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## Brunswick 1 – Quarterly Performance Indicators

### 3Q/2017 Performance Indicators

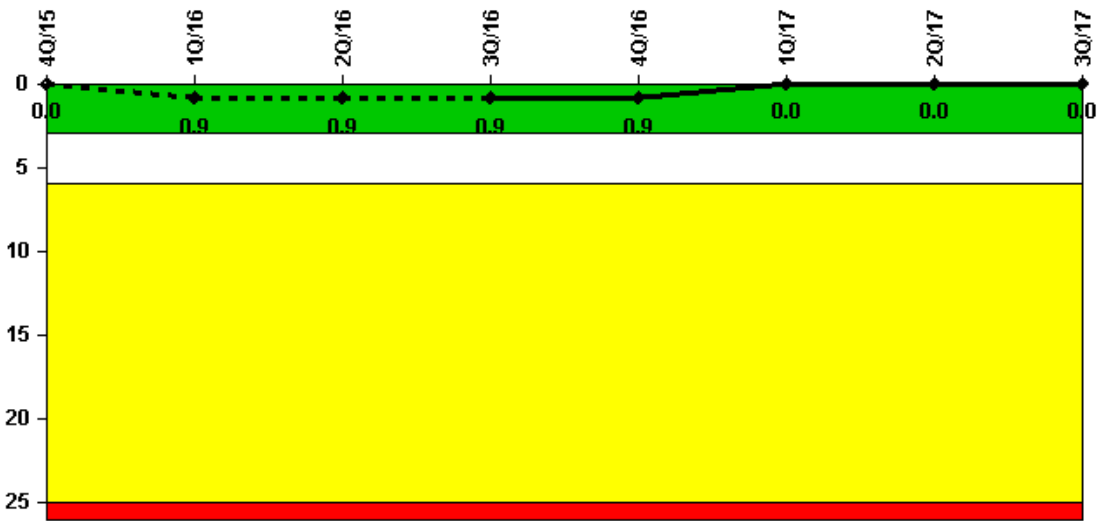
The solid trend line represents the current reporting period.

Licensee's General Comments: The Normalization Factor for both IDS and CCTV for Physical Security was updated for March 2017 and future months.

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- Unplanned Scrams (IE01)
- Unplanned Power Changes per 7000 Critical Hours (IE03)
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- Emergency AC Power Systems (MS06)
- High Pressure Injection Systems (MS07)
- Heat Removal Systems (MS08)
- Residual Heat Removal Systems (MS09)
- Cooling Water Systems (MS10)
- Reactor Coolant System Activity (BI01)
- Reactor Coolant System Leakage (BI02)
- Drill/Exercise Performance (EP01)
- Emergency Response Organization Drill Participation (EP02)
- Alert and Notification System Reliability (EP03)
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- Protected Area Equipment (PP01)

### Unplanned Scrams per 7000 Critical Hrs



Thresholds: White > 3.0 Yellow > 6.0 Red > 25.0

#### Notes

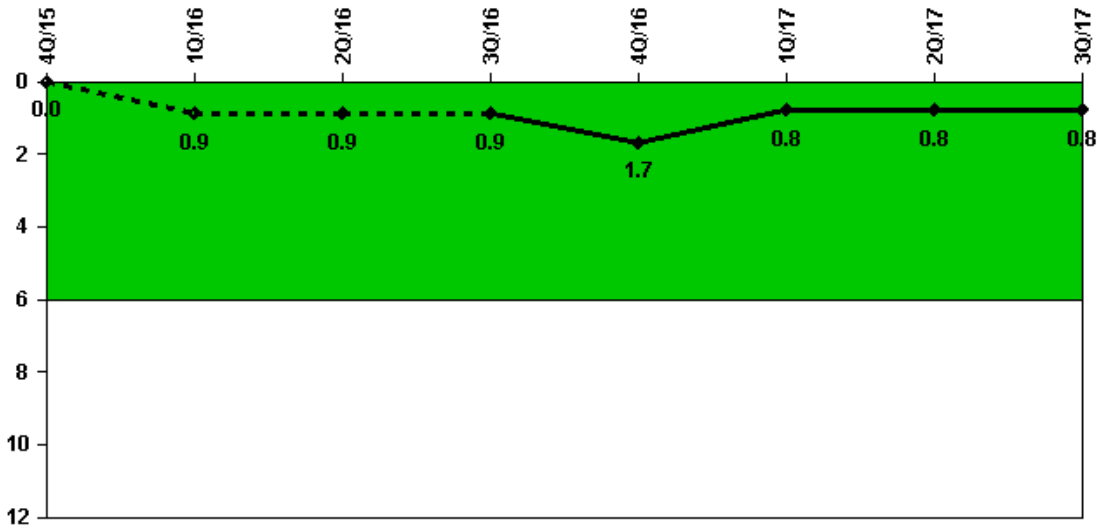
Unplanned Scrams per 7000 Critical Hrs	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17
Unplanned scrams	0	1.0	0	0	0	0	0	0
Critical hours	2127.2	1421.2	2184.0	2208.0	2209.0	2159.0	2127.4	2208.0

Indicator value	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17
	0	0.9	0.9	0.9	0.9	0	0	0

