

**Enclosure 3**

**Reactor Oversight Process Task Force FAQ Log – July 15, 2015**

**Dated August 12, 2015**

## FAQ Log for July 15, 2015 ROP Working Group Meeting

FAQ No.	PI	Topic	Status	Plant/Co.	Point of Contact
15-02	IE03	Prairie Island Power Change December 2014	Introduced 06/17	Generic	Bryan Willard (Xcel)  Karla Stoedter (NRC)
15-03	MS	Unavailability Monitoring of Low-Risk Trains	Introduced 06/17.  Revised to address discussion on 06/17.	Generic	Roy Linthicum (Exelon)  TBD (NRC)

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**NEI 99-02 FAQ 15-02**  
**Prairie Island Power Change December 2014**

**Plant:** Prairie Island Nuclear Generating Station (PINGP) Unit 1  
**Date of Event:** 12/10/2014  
**Submittal Date:** 06/16/2015  
**Licensee Contact:** Bryan Willard  
Tel/email: 651-267-6829 / Bryan.Willard@xenuclear.com  
**NRC Contact:** Karla Stoedter  
Tel/email: 651-388-1121 x4219  
**Performance Indicator:** IE03 – Unplanned Power Changes per 7,000 Critical Hours  
**Site-Specific FAQ (see Appendix D)?** No [This is generic.]  
**FAQ to become effective:** When approved

**Question Section**

**NEI 99-02 Guidance needing interpretation (including page and line citation):**

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The 72-hour period between discovery of an off-normal condition and the corresponding change in power level is based on the typical time to assess the plant condition, and prepare, review, and approve the necessary work orders, procedures, and safety reviews, to effect a repair. The key element to be used in determining whether a power change should be counted as part of this indicator is the 72-hour period and not the extent of the planning that is performed between the discovery of the condition and initiation of the power change.

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If a condition is identified that is slowly degrading and the licensee prepares plans to reduce power when the condition reaches a predefined limit, and 72 hours have elapsed since the condition was first identified, the power change does not count. If however, the condition suddenly degrades beyond the predefined limits and requires rapid response, this situation would count. If the licensee has previously identified a slowly degraded off-normal condition but has not prepared plans recognizing the potential need to reduce power when the condition reaches predefined limits, then a sudden degradation of that condition requiring rapid response would constitute a new off-normal condition and therefore, a new time of discovery.

**Event or circumstances requiring guidance interpretation:**

On December 10, 2014, PINGP Unit 1 commenced a power reduction and initiated a forced outage in response to leakage through the 12 Reactor Coolant Pump (RCP) seal. See the timeline below for a description of the actions taken surrounding this event. Figure 1 shows the unidentified leakage rate during the time period of interest.

- 11/30/2014 0201 – Action Request (AR) 1457811 was initiated to identify 12 RCP #3 seal degradation.
  - This was found by an increasing trend in Unit 1 Reactor Coolant Drain Tank (RCDT) level rate of change, and a steady increase in pressure in the 12 RCP #3 seal cavity, which suggested that more flow was being diverted to the #3 seal.

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- An Operational Decision-Making Issue (ODMI) evaluation was requested under this AR on 12/02/2014. The purpose of this ODMI was to establish actions for operators once certain leakage thresholds were exceeded.
- 12/07/2014 0501 – AR 1458595 was initiated to identify that action levels were exceeded for the RCS Leakage Monitoring Program. This was closed to AR 1457811.
- 12/07/2014 0845 – NRC Resident was notified of issues with Unit 1 Reactor Coolant System (RCS) unidentified leakage and pending containment entry to investigate.
- 12/08/2014 1523 – AR 1458727 was initiated to document an increase in Unit 1 RCS unidentified leakage. This was closed to AR 1457811.
- 12/09/2014 – ODMI 1457811 was completed and signed by the Plant Manager.
- 12/10/2014 0901 – A second consecutive performance of the Unit 1 RCS Leakage Test resulted in unidentified leakage greater than 0.8 gallons per minute (GPM). This exceeded a threshold in ODMI 1457811, and it was decided to commence a shutdown of Unit 1 per 1C1.4, “Unit 1 Power Operation.” Procedure 1C1.4 is the normal operating procedure for Unit 1 above 15% rated power. When a shutdown is commenced, it is used for load decreases prior to entering 1C1.3, “Unit 1 Shutdown.”

