



Home > Nuclear Reactors > Operating Reactors > Reactor Oversight Process > Plant Summaries > Waterford 3 > Quarterly Performance Indicators

## Waterford 3 – Quarterly Performance Indicators

### 3Q/2017 Performance Indicators

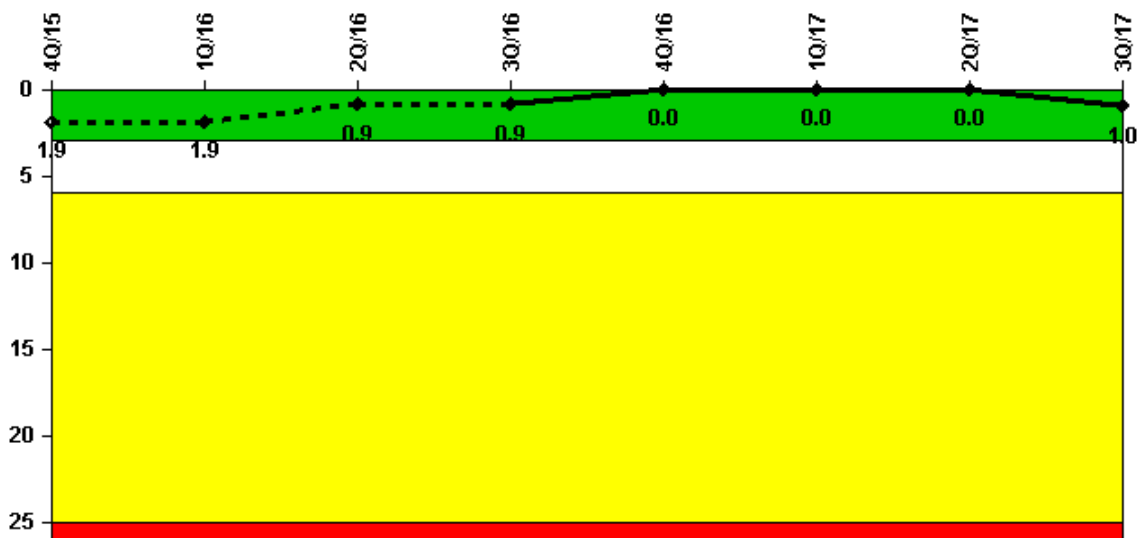
The solid trend line represents the current reporting period.

Licensee's General Comments: none

On this page:

- Unplanned Scrams (IE01)
- Unplanned Power Changes per 7000 Critical Hours (IE03)
- Unplanned Scrams with Complications (IE04)
- Safety System Functional Failures (MS05)
- 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)
- Occupational Exposure Control Effectiveness (OR01)
- RETS/OCDM Radiological Effluent Occurrence (PR01)
- Protected Area Equipment (PP01)