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Licensee Comments: none

### Unplanned Power Changes per 7000 Critical Hrs



Thresholds: White > 6.0

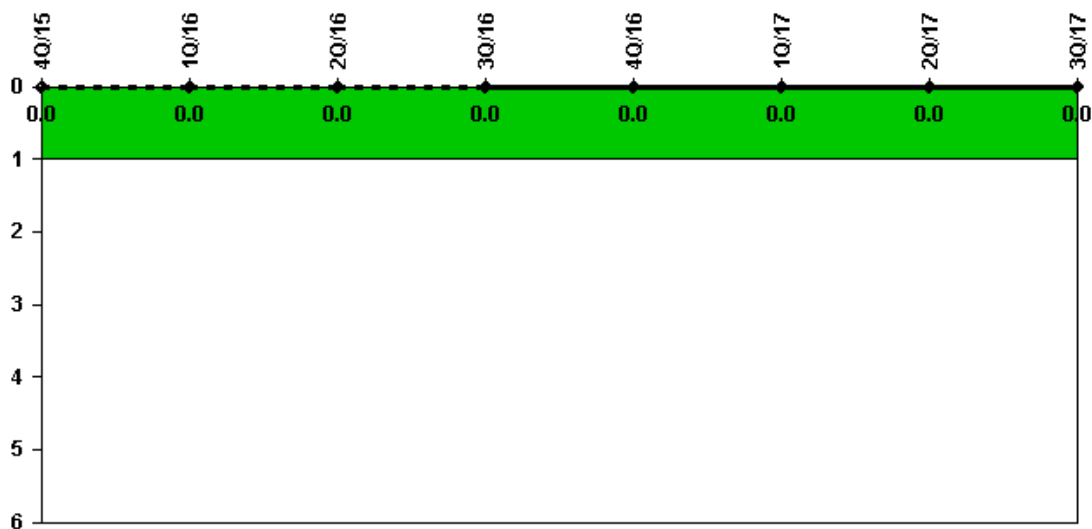
**Notes**

<b>Unplanned Power Changes per 7000 Critical Hrs</b>	<b>4Q/15</b>	<b>1Q/16</b>	<b>2Q/16</b>	<b>3Q/16</b>	<b>4Q/16</b>	<b>1Q/17</b>	<b>2Q/17</b>	<b>3Q/17</b>
Unplanned power changes	0	1.0	0	0	1.0	0	0	0
Critical hours	2127.2	1421.2	2184.0	2208.0	2209.0	2159.0	2127.4	2208.0
<b>Indicator value</b>	<b>0</b>	<b>0.9</b>	<b>0.9</b>	<b>0.9</b>	<b>1.7</b>	<b>0.8</b>	<b>0.8</b>	<b>0.8</b>

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Licensee Comments: none

**Unplanned Scrams with Complications**



Thresholds: White > 1.0

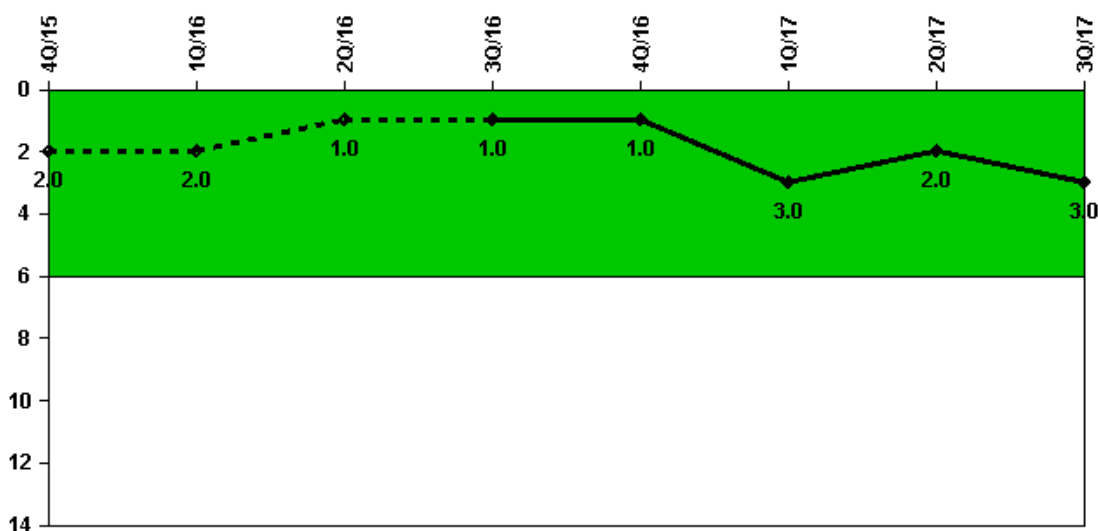
**Notes**

<b>Unplanned Scrams with Complications</b>	<b>4Q/15</b>	<b>1Q/16</b>	<b>2Q/16</b>	<b>3Q/16</b>	<b>4Q/16</b>	<b>1Q/17</b>	<b>2Q/17</b>	<b>3Q/17</b>
Scrams with complications	0	0	0	0	0	0	0	0
<b>Indicator value</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

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Licensee Comments: none

Safety System Functional Failures (BWR)



Thresholds: White > 6.0

Notes

Safety System Functional Failures (BWR)4Q/151Q/162Q/163Q/164Q/161Q/172Q/173Q/17

Safety System Functional Failures                   0   0   1   0   0   2   0   1

Indicator value                                   2   2   1   1   1   3   2   3



Licensee Comments:

