4: R. Alexander
Details of issue	The licensee did not demonstrate (through an analysis, evaluation or any other means) that the strategy for the flooding scenario would be successful. Specifically, 1. The licensee did not recognize the 12-inch diameter hose that would be used to provide water to the D/G building manifold had a minimum bend radius of 15 feet. The route the hose would need to take, included a tight S curve, which after questioning from the inspectors, the licensee determined the maximum bend radius achievable through this curve would be 7 feet. The inspectors determined the hose could be crimped, inhibiting flow and could be potentially damaged and unable to perform its intended function. 2. The licensee identified an issue related to the stresses imposed on the coupling for connecting the 12-inch hose from outside the D/G building to the manifold located inside the D/G building. The licensee documented this issue in their CAP program, including a statement that the vendor said the hose would likely fail by pulling apart due to the stresses involved. The licensee closed this issue, stating the problem was in the way the procedure was written and that the actual configuration, as documented in an engineering change (EC) document, would not impose a large amount of stress on the coupling connection. The inspectors reviewed the EC and determined the configuration evaluated would have the hose connected to a coupling piece that would hang through an opening in the D/G building, and that the concern about the stresses on the coupling was still valid and had not been appropriately addressed. Both issues involve concerns about whether the method for providing water to the D/G manifold during a flooding event would be able to function. The D/G manifold is the only way of providing water from the ultimate heat sink to the plant during a flooding scenario, to support the Phase 2 core coolant, containment heat removal and spent fuel pool cooling strategies.
Proposed Resolution	Green

Details of Proposed Resolution	The performance deficiency was determined to be more than minor, and therefore a finding, because, it was associated with the mitigating systems cornerstone attribute of protection against external factors, specifically the flood hazard, and it adversely affected the cornerstone attribute of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee did not ensure through evaluations, calculations, analyses or any other means that the strategy for maintaining core cooling, containment heat removal and SFP cooling during a flooding scenario would be capable of fulfilling its function. 1. For the hose bend radius example, there was reasonable doubt the hose would not crimp, restricting the flow, and would be able to withstand the stresses created by routing the hose through an area that would only permit less than half the bend radius the hose was designed for (7 feet instead of the vendor recommended 15 feet). In order to prove the hose would not fail, the licensee requested the vendor perform a test at the maximum available bend radius of 7'. The vendor was able to successfully prove the hose would not fail and would not restrict the flow to a point that would impact the FLEX strategy for flooding. For the hose coupling example, there was reasonable doubt the coupling would be able to withstand the stresses imposed on it when the hose was full of water. There were also misunderstandings between the operations department and the engineering department, as to what configuration would be used for this scenario, and what the procedure was driving them to do. The procedure was changed to a method that was not evaluated and the evaluated method did not prove the coupling would be able to withstand the imposed stresses. Therefore, based on the inspector's questions the licensee had to perform an analysis to prove the evaluated configuration would not fail.
Panel Outcome	Green
Details of Panel Decision	Overall panel agreed with proposed resolution of the issue. RIV believed issue was minor.

Region	3
Site	Clinton
Panel Date	08/4/2016
Participants	JLD: T. Brown/Mandy Halter/Joylynn Quinones-Navarro DIRS: B. Blusius/S. Campbell R1: C. Lally R2: R. Rodriguez/J. Munday R3: S. Stuart/B. Bartlett/A. Stone/M. Jeffers/E. Sanchez R4: R. Alexander
Details of issue	The concern is that the licensee failed to pressure test FLEX related piping at the operating pressures it will experience in service. The licensee utilized essential service water (SX) piping from the uncompleted Unit 2 to move water up the hill from the intake structure to the plant. The piping was designed to 200 psi, but was never hydro tested or maintained, and was abandoned in place for decades. The piping was pneumatically tested to 120 psi. The piping will be administratively limited to and operated at up to 150 psi. Subsequent to the inspectors' observations the licensee successfully performed another pneumatic test but this time it was at 150 PSI.
Proposed Resolution	Green
Details of Proposed Resolution	The performance deficiency was determined to be more than minor, and therefore a finding, because, it was associated with the equipment performance attribute of the mitigating systems cornerstone and affects the associated objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Additionally, if left uncorrected the performance deficiency has the potential to lead to a more significant safety concerns in that the failure to properly test the long disused and never properly testing piping could have identified more significant issues. The piping was not opened up for inspection of any potential corrosion issues and was in a warm moist environment for several decades. At the very least a full pressure test should have been performed to identify any issues.
Panel Outcome	Minor
Details of Panel Decision	Six votes for the issue to be minor with basis that Clinton had an authorized NRC Safety Evaluation prior to testing which approved their testing of 125psi in accordance with Clinton Work Order 01684636 which states if piping is unavailable then hose will be deployed.

Region	3
Site	Clinton
Panel Date	10/8/2019
Participants	DLP: Kevin Roche DIRS: Anthony Masters, Aron Lewin, Ross Telson R1: Marc Ferdas R2: Reinaldo Rodriquez R3: Ann Marie Stone, Stuart Sheldon, James Beavers, Laura Kozak R4: None
Details of issue	Note: Issue identified during performance of baseline inspection program. Issue is related to previous discussion held at 8/4/16 panel. The permanently installed FLEX diesel generator (D/G) 1FX01KA and the trailer mounted N+1 FLEX D/G 1FX01KB did not have their phase rotation checked by the licensee when they were originally installed. Based on operating experience the licensee performed a phase rotation check on both FLEX diesel generators on July 11, 2019. 1FX01KA failed the phase rotation check because its connections were wired incorrectly and the phase rotation was backwards.
Proposed Resolution	Finding, Color TBD
Details of Proposed Resolution	The performance deficiency was determined to be more than minor, and therefore a finding, because, it was associated with the design control attribute of the mitigating systems cornerstone and affects the associated objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to ensure that the phase rotation was correct resulted in the 'A' FLEX diesel generator being unavailable to supply adequate AC power to station loads.
Panel Outcome	Finding, Color TBD
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	3
Site	Davis Besse
Panel Date	05/09/2017
Participants	JLD: J. Quinones-Navarro/J. Boska (Acting JOMB BC)/E. Bowman DIRS: S. Campbell/A. Lewin R1: M. Ferdas R2: R. Rodriguez/P. McKenna/J Hannah R3: A. Stone/ S Sheldon (Presenter) R4: R. Alexander/J. Matychek NSIR:
Details of issue	The licensee failed to maintain adequate room temperature in the emergency feedwater facility (EFWF) to support equipment operation. Specifically, the inspectors identified temperatures in the EFWF basement below freezing in multiple locations which is contrary to design calculation C-ME-050.05-007 which specifies a minimum temperature of 60 degrees F. The basement housed the diesel driven emergency feedwater pump (EFWP) credited for phase 1 flex implementation.
Proposed Resolution	Green
Details of Proposed Resolution	The PD was determined to be a More than Minor because it was associated with the cornerstone attribute of protection against external factors and adversely affected the mitigating systems cornerstone objective “To ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage).” The PD was determined to be a Green Finding after a detailed risk evaluation was performed per Appendix A, which determined a delta CDF of 1E-8 for a 3-day exposure time.
SDP Appendix	Appendix A vice Appendix O (more restrictive and bounding and reflective of actual situation, more frequent than the external event).
Panel Outcome	Green
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	3
Site	DC Cook
Panel Date	05/12/2016
Participants	JLD: G. Bowman/J. Davis/T. Brown/J. Quinones DIRS: D. Willis (Acting IRIB BC)/ S. Campbell R1: M. Ferdas R2: M. Franovich/M. Franke/A. Masters/R. Rodriguez/G. MacDonald/J. Hanna, R3: A. Stone/B. Bartlett/J. Boettcher R4: R. Alexander/G. Werner/J. Mateychick
Details of issue	In the event of a loss of all AC power, DC Cook Units 1 and 2 would implement procedures 1-OHP-4023-ECA-0.0, and 2-OHP-4023-ECA-0.0, "Loss of All AC Power," respectively. Should an extended loss of all AC power (ELAP) be declared, operators would continue to perform procedure ECA-0.0 and initiate the FLEX strategies in accordance with FLEX strategy guidelines (FSGs) 1-OHP-4027-FSG-5 or 2-OHP-4027-FSG-5, "Initial Assessment and FLEX Equipment Staging," as required. At the onset of this scenario, the turbine driven auxiliary feedwater pump (TDAFWP) would supply water to the steam generators (SG) using the unit's condensate storage tank (CST) as the suction source. This is the method credited in the licensee's Final Integrated Plan. Upon reaching a low level in a unit's CST, as described in the licensee's Final Integrated Plan, operators would then take suction from Lake Michigan using a FLEX lift pump and hoses to provide water to the unit's TDAFWP. The single FLEX lift pump is capable of supplying water to both units' TDAFWP. This Flex strategy would be implemented in accordance with FSG 1-OHP-4027-FSG-2 and/or 2-OHP-4027-FSG-2, "Alternate AFW Suction Source." However, the licensee would prefer to supply additional water a unit's TDAFWP using the Lake Township water system or the fire protection system, if available, since these sources are cleaner than water directly from Lake Michigan. Either the Lake Township water system or the fire protection system, if available, have sufficient capacity to provide water to both units simultaneously, however; they are not robust and are not the credited sources. Procedures 1-OHP-4023-ECA-0.0 and 2-OHP-4023-ECA-0.0 direct refilling the respective unit's CST if the unit's CST level is less than 44% by implementing FSGs 1-OHP-4027-FSG-6 and 2-OHP-4027-FSG-6, "Alternate CST Makeup," respectively (item 3, fold out page). The inspectors identified a performance deficiency in that FSGs 1-OHP-4027-FSG-6 and 2-OHP-4027-FSG-6 do not provide sufficient direction to refill the CSTs in both units. The procedures direct the connection of hoses to fill only one CST and do not provide direction on providing water to the other unit's CST. Further, the licensee did not stage sufficient hoses and