For clarification, the ODMI process at PINGP serves to assist operations in evaluating certain trends and conditions. ODMI 1457811 was developed during the window between off-normal condition discovery and the corresponding change in power level, in order to assess the plant condition and ensure the safe operation of Unit 1.

The trending throughout this event was focused on unidentified leakage because the maximum allowable unidentified leakage to meet LCO 3.4.14 is 1.0 GPM. The maximum allowable identified leakage to meet LCO 3.4.14 is 10.0 GPM, and this limit was not challenged during this event.

The Unit 1 power reduction was reported as an unplanned power change per NEI 99-02 in the 4th quarter of 2014; however, PINGP is seeking to retract the unplanned power change.

**If licensee and NRC resident/region do not agree on the facts and circumstances, explain:**

The NRC Resident agrees with the description of the event. However, it is not clear from NEI 99-02 when the off-normal condition was first discovered and whether the licensee adequately prepared plans to reduce power.

**Potentially relevant FAQs:** None

**Response Section**

**Proposed Resolution of FAQ:**

The point of disagreement between the licensee and NRC inspector is on what constitutes “discovery”.

PINGP first identified the slowly degrading off-normal condition under AR 1457811 on 11/30/2014. This was ten days before the Unit 1 shutdown commenced. The ODMI was finalized the day before the

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shutdown. While other ARs were written concerning the increased rate of Unit 1 unidentified leakage, AR 1457811 remained the primary CAP entry that tracked key actions in the event troubleshooting process.

This situation did not degrade beyond predefined limits or require rapid response. Throughout the event, the maximum allowable unidentified leakage of 1.0 GPM, as defined in PINGP's Technical Specifications, was not exceeded. The decision to reduce power, aided by guidance in ODMI 1457811, was conservative in nature and provided for a safe transition of the unit to Mode 5. Since normal operating procedures were used to reduce power in Unit 1, a rapid response designated by use of abnormal operating procedure 1C1.4 AOP1, Rapid Power Reduction Unit 1, did not take place.

NEI 99-02 states that "the key element to be used in determining whether a power change should be counted as part of this indicator is the 72-hour period and not the extent of planning that is performed between the discovery of the condition and initiation of the power change." The initiation of AR 1457811 on 11/20/2015 identified the apparent degradation to the reactor coolant pump seal and constitutes "discovery" for the purposes of this indicator. The plant shutdown occurred on 12/10/2015, well in excess of the 72-hour period required prior to the power reduction. Therefore, the power reduction commenced on 12/10/2014 does not count as an Unplanned Power Change per NEI 99-02.