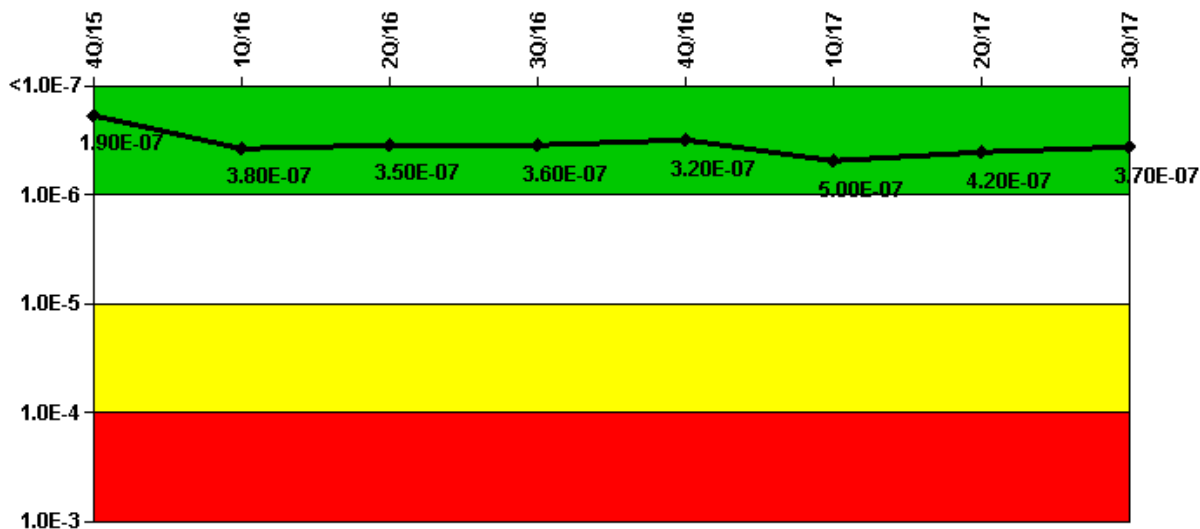
3Q/17: LER 1-2017-003 documented a SSFF of the Control Room AC and Control Room Emergency Ventilation (CREV) system when it was rendered inoperable. LER 1-2017-003 was submitted on Aug. 2, 2017. Because of the shared nature of the Control Rooms at Brunswick, the loss of safety function affects both Unit 1 and Unit 2.

1Q/17: LER 1-2017-001, submitted on March 22, 2017, reports a safety system functional failure (SSFF) of the on-site Emergency AC System. EDG 1 was inoperable coincident with other EDGs at various times. Since it was not known that EDG 1 was inoperable, only one SSFF is counted, consistent with NEI 99-02 guidance. Due to the shared electrical distribution system, this affects Units 1 and 2.

LER 1-2016-006, submitted on Feb. 13, 2017, reports a safety system functional failure (SSFF) of the Control Room Air Conditioning System. Due to the shared control room configuration, this affects Units 1 and 2.

2Q/16: LER 1-2016-002, dated 5/2/16, reported one event where EDG 3 failed to start and was considered inoperable. Therefore, this event was counted as a SSFF. This was applicable to both Unit 1 and 2.

### Mitigating Systems Performance Index, Emergency AC Power System



Thresholds: White > 1.00E-6 Yellow > 1.00E-5 Red > 1.00E-4

**Notes**

**Mitigating Systems Performance Index, Emergency AC Power System**

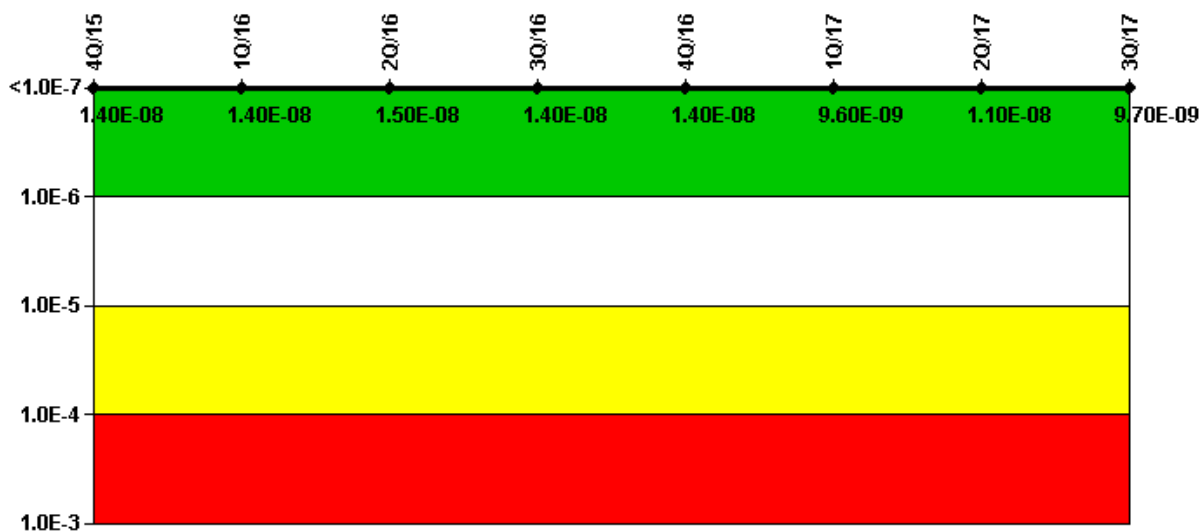
	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17
UAI (ΔCDF)	1.14E-07	1.68E-07	1.36E-07	1.42E-07	1.02E-07	1.37E-07	1.28E-07	1.44E-07
URI (ΔCDF)	7.27E-08	2.13E-07	2.14E-07	2.14E-07	2.14E-07	3.60E-07	2.90E-07	2.27E-07
PLE	NO	NO	NO	NO	NO	NO	NO	NO
<b>Indicator value</b>	<b>1.90E-07</b>	<b>3.80E-07</b>	<b>3.50E-07</b>	<b>3.60E-07</b>	<b>3.20E-07</b>	<b>5.00E-07</b>	<b>4.20E-07</b>	<b>3.70E-07</b>

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Licensee Comments:

1Q/16: Planned unavailability hours were adjusted for March 2016 on the Emergency Diesel Generators due to double counting of hours that was discovered during a review of Operations logs and the CDE database. This adjustment did not affect the color of the EAC MPSI indicator.