	fittings to supply water to both CSTs. A cross-tie line between the CSTs exists but procedures 1-OHP-4023-ECA-0.0 and 2-OHP-4023-ECA-0.0 and FSGs 1-OHP-4027-FSG-6 and 2-OHP-4027-FSG-6 did not direct the operators to open the cross-tie valve.
Proposed Resolution	Minor
Details of Proposed Resolution	The licensee noted that the implementation of procedures 1-OHP-4023-ECA-0.0 and 2-OHP-4023-ECA-0.0 and FSGs would be performed by qualified personnel under the direction of the shift manager. The licensee expressed high confidence that the CST cross-tie line would be utilized or that additional hoses and fittings would obtained from the FLEX building. The inspectors considered the licensee's position to be reasonable and noted that the use of the Lake Township water system or the fire protection system is not required per the Final Implementation Plan. Further, implementation of the Final Implementation Plan per FSGs 1-OHP-4027-FSG-2 and/or 2-OHP-4027-FSG-2 would not be impacted.
Panel Outcome	Minor
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	3
Site	DC Cook
Panel Date	05/12/2016
Participants	JLD: G. Bowman/J. Davis/T. Brown/J. Quinones/M. Franovich DIRS: D. Willis (Acting IRIB BC)/S. Campbell R1: M. Ferdas R2: M. Franke/A. Masters/R. Rodriguez/G. MacDonald/J. Hanna, R3: A. Stone/B. Bartlett/J. Boettcher R4: R. Alexander/G. Werner/J. Mateychick
Details of issue	The inspectors requested that the licensee provide a copy of their deployment route map. The licensee was able to provide a figure (attached Figure 17A) that showed Phase II equipment deployment locations from the FIP but stated that there was no overall map to show deployment haul paths to get from the FLEX Support Building (FSB) to equipment deployment locations in the Protected Area (PA). The inspectors further discussed potential haul paths with the licensee and were told that operators would use their judgement during the scenario to clear the best possible route for equipment deployment as needed. The licensee discussed using a pathway inside the PA and just outside the PA to a secondary gate into the PA. Upon review of the liquefaction analyses used to support the FLEX haul paths, it was determined that only the access roads and areas inside the PA were included in the analyses. The described pathway outside the PA was not analyzed. The inspectors later identified a haul path map in the licensee's severe weather procedure that supported steps to clear haul paths for snow and ice conditions. No similar maps were included in the licensee's earthquake procedure or FLEX deployment procedures.
Proposed Resolution	Minor
Details of Proposed Resolution	The Issue of Concern was within the licensee's ability to foresee and correct because a detailed and comprehensive review of the FSGs by the licensee would have identified the failure to have documented haul paths. Although a document showing haul paths was located in procedures that would have not address seismic scenarios, the licensee was able to demonstrate that liquefaction would not have prevented the use of the proffered path. The licensee will issue a haul path procedure/map which will restrict the use of the less than fully analyzed path previously discussed. The licensee understood which routes were evaluated for soil liquefaction and created a white paper stating that the subsurface conditions, strata, and geotechnical parameters are generally consistent across the site and believe the conclusions of the liquefaction evaluation would remain valid for the pathway immediately outside the PA.
Panel Outcome	Minor
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	3
Site	Dresden
Panel Date	12/19/2017
Participants	JLD: Kevin Roche, Joylynn Quinones-Navarro, Tony Brown DIRS: Greg Bowman, Aron Lewin R1: Christopher Lally R2: Reinaldo Rodriquez R3: Stuart Sheldon R4: Ryan Alexander, John Mateychick, Stephanie Anderson
Details of issue	Dresden uses FLEX diesels to repower 480V AC Busses in order to reenergize battery chargers, energize a SBLC pump as a high-pressure injection source and provide power to AC MOVs to allow isolating recirculation loops. The licensee had not verified phase rotation compatibility of the FLEX diesels with the plant 480V busses. In response, the licensee conducted checks and identified that the 480V bus phase rotation was opposite of the FLEX diesels. As a result, the AC MOVs would not operate properly and this would preclude isolation of the recirculation loops. This would potentially result in increased inventory loss.
Proposed Resolution	Green Finding
Details of Proposed Resolution	The performance deficiency was determined to be more than minor, and therefore a finding, because, it was associated with the equipment performance attribute of the mitigating systems cornerstone and affects the associated objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences.
Panel Outcome	Green Finding
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	3
Site	Fermi
Panel Date	07/21/2016
Participants	JLD: T. Brown DIRS: B. Blusius/S. Campbell/L. Casey R1: M. Ferdas/C. Lally R2: R. Rodriguez R3: S. Stuart/B. Bartlett/J. Lara/ V. Meghani /D. Hills R4: R. Alexander/J. Mateychick
Details of issue	Licensee personnel failed to follow their procedures and design specification during concrete placement for installation of Diverse and Flexible Coping Strategies (FLEX) Buildings 1 and 2, identified as Flexible Storage Facility buildings (FSF-1and FSF-2).
Proposed Resolution	Green
Details of Proposed Resolution	Inspectors did not find an example similar to the subject condition under Section 4, “Insignificant Procedural errors,” in IMC 0612, Appendix E, “Examples of Minor Issues.” However, the reasoning from example 3j involving a calculation error was used to support the more than minor determination because the deficiency resulted in a condition where there was a reasonable doubt regarding the functional adequacy of the FLEX building walls and a significant amount of effort including additional investigations and evaluations was needed to demonstrate such adequacy.
Panel Outcome	Green
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	3
Site	Fermi
Panel Date	02/9/2017 & 02/21/2017
Participants	JLD: M. Halter/J. Quinones-Navarro/T. Brown/M. Franovich/M. Shams/ J. Marshal DIRS: S. Campbell/L. Casey/C. Regan/R. Gibbs, R1: M. Ferdas/C. Lally R2: P McKenna/R. Rodriguez R3: A. Stone/S. Stuart/B. Bartlett/J. Lara /K. O'Brien R.4: Alexander/J. Mateychick
Details of issue	The licensee identified an issue with their FSGs that would cause RCIC or HPCI injection to be interrupted if the procedure was followed during an ELAP event. The procedure to bypass trips would pull fuses which would result in closure of the steam admission valve to HPCI or RCIC which would interrupt injection flow to the RPV. These procedures are only used in an ELAP event. Further analysis by the licensee determined that the situation is readily recognizable, and recoverable by reinstalling the fuses. Best estimate time results in an 18-minute interruption of flow to the RPV. This includes time for communication and decision making. Radios would be available, but the licensee included time to dispatch the STA to the relay room to assess the condition. Assuming minimum initial conditions on reactor level, the time to boil down to top of active fuel is 116 minutes. Hence, the core cooling safety function is maintained. The licensee immediately modified the procedures to correct the deficiency.
Proposed Resolution	Green
Details of Proposed Resolution	Requirement: 10CFR50, Appendix B, Criteria V. "Instructions, Procedures, and Drawings" states in part: Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances. (HPCI is safety related) Self-imposed Standard: NEI 12-06, Section 3.2.1.1 General Criteria Procedures and equipment relied upon should ensure that satisfactory performance of necessary fuel cooling and containment functions are maintained. The performance deficiency is associated with the Procedure Quality Attribute of the Mitigating Systems Cornerstone and adversely affect the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, using the procedure during an ELAP event would cause an interruption of injection flow to the RPV.

