



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION I  
2100 RENAISSANCE BOULEVARD, SUITE 100  
KING OF PRUSSIA, PENNSYLVANIA 19406-2713

January 31, 2018

Mr. Anthony J. Vitale  
Site Vice President  
Entergy Nuclear Operations, Inc.  
Indian Point Energy Center  
450 Broadway, General Services Building  
P.O. Box 249  
Buchanan, NY 10511-0249

**SUBJECT: INDIAN POINT NUCLEAR GENERATING – TEMPORARY INSTRUCTION  
2515/191 INSPECTION REPORT 05000247/2017010 AND 05000286/2017010**

Dear Mr. Vitale:

On December 1, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Indian Point Nuclear Generating (Indian Point), Units 2 and 3. On December 1, 2017, the NRC inspectors discussed the results of this inspection with you and other members of your staff. During this discussion, your staff was requested to provide additional information for consideration. In-office review of the additional information continued by the NRC after the conclusion of the onsite inspection, and a telephonic exit meeting was conducted on January 10, 2018, with you and other members of your staff. The results of this inspection are documented in the enclosed report.

The inspection examined activities conducted under your licenses as they relate to the implementation of mitigation strategies and spent fuel pool instrumentation orders (EA-12-049 and EA-12-051) and Emergency Preparedness Communication/Staffing/Multi-Unit Dose Assessment Plans, your compliance with the Commission's rules and regulations, and with the conditions of your operating licenses. Within these areas, the inspection involved examination of selected procedures and records, observation of activities, and interviews with plant personnel. NRC inspectors documented one finding of very low safety significance (Green) in this report. The finding did not involve a violation of NRC requirements.

If you disagree with a cross-cutting aspect assignment or a finding not associated with a regulatory requirement in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; and the NRC resident inspector at Indian Point.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and the NRC Public Document Room in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

**/RA/**

Marc S. Ferdas, Chief  
Technical Support and Assessment Branch  
Division of Reactor Projects

Docket Nos. 50-247 and 50-286  
License Nos. DPR-26 and DPR-64

Enclosure:  
Inspection Report 05000247/2017010  
and 05000286/2017010 w/Attachment:  
Supplementary Information

cc w/encl: Distribution via ListServ

SUBJECT: INDIAN POINT NUCLEAR GENERATING – TEMPORARY INSTRUCTION  
 2515/191 INSPECTION REPORT 05000247/2017010 AND 05000286/2017010  
 dated January 31, 2018

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**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION I**

Docket Nos. 50-247 and 50-286

License Nos. DPR-26 and DPR-64

Report Nos. 05000247/2017010 and 05000286/2017010

Licensee: Entergy Nuclear Northeast (Entergy)

Facility: Indian Point Nuclear Generating, Units 2 and 3

Location: 450 Broadway, General Services Building  
Buchanan, NY 10511-0249

Dates: November 27, 2017, through December 1, 2017

Inspectors: C. Cahill, Senior Reactor Analyst, Division of Reactor Safety (DRS)  
B. Fuller, Senior Operations Engineer, DRS  
A. Rosebrook, Senior Project Engineer, Division of Reactor Projects  
(DRP)  
A. Siwy, Resident Inspector, DRP

Approved by: Marc S. Ferdas, Chief  
Technical Support and Assessment Branch  
Division of Reactor Projects

## SUMMARY

Inspection Report 05000247/2017010 and 05000286/2017010; 11/27/2017 – 12/01/2017; Indian Point Nuclear Generating (Indian Point), Units 2 and 3; Temporary Instruction (TI) 2515/191, Inspection of the Implementation of Mitigation Strategies and Spent Fuel Pool Instrumentation Orders and Emergency Preparedness Communication/Staffing/Multi-Unit Dose Assessment Plans.

The inspection covered a one week inspection by a senior reactor analyst, a senior operations engineer, a senior project engineer, and a resident inspector. One finding of very low safety significance (Green) that does not involve a violation of regulatory requirements was identified. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6.