**If appropriate, provide proposed rewording of guidance for inclusion in next revision:**  
Not applicable.

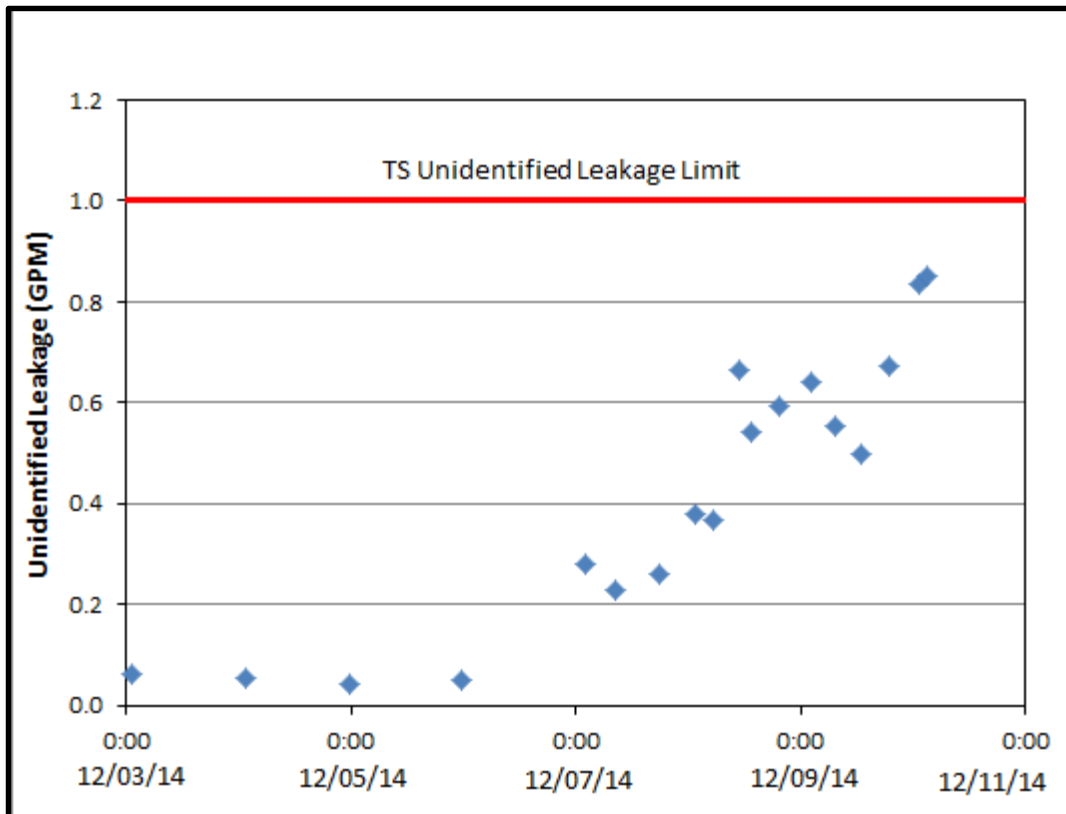


Figure 1 -- Unit 1 RCS Unidentified Leakage during from 12/03/14 through 12/10/14. Each data point was captured while performing SP 1001AA, Daily Reactor Coolant System Leakage Test. The off-normal condition was first discovered on 11/30/14 (AR 1457811) and the ODMI was signed on 12/9/14.

**NEI 99-02 FAQ 15-03**  
**Unavailability Monitoring of Low-Risk Trains**

**Plant:** Generic  
**Date of Event:** N/A  
**Submittal Date:** 06/16/2015  
**Licensee Contact:** Roy Linthicum **Tel/email:** [roy.linthicum@exeloncorp.com](mailto:roy.linthicum@exeloncorp.com)  
**NRC Contact:** TBD **Tel/email:** \_ \_ \_ \_ @nrc.gov  
**Performance Indicator:**

Mitigating System Performance Index (Emergency AC Power Systems) (MS06)  
Mitigating System Performance Index (High Pressure Injection Systems) (MS07)  
Mitigating System Performance Index (Heat Removal Systems) (MS08)  
Mitigating System Performance Index (Residual Heat Removal Systems) (MS09)  
Mitigating System Performance Index (Cooling Water Systems) (MS10)

**Site-Specific FAQ (Appendix D)?** No [This is generic]  
**FAQ requested to become effective:** When approved

**Question Section**

[This FAQ implements a whitepaper approved by the ROP Working Group in the spring of 2015. The whitepaper addressed the following question: Can low risk worth trains be excluded from monitoring based on a low Birnbaum value?]

**NEI 99-02, Rev. 7 Guidance needing interpretation (include page and line citation):**

F.1.1.2 Identification of Trains within the System

There is no allowance to exclude a train based on a low Birnbaum value, though there is exclusion for low risk valves and circuit breakers

**Event or circumstances requiring guidance interpretation:**

**Introduction/Background**

MSPI monitors URI and UAI for a rolling period of three years. NEI 99-02 section F 2.3.5 discusses Birnbaum importance as it relates the exclusion of some valves and circuit breakers from the requirement to monitor those components for failures. For

$$B = CDF*[FV/UR]_{max}$$

If the Birnbaum importance (B) of a component (adjusted for Common Cause failure and Initiating Event frequency) is less than 1.0E-06, it may be excluded from the requirement to monitor for failures. Currently, in NEI 99-02, there is no similar exclusion for monitoring the unavailability of trains or segments that have a low Birnbaum importance.

**Summary of Issues**

In a three year period, there are 26,280 hours. Throughout the industry, it is not unusual to see trains or segments that can incur tens, if not hundreds of thousands of unavailability hours and remain Green. This means that they could be unavailable over the entire monitoring period and not make the indicator go white. Similar to monitored components, one can calculate the Birnbaum importance of individual trains or segments:

$$B = CDF*[FVUAP/UAP]_{max}$$

Where FVUAP is a Basic Event in the PRA model and UAP is the Basic Event probability adjusted for Initiating Event frequency, if applicable.