	Section 0609-03 of IMC 0609, Appendix O directed the use of Appendix A if the performance deficiency concerned installed plant and is also used to mitigate other transients or accidents and to use the more limiting SDP to assess significance. R-III conducted a DRE and IE was less than 1E-6.
Panel Outcome	Green
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	3
Site	LaSalle
Panel Date	10/30/2018
Participants	DLP: Nathan Sanfilippo DIRS: Tom Hipschman, Aron Lewin NSIR: Milt Murray R1: Christopher Lally R2: Reinaldo Rodriquez R3: Ann Marie Stone, Stu Sheldon R4: Ryan Alexander
Details of issue	There is insufficient electrical cabling to implement the contingency path of LOA-FSG-002, FLEX Electrical Strategy, Attachment D1, D2, E1, and E2, Revision 9. The licensee has a primary deployment location that is described in the FIP which allows access to both the primary and alternate connection points for the electrical strategy. There is no alternate path to the primary location described in procedures, but the FIP states that there is no equipment or structure that could block the path that cannot be moved by the debris removal. Their procedures however, have a contingency deployment location in the event 345kV lines and structures fall. Additionally, LOA-FSG-008, Overhead Lines, states in Section C.2 that “In all cases where potentially energized high voltage power lines are encountered during implementation of FLEX strategies, the FIRST option is to find any alternate path to perform actions, even if that path was not analyzed during development of the strategies.” Discussions with operators indicate they would use the contingency location if the 345kV lines were down and would not attempt to access the primary location. With the diesels staged at the contingency location, the available cables would not reach the primary or alternate electrical connection points. The cable reels have 300’ of cable and the distance is ~775’ to Unit 1 and ~450’ to Unit 2. Their choreography indicates that about 3 hours into the event as cables were being deployed, they would identify that the cables were not long enough. Operators would have to take actions at that point to clear debris to the primary deployment location. Inspectors are concerned that the licensee would not be able to recover the electrical strategy within the necessary timeline.
Proposed Resolution	Green
Details of Proposed Resolution	The performance deficiency was more than minor because it was associated with the protection against external factors attribute of the mitigating systems cornerstone and adversely affected the Mitigating Systems Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences.

	Specifically, the inability to deploy the contingency electrical strategies had the potential to affect the containment pressure control and RPV heat removal functions of the FLEX strategy. At the very least, ad hoc recovery actions affect the electrical strategy timeline.
Panel Outcome	Green
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	3
Site	Monticello
Panel Date	04/10/2018
Participants	DLP: Joylynn Quinones-Navarro, Kevin Roche, Tony Brown DIRS: Greg Bowman, Aron Lewin NSIR: Milt Murray R1: Christopher Lally, Andrew Rosebrook, Marc Ferdas R2: Reinaldo Rodriquez R3: Ann Marie Stone, Julie Boettcher R4: Ryan Alexander, Mike Stafford, Jason Kozal
Details of issue	The inspectors are concerned that licensee procedures/guidance do not fully consider the loss of heat tracing effects for Condensate Storage Tank (CST) lines. Specifically, during an ELAP, power to heat tracing on the CST level instruments is lost. The licensee's procedures do not specify clear criteria for transferring from the CST to the suppression pool during an ELAP in cold weather conditions where there is a potential for these lines to freeze. Two connected CSTs is the preferred, but not credited/protected, RCIC suction source for RPV makeup in Monticello's Phase 1 FLEX strategy. Without heat tracing, the CST instrument lines have the potential to freeze, rendering the CST level instruments inaccurate. Loss of the CST level indication will cause a loss of the automatic transfer of the RCIC suction source from the CST to the Suppression Pool. Alternate steps needed to ensure RCIC availability if the automatic suction source swap does not occur are not clearly directed in the licensee's procedures. A loss of the automatic swap could cause an interruption of injection to the reactor vessel at a minimum and could ultimately lead to a failure of the RCIC pump due to a loss of suction source if not protected by some other means (e.g. manual suction source swap by operators before suction source is lost).
Proposed Resolution	Green
Details of Proposed Resolution	The performance deficiency is associated with the Procedure Quality Attribute of the Mitigating Systems Cornerstone and adversely affect the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee's procedures used during an ELAP event in cold weather conditions did not ensure that an adequate suction source remained available to the RCIC pump for reactor vessel inventory supply.
Panel Outcome	Minor
Details of Panel Decision	DLP, DIRS, R4: Minor R2: No PD R1, R3: Green