### Mitigating Systems Performance Index, High Pressure Injection System



Thresholds: White > 1.00E-6 Yellow > 1.00E-5 Red > 1.00E-4

**Notes**

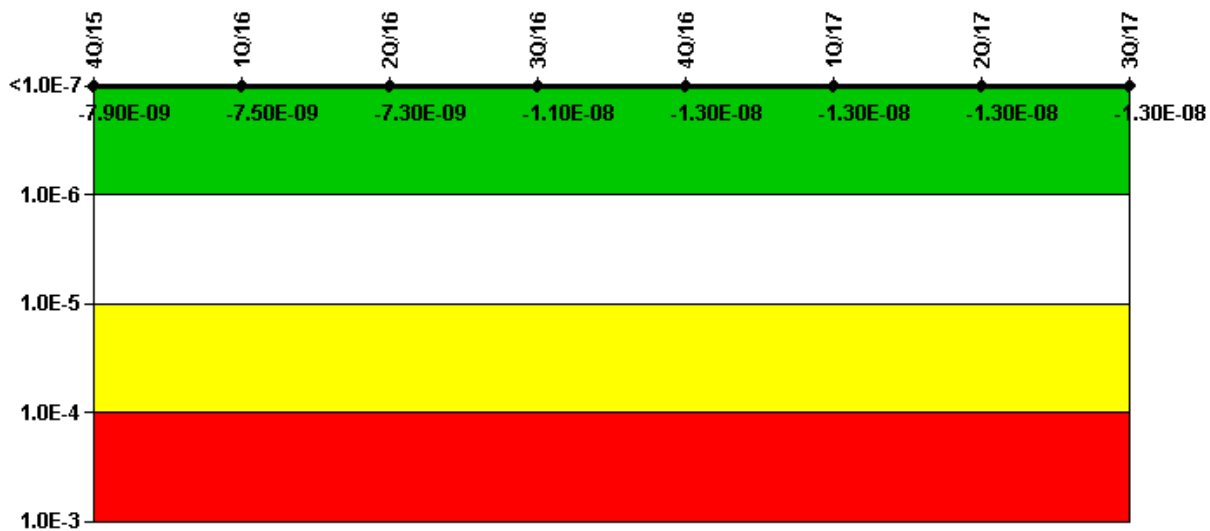
**Mitigating Systems Performance Index, High Pressure Injection System**

	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17
UAI ( $\Delta$ CDF)	6.43E-09	6.91E-09	7.34E-09	6.45E-09	6.44E-09	2.38E-09	3.44E-09	2.42E-09
URI ( $\Delta$ CDF)	7.25E-09	7.25E-09	7.25E-09	7.25E-09	7.25E-09	7.25E-09	7.25E-09	7.25E-09
PLE	NO	NO	NO	NO	NO	NO	NO	NO
<b>Indicator value</b>	<b>1.40E-08</b>	<b>1.40E-08</b>	<b>1.50E-08</b>	<b>1.40E-08</b>	<b>1.40E-08</b>	<b>9.60E-09</b>	<b>1.10E-08</b>	<b>9.70E-09</b>

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Licensee Comments: none

### Mitigating Systems Performance Index, Heat Removal System



Thresholds: White > 1.00E-6 Yellow > 1.00E-5 Red > 1.00E-4

**Notes**

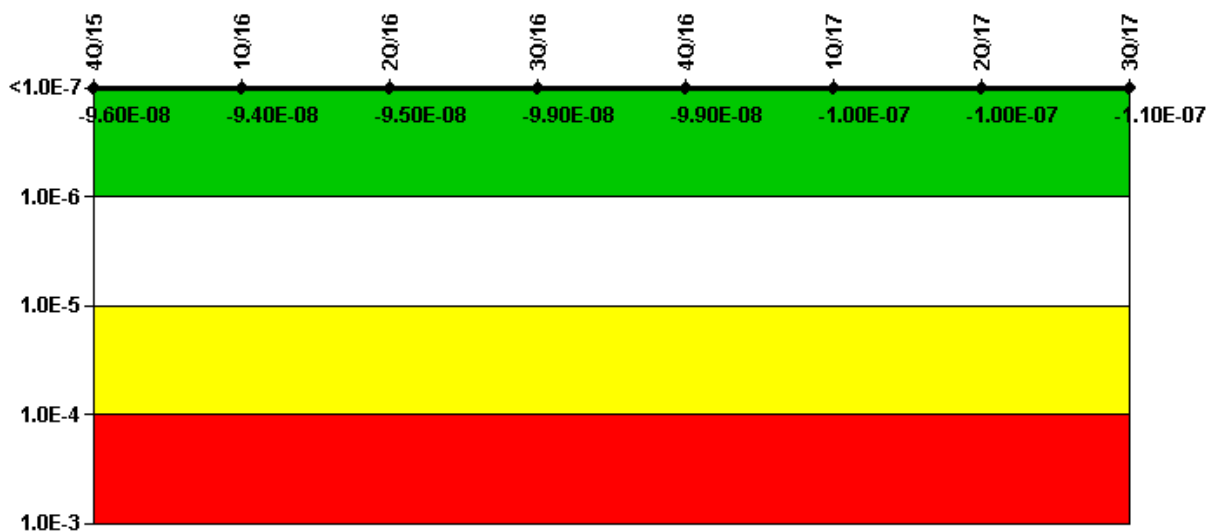
**Mitigating Systems Performance Index, Heat Removal System**

	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17
UAI ( $\Delta$ CDF)	2.26E-09	2.64E-09	2.91E-09	-3.76E-10	-3.25E-09	-3.25E-09	-3.25E-09	-3.25E-09
URI ( $\Delta$ CDF)	-1.02E-08	-1.02E-08	-1.02E-08	-1.02E-08	-1.02E-08	-1.02E-08	-1.02E-08	-1.02E-08
PLE	NO	NO	NO	NO	NO	NO	NO	NO
<b>Indicator value</b>	<b>-7.90E-09</b>	<b>-7.50E-09</b>	<b>-7.30E-09</b>	<b>-1.10E-08</b>	<b>-1.30E-08</b>	<b>-1.30E-08</b>	<b>-1.30E-08</b>	<b>-1.30E-08</b>