### Unplanned Scrams per 7000 Critical Hrs



Thresholds: White > 3.0 Yellow > 6.0 Red > 25.0

#### Notes

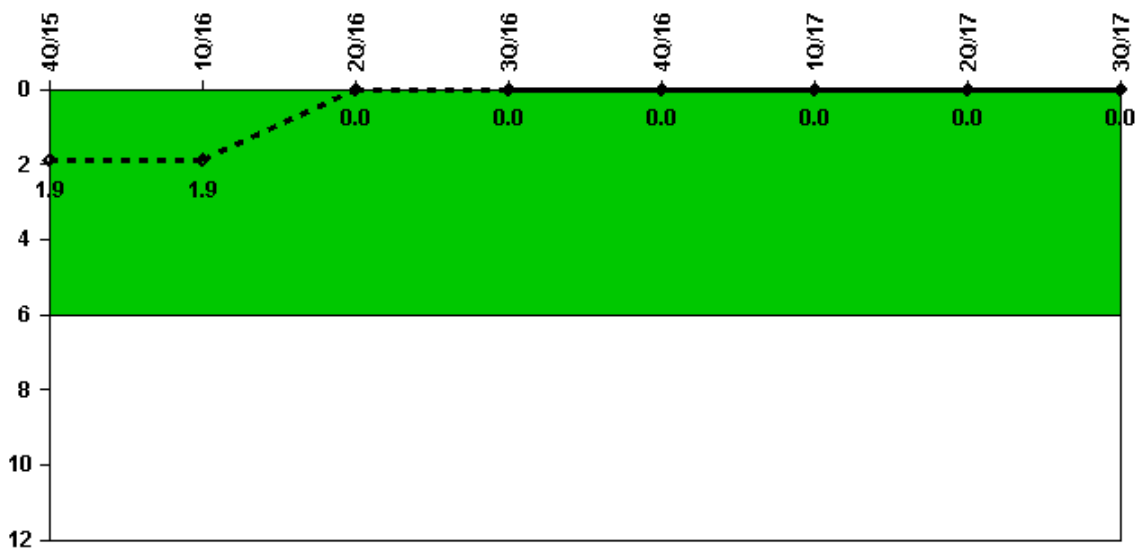
Unplanned Scrams per 7000 Critical Hrs	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17
Unplanned scrams	1.0	0	0	0	0	0	0	1.0
Critical hours	929.5	2183.0	2184.0	2208.0	2067.3	2159.0	1046.0	1922.6

Indicator value	1.9	1.9	0.9	0.9	0	0	0	1.0
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Licensee Comments: none

### Unplanned Power Changes per 7000 Critical Hrs



Thresholds: White > 6.0

**Notes**

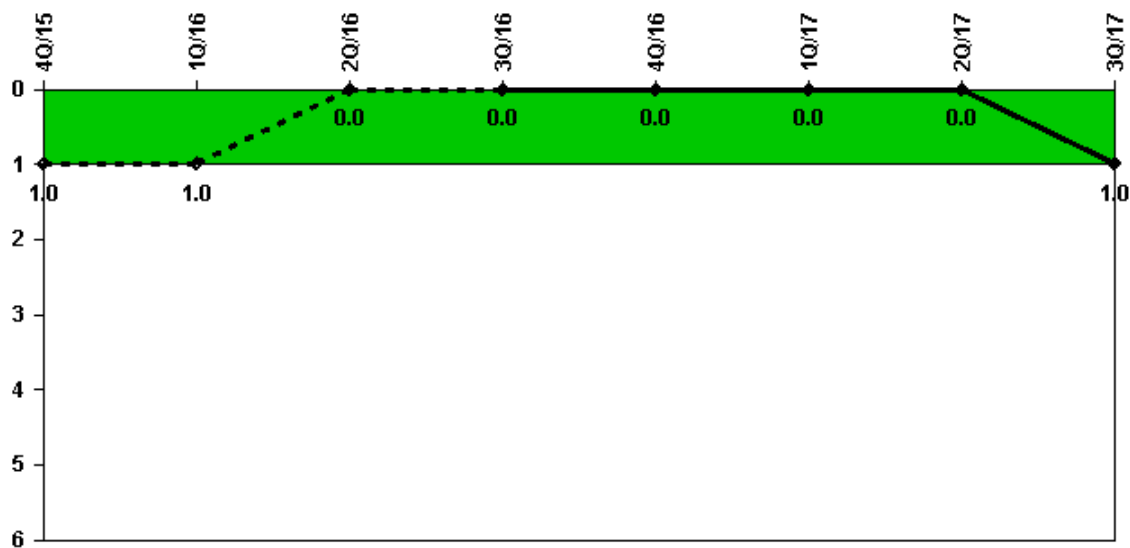
Unplanned Power Changes per 7000 Critical Hrs	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17
Unplanned power changes	0	0	0	0	0	0	0	0
Critical hours	929.5	2183.0	2184.0	2208.0	2067.3	2159.0	1046.0	1922.6

Indicator value	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17
	1.9	1.9	0	0	0	0	0	0