Region	3
Site	Palisades
Panel Date	11/15/2016
Participants	T. Brown/Mandy Halter/Joylynn Quinones-Navarro (JLD), S. Campbell (DIRS), M. Ferdas (R1), R. Rodriguez (R2), S. Stuart/B. Bartlett/A. Stone/J. Boettcher (R3), J. Mateychick (R4)
Details of issue	The inspectors identified a discrepancy between tank level for their FLEX strategy and actions to restore tank level in the licensee's alarm response procedure (ARP) for the primary makeup storage tank (T-81) hi-lo level. The licensee's ARP-7, "Auxiliary Systems Scheme EK-11 (C-13)," incorrectly states in the primary makeup storage tank (T-81) hi-lo level alarm response that the FLEX assumed minimum level is 85% and directs the operator to restore level to >85% within one shift if level is low. The actual FLEX minimum required level to meet the eight-hour supply time per calculation EA-EC46465-14, "T-2 Inventory Makeup Capability of AFW with T-81 Gravity Feed," is 88%.
Proposed Resolution	Minor
Details of Proposed Resolution	This is minor because the primary makeup storage tank (T-81) is a credited water source of makeup water to the condensate storage tank via gravity feed. T-81 level is controlled by CV-2008, primary makeup storage tank (T-81) makeup valve. The valve opens automatically when LS-2020 reaches 88% and closes at 96%. The licensee automatically controls T-81 level at >88%. The follow-up actions in the ARP are only applicable in a low-level condition. Therefore, the inspectors determined this was an irrelevant procedural error.
Panel Outcome	Minor
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	3
Site	Palisades
Panel Date	07/18/2017
Participants	JLD: Tony Brown, Kevin Roche, Joylynn Quinones DIRS: Mike Montecalvo, Aaron Lewin, Alex Schwab R1: Chris Lally R2: Necota Staples R3: Stu Sheldon, Ann Marie Stone, Julie Boettcher R4: Jeff Sowa, John Mateycheck, Michael Stafford NSIR: Eric Schrader
Details of issue	Note: Issue identified during performance of baseline inspection program. The licensee commenced a refueling outage on April 23, 2017. In preparation for the outage, they moved FLEX generators out of their protected storage locations as described below solely due to blockage of FLEX haul paths by outage equipment and trailers. On March 11, 2017, the licensee moved the FLEX generator from the 'A' storage building to its primary staging location (590' elevation). They identified that the generator was functional and available, but not protected and placed it on a 45-day timeclock to return the generator to the 'A' storage building on April 25, 2017. The timeclock that the licensee entered was associated with their ORM requirements (3.24, condition 1). Their ORM discusses that they have 2 "required functional channels" and 1 "minimum functional channel" for the generators. If one or more FLEX components doesn't meet required functional channels, they enter condition 1 and must restore the component to functional status in 45 days. Their ORM bases does not differentiate between functional and not protected. NEI 12-06 Rev 2, section 11.5.4.b states: The required FLEX equipment may be unavailable for 90 days provided that the site FLEX capability (N) is met. If the site FLEX (N) capability is met but not protected for all of the site's applicable hazards, then the allowed unavailability is reduced to 45 days. On April 11, 2017, the licensee moved the FLEX generator from the 'B' storage building to its primary staging location (625' elevation). They again identified that the generator was functional and available, but not protected and placed it on a separate 45-day timeclock to return the generator to the 'B' storage building on May 26, 2017. This resulted in both generators being located in their staging location and not protected.

	On April 14, 2017, after discussion with the licensee, the generator from the 'A' storage building was placed back in its storage building and removed from the initial 45-day timeclock (set to expire on April 25, 2017). On May 15, 2017, the generator from the 'B' storage building was returned to the 'B' storage building. Per the licensee's safety evaluation (SE), the 'A' storage building is protected against all hazards except for a high wind/tornado missile BDBEE. The 'B' storage building is protected against all hazards, however, due to liquefaction concerns of the sole haul path from the 'B' storage building to its primary staging location (625' elevation), the building is not credited for a seismic BDBEE. This configuration is an alternative to NEI 12-06 Rev 0 and the licensee is committed to using NEI 12-06 Rev 2 for their storage building configuration, per the SE, noted below. Section 11.5.4.b of NEI 12-06, Revision 2, contains the condition that if the site FLEX capability (N) is met, but not protected for all of the site's applicable hazards, then the allowed unavailability is reduced to 45 days (compared to the 90-day unavailability with any FLEX equipment unavailable, but with the FLEX capability (N) available and in a protected or diverse storage configuration). Although Palisades is evaluated to NEI 12-06, Rev. 0, in this SE, the licensee has committed to follow the 45-day unavailability limit stated in NEI 12-06, Rev. 2. Therefore, the NRC staff finds the Palisades storage configuration acceptable. The NRC staff reviewed the licensee's proposal and finds that the methods used to ensure that the primary (N) set of equipment is available, with a reduction in allowed unavailability to 45 days if any N equipment is not protected for all of the site's applicable hazards, is an acceptable alternative to the NEI 12-06, and should meet the requirements of Order EA-12-049. The licensee's original plan was to move each generator to its staging location on differing days and move back when each of the 45-day time periods were expired. The RIO engaged the licensee on this topic because of their alternate storage building configuration. It is Region III's position that, in this scenario and in order to meet the requirements of NEI 12-06 Rev 2, section 11.5.4.b, the licensee would have to move both generators back into their respective storage locations to restore (N+1) capability after 45 days because neither of the buildings protect against all hazards, when the first generator is moved out of its storage building, (N) capability is no longer met for the generators. Specifically, when the licensee moved the generator from 'A' building on March 11, they no longer protected (N) capability against all hazards. When the licensee moved the generator from 'B' building, it did not impact the 45-day timeclock. However, the licensee originally planned to move the 1st generator back to the 'A' building on April 25 (at the end of 45

	days) and leave the generator from the 'B' building in the staging area until the end of its 45-day timeclock on 5/26. It is Region III's position that, in order to restore (N+1) capability, the licensee would have to return both generators to their prospective buildings at the end of the 45-day timeclock (on April 25). In total, the projected number of days where (N) is not protected from all hazards (3/11 to 5/15) is a represents a 65-day period, as shown above by the gray block.
Proposed Resolution	Region III does not believe there is a performance deficiency because this issue was not within the licensee's ability to foresee and correct.
Details of Proposed Resolution	Issue was identified during baseline inspection activity and was dispositioned by the Region. Issue was brought to panel for panel awareness.
Panel Outcome	No significant concerns raised. JLD indicated that NEI was contacted as well to provide awareness.
Details of Panel Decision	No decision rendered as region had previously dispositioned issue. Issue brought to panel for awareness.

Region	3
Site	Perry
Panel Date	(08/29/2016
Participants	JLD: T. Brown/M. Halter/J. Quinones-Navarro DIRS: B. Blusius/S. Campbell R1: C. Lally R2: A. Masters R3: S. Sheldon/A. Stone/Bruce Bartlett/J. Wojewoda (R3) R4: R. Alexander NSIR: E. Schrader
Details of issue	The licensee failed to establish period tasks to check the operation of recently installed FLEX related communications equipment in accordance with their Perry Nuclear Power Plant FLEX Final Integrated Plan Report. This equipment includes a UPS for internal communications equipment, and satellite phones.
Proposed Resolution	Green
Details of Proposed Resolution	The performance deficiency is associated with the Emergency Preparedness Cornerstone Attribute of Facilities and Equipment which includes Maintenance Surveillance and Testing of Facilities, Equipment and Communications Systems and adversely affect the associated cornerstone objective of ensuring that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, communications equipment, particularly batteries, degraded over time and without a period checks to verify functionality, the equipment might not be available for response to a potential accident
Panel Outcome	Green
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	3
Site	Perry
Panel Date	08/29/2016
Participants	JLD: T. Brown/M. Halter /J. Quinones-Navarro DIRS: B. Blusius/S. Campbell R1: C. Lally R2: A. Masters R3: S. Sheldon/A. Stone/Bruce Bartlett/J. Wojewoda R4: R. Alexander NSIR: E. Schrader
Details of issue	The licensee failed to establish a periodic replacement program for the high-temperature hoses used within FSG 30.3 and 30.4, ADHR (Alternate Decay Heat Removal) Pump Suppression Pool Cooling using RHR A and B, respectively, in accordance with their Perry Nuclear Power Plant FLEX Final Integrated Plan Report. Specifically, the licensee did not account for the limited shelf life of these hoses.
Proposed Resolution	Green
Details of Proposed Resolution	The performance deficiency was more than minor because it was associated with the protection against external factors (flood) attribute of the Mitigating Systems Cornerstone and adversely affected the Mitigating Systems Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences.
Panel Outcome	Green
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	4
Site	ANO
Panel Date	04/11/2017
Participants	JLD: /J. Quinones-Navarro/J. Boska (Acting JOMB BC)/K. Roche DIRS: S. Campbell/M. Halter (IPAB Acting BC), R1: B. Cook/F. Arner R2: R. Rodriguez/P. McKenna R3: S. Sheldon /A. Stone/B. Bartlett R4: J. Mateychick (Presenter)/R. Alexander/T. Pruett/N. O'Keefe NSIR: E. Schrader
Details of issue	Three examples of inadequate procedures: • Lack of detailed work instructions regarding the connections to be made up in terminal panel 2TB1011 in preparation for a flood (Example 1). • The licensee is not adequately controlling procedure changes which impact the FLEX program (Example 2). • FDS-007 and FDS-008 (Unit 1 and Unit 2 Flood ELAP Guideline) do not reflect the plant conditions during a flood event Example 3). Inadequate Power Supply Connections
Proposed Resolution	Green
Details of Proposed Resolution	The performance deficiency was more than minor because it was associated with the protection against external factors (flood) attribute of the Mitigating Systems Cornerstone and adversely affected the Mitigating Systems Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically: • the licensee failed to provide adequate work instructions to connect cables to make up electrical connections from the FLEX 800KW Diesel Generator to the critical loads during a flood BDBEE (Example 1); • the licensee provided inadequate guidance for shifting to an alternative water supply if the tank which was the initial source had been impacted by a tornado missile (Example 2); and • the licensee did not ensure that the strategy for providing power to critical plant loads for Phase 2 would be capable of fulfilling its function during a high wind event (Inadequate Power Supply Connections).
Panel Outcome	Green
Details of Panel Decision	Panel overall agreed with proposed resolution of the issue.