### Cornerstone: Mitigating Systems

- Green. The NRC identified a finding for the failure to assure that diesel powered Diverse and Flexible Coping Strategies (FLEX) equipment would be reliable to mitigate postulated beyond-design basis external events during very low temperature conditions. Specifically, at temperatures below 21°F, portable FLEX equipment, such as emergency diesels, steam generator and reactor makeup pumps, and transfer pumps, were susceptible to conditions in which they would not have been capable of starting and operating due to fuel crystalizing or gelling. (CR-IP2-2017-04902/IP3-2017-05574)

The failure to ensure that the portable diesel equipment could function within the required temperature range was a performance deficiency. 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. The significance of the finding was evaluated using NRC Inspection Manual Chapter 0609, Appendix O, "Significance Determination Process for Mitigating Strategies and Spent Fuel Pool Instrumentation (Orders EA-12-049 and EA-12-051)," dated October 7, 2016, and Appendix M, "Significance Determination Process Using Qualitative Criteria," dated April 12, 2012. The event of concern was determined to be a seismic event greater than 0.3g resulting in a loss of offsite power during extreme cold weather events. A bounding evaluation was performed in accordance with Step 4.1.1 of Appendix M. Indian Point declared full compliance with the order on August 12, 2016. The preliminary review of available weather conditions for the site, from the time of full compliance, shows that the temperature was below the cloud point of the fuel for over 200 hours. The Indian Point Unit 3 External Initiator Risk Informed Notebook was utilized to estimate the risk and was determined to adequately model the risk of both units. Utilizing Table 5.3.2, sequences that included emergency power, auxiliary feedwater, and high pressure makeup were evaluated. Assuming a 200 hour exposure and the unavailability of all diesel driven FLEX equipment the risk was determined to less than 1E-7/yr. Therefore, the finding was determined to have a very low risk significance. The finding had a cross-cutting aspect in the Avoiding Complacency of the Human Performance area because the licensee failed to ensure that all susceptible elements of the mitigation strategies were designed, maintained, or operated in such a manner that they could reliably function over then entire temperature spectrum for beyond-design basis external events. [H.12]

## REPORT DETAILS

### 4. OTHER ACTIVITIES

#### 4OA5 Other Activities

##### TI 2515/191 – Inspection of the Implementation of Mitigation Strategies and Spent Fuel Pool Instrumentation Orders and Emergency Preparedness Communication/Staffing/Multi-Unit Dose Assessment Plans

The objective of TI 2515/191, “Inspection of the Implementation of Mitigation Strategies and Spent Fuel Pool Instrumentation Orders and Emergency Preparedness Communication/Staffing/Multi-Unit Dose Assessment Plans,” is to verify: (1) that licensees have adequately implemented the mitigation strategies as described in the licensee’s Final Integrated Plan (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16235A292 for Unit 2, and ML15149A140 for Unit 3) and the NRC’s plant safety evaluation (ADAMS Accession No. ML17065A171); (2) that the licensees installed reliable water-level measurement instrumentation in their spent fuel pools (SFPs); and (3) that licensees have implemented emergency preparedness enhancements as described in their site-specific submittals and NRC safety assessments, including dose assessment capability, enhancements to ensure that staffing is sufficient, and that communications can be maintained during beyond-design basis external events.

The team verified that plans for complying with NRC Orders EA-12-049, “Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design Basis External Events,” (ADAMS Accession No. ML12054A735) and EA-12-051, “Order Modifying Licenses With Regard to Reliable Spent Fuel Pool Instrumentation,” (ADAMS Accession No. ML12056A044) were in place and were being implemented by Entergy. The team also verified that Entergy had implemented staffing and communications plans provided in response to the March 12, 2012, request for information letter and dose assessment information provided per COMSECY-13-0010, “Schedule and Plans for Tier 2 Order on Emergency Preparedness for Japan Lessons Learned,” dated March 27, 2013 (ADAMS Accession No. ML12339A262).