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Licensee Comments: none

### Unplanned Scrams with Complications



Thresholds: White > 1.0

#### Notes

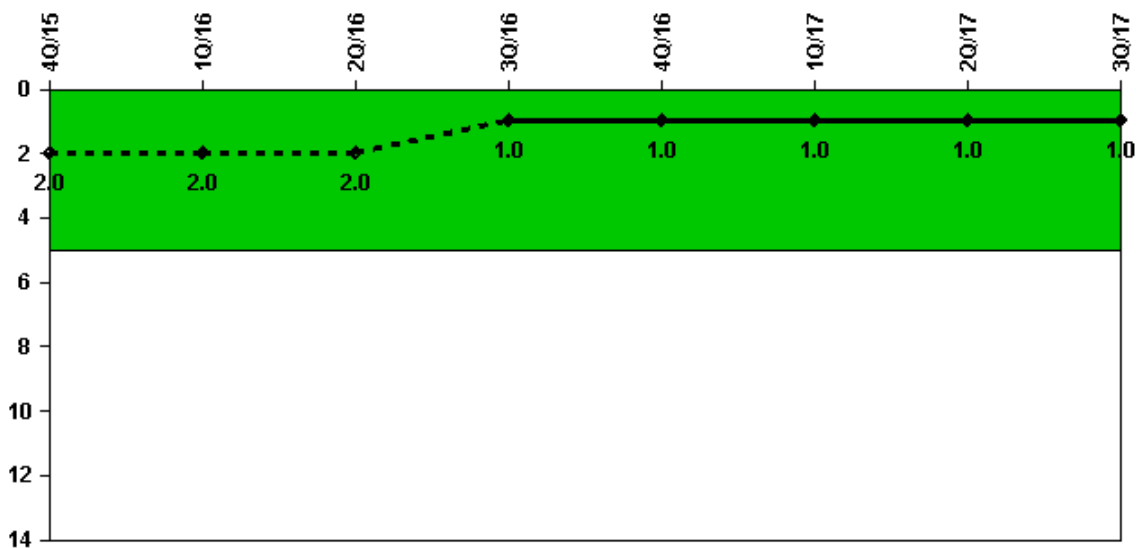
Unplanned Scrams with Complications	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17
Scrams with complications	0	0	0	0	0	0	0	1.0

**Indicator value** 1.0 1.0 0.0 0.0 0.0 0.0 0.0 1.0

▲ TOP

Licensee Comments: none

### Safety System Functional Failures (PWR)



Thresholds: White > 5.0

**Notes**

Safety System Functional Failures (PWR)	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17
Safety System Functional Failures	2	2	2	1	1	1	1	1