Region	4
Site	Callaway
Panel Date	09/12/2017
Participants	JLD: Tony Brown, Joylynn Quinones-Navarro DIRS Michael Montecalvo, Aron Lewin R1: Christopher Lally, Frank Arner R2: Reinaldo Rodriquez R3: Stuart Sheldon, Bruce Bartlett R4: Ryan Alexander, John Mateychick
Details of issue	The station failed to implement the station procedure to track the unavailability/protection of both the N and N+1 FLEX Spent Fuel Pool (SFP) pumps when both pumps were removed from the Hardened Storage Building (HSB) on June 20, 2017.
Proposed Resolution	Minor
Details of Proposed Resolution	This issue is minor in that while the licensee failed to track the unprotected status of the N and N+1 FLEX SFP pumps per the requirements of the administrative procedures, the pumps were both unprotected (and potentially non-functional when each were connected to the testing equipment) for only approximately a 4-hour period during annual testing activities (out of the 24 hour and/or 45 day out of service “clocks”) – see summary of log entries in Section 10 below. However, since the tracking requirements per ODP-ZZ-00002 were not fully implemented, had a BDBEE (e.g., earthquake, tornado, etc.) occurred during those periods, the Control Room may not have been aware that the FLEX SFPs were unprotected and potentially non-functional until after the station started the damage assessment activities per FSG-5. This issue would have been more than minor if both pumps had remained unprotected for >24 hours. (This screening is consistent with the North Anna example decision in that the 24-hour restoration period for at least one of the pumps to be returned to the HSB was not exceeded.)
Panel Outcome	Minor
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	4
Site	Columbia
Panel Date	07/31/2018
Participants	DLP: Kevin Roche DIRS: Greg Bowman R1: Christopher Lally R2: Reinaldo Rodriquez R3: Stuart Sheldon R4: Ryan Alexander
Details of issue	The licensee failed to ensure that FLEX equipment was procured to function in the extreme conditions applicable to the site. Specifically, the licensee failed to analyze or obtain equipment specification information to ensure the equipment would function within the temperature ranges of -27°F to +115°F following an ELAP. The licensee stated in Section A.8.1 of FLEX-01, the Columbia FLEX program document, that the "On-site FLEX equipment has been procured to function in the conditions applicable to Columbia." However, the licensee was not able to provide data or analysis to support this statement. For example, the oil used in the FLEX pump and diesel generator was not rated for operation for the entire temperature range applicable to the station according to the vender technical manual (the lower site temperature range below +15°F was not covered by the oil grade selected).
Proposed Resolution	Minor
Details of Proposed Resolution	The performance deficiency is minor because the performance deficiency could not be viewed as a precursor to a significant event; if left uncorrected, would not have the potential to lead to a more significant safety concern; does not relate to a performance indicator; and is not associated with one of the cornerstone attributes or adversely affect the associated cornerstone objective. Specifically, the inspectors reviewed the licensee's Technical Assessment for AR 38147 (completed in June 2018 in response to the inspectors' questions) which found that during the period of FLEX compliance (August 17, 2017 until June 14, 2018) temperatures did not get low enough to the point where inspectors questioned the functionality of the equipment.
Panel Outcome	Minor
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	4
Site	Comanche Peak
Panel Date	06/20/2017
Participants	JLD: T. Brown/E. Bowman, J. Quinones DIRS: S Campbell R-I: C. Lally R-II: R. Rodriguez R-III: S. Sheldon R-IV: R Alexander / E Ruesch
Details of issue	The issue of concern is that the licensee's procedure for alternate spent fuel pool makeup intended to direct the operator to isolate the fire hose stations from the fire water supply until appropriate alignments are made and the desire from the control room to start injection, however, the valve identified and named in the procedure was not the appropriate valve. Instead, the licensee isolated another section which appears to feed a deluge system, not required for FLEX.
Proposed Resolution	Minor
Details of Proposed Resolution	The Performance Deficiency is minor in that it did not meet the first three More than Minor questions in MC 0612, App. B. Additionally, though the PD is associated with the Barrier Integrity cornerstone, it did not adversely affect the cornerstone objective in that had FSI-11.0 been implemented as written, and the wrong valve was isolated, the licensee would have recognized the unintended water spray and taken prompt action to mitigate the deficiency. The water supply would not significantly affect the Spent Fuel Pool Level since the water supply does not make significant changes in water level (approximately 375 gpm, or ~2 inches per minute of level at that flow rate). This would have allowed the licensee some additional time to stop the spray, understand what occurred, and correct the condition. The licensee wrote CR 2017-006488 to capture the issue, and initiated actions to correct the procedure. (The procedure was corrected and issued 2 days after the end of the on-site inspection.)
Panel Outcome	Minor
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	4
Site	Comanche Peak
Panel Date	06/20/2017
Participants	JLD: T. Brown/E. Bowman, J. Quinones DIRS: S Campbell R-I: C. Lally R-II: R. Rodriguez R-III: S. Sheldon R-IV: R Alexander (presenter)/E Ruesch
Details of issue	The issue of concern is that the licensee established a preventative maintenance (PM) activity for the 4160 to 6900 VAC FLEX step-up transformers (PM 350806) which was inadequate in that the PM did not include all of the vendor recommended maintenance items. Specifically, the vendor documentation included actions to utilize the pre-installed strip heaters in the transformers while the equipment is in storage. The strip heaters are used to protect the coils from water condensation during low temperature variations.
Proposed Resolution	Minor
Details of Proposed Resolution	The Performance Deficiency is minor in that it did not meet the first three More than Minor questions in MC 0612, App. B. Though the PD is associated with the Mitigating Strategies cornerstone, it did not adversely affect the cornerstone objective in that (1) the transformer units are stored indoors in the FLEX storage building, (2) the robust design of the FLEX storage building to protect from tornadic and seismic hazards contributes to an internal building environment that only experiences moderate temperature changes, and (3) the documented temperatures in the FLEX Storage Building over the last winter showed low variability, and were no lower than 49 ºF even during periods where the outdoor air temperature was as low as 15 ºF. Therefore, the storage conditions preclude the likelihood of significant condensation (and subsequent damage) of the coils. The licensee wrote CR-2017-006462 to capture and correct the issue.
Panel Outcome	Minor
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	4
Site	Cooper
Panel Date	04/10/2018
Participants	DLP: Joylynn Quinones-Navarro, Kevin Roche, Tony Brown DIRS: Greg Bowman, Aron Lewin NSIR: Milt Murray R1: Christopher Lally, Andrew Rosebrook, Marc Ferdas R2: Reinaldo Rodriquez R3: Ann Marie Stone, Julie Boettcher R4: Ryan Alexander, Mike Stafford, Jason Kozal
Details of issue	The licensee failed to adequately translate the FLEX Preventative Maintenance (PM) Plans into work instructions (i.e., Vendor Purchase Orders and Operations Instruction 25).
Proposed Resolution	Green
Details of Proposed Resolution	The performance deficiency is more than minor because it adversely affects equipment performance attribute of the Mitigating Systems Cornerstone and its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, inadequate/incomplete PMs and documentation thereof do not provide reasonable assurance that the FLEX equipment will be available and capable of providing the required functions when called upon.
Panel Outcome	Minor
Details of Panel Decision	DLP: Minor DIRS: Minor R1: Minor R2: Minor R3: Minor R4: Green