The team discussed the plans and strategies with Entergy personnel, reviewed documentation, completed a tabletop exercise involving a beyond-design basis event leading to an extended loss of offsite power, and where appropriate, performed plant walk downs to verify that the strategies could be implemented as stated in Entergy’s submittals and the NRC staff prepared safety evaluation. This included verification that the strategy was feasible, procedures and/or guidance had been developed, training had been provided to plant staff, and required equipment had been identified and staged. Specific details of the team’s inspection activities are described in the following sections. Documents reviewed for each section of this report are listed in the Attachment.

#### 1. Mitigation Strategies for Beyond-Design Basis External Events

##### a. Inspection Scope

The team examined Entergy’s established guidelines and implementing procedures for the beyond-design basis mitigation strategies. The team assessed how the Entergy staff

coordinated and documented the interface/transition between existing off-normal and emergency operating procedures with the newly developed mitigation strategies. The team selected a number of mitigation strategies and conducted plant walk downs with licensed operators and responsible plant staff to assess: the adequacy and completeness of the procedures; familiarity of operators with the procedure objectives and specific guidance; staging and compatibility of equipment; and the practicality of the operator actions prescribed by the procedures, consistent with the postulated scenarios.

The team verified that a preventive maintenance program had been established for the FLEX portable equipment and that periodic equipment inventories were in place and being conducted. Additionally, the team examined the introductory and planned periodic/refresher training provided to the Operations and Indian Point staff most likely to be tasked with implementation of the FLEX mitigation strategies. The team also reviewed the introductory and planned periodic training provided to the Emergency Response Organization personnel.

### Assessment

Based on samples selected for review, the inspectors verified that Entergy had satisfactorily implemented appropriate elements of the FLEX strategy as described in the plant specific submittals and the associated safety evaluation (ADAMS Accession No. ML17065A171) and determined that Entergy was in compliance with NRC Order EA-12-049, upon completion of the inspection.

The team verified that Entergy satisfactorily:

- Developed and issued FLEX Support Guidelines (FSGs) to implement the FLEX strategies for postulated external events;
- Integrated their FSGs into their existing emergency operating procedures and off-normal procedures such that entry into and departure from the FSGs are clear when using existing plant procedures;
- Protected FLEX equipment from site-specific hazards;
- Developed and implemented adequate testing and maintenance of FLEX equipment to ensure their availability and capability;
- Trained their staff to assure personnel proficiency in the mitigation of beyond-design basis events, and;
- Developed procedures to ensure that the necessary off-site FLEX equipment will be available from off-site locations.

The team verified that inspector observations identified during the inspection were entered into Entergy's corrective action program, where appropriate.

## b. Findings

### Inadequate Diesel Fuel Oil Temperature Protection

Introduction. The NRC identified a Green finding for the failure to assure that diesel powered FLEX equipment would be reliable to mitigate postulated beyond-design basis external events during very low temperature conditions. Specifically, at temperatures below 21°F, portable FLEX equipment, such as emergency diesels, steam generator

and reactor makeup pumps, and transfer pumps, were susceptible to conditions in which they would not have been capable of starting and operating due to fuel crystalizing or gelling.

Description. The team reviewed the ability of the FLEX equipment to operate across the site specific temperature hazard range. Indian Point committed to Nuclear Energy Institute 12-06, Revision 3 as endorsed by the NRC. According to Nuclear Energy Institute 12-06, section 8.2.2, "Storage of FLEX equipment should account for the fact that the equipment will need to function in a timely manner. The equipment should be maintained at a temperature within a range to ensure its likely function when called upon. For example, by storage in a heated enclosure or by direct heating (e.g., jacket water, battery, engine block heater, etc.)."