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Licensee Comments: none

### Mitigating Systems Performance Index, Residual Heat Removal System



Thresholds: White > 1.00E-6 Yellow > 1.00E-5 Red > 1.00E-4

**Notes**

**Mitigating Systems Performance Index, Residual Heat Removal System**

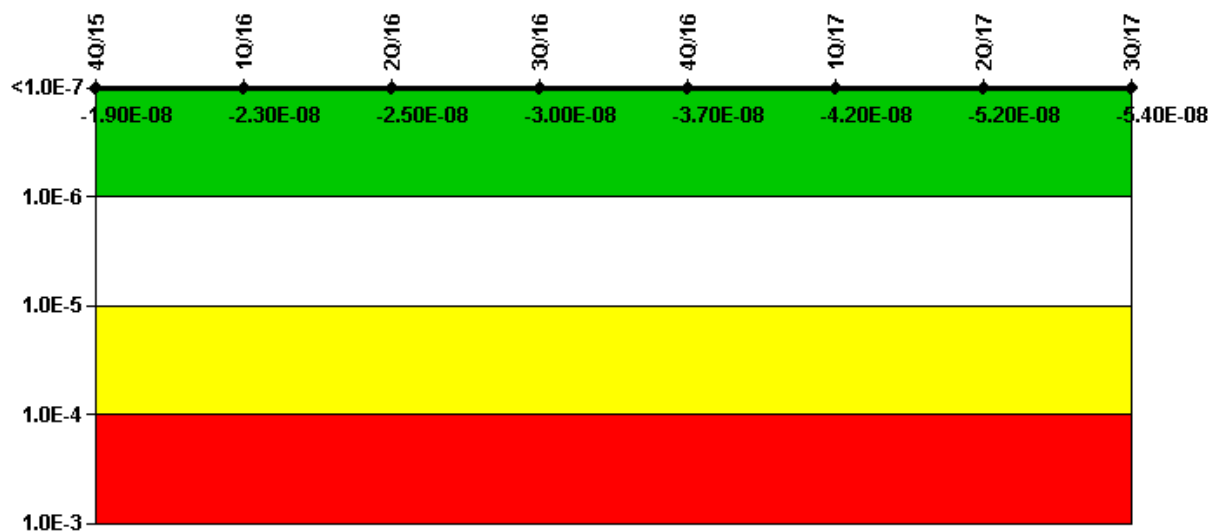
	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17
UAI ( $\Delta$ CDF)	-2.45E-08	-2.26E-08	-2.33E-08	-2.74E-08	-2.77E-08	-2.95E-08	-2.98E-08	-3.45E-08
URI ( $\Delta$ CDF)	-7.13E-08	-7.13E-08	-7.13E-08	-7.13E-08	-7.13E-08	-7.13E-08	-7.13E-08	-7.13E-08
PLE	NO	NO	NO	NO	NO	NO	NO	NO
<b>Indicator value</b>	<b>-9.60E-08</b>	<b>-9.40E-08</b>	<b>-9.50E-08</b>	<b>-9.90E-08</b>	<b>-9.90E-08</b>	<b>-1.00E-07</b>	<b>-1.00E-07</b>	<b>-1.10E-07</b>

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Licensee Comments: none



### Mitigating Systems Performance Index, Cooling Water Systems



Thresholds: White > 1.00E-6 Yellow > 1.00E-5 Red > 1.00E-4

#### Notes

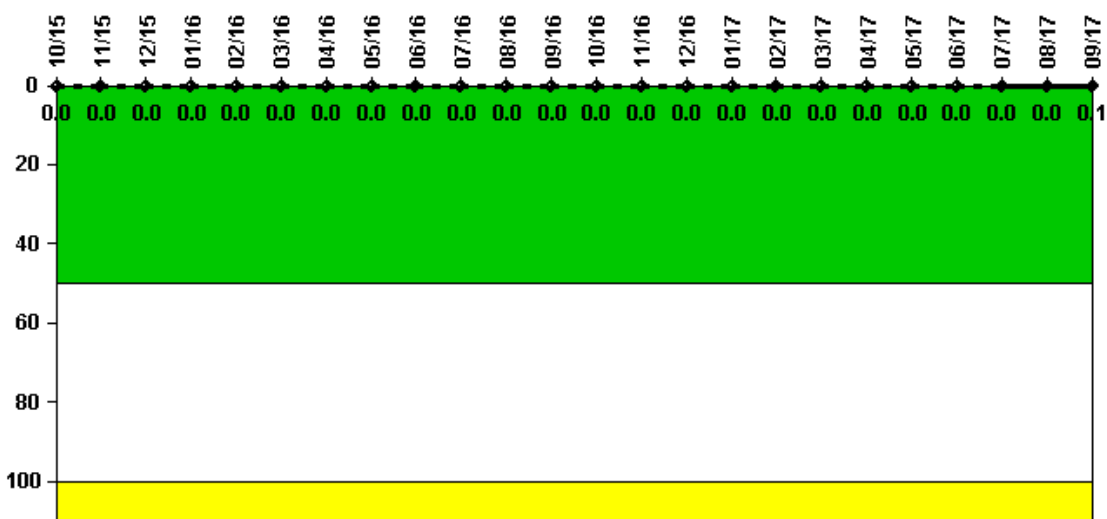
#### Mitigating Systems Performance Index, Cooling Water Systems