Region	4
Site	Cooper
Panel Date	04/10/2018
Participants	DLP: Joylynn Quinones-Navarro, Kevin Roche, Tony Brown DIRS: Greg Bowman, Aron Lewin NSIR: Milt Murray R1: Christopher Lally, Andrew Rosebrook, Marc Ferdas R2: Reinaldo Rodriquez R3: Ann Marie Stone, Julie Boettcher R4: Ryan Alexander, Mike Stafford, Jason Kozal
Details of issue	The licensee failed to maintain their satellite phones in locations that provide reasonable assurance they will remain available following all beyond design basis external events, consistent with the standard the licensee committed to meet relative to the capabilities and protection of the satellite phones (NEI 12-01, “Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities”).
Proposed Resolution	Green
Details of Proposed Resolution	The performance deficiency is more than minor because it adversely affects facilities and equipment attribute of the Emergency Preparedness Cornerstone and its objective to ensure that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, by moving the satellite phones to locations that are not rated for all beyond design basis external events, the licensee would not be able to contact any offsite organizations including the NRC, ERO, or NSRC.
Panel Outcome	Green
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	4
Site	Diablo Canyon
Panel Date	12/19/2017
Participants	JLD: Kevin Roche, Joylynn Quinones-Navarro, Tony Brown DIRS: Greg Bowman, Aron Lewin R1: Christopher Lally R2: Reinaldo Rodriquez R3: Stuart Sheldon R4: Ryan Alexander, John Mateychick, Stephanie Anderson
Details of issue	During an annual flow test of Emergency AFW Pump 0-1, the pump discharge pressure was recorded to be less than the minimum required to be established per the PM work order. The completed work order was reviewed and accepted as satisfactory without the discrepancy being identified and dispositioned.
Proposed Resolution	Minor
Details of Proposed Resolution	The team recommends this classified as minor. Review of the annual pump test determined that the deviation for the test criteria did not invalidate the test results. The annual test does not measure pump flow. It flows water for an hour while monitoring pump parameters. The establishment of the discharge pressure is to assure that the diesel is sufficiently loaded during operation. The test discharge pressure of 210 psi versus the test criteria of at least 217 psi was an insignificant deviation.
Panel Outcome	Minor
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	4
Site	Diablo Canyon
Panel Date	12/19/2017
Participants	JLD: Kevin Roche, Joylynn Quinones-Navarro, Tony Brown DIRS: Greg Bowman, Aron Lewin R1: Christopher Lally R2: Reinaldo Rodriquez R3: Stuart Sheldon R4: Ryan Alexander, John Mateychick, Stephanie Anderson
Details of issue	The strategy for protecting spent fuel includes the option to use two nozzles to cool the fuel via spray if SFP level cannot be maintained by makeup to the pool. FSG 11, “Alternate SFP Makeup and Cooling,” Revision 1A, provided guidance on location and setup of the of the two spray nozzles. FSG 11 did not include directions on how to fix the nozzles to prevent rotation horizontally. Movement of a nozzle when placed in service could result in the spray pattern not cooling all of the fuel assemblies.
Proposed Resolution	Green
Details of Proposed Resolution	The performance deficiency was more than minor because it was associated with the protection against external factors (seismic event) attribute of the Mitigating Systems Cornerstone and adversely affected the Mitigating Systems Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee failed to provide adequate guidance to assure spray nozzles would cool all spent fuel assembles in the spent fuel pool.
Panel Outcome	Minor
Details of Panel Decision	JLD, DIRS, R1, R2, R3 believed issue was minor due to availability of other options and minimal reliance of spray in strategy.

Region	4
Site	Grand Gulf
Panel Date	04/25/2017
Participants	JLD: J. Quinones-Navarro/J. Boska (Acting JOMB BC)/K. Roche DIRS: S. Campbell/M. Halter (IPAB Acting BC) DRA: A. Schwab R1: M. Ferdas/C. Cahill R2: R. Rodriguez/P. McKenna R3: A. Stone R4: J. Mateychick /R. Alexander (Presenter)/J. Kozal/M. Stafford NSIR:
Details of issue	The licensee failed to implement the Workability and Ready to Work reviews in a timely matter as required by fleet procedure EN-MA-101-03, Maintenance Work Preparation Process, for the 1-year preventative maintenance activities for the two portable hydrogen igniter/light tower diesel generators.
Proposed Resolution	Minor
Details of Proposed Resolution	The Performance Deficiency does not constitute a finding since it is not a precursor to a more significant event, it will not become more significant if left uncorrected, it is not related to a Performance Indicator (PI) that would have caused a PI threshold exceedance, and it does not adversely affect a cornerstone objective. While the NRC inspectors identified the “workability issues” with the subject MWOs during the inspection, when the licensee did complete the two EN-MA-101-03 pre-work activities, the licensee did not identify any additional issues with the MWOs, corrected the issues in the MWOs identified by the NRC inspectors, and successfully completed the one-year PMs for the hydrogen igniter generators by the due date.
Panel Outcome	Minor
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	4
Site	Grand Gulf
Panel Date	04/25/2017
Participants	JLD: J. Quinones-Navarro/J. Boska (Acting JOMB BC)/K. Roche DIRS: S. Campbell/M. Halter (IPAB Acting BC) DRA: A. Schwab R1: M. Ferdas/C. Cahill R2: R. Rodriguez/P. McKenna R3: A. Stone R4: J. Mateychick /R. Alexander (Presenter)/J. Kozal/M. Stafford NSIR:
Details of issue	The licensee failed to ensure that storage of FLEX equipment accounted for the fact that the equipment will need to function in a timely manner. Specifically, station procedures were not sufficient to ensure that the equipment was maintained at a temperature within a range to ensure its likely function when called upon.
Proposed Resolution	Minor
Details of Proposed Resolution	The performance deficiency is minor because the performance deficiency could not be viewed as a precursor to a significant event; if left uncorrected, would not have the potential to lead to a more significant safety concern; does not relate to a performance indicator; and is not associated with one of the cornerstone attributes or adversely affect the associated cornerstone objective. Specifically, the inspectors reviewed readily available NOAA temperature data for Port Gibson, Mississippi for over 100 years (1894-present) and found that the recorded daily high temperature was below 40F for less than 2% of the time period. Additionally, for the same NOAA temperature data for Port Gibson, while the area experienced low temperatures of less than 40F for ~26% of the recorded days, a large majority of those same days (~92%) had high temperatures in excess of 40F. However, the same NOAA data suggests that during the winter months “cold weather snaps” (of 3-4 days in a row) is not an uncommon occurrence in the Port Gibson area, as such only a weekly check to activate the block heaters is an incomplete barrier to ensure the equipment is always cold-weather protected and likely to function to when called upon.
Panel Outcome	Minor
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	4
Site	River Bend
Panel Date	07/18/2017
Participants	JLD: Tony Brown, Kevin Roche, Joylynn Quinones DIRS: Mike Montecalvo, Aaron Lewin, Alex Schwab R1: Chris Lally R2: Necota Staples R3: Stu Sheldon, Ann Marie Stone, Julie Boettcher R4: Jeff Sowa, John Mateycheck, Michael Stafford NSIR: Eric Schrader
Details of issue	AOP-0065, Extended Loss of AC Power, does not provide adequate direction to implement Phase 3 strategies in accordance with station procedures. No guidance is provided to direct station personnel to install adequately sized fans to provide long-term cooling of the main control room, Division II switchgear room, or RHR B pump room. The station has various size fans and flexible ductwork designated as FLEX equipment. No specific directions are made regarding placement of the fans and air flow paths required to ensure adequate air flow in each location.
Proposed Resolution	Green
Details of Proposed Resolution	The performance deficiency was more than minor because it was associated with the protection against external factors attribute of the Mitigating Systems Cornerstone and adversely affected the Mitigating Systems Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee did not ensure that equipment cooling strategies for the main control room, Division II switchgear room, and RHR B pump room would be adequately implemented during Phase 3 mitigation.
Panel Outcome	Minor
Details of Panel Decision	JLD, DIRS, R1, R2, R3 believed issue was minor due to the site having greater emphasis on Phase 2 vice Phase 3 strategies per docketed correspondence.

