

## Byron 1

### 3Q/2016 Plant Inspection Findings

---

#### Initiating Events

**Significance:**  Jun 30, 2016

Identified By: NRC

Item Type: FIN Finding

##### **Failure to Perform ASME Code Case Required Extent of Condition to Identify Unacceptable Piping Flaws**

Green. A finding of very-low safety significance was identified by the inspectors when, upon identification of a through-wall leak, the licensee declared the structural integrity of Class 3 fire protection piping to be operable, but failed to perform augmented examinations within 30 days as required by American Society of Mechanical Engineers (ASME) Code Case N-513-3. The licensee repaired the leaking pipe, and upon identification by the inspectors, documented the issue in their corrective action program (CAP) as IRs 2639930 and 2652145, and performed the required augmented examinations.

The inspectors determined the performance deficiency was more than minor because, if left uncorrected, the finding had the potential to lead to a more significant safety concern. Specifically, the augmented examinations identified a location where wall thickness measurements were below the acceptance criteria such that the pipe could have ruptured during a seismic event, impacting the functionality of the fire protection system and causing a flooding hazard in the auxiliary building. Because the finding involved an internal flooding hazard, a detailed risk evaluation was performed, which determined the finding to be of very low safety significance. The inspectors determined the finding had a cross-cutting aspect in the Problem Identification and Resolution area of Evaluation [P.2], because the licensee failed to thoroughly evaluate the issue to ensure that the resolution addressed the cause and extent of condition commensurate with the safety significance. Specifically, the licensee failed to complete the N-513-3 evaluation and perform the required extent of condition activities in a timely manner as specified by the ASME Code Case. (Section 1R12.1)

Inspection Report# : [2016002](#) (*pdf*)

**Significance:**  Mar 31, 2016

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

##### **Entry into Mode 3 with Turbine trip Function of SSPS Disabled**

Green. A finding of very low safety significance and associated non-cited violation (NCV) of Technical Specification (TS) Limiting Condition for Operation (LCO) 3.0.4 was self-revealed when the licensee transitioned Unit 1 to Mode 3 with the turbine trip function of the Solid State Protection System (SSPS) disabled although the turbine trip function was required by TS LCO 3.3.2 to be operable in Mode 3. Upon identification, the licensee immediately manually tripped the turbine and restored the automatic turbine trip function. The licensee entered the issue into the corrective action program (CAP) and initiated actions to revise the mode change checklist and affected surveillance procedures.

The inspectors determined that the finding was of more than minor safety significance because it was associated with the Configuration Control aspect of the Initiating Events Cornerstone and adversely affected the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions. The finding was Green because the manual turbine trip and main steam isolation functions were not affected by the finding. The inspectors determined that the finding had a cross-cutting aspect of Work Management in the areal of Human Performance (H.5) because the licensee failed to plan, control, and execute work activities such that nuclear safety

was the overriding priority. {Section 40A3.1}  
 Inspection Report# : [2016001](#) (pdf)

**Significance:**  Dec 31, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Failure to Implement Protective Tagging Procedure Requirements**

Green: A finding of very low safety significance and associated NCV of Technical Specification (TS) 5.4.1.a, "Procedures," was self-revealed during the Unit 1 refueling outage that ended on October 2, 2015, as a result of the licensee's failure to implement the requirements of OP-AA-109-101, "Clearance and Tagging Program." Two instances of personnel failing to implement the procedural requirements were identified. First, on September 18, 2015, workers in the switchyard performed a preventative maintenance task to replace the breaker and removed the old breaker with the danger tag still attached. Additionally, on September 28, a deficient clearance order for the Unit 1 polar crane was put in place to support maintenance, and the clearance order did not incorporate temporary plant configuration changes. The licensee entered both issues in the Corrective Action Program (CAP). The site performed a work stand down with switchyard workers to reinforce the procedural requirements following the first issue and with all operators qualified to prepare and approve clearance orders to communicate the second event, potential consequences, and procedural implementation shortfalls. The site also performed a review of all open temporary configuration changes with clearances to ensure equipment was properly tagged out.