The final integrated plan states that FLEX mitigation equipment is designed to operate over a temperature range from -15°F through 115°F. Due to the design of the FLEX storage building, temperatures for FLEX equipment stored in the FLEX storage building have been estimated to drop to -6°F when outside temperatures reach -15°F. Once the FLEX deployment is begun, the area and equipment will be subjected to ambient conditions, potentially as low as -15°F. Initial Indian Point fuel oil samples show that the cloud point was approximately 21°F which is substantially above the worst case beyond-design basis temperatures. At temperatures below the cloud point, the fuel oil crystalizes and gels causing it to clog fuel lines and filters, thereby disabling the equipment. The FLEX portable diesel powered equipment is equipped, as appropriate, with cold weather features such as block heaters, glow-plugs, and air intake heaters. Fuel oil heating, where provided, requires the engines to be operating, to provide warm engine coolant through the fuel oil heat exchanger. The licensee had no provisions to ensure that the diesel fuel oil was maintained above the cloud point either through such means as the selection of an appropriate fuel oil or through standby fuel oil heating.

Analysis. The failure to ensure that the portable diesel equipment could function within the required temperature range was a performance deficiency. 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. The significance of the finding was evaluated using NRC Inspection Manual Chapter 0609, Appendix O, "Significance Determination Process for Mitigating Strategies and Spent Fuel Pool Instrumentation (Orders EA-12-049 and EA-12-051)," dated October 7, 2016, and Appendix M, "Significance Determination Process Using Qualitative Criteria," dated April 12, 2012. The event of concern was determined to be a seismic event greater than 0.3g resulting in a loss of offsite power during extreme cold weather events. A bounding evaluation was performed in accordance with Step 4.1.1 of Appendix M. Indian Point declared full compliance with the order on August 12, 2016. The preliminary review of available weather conditions for the site, from the time of full compliance, shows that the temperature was below the cloud point of the fuel for approximately 200 hours. The Indian Point Unit 3 External Initiator Risk Informed Notebook was utilized to estimate the risk and was determined to adequately model the risk of both units. Utilizing Table 5.3.2, sequences that included emergency power, auxiliary feedwater, and high pressure makeup were evaluated. Assuming a 200 hour exposure and the unavailability of all diesel driven FLEX equipment, the risk was



determined to be less than 1E-7/yr. Therefore, the finding was determined to have a very low risk significance (Green).

The finding had a cross-cutting aspect in the Avoiding Complacency of the Human Performance area because the licensee failed to ensure that all susceptible elements of the mitigation strategies were designed, maintained, or operated in such a manner that they could reliably function over the entire temperature spectrum for beyond-design basis external events [H.12].

Enforcement. This finding does not involve enforcement action because no violation of regulatory requirements was identified. Specifically, the performance deficiency was determined to involve the failure to meet a self-imposed standard. Because the finding does not involve a violation of regulatory requirements and has very low safety significance (Green), it is identified as a finding. **(FIN 05000247/2017010-01 and 0500086/2017010-01, Inadequate Diesel Fuel Oil Temperature Protection)**

## 2. Spent Fuel Pool Instrumentation

### a. Inspection Scope

The team examined Entergy's newly installed SFP instrumentation. Specifically, the team verified the sensors were installed as described in the plant specific submittals and the associated safety evaluation, and that the cabling for the power supplies and the indications for each channel were physically and electrically separated. In addition, the team verified that Entergy had evaluated the environmental conditions and accessibility of the instrumentation.

The team verified that Entergy had approved procedures for maintenance, testing, calibration, and use of the primary and backup SFP instrumentation channels. The team also verified that the procedures followed the industry guidance contained in Nuclear Energy Institute 12-02, "Industry Guidance for Compliance with NRC Order EA-12-051, "To Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation," and that these procedures were part of an existing Entergy process to be maintained.

### b. Assessment

Based on samples selected for review, the team determined that Entergy satisfactorily installed and established appropriate operating and maintenance controls for the SFP instrumentation as described in the plant specific submittals and the associated safety evaluation. The team determined that Entergy was in compliance with NRC Order EA-12-051.