Region	4
Site	River Bend
Panel Date	07/18/2017
Participants	JLD: Tony Brown, Kevin Roche, Joylynn Quinones DIRS: Mike Montecalvo, Aaron Lewin, Alex Schwab R1: Chris Lally R2: Necota Staples R3: Stu Sheldon, Ann Marie Stone, Julie Boettcher R4: Jeff Sowa, John Mateycheck, Michael Stafford NSIR: Eric Schrader
Details of issue	The licensee failed to ensure that storage of FLEX equipment accounted for the fact that the equipment will need to function in a timely manner. Specifically, no station procedures were developed to ensure that the equipment was maintained at a temperature within a range to ensure its likely function when called upon. The licensee identified that no procedural guidance was developed that initiates and verifies actions to complete FLEX Storage Building cold weather preps (i.e., turn on block heaters.) Additionally, the licensee identified that no procedure was developed to protect stored equipment against cold weather in the event of a loss of power to the FLEX Storage Buildings. The River Bend Station Final Integrated Plan Section 2.7, “Planned Protection of Flex Equipment,” stated that a procedure had been developed to accomplish these tasks. The licensee identified that no procedure was developed during a pre-inspection self-assessment and entered the issue into their corrective action program.
Proposed Resolution	Minor
Details of Proposed Resolution	The performance deficiency is minor because the performance deficiency could not be viewed as a precursor to a significant event; if left uncorrected, would not have the potential to lead to a more significant safety concern; does not relate to a performance indicator; and is not associated with one of the cornerstone attributes or adversely affect the associated cornerstone objective. Specifically, the inspectors reviewed readily available NOAA temperature data for Baton Rouge, Louisiana and compared this with vendor documents for the FLEX equipment. Since September 29, 2015, the date of FLEX implementation at RBS, there were only 5 days where ambient air temperature did not rise above 40F. During this time period, the equipment would not have been challenged to operate. The data did show “cold weather snaps” (of approximately 3 days in a row) during the winter months, where the recorded low temperature would drop into the 20s for an overnight low then recover to above 40 during the day. Therefore, based on the low

	frequency of cold days the inspection team has decided to disposition this issue of concern as minor.
Panel Outcome	Minor
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	4
Site	River Bend
Panel Date	07/18/2017
Participants	JLD: Tony Brown, Kevin Roche, Joylynn Quinones DIRS: Mike Montecalvo, Aaron Lewin, Alex Schwab R1: Chris Lally R2: Necota Staples R3: Stu Sheldon, Ann Marie Stone, Julie Boettcher R4: Jeff Sowa, John Mateycheck, Michael Stafford NSIR: Eric Schrader
Details of issue	At one point the two coaxial signal cables from the spent fuel level transmitters exit independent wall penetrations and transition to independent metal conduits. As the two coaxial cables transition in free space the two coaxial cables crossed and were discovered in physical contact with each other.
Proposed Resolution	Minor
Details of Proposed Resolution	The minor touching of shielded jacket of the coaxial signal cable at one point did not impair the function of the spent fuel pool level instruments. The minor touching would not be expected to significantly increase the likelihood of a common mode failure due to the flexible nature of the cables and outer protective layer of the coaxial cables being resistant to abrasion. The location was within a safety related building. Note the condition was promptly corrected by separating the cables and anchoring them to nearby support structures with cable ties.
Panel Outcome	Minor
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	4
Site	South Texas Project
Panel Date	12/19/2017
Participants	JLD: Kevin Roche, Joylynn Quinones-Navarro, Tony Brown DIRS: Greg Bowman, Aron Lewin R1: Christopher Lally R2: Reinaldo Rodriquez R3: Stuart Sheldon R4: Ryan Alexander, John Mateychick, Stephanie Anderson
Details of issue	The licensee failed to ensure that appropriate programmatic controls were in place for the continued viability and reliability of the FLEX strategies. Specifically, the licensee did not have appropriate programmatic controls relative to configuration management for the removable key for the interlock device that supports operation of the installed N and N+1 FLEX Diesel Generators (DGs) for each unit. The interlock that prevents both the FLEX DGs in a unit from simultaneously supplying the DP1000 distribution panel utilizes a “Kirk Key” for which the station only has one key per unit. This key is required to be inserted, rotated in the appropriate direction, and remain inserted to allow one or the other FLEX DGs to be started and connected to the DP1000 panel. However, the team identified that the “Kirk Key” did not have any device or other physical control associated with it to ensure the key remains at the location of the FLEX DG panels, and the station does not have backup/spare Kirk Keys controlled in alternative location(s) to be used should the primary key at the device become lost, damaged, or otherwise unusable.
Proposed Resolution	Green Finding
Details of Proposed Resolution	The Performance Deficiency is more than minor because if left uncorrected it could have potential lead to a more significant safety concern. Since the key is a critical component for operations of the FLEX DGs, had the key been lost due to lack of the appropriate programmatic/administrative controls not being corrected, it could have a direct impact on the station’s ability to start one of the FLEX DGs on one of the units and repower the DC batteries to support the continuing actions to mitigate the beyond design basis event.
Panel Outcome	Minor
Details of Panel Decision	JLD, DIRS, R1, R2, R3 believed issue was minor since key was not lost / not known to be lost in past.

Region	4
Site	Waterford
Panel Date	02/27/2018
Participants	JLD: Joylynn Quinones-Navarro, Tony Brown, Kevin Roche, Peter Bamford DIRS: Aron Lewin, Alex Garmoe DRA: Michael Montecalvo, Candace Spore R1: Marc Ferdas, Chris Cahill R2: Reinaldo Rodriquez, Michelle Catts, Shane Sandal, Scott Freeman R3: Stu Sheldon, AnnMarie Stone R4: Ryan Alexander, Troy Pruett, Geoffrey Miller, Frances Ramirez, Michael Stafford
Details of issue	The station did not give consideration to the impacts from large internal flooding sources that are not seismically robust. Specifically, the electrical connection to provide power from the FLEX diesel generator to the FLEX Core Cooling Pump (FCCP) on Reactor Auxiliary Building -35' elevation is not protected from potential impacts of seismically-induced internal flooding from non-seismic fire protection piping in the area either by design or by procedure. The electrical connection (pigtail) for the FCCP is not water resistant or otherwise protected from flooding. Following a seismically-induced internal flooding event, the connection can potentially either be damaged or otherwise fail from water exposure, potentially rendering the pump unable to function. This issue potentially impacts both the pre-staged N-set FCCP and the N+1 FCCP if it is used to take the place of the N-set pump.
Proposed Resolution	Green
Details of Proposed Resolution	The performance deficiency is more than minor because it adversely affects equipment performance attribute of the Mitigating Systems Cornerstone and its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, without design or procedural protections in place to address the performance deficiency, a seismically induced internal flood could render either the N-set or N+1 FCCP unable to fulfill its functions during an ELAP event.
Panel Outcome	Green
Details of Panel Decision	Panel agreed with proposed resolution of the issue.