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

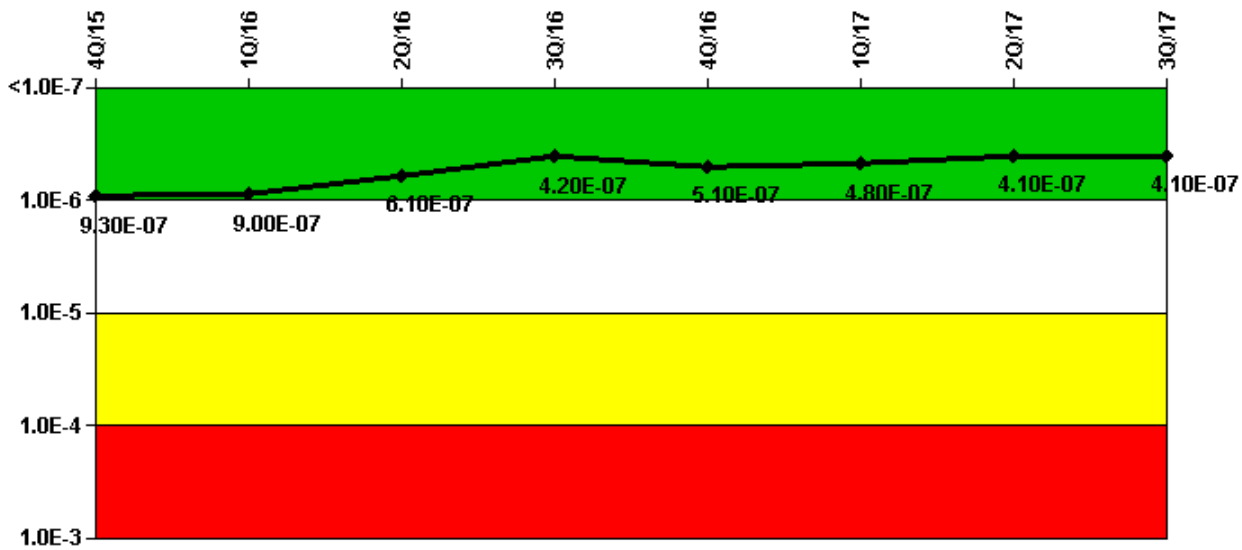
TOP

Licensee Comments:

4Q/16: LER 2016-002-00 reported 10/11/2016 - Incident occurred August 12th 2016.

4Q/15: LER 2015-007-00 issued 10/23/2015. On 8/16/2015, Both A & B EDG declared inoperable, entry into TS 3.8.1.1 action f. - EDG A was declared inoperable following a trip on generator differential due to failed current transformer. Then EDG B, which was subsequently started per TS 3.8.1.1 action b(1), was declared inoperable due to exhaust fan not starting when diesel was started then TS 3.8.1.1 action f was entered.

### 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**

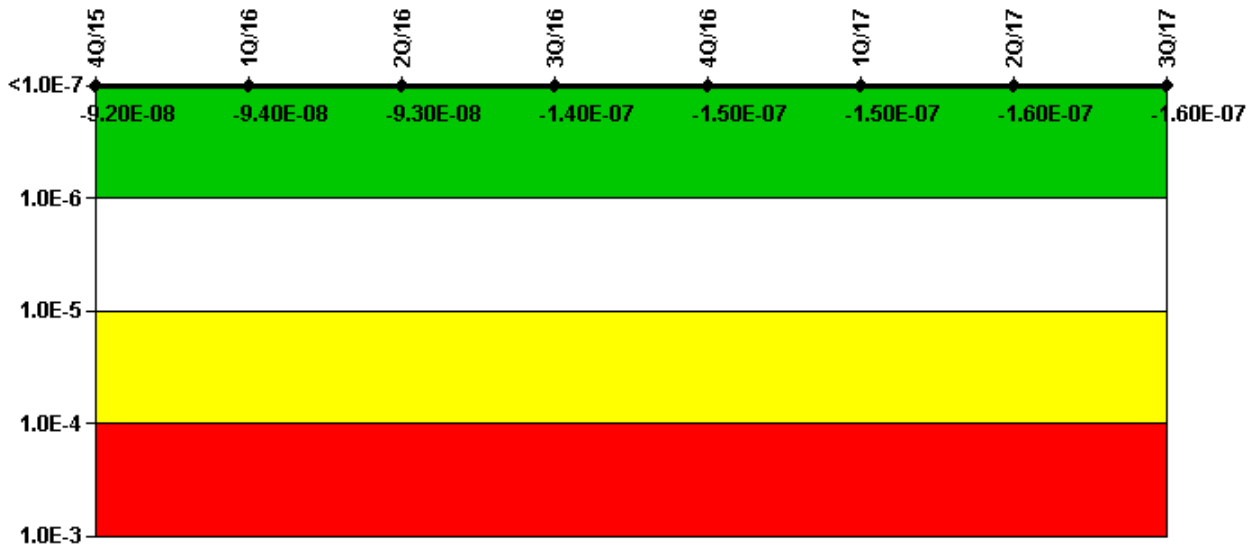
	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17
UAI (ΔCDF)	5.71E-07	5.55E-07	7.02E-07	1.61E-07	2.37E-07	1.56E-07	7.42E-08	7.74E-08
URI (ΔCDF)	3.56E-07	3.49E-07	-9.46E-08	2.54E-07	2.78E-07	3.28E-07	3.38E-07	3.35E-07
PLE	NO	NO	NO	NO	NO	NO	NO	NO
<b>Indicator value</b>	<b>9.30E-07</b>	<b>9.00E-07</b>	<b>6.10E-07</b>	<b>4.20E-07</b>	<b>5.10E-07</b>	<b>4.80E-07</b>	<b>4.10E-07</b>	<b>4.10E-07</b>