The team verified that Entergy satisfactorily:

- Installed the SFP instrumentation sensors, cabling, and power supplies to provide physical and electrical separation as described in the plant specific submittals and safety evaluation;
- Installed the SFP instrumentation display in the accessible location, and environmental conditions as described in the plant specific submittals;
- Trained their staff to assure personnel proficiency with the maintenance, testing, and use of the SFP instrumentation; and,

- Developed and issued procedures for maintenance, testing, and use of the reliable SFP instrumentation.

The team verified that issues identified during the inspection were entered into Entergy's corrective action program, where appropriate.

c. Findings

No findings were identified.

3. Staffing and Communication Request for Information

a. Inspection Scope

Through discussions with plant staff, review of documentation, and plant walk downs, the team verified that Entergy had implemented required changes to staffing, communications equipment, and facilities to support an extended loss of all AC power (ELAP) scenario as described in Entergy's staffing assessment and the NRC safety evaluation. The team also verified that Entergy had implemented dose assessment (including releases from SFPs) capability using site-specific dose assessment software, as described in Entergy's dose assessment submittal.

Assessment

The team reviewed information provided in Entergy's dose assessment submittal and in response to the NRC's March 12, 2012, request for information letter (ADAMS Accession No. ML12053A340), and verified that Entergy satisfactorily implemented enhancements pertaining to Near-Term Task Force Recommendation 9.3, response to a large scale natural emergency event that results in an ELAP and impedes access to the site.

The team verified the following:

- Entergy satisfactorily implemented required staffing changes to support an ELAP scenario;
- Emergency preparedness communications equipment and facilities were sufficient for dealing with an ELAP scenario, and;
- Entergy implemented dose assessment capabilities (including releases from SFPs) using site-specific dose assessment software and approach.

The team verified that issues identified during the inspection were entered into Entergy's corrective action program, where appropriate.

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

On December 1, 2017, the team debriefed the inspection results with Mr. Anthony J. Vitale, Site Vice President, and other members of the Indian Point staff. An exit was

conducted with Mr. Anthony J. Vitale, Site Vice President, via telephone on January 10, 2018, to discuss the final results of the inspection. The team verified that no proprietary information was retained by team members or documented in this report.

**ATTACHMENT: SUPPLEMENTARY INFORMATION**

**SUPPLEMENTARY INFORMATION**

**KEY POINTS OF CONTACT**

Licensee Personnel

M. Cali, Contractor  
S. Couelier, Reactor Operator  
C. Karsten, Senior Emergency Planner  
R. Martin Senior Project Manager  
M. Mirzai, Licensing Specialist  
D. Morse, Engineer  
D. Powell, FLEX Marshall

**LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED**

Opened and Closed

05000247/2017010-01 and 05000286/2017010-01	FIN	Inadequate Diesel Fuel Oil Temperature Protection
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Discussed