The inspectors determined that the licensee's failure to implement the requirements of OP-AA-109-101, "Clearance and Tagging Program," was a performance deficiency. The inspectors reviewed IMC 0612, Appendix B, "Issue Screening," and determined that the issue was more than minor because, if left uncorrected, the performance deficiency could result in a more significant safety concern. Specifically, failure to implement the requirements of the protective tagging program could result in a direct challenge to nuclear safety through an initiating event, barrier degradation or damage to equipment necessary to mitigate an event. The inspectors determined that while the Initiating Events Cornerstone attributes of Equipment Performance and Human Error best addressed the specific performance deficiencies identified, more than one cornerstone was potentially affected since the performance deficiency affected programmatic control of equipment configuration. The inspectors utilized IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process," dated May 9, 2015 to evaluate the significance. After evaluating plant conditions at the time the examples occurred, the inspectors used Attachment 1, "Phase 1 Initial Screening and Characterization of Findings," Exhibit 2, "Initiating Events Screening Questions," and answered all of the questions such that the issue was screened as Green or very low safety significance. The common element to these two examples was the lack of familiarity of the individuals with the process and their understanding of the indications present. As a result, inspectors assigned a Human Performance cross-cutting aspect of Training (H.9). [Section 1R20]

Inspection Report# : [2015004](#) (pdf)

## **Mitigating Systems**

**Significance:**  Sep 30, 2016

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

### **DOST Flood Barrier Door Left Open**

Green. A finding of very low safety significance and an associated NCV of 10 CFR 50 Appendix B, Criterion V, "Instructions, Procedures and Drawings," was self-revealed on September 14, 2016, when a station employee discovered that the flood barrier door for the Unit 1 Train B (1B) diesel oil storage tank (DOST) was open and

unattended for three hours and six minutes. The watertight door was installed to protect the DOST fuel oil transfer pumps from the effects of a postulated failure of a circulating water expansion joint at the condenser water boxes in the turbine building, and the open door rendered the 1B diesel generator inoperable. An operator was dispatched to assess the door and, after finding no mechanical issue with the door, closed the door to restore operability to the 1B diesel generator. The issue was entered into the licensee's Corrective Action Program (CAP) as IR 02699674. The inspectors determined that the issue was more than minor because it was associated with the Configuration Control attribute of the Mitigating Systems Cornerstone and adversely impacted the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to close and dog the 1B DOST door impacted the availability of the 1B diesel generator during postulated events. The finding was determined to be of very low safety significance, or Green, in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," Appendix A, "The Significance Determination Process (SDP) For Findings at Power," because the inspectors answered the Exhibit 2 – Mitigating Systems Screening Question B as "Yes." The inspectors determined that the finding involved the degradation of equipment specifically designed to mitigate a flooding event and used Exhibit 4 of the same Appendix to evaluate the significance. The inspectors determined that with the flood door open, this single condition during a turbine building flood event would degrade two trains of a multi-train system. Specifically, the turbine building flood would impact the diesel fuel transfer pumps for both Unit 1 emergency diesel generators. Therefore, a Detailed Risk Evaluation was performed by a Senior Risk Analyst who concluded that the change in core damage frequency (delta CDF) associated with the finding was  $4.6E-10/\text{year}$  and since the total estimated delta CDF was less than  $1.0E-7/\text{year}$ , the issue screened as having very low safety significance (i.e., Green) using IMC 0609, Appendix H, "Containment Integrity Significance Determination Process," for large early release frequency (LERF). The inspectors assigned a cross-cutting aspect in the Avoiding Complacency element of the Human Performance Area (IMC 0310 H.12) to this finding because an individual accessing the room through the doorway failed to challenge the door to ensure proper closure in a manner that would have revealed the door was not properly latched.