▲ TOP

Licensee Comments:

- 3Q/17: Risk Cap Invoked.
- 2Q/17: Risk Cap Invoked.
- 1Q/17: Risk Cap Invoked.
- 4Q/16: Risk Cap Invoked. Changed PRA Parameter(s).
- 4Q/16: Risk Cap Invoked.
- 3Q/16: Risk Cap Invoked. Changed PRA Parameter(s).
- 3Q/16: Risk Cap Invoked. Changed PRA Parameter(s).
- 2Q/16: Risk Cap Invoked.
- 1Q/16: Risk Cap Invoked. The Generic Common Cause Failure (CCF) Factors applied to the Emergency Diesel Generator (EDG) runtime failure Birnbaum were not correct. The incorrect value of 1.0 should be changed to 1.25 per the guidance in NEI 99-02 Rev. 7. Ref. EC-63198.
- 4Q/15: Risk Cap Invoked.

### 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**

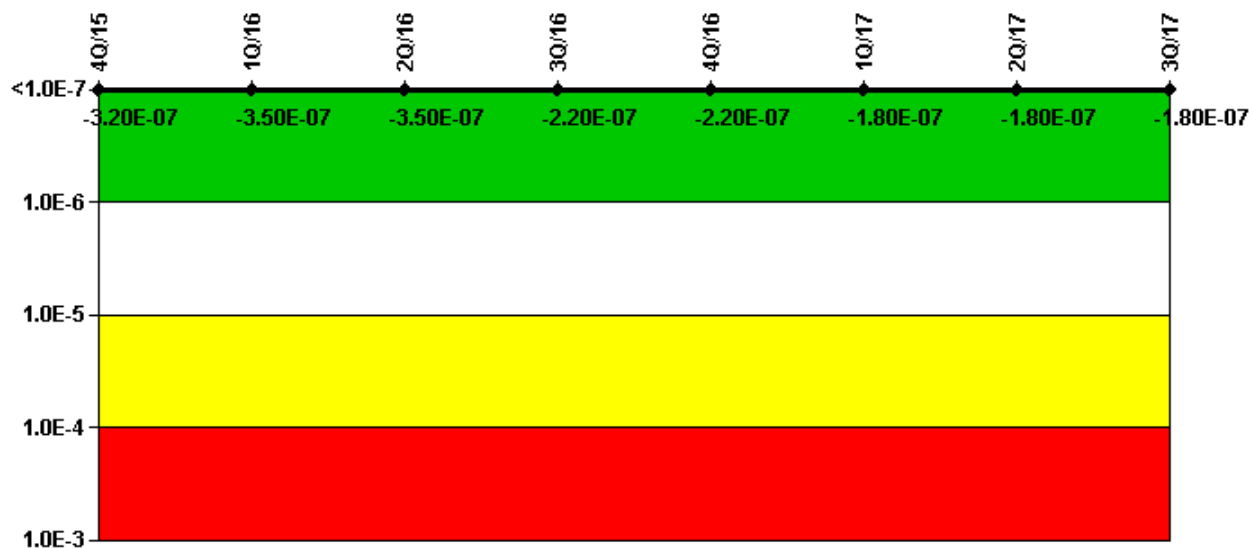
	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17
UAI ( $\Delta$ CDF)	-1.32E-09	-5.11E-09	-4.45E-09	-3.01E-09	-9.75E-09	-1.16E-08	-1.16E-08	-1.16E-08
URI ( $\Delta$ CDF)	-9.11E-08	-8.93E-08	-8.88E-08	-1.41E-07	-1.41E-07	-1.39E-07	-1.45E-07	-1.45E-07
PLE	NO	NO	NO	NO	NO	NO	NO	NO
<b>Indicator value</b>	<b>-9.20E-08</b>	<b>-9.40E-08</b>	<b>-9.30E-08</b>	<b>-1.40E-07</b>	<b>-1.50E-07</b>	<b>-1.50E-07</b>	<b>-1.60E-07</b>	<b>-1.60E-07</b>

▲ TOP

Licensee Comments:

3Q/16: Changed PRA Parameter(s).