None

**LIST OF DOCUMENTS REVIEWED**

Procedures

0-FSG-100, BDBEE/ELAP Emergency Response  
0-FSG-101, BDBEE/Emergency Communications, Revision 3  
0-FSG-200, FLEX Operator Guide, Revision 0  
0-FSG-200.01, FLEX-Debris-1, Debris Removal Equipment, Revision 0  
0-FSG-200.02, FLEX-PDG-1, Phase 2 Diesel Generator Operator Guide, Revision 1  
0-FSG-200.03, FLEX-P-1, RCS Makeup Pump Operator Guide, Revision 0  
0-FSG-200.04, FLEX-P-2, SFP Makeup Pump Operator Guide, Revision 0  
0-FSG-200.05, FLEX-P-3, SG Makeup Pump Operator Guide, Revision 1  
0-FSG-200.06, FLEX-P-4, Inventory Transfer Pump Operator Guide, Revision 1  
0-FSG-200.07, Light Tower Operator Guide, Revision 0  
0-FSG-200.08, FLEX Fuel Tank Trailer 1 Operator Guide, Revision 0  
0-FSG-200.09, FLEX\_EPGEN-1, EP Communications Generator Operator Guide, Revision 0  
0-FSG-200.10, FLEX-COM-1, Air Compressor Operator Guide, Revision 1  
0-FSG-200.11 FLEX-Debris-1, Attachment Placement Operator Guide, Revision 0  
0-FSG-201, Staging FLEX Equipment, Revision 3  
0-FSG-202, Refueling FLEX Equipment, Revision 1  
0-FSG-200.03, FLEX-P-1, RCS Makeup Pump Operator Guide, Revision 0  
2-ECA-0.0, Loss of All AC Power, Revision 17  
2-FSG-001, Long Term RCS Inventory Control, Revision 3  
2-FSG-002, Alternate AFW/EFW Suction Source, Revision 1  
2-FSG-003, Alternate Low Pressure Feedwater, Revision 2  
2-FSG-004, ELAP DC Bus Load Shed/Management, Revision 1

2-FSG-005, Initial Assessment and FLEX Equipment Staging, Revision 3  
 2-FSG-006, Alternate CST Makeup, Revision 2  
 2-FSG-007, Loss of Vital Instrumentation or Control Power, Revision 0  
 2-FSG-008, Alternate RCS Boration, Revision 2  
 2-FSG-009, Low Decay Heat Temperature Control, Revision 0  
 2-FSG-010, Passive RCS Injection, Revision 0  
 2-FSG-011, Alternate SFP Makeup and Cooling, Revision 2  
 2-FSG-012, Alternate Containment Cooling, Revision 0  
 2-FSG-013, Transition From FLEX Equipment, Revision 0  
 2-FSG-014, Extended Loss of AC Power – Phase 3, Revision 3  
 2-FSG-015, Extended Loss of AC Power – Cold Shutdown, Revision 0  
 2-FSG-016, Extended Loss of AC Power – Refueling, Revision 1  
 3-ECA-0.0, Loss of All AC Power, Revision 14  
 3-FSG-001, Long Term RCS Inventory Control, Revision 3  
 3-FSG-002, Alternate AFW/EFW Suction Source, Revision 2  
 3-FSG-003, Alternate Low Pressure Feedwater, Revision 3  
 3-FSG-004, ELAP DC Bus Load Shed/Management, Revision 1  
 3-FSG-005, Initial Assessment and FLEX Equipment Staging, Revision 5  
 3-FSG-006, Alternate CST Makeup, Revision 3  
 3-FSG-007, Loss of Vital Instrumentation or Control Power, Revision 1  
 3-FSG-008, Alternate RCS Boration, Revision 2  
 3-FSG-009, Low Decay Heat Temperature Control, Revision 1  
 3-FSG-010, Passive RCS Injection, Revision 1  
 3-FSG-011, Alternate SFP Makeup and Cooling, Revision 3  
 3-FSG-012, Alternate Containment Cooling, Revision 1  
 3-FSG-013, Transition From FLEX Equipment, Revision 1  
 3-FSG-014, Extended Loss of AC Power – Phase 3, Revision 4  
 3-FSG-015, Extended Loss of AC Power – Cold Shutdown, Revision 1  
 3-FSG-016, Extended Loss of AC Power – Refueling, Revision 2  
 EP-13, Manual Dose Assessment Worksheet, Revision 10  
 IP-EP-250, Attachment 9.5, Dose Assessor Checklist, Revision 38  
 IP-EP-310, Dose Assessment, Revision 16  
 OAP- 008, Severe Weather Preparations, Revision 24  
 OAP-048, Seasonal Weather Preparation, Revision 19  
 OAP-115, Operations Commitments and Policy Details, Revision 30  
 0-CY-1810, Diesel Fuel Oil Monitoring, Revision 18  
 2-PT-A064, LI-6500 A/B, Spent Fuel Pool Level Instrument Channel Check/ Panel Functional Check, Revision 0  
 3-PT-A052, LI-6500 A/B, Spent Fuel Pool Level Instrument Channel Check/ Panel Functional Check, Revision 0  
 3-PT-Q140, LI-6500 A/B, Spent Fuel Pool Level Instrument Channel Check, Revision 0