Inspection Report# : [2016003](#) (pdf)

**Significance:**  Dec 31, 2015

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

### **Mispositioned Valve in Diesel Fuel Oil Transfer Pump Recirculation Flow Path**

• Green. A finding of very low safety significance (Green) and an associated NCV of Title 10 of the Code of Federal Regulations Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings was self-revealed on October 7, 2015, when the Unit 1 diesel oil storage tank (DOST) high level alarm and 1B DOST sump high-high alarms actuated as a result of a mispositioned valve in the diesel fuel oil (DO) system. Specifically, when administrative controls were removed from two valves in the DO system, one of the valves was not placed in its standby position resulting in fuel oil trains being cross-tied across divisions. The licensee entered this issue into its CAP. Corrective actions included closing the mispositioned valve and restoring fuel oil storage tank levels in both trains. The operators were briefed on the requirement to use controlled documents and using human performance error reduction techniques when identifying the restoration position of components under administrative controls.

The inspectors evaluated the performance deficiency in accordance with IMC 0612, Appendix B, "Issue Screening," and characterized the issue as more than minor because the performance deficiency is associated with the Mitigating Systems Cornerstone objective attribute of Configuration Control of operating equipment, and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems to respond to an initiating event. Specifically, mispositioning the 1DO055A so that the fuel oil trains were cross-tied created a flow path during operation of the 1A DG that transferred fuel oil out of the "A" train tanks to the "B" train tanks. In this instance, tank low level alarms were received and the senior reactor operators declared the 1A DG inoperable, but operators were able to terminate the event before the tank level reached actual TS minimum level. The inspectors determined the finding could be evaluated using the Significance Determination Process (SDP) in accordance with IMC 0609,

Significance Determination Process, Attachment 4, "Initial Screening and Characterization of Findings," dated June 19, 2012, and IMC 0609, Appendix A, "The SDP for Findings At-Power," dated June 19, 2012, Exhibit 2 – Mitigating Systems Screening Questions Section A. All questions were answered "No." Therefore, the finding screened as Green. The inspectors determined that this finding had an associated cross-cutting aspect in the area of Human Performance – Design Margins in that the supervisor assumed the open position was changed by the modification and did not use the appropriate rigor to identify the required position using controlled documents and thereby implementing the design requirements to maintain margin (H.6). [Section 1R19]

Inspection Report# : [2015004](#) (*pdf*)

---

## Barrier Integrity

**Significance:**  Dec 31, 2015

Identified By: NRC

Item Type: FIN Finding

### **Inaccurate Technical Basis for Operability Evaluation of Reactor Head Flange Damage**

Green. The NRC inspectors identified a finding of very low safety significance (Green) when licensee personnel failed to ensure accuracy of calculations used to support an operability evaluation of the Unit 1 reactor vessel head flange for the impression caused by an allen wrench trapped between the stud tensioner and the head flange during stud de-tensioning. The licensee entered this issue in its CAP as Issue Report 02559542. Corrective actions included a significant revision to the Operability Evaluation to address each of the inspector's concerns.

The finding was determined to be more than minor because it was associated with the Reactor Coolant System (RCS) Equipment and Barrier Performance attribute of the Barrier Integrity Cornerstone, and adversely affected the cornerstone objective of providing reasonable assurance that physical barriers RCS protect the public from radionuclide releases caused by accidents or events. Additionally, More than Minor Example 3.a of IMC 0612, Appendix E, "Examples of Minor Issues," was used to answer this more than minor screening question. Specifically, the licensee used incorrect area in the bearing stress calculation that, at the time of discovery, resulted in reasonable doubt of the operability as the bearing stress exceeded the allowable stress value used in the evaluation to preclude plastic deformation. In accordance with IMC 0609, "Significance Determination Process," Attachment 4, "Initial Characterization of Findings," dated June 19, 2012, Table 2, the RCS boundary issues need to be considered under the Initiating Event Cornerstone. Using Table 3, the inspectors determined the finding pertained to an event or degraded condition while the plant was in shutdown and, therefore, used IMC 0609, Appendix G "Shutdown Operations Significance Determination Process," dated May 9, 2014, for significance determination. The finding did not represent a loss of level control per the Criteria in Appendix G, Attachment 1. The inspectors reviewed Appendix G, Attachment 1, Exhibit 2, "Initiating Events Screening Questions." The inspectors answered "No" to Question A.1, and found all other questions to be not applicable and, therefore, concluded that the finding was of very low safety significance (Green). This finding had a cross-cutting aspect in Human Performance – Avoid Complacency because the licensee reviewer, expecting acceptable results, did not use appropriate rigor in evaluating possible errors. Specifically, the licensee did not expect a numerical error in the evaluation performed by the vendor and did not take expected actions to verify accuracy. (H.12) [Section 1R08]