### 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)	5.12E-09	-4.01E-08	-4.03E-08	-6.13E-08	-6.20E-08	-4.70E-08	-4.70E-08	-4.70E-08
URI ( $\Delta$ CDF)	-3.26E-07	-3.13E-07	-3.13E-07	-1.63E-07	-1.60E-07	-1.30E-07	-1.32E-07	-1.34E-07
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	-3.20E-07	-3.50E-07	-3.50E-07	-2.20E-07	-2.20E-07	-1.80E-07	-1.80E-07	-1.80E-07

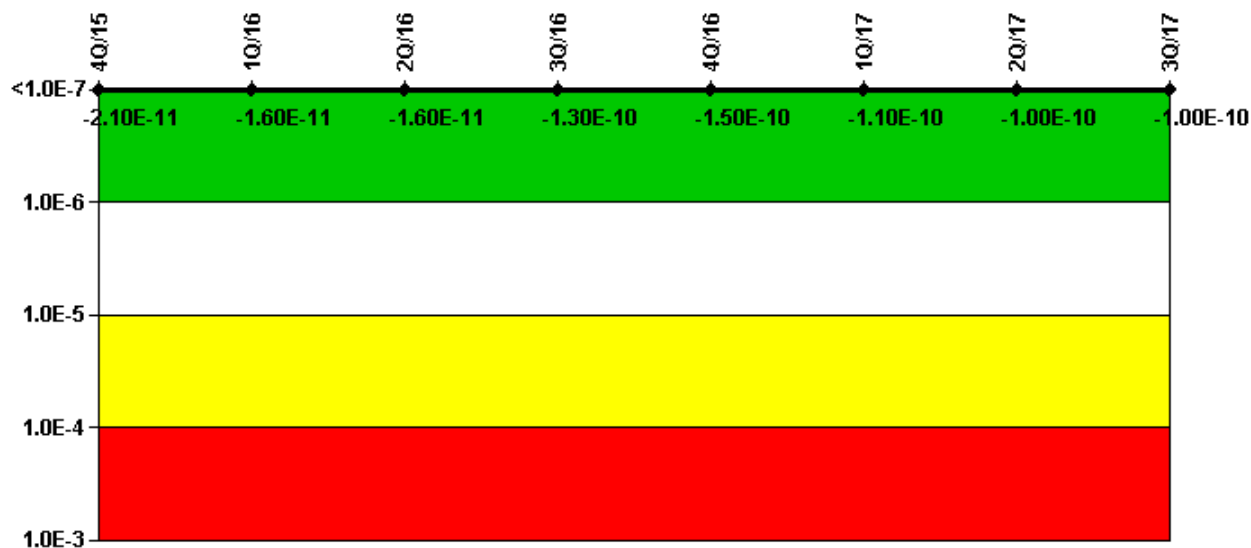
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Licensee Comments:

3Q/16: Changed PRA Parameter(s).