	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17
UAI ( $\Delta$ CDF)	-4.59E-09	-8.56E-09	-9.59E-09	-1.44E-08	-2.18E-08	-2.64E-08	-2.71E-08	-2.92E-08
URI ( $\Delta$ CDF)	-1.48E-08	-1.48E-08	-1.56E-08	-1.56E-08	-1.56E-08	-1.56E-08	-2.45E-08	-2.46E-08
PLE	NO	NO	NO	NO	NO	NO	NO	NO
<b>Indicator value</b>	<b>-1.90E-08</b>	<b>-2.30E-08</b>	<b>-2.50E-08</b>	<b>-3.00E-08</b>	<b>-3.70E-08</b>	<b>-4.20E-08</b>	<b>-5.20E-08</b>	<b>-5.40E-08</b>

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Licensee Comments: none

### Reactor Coolant System Activity



Thresholds: White > 50.0 Yellow > 100.0

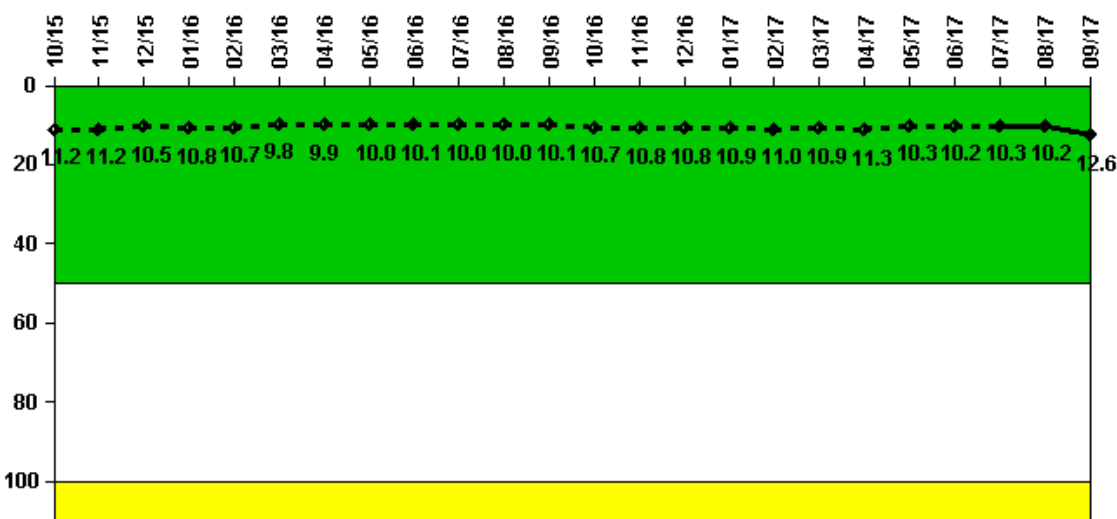
#### Notes

Reactor Coolant System Activity	10/15	11/15	12/15	1/16	2/16	3/16	4/16	5/16	6/16	7/16	8/16	9/16
Maximum activity	0.000038	0.000038	0.000038	0.000036	0.000036	0.000035	0.000033	0.000029	0.000043	0.000031	0.000035	0.000034
Technical specification limit	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Indicator value	0	0	0	0	0	0	0	0	0	0	0	0
Reactor Coolant System Activity	10/16	11/16	12/16	1/17	2/17	3/17	4/17	5/17	6/17	7/17	8/17	9/17
Maximum activity	0.000029	0.000036	0.000027	0.000026	0.000029	0.000035	0.000033	0.000033	0.000034	0.000035	0.000038	0.000156
Technical specification limit	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Indicator value	0	0	0	0	0	0	0	0	0	0	0	0.1

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Licensee Comments: none

### Reactor Coolant System Leakage



Thresholds: White > 50.0 Yellow > 100.0

#### Notes

Reactor Coolant System Leakage	10/15	11/15	12/15	1/16	2/16	3/16	4/16	5/16	6/16	7/16	8/16	9/16
Maximum leakage	2.800	2.790	2.620	2.690	2.680	2.440	2.470	2.510	2.520	2.510	2.510	2.520
Technical specification limit	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0

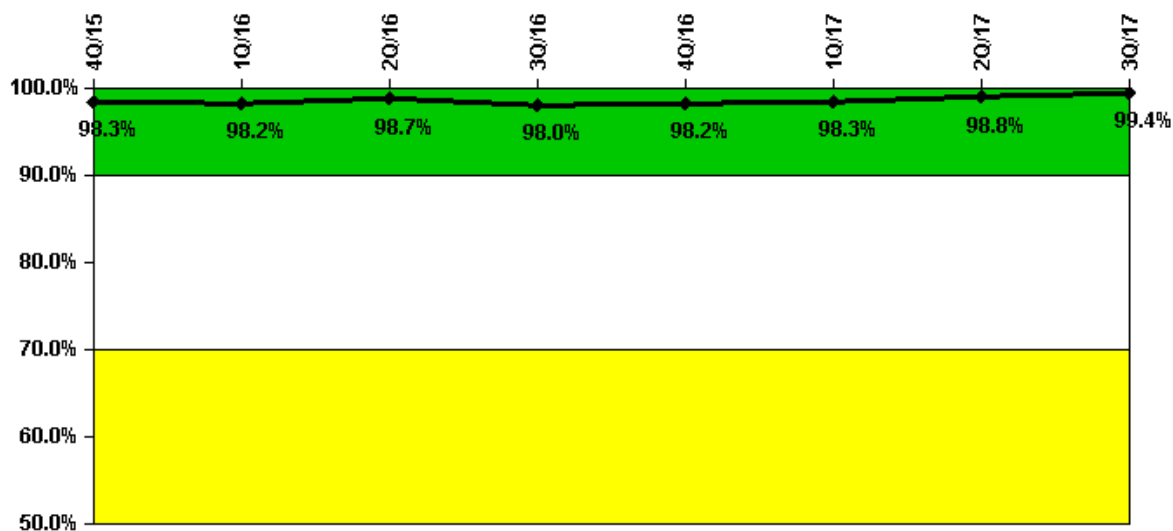
<b>Indicator value</b>	<b>11.2</b>	<b>11.2</b>	<b>10.5</b>	<b>10.8</b>	<b>10.7</b>	<b>9.8</b>	<b>9.9</b>	<b>10.0</b>	<b>10.1</b>	<b>10.0</b>	<b>10.0</b>	<b>10.1</b>
Reactor Coolant System Leakage	10/16	11/16	12/16	1/17	2/17	3/17	4/17	5/17	6/17	7/17	8/17	9/17
Maximum leakage	2.680	2.700	2.710	2.730	2.750	2.730	2.830	2.570	2.550	2.580	2.560	3.150
Technical specification limit	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0