Region	4
Site	Waterford
Panel Date	02/27/2018
Participants	DLP: Joylynn Quinones-Navarro, Tony Brown, Kevin Roche, Peter Bamford DIRS: Aron Lewin, Alex Garmoe DRA: Michael Montecalvo, Candace Spore R1: Marc Ferdas, Chris Cahill R2: Reinaldo Rodriquez, Michelle Catts, Shane Sandal, Scott Freeman R3: Stu Sheldon, AnnMarie Stone R4: Ryan Alexander, Troy Pruett, Geoffrey Miller, Frances Ramirez, Michael Stafford
Details of issue	Waterford is unique in that there are 15 permanent, large chemical industry facilities within 5 miles of the station along the Mississippi River. As such, the licensee has design bases analyses documenting the potential hazards from the wide variety of flammable and toxic materials produced and/or stored at these industrial facilities in the U/FSAR (Section 2.2.3). Additionally, because of this hazard, the licensee (1) utilizes Technical Specification-required, broad range gas detection equipment to detect and initiate automatic isolation of the control room ventilation system (described in U/FSAR Section 6.4), and (2) established comprehensive toxic chemical contingency (i.e., emergency) procedures to address actions to ensure the safety of station personnel during such releases from nearby facilities. This equipment and procedures have been described in the U/FSAR and been established since early in the operations of Waterford 3, and well before the development of the FLEX strategies in accordance with Order EA-12-049. The team determined that the licensee failed to develop and consider accessibility and personal protective equipment requirements for locations where operators will be required to perform FLEX-related local manual operations for all possible hazards, including the expected release of large quantities of toxic chemicals following a BDBEE. Specifically, the licensee failed to establish contingencies to ensure sufficient continuous breathing air is available to the staff executing FLEX activities outside of the control room envelope, and the prompt replenishment of the breathing air during Phases 1 and 2. Further, the licensee did not consider the impact of toxic chemical events on the FLEX ventilation strategy established for the main control room, nor did they establish contingencies for other FSG-directed actions to account for the potential concurrent toxic gas impacts on the site.
Proposed Resolution	Potentially Greater Than Green. Issue brought to panel for awareness & discussion.

Details of Proposed Resolution	The performance deficiency is more than minor because it adversely affects the protection against external factors (i.e., toxic hazard) attribute of the Mitigating Systems Cornerstone and its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the licensee failed to establish contingencies to ensure sufficient personal protective equipment (continuous breathing air in particular) is available to the staff executing FLEX activities outside of the control room envelope, and the prompt replenishment of the breathing air during Phases 1 and 2. Further, the licensee did not consider the impact of toxic chemical events on the FLEX ventilation strategy established for the main control room, or other FLEX-related actions in the outside environment.
Panel Outcome	No panel outcome reached. Issue was brought to panel for awareness & discussion.
Details of Panel Decision	N/A. Focus of discussion was on toxic hazards as they relate to FLEX strategies. DLP and RIV to engage in additional dialogue.

Region	4
Site	Waterford
Panel Date	02/27/2018
Participants	DLP: Joylynn Quinones-Navarro, Tony Brown, Kevin Roche, Peter Bamford DIRS: Aron Lewin, Alex Garmoe DRA: Michael Montecalvo, Candace Spore R1: Marc Ferdas, Chris Cahill R2: Reinaldo Rodriquez, Michelle Catts, Shane Sandal, Scott Freeman R3: Stu Sheldon, AnnMarie Stone R4: Ryan Alexander, Troy Pruett, Geoffrey Miller, Frances Ramirez, Michael Stafford
Details of issue	The licensee implemented a change to their strategies for the protection and utilization of the N+1 FLEX Diesel Generator (DG) without prior NRC approval but those changes were determined to be inconsistent with the requirements of NEI 12-06, Revision 0, Section 11.8 and the approved alternatives to the guidance described in Section 12.5 of the licensee's Final Integrated Plan, and Section 3.14.5 of the NRC Safety Evaluation. Specifically, the licensee revised the FLEX strategies such that (1) the N+1 FLEX DG could not be used under all hazards, (2) implemented revised allowed out of service time inconsistent with the NEI 12-06, Revision 0, and the approved alternatives guidance, and (3) ultimately failed to properly control the availability of the N and N+1 FLEX DGs for a period of 25 days in February 2017.
Proposed Resolution	Potentially Greater Than Green. Issue brought to panel for awareness & discussion.
Details of Proposed Resolution	The performance deficiency is more than minor because it adversely affects equipment performance attribute of the Mitigating Systems Cornerstone and its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the licensee developed the revised FLEX electrical strategy which failed the ensure that the N capability of the FLEX DGs were capable under all hazards, and actually implemented an element of the inadequate strategy when the N FLEX DG was non-functional/unavailable for a period of approximately 25 days beginning in February 2017.
Panel Outcome	Panel members supported more than minor determination & that application of IMC 609, Appendix O, results in referral & use of IMC 609, Appendix M.
Details of Panel Decision	Next step is to finalize results of IMC 609, Appendix M. If results of IMC 609, Appendix M, are potentially greater than green finding, then issue will be brought before SERP panel for additional consideration.

Region	4
Site	Wolf Creek
Panel Date	02/27/2018
Participants	DLP: Joylynn Quinones-Navarro, Tony Brown, Kevin Roche, Peter Bamford DIRS: Aron Lewin, Alex Garmoe DRA: Michael Montecalvo, Candace Spore R1: Marc Ferdas, Chris Cahill R2: Reinaldo Rodriquez, Michelle Catts, Shane Sandal, Scott Freeman R3: Stu Sheldon, AnnMarie Stone R4: Ryan Alexander, Troy Pruett, Geoffrey Miller, Frances Ramirez, Michael Stafford
Details of issue	The licensee failed to follow the maintenance procedure for the annual maintenance activity on the FLEX RCS Pump #2. Following the Annual operational run and inspection of FLEX RCS Pump #2 in August of 2017, the preventative maintenance (PM) activity directed the licensee to perform the “return to standby” PM task. This task would have the licensee drain all of the water from the pump and blow compressed air through the system to dry out the piping. The licensee failed to correctly tie this PM task to the Annual test, and therefore did not ensure that sufficient water was drained from the pump and the piping dried out. This oversight was not identified in the post-work completion review. Subsequent quarterly PM activities for this pump required the licensee to hand rotate the pump (unclutched from the motor). This action could not be completed due to the fact that the licensee had not drained all the water from the pump, which meant that the trapped water inside the cylinders of the pump prevented the hand rotation. During these two subsequent quarterly PM activities the licensee experienced this problem and required changes to the work order instructions to allow the hand rotation to be successful. The changes included opening the discharge valve of the pump allowing trapped water to exit the cylinders and the pump to be rotated.
Proposed Resolution	Minor
Details of Proposed Resolution	This performance deficiency is recommended to be characterized as minor because the inspectors answered “no” to all the more than minor questions in IMC 0612, Appendix B. Specifically, this condition would not keep the pump from performing its function. The approximately 30 HP motor on the FLEX RCS pump would be able to overcome any hydro-lock effects of residual water remaining in the pump, if the pump was required to be staged and run in response to an ELAP event. Additionally, the pump discharge valve would be open in the course of the executing the operating instruction, allowing any trapped water to be pumped from the cylinders. The strength of a person trying to hand rotate this pump was not enough to overcome this resistance, and the

	quarterly PM work activities did not have the pump aligned such that the discharge valve was opened.
Panel Outcome	Minor.
Details of Panel Decision	Panel agreed with proposed resolution of the issue.