### 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**

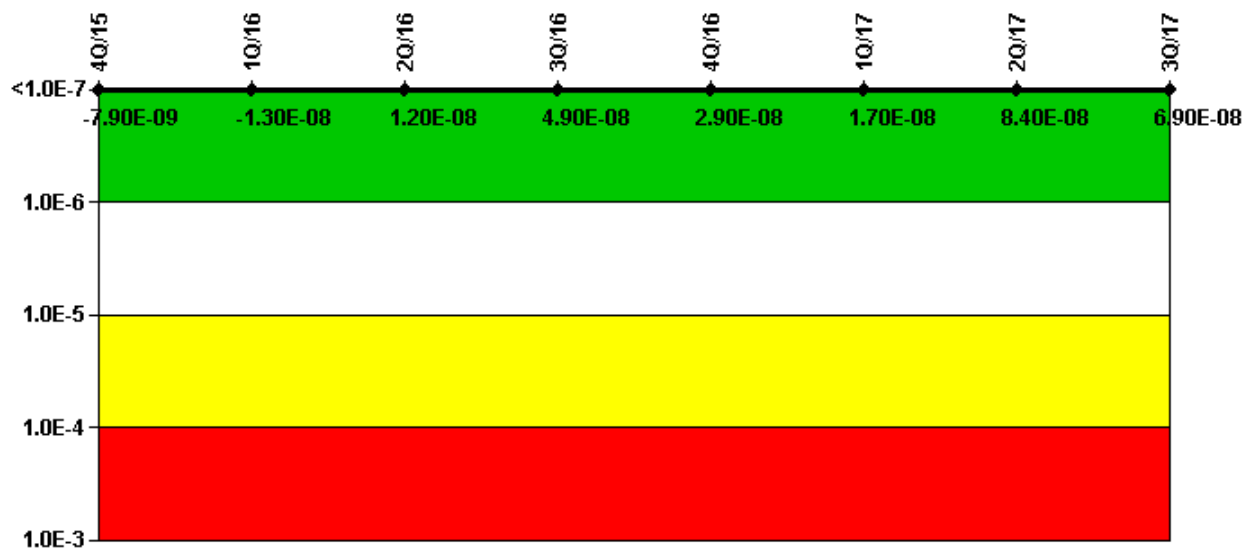
	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17
UAI (ΔCDF)	-8.56E-12	-3.88E-12	-3.47E-12	2.58E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00
URI (ΔCDF)	-1.22E-11	-1.20E-11	-1.22E-11	-1.57E-11	-1.54E-11	-1.10E-11	-1.01E-11	-1.04E-11
PLE	NO	NO	NO	NO	NO	NO	NO	NO
<b>Indicator value</b>	<b>11</b>	<b>11</b>	<b>11</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>

▲ TOP

Licensee Comments:

3Q/16: Changed PRA Parameter(s).

### 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

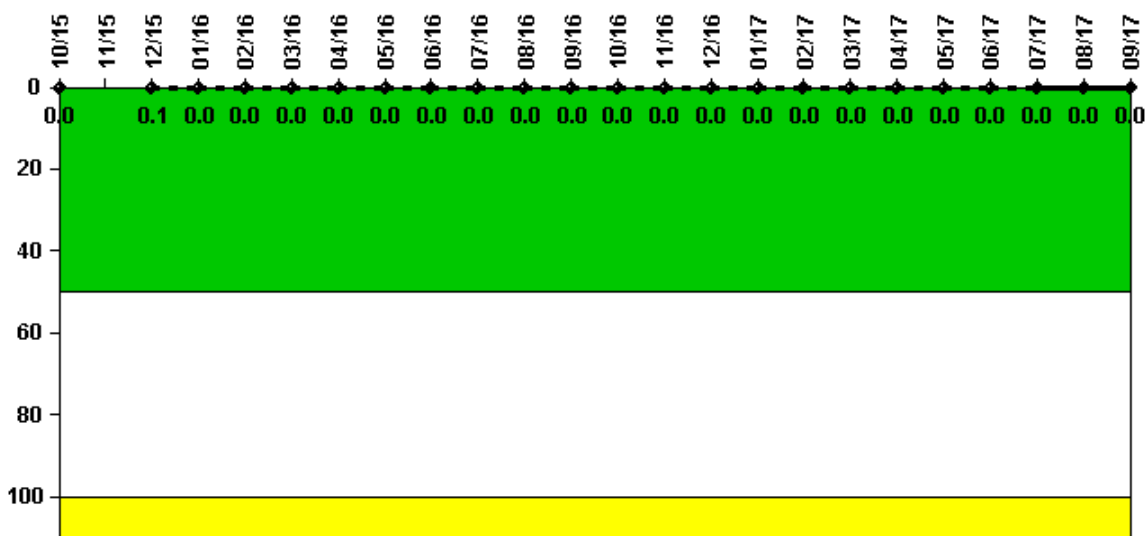
	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17
UAI ( $\Delta$ CDF)	3.47E-08	3.52E-08	5.42E-08	2.61E-07	2.42E-07	2.03E-07	2.74E-07	2.63E-07
URI ( $\Delta$ CDF)	