<b>Indicator value</b>	<b>10.7</b>	<b>10.8</b>	<b>10.8</b>	<b>10.9</b>	<b>11.0</b>	<b>10.9</b>	<b>11.3</b>	<b>10.3</b>	<b>10.2</b>	<b>10.3</b>	<b>10.2</b>	<b>12.6</b>
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Licensee Comments: none

### Drill/Exercise Performance



Thresholds: White < 90.0% Yellow < 70.0%

#### Notes

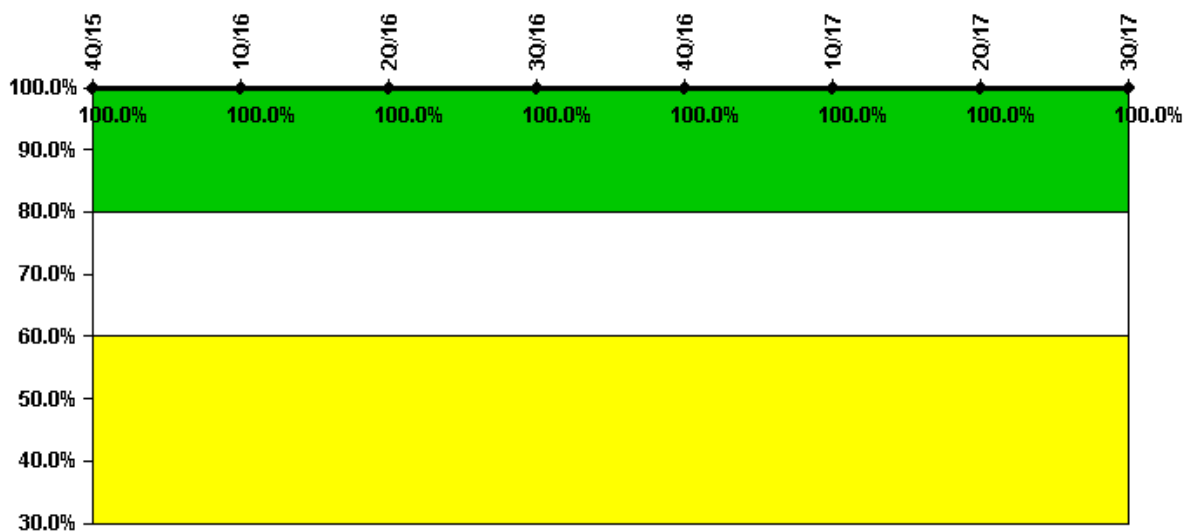
Drill/Exercise Performance	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17
Successful opportunities	22.0	8.0	9.0	29.0	35.0	23.0	8.0	25.0
Total opportunities	22.0	8.0	9.0	30.0	35.0	23.0	8.0	25.0

**Indicator value**                    **98.3% 98.2% 98.7% 98.0% 98.2% 98.3% 98.8% 99.4%**

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Licensee Comments: none

### ERO Drill Participation



Thresholds: White < 80.0% Yellow < 60.0%

#### Notes

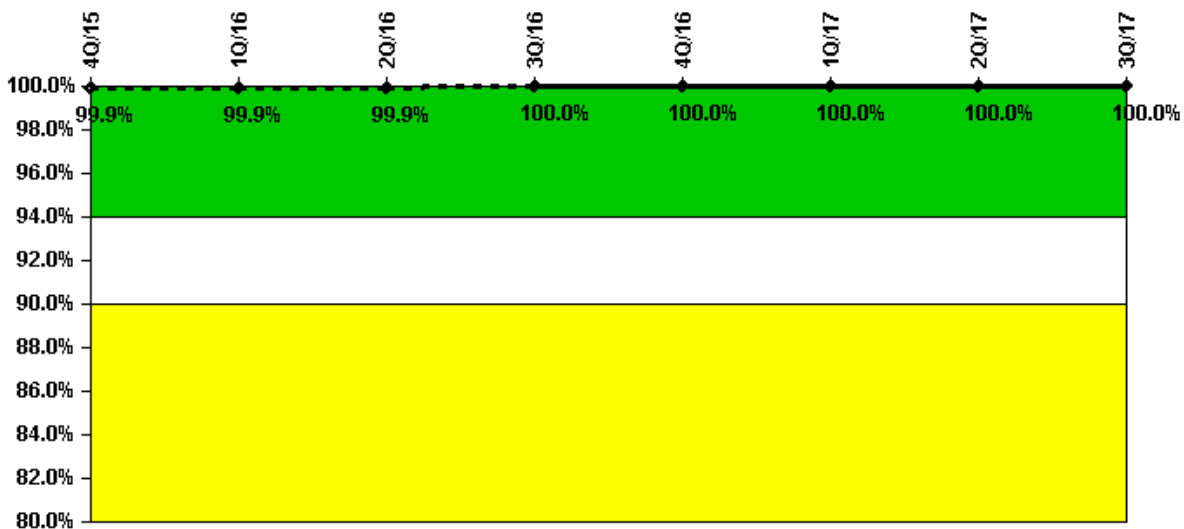
ERO Drill Participation	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17
Participating Key personnel	112.0	108.0	102.0	109.0	112.0	102.0	97.0	165.0
Total Key personnel	112.0	108.0	102.0	109.0	112.0	102.0	97.0	165.0