The following was calculated from a plant's data. The plant name and names of the segments have been changed:

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Plant X Cooling Water Unavailability							
Segment	Segment <sub>A</sub>	Segment <sub>B</sub>	Segment <sub>C</sub>	Loop B	Loop A	Train B	Train A
CDF	1.07E-05	1.07E-05	1.07E-05	1.07E-05	1.07E-05	1.07E-05	1.07E-05
FV <sub>UAP</sub>	2.13E-03	9.54E-04	1.42E-03	3.62E-03	2.61E-03	1.98E-02	1.69E-02
UAP	1.18E-02	1.07E-02	1.18E-02	7.32E-04	7.32E-04	2.59E-03	2.59E-03
Birnbaum	1.93E-06	9.54E-07	1.29E-06	5.29E-05	3.82E-05	8.18E-05	6.98E-05
Hours to White	14,240	29,120	21,360	519	720	355	407

The hours to White in this table came from the plant's MSPI Margin report. This indicates that the hours to remain Green reaches the three year total of 26,280 when the Birnbaum importance is approximately 1E-06. Since the impact of the train or segment unavailability is added to other trains and URI to calculate MSPI, the impact of a train with a Birnbaum of 1E-06 can't be ignored.

**If licensee and NRC resident/region do not agree on the facts and circumstances explain:** N/A

**The Licensee's Position:** Industry recommends that any train or segment that has a Birnbaum of < 1E-07 be excluded from the requirement to monitor for unavailability.

**The NRC's Position:** TBD

**Potentially relevant existing FAQ numbers:** None

## Response Section

### Proposed Resolution of FAQ

Add a third bullet under Section F.1.1 of NEI 99-02 as follows:

- Identify trains/segments with an adjusted Birnbaum value of less than 1.0E-07 (these may be excluded from unavailability monitoring).

Add a new last paragraph under F.1.1.2 as follows:

#### Systems with no monitored Trains:

If all trains/segments within a system have been excluded, a pseudo train will be reported in CDE<sup>1</sup>. The train should be identified by the name of the system followed by the word pseudo (e.g., RHR pseudo). The following values should be applied to all pseudo trains:

FV = 0.0

UA = 1.0

Baseline planned unavailability = 0.0

Baseline unplanned unavailability = 0.0

Monthly Unavailability Hours (planned and unplanned) = 0

<sup>1</sup> CDE requires all systems to have at least 1 train to calculate MSPI values.

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Add a new Section F.1.3.5 to NEI 99-02 as follows:

**F 1.3.5. BIRNBAUM IMPORTANCE**

One of the rules used for determining the trains/segments to be monitored in this performance indicator is that licensees are given the option of excluding trains/segments with an adjusted Birnbaum importance less than 1.0E-07. This is an option, not a requirement. Thus the last two columns of Table G1 (“Adjusted Birnbaum Value” and “Monitored”) are required only if the licensee chooses to exclude trains/segments with low adjusted Birnbaum values. A licensee may choose to use this exclusion in one system without using it in any other system(s). To apply this screening rule the Birnbaum importance is calculated from the values derived in this section as:

$$B = CDF*[FV/UA]_{ind} = CDF*[FV/UA]_{max}$$

Ensure that the support system initiator correction (if applicable) is included in the Birnbaum value used to exclude components from monitoring.

In Section G.3, revise Table G1 as shown below.

**Table G 1 Unavailability Data HPSI (one table per system)**

Train	Basic Event Name	Basic Event Description	Basic Event Probability (UAP)	Basic Event FVUAP <sup>1</sup>	FVUAP/UAP	Adjusted Birnbaum Value <sup>1, 2</sup>	Monitored?2
A	1SIAP02- --- MP6CM	HPSI Pump A Unavailable Due to Mntc	3.20E-03	3.19E-03	9.97E-01	1.99E-6	Yes
B	1SIBP02-- --MP6CM	HPSI Pump B Unavailable Due to Mntc	3.20E-03	3.85E-03	1.20E+00	2.4E-06	Yes

Note 1. Adjusted for IEF correction if used

Note 2: These two columns are needed only if the licensee chooses the option of excluding trains/segments with an adjusted Birnbaum importance of less than 1.0E-07.

**NRC Response**

TBD