#### Calculations

IP-CALC-13-00057, FLEX Event Diesel Fuel Usages – Unit 3, Revision 4  
 IP-CALC-14-00037, FLEX Event Diesel Fuel Usages – Unit 2, Revision 4

#### Engineering Change Packages

EC-45720, FLEX – Beyond Design Basis External Event Phase II Coping with On-Site FLEX Equipment - Electrical, Revision 0  
 EC-53871, Incorporate Phase II PDG Circuit Breaker into Calc, Revision 0

Miscellaneous

AD6-8, Emergency Facilities Quarterly Communications Test and Inventory, Revision 29  
 Email from Rebecca Martin to ERO Staff, Subject Additional Equipment Added to EP Facilities  
 for Flex Response, March 21, 2015

LO-HQNLO-2014-0054, Fukushima Project Phase 2 Communications Assessment, Revision 1  
 Purchase Order 10416439, RCS Inventory Makeup Hale HP300DJ

IPEC FLEX Phase 2 Portable Diesel Generator (PDG) Output Breaker Setpoint Evaluation  
 Procurement Engineering Technical Evaluation 04-001504, Open Market Generic (00226)  
 Diesel Fuel Oil, Revision 1

2-RND-NUC, Unit 2 Nuclear Rounds, retrieved 11/30/17

3-RND-NUC, Unit 3 Nuclear Rounds, retrieved 11/30/17

Engineering Change

EC No. 45124 Updated EP and Operation's Communications to Address Fukushima FLEX  
 Requirements in NEI 12-01, Revision 0

Training

I0LP-OPS-FLEX, Diverse and Flexible Coping Strategies, Revision 5

Vendor Manuals

029-0020-61-0, Hale Pump

029-0020-83-0, Hale Pumps

SEBU9157-02, CAT C18 Generator Set

FPT Powertrain Technologies C Series Industrial Engines

Magnum Light Tower MLT3060M \* MLT3060K, MLT380M \* MLT 3080K

OMRG34851, PowerTech 2.4L and 3.0L OEM Diesel Engines

OMRG36852, PowerTech Plus 4045 and 6068 OEM Diesel Engines

Corrective Actions

CR-IP2-2014-04907	CR-IP2-2017-04855*	CR-IP3-2016-00546
CR-IP2-2015-00094	CR-IP2-2017-04858*	CR-IP3-2017-04259
CR-IP2-2015-01317	CR-IP2-2017-04900*	CR-IP3-2017-05516*
CR-IP2-2016-01366	CR-IP2-2017-04902*	CR-IP3-2017-05525*
CR-IP2-2016-01617	CR-IP3-2014-02761	CR-IP3-2017-05571*
CR-IP2-2017-04864	CR-IP3-2014-03406	CR-IP3-2017-05574*
CR-IP2-2017-04865*	CR-IP3-2015-00061	CR-IP3-2017-05678

\*Denotes results from NRC inspection

Work Orders

WO 00438606

WO 52773774

WO 52773775

WO 52773776

WO 52773779

WO 52626738

**LIST OF ACRONYMS**

ADAMS	Agencywide Documents Access and Management System
DRP	Division of Reactor Projects
DRS	Division of Reactor Safety
ELAP	Extended Loss of all AC Power
FLEX	Diverse and Flexible Coping Strategies
FSG	FLEX Support Guidelines
NRC	Nuclear Regulatory Commission, U.S.
SFP	Spent Fuel Pool
TI	Temporary Instruction