Inspection Report# : [2015004](#) (*pdf*)

---

## Emergency Preparedness

---

## Occupational Radiation Safety

**Significance:**  Jun 30, 2016

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

### **Failure to Comply With Radiation Work Permit Requirements Resulting In An Unplanned Dose Rate Alarm**

Green. A finding of very low safety significance and an associated Non-Cited Violation (NCV) of Technical Specification 5.4.1 was self-revealed when an engineer violated a radiation work permit by entering an area that was outside of the scope of the radiation work permit (RWP), which resulted in the engineer receiving an unplanned electronic dosimeter dose rate alarm. After the engineer received the unplanned dose rate alarm, he immediately exited the area and reported the event to the radiation protection staff. The licensee entered this issue into their CAP as IR 02655195.

The inspectors determined that the performance deficiency was more than minor because the finding impacted the Program and Process attribute of the Occupational Radiation Safety Cornerstone, and adversely affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation. Specifically, the engineer, by entering an area that he was not briefed to enter on the radiation work permit, removed a barrier that was intended to prevent workers from receiving unexpected dose. The finding was determined to be of very low safety significance in accordance with Inspection Manual Chapter (IMC) 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," dated August 19, 2008. The violation was determined to be of very low safety significance (Green) because: (1) it did not involve as-low-as-reasonably-achievable (ALARA) planning or work controls; (2) there was no overexposure; (3) there was no substantial potential for an overexposure; and (4) the ability to assess dose was not compromised. The inspectors determined that the finding had a cross-cutting aspect in the Human Performance area of Challenging the Unknown [H.11] because the individual did not stop when faced with an uncertain condition. Specifically, risks were not evaluated and managed before proceeding. (Section 2RS1.6)

Inspection Report# : [2016002](#) (*pdf*)

---

## Public Radiation Safety

**Significance:**  Sep 30, 2016

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

### **Failure to Properly Block and Brace a Radioactive Shipment for Transport**

Green. A finding of very low safety significance and an associated NCV of 10 CFR 71.5(a) and 49 CFR 171.1(b)(12) was self-revealed when the licensee failed to properly block and brace a Radioactive Waste (Radwaste) Shipment that was shipped to a waste processing facility for disposal. The failure to properly block and brace the Radwaste Shipment caused a breach of the shipping package while in transit to the waste processing facility. When the shipment breach was discovered at the waste processing facility, contamination surveys were immediately conducted and it was determined that no loss of content had occurred during transportation. The surveys also determined that radiation dose limits from the package were below NRC and Department of Transportation (DOT) limits. The waste processing facility notified the licensee of the breach during transport and the licensee entered the event into their CAP as IR 02665985.

The inspectors determined that the issue was more than minor because it was associated with the Program and Process attribute of the Public Radiation Safety Cornerstone and adversely impacted the cornerstone objective of ensuring

adequate protection to public health and safety from exposure to radiation from routine civilian nuclear operations. Specifically, the breach of the transportation package by its content could lead to the inadvertent spread of radioactive contamination to the public domain if conditions had been slightly altered. The finding was determined to be of very low safety significance, or Green, in accordance with IMC 0609, Appendix D, "Public Radiation Safety Significance Determination Process," dated February 12, 2008, because the finding did not involve: (1) a radioactive shipment above radiation limits; (2) a certificate of compliance issue; (3) the failure to make emergency notifications; or (4) a low-level burial issue. A breach of the transportation package occurred during transit. However, the shipment contained less than a Type A quantity of material (LSA II shipment), and there was no loss of package contents or radioactive contamination. The inspectors assigned a cross-cutting aspect in the Resources element of the Human Performance Area (IMC 0310 H.1) to this finding due to inadequate procedures. (Section 2RS8.4)

Inspection Report# : [2016003](#) (*pdf*)

---

## Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

---

## Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

---

## Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

---

## Miscellaneous

Last modified : December 08, 2016