**Indicator value**                    **100.0% 100.0% 100.0% 100.0% 100.0% 100.0% 100.0% 100.0%**

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Licensee Comments: none

### Alert & Notification System



Thresholds: White < 94.0% Yellow < 90.0%

**Notes**

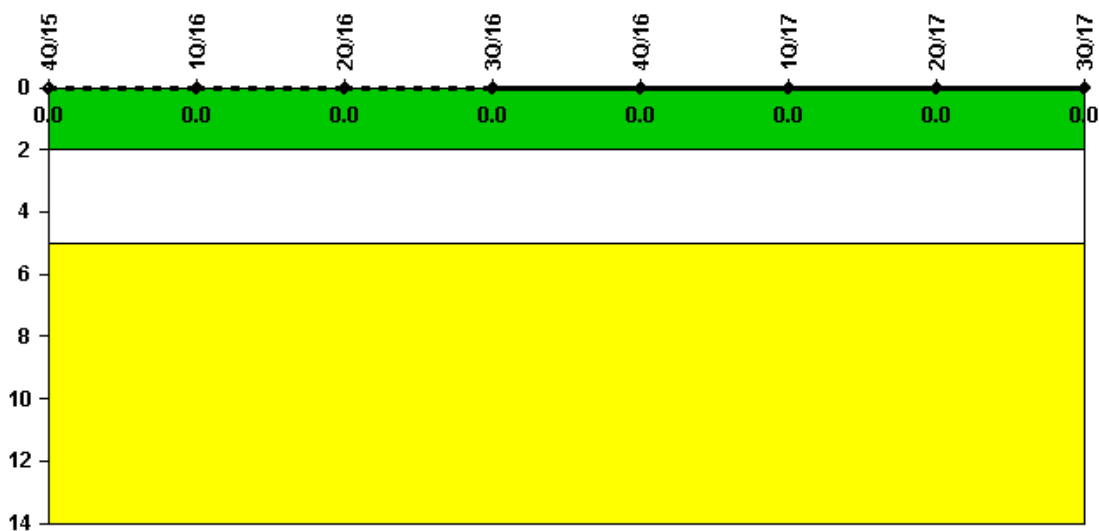
Alert & Notification System	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17
Successful siren-tests	570	532	532	532	532	532	532	532
Total sirens-tests	570	532	532	532	532	532	532	532

**Indicator value**                    99.9% 99.9% 99.9% 100.0% 100.0% 100.0% 100.0% 100.0%

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Licensee Comments: none

### Occupational Exposure Control Effectiveness



Thresholds: White > 2.0 Yellow > 5.0

#### Notes

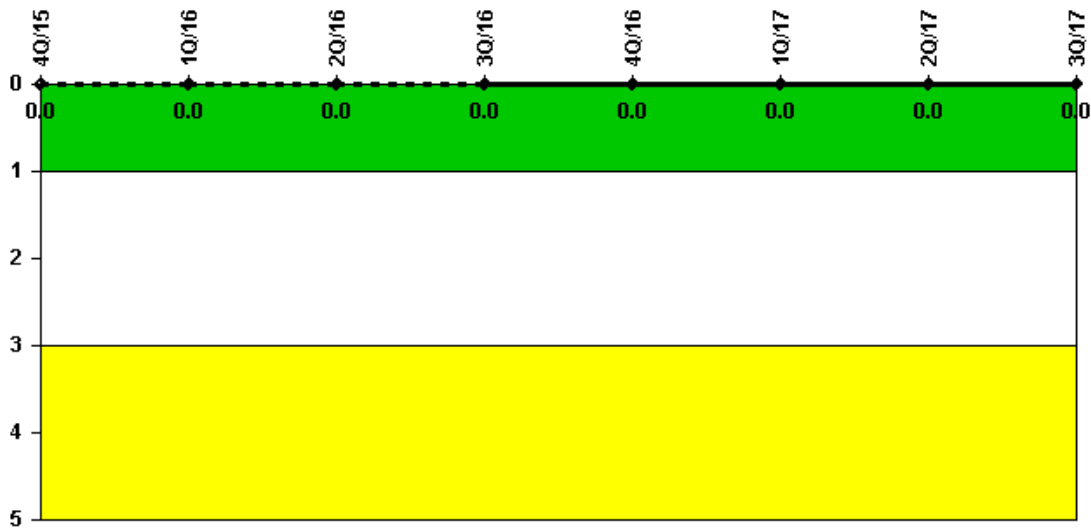
#### Occupational Exposure Control Effectiveness 4Q/15 1Q/16 2Q/16 3Q/16 4Q/16 1Q/17 2Q/17 3Q/17

High radiation area occurrences	0	0	0	0	0	0	0	0
Very high radiation area occurrences	0	0	0	0	0	0	0	0
Unintended exposure occurrences	0	0	0	0	0	0	0	0
<b>Indicator value</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

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Licensee Comments: none

### RETS/ODCM Radiological Effluent



Thresholds: White > 1.0 Yellow > 3.0

#### Notes

#### RETS/ODCM Radiological Effluent 4Q/15 1Q/16 2Q/16 3Q/16 4Q/16 1Q/17 2Q/17 3Q/17

RETS/ODCM occurrences                    0    0    0    0    0    0    0    0

**Indicator value**                            0    0    0    0    0    0    0    0

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Licensee Comments: none

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.

*Current data as of: October 31, 2017*

*Page Last Reviewed/Updated Monday, November 06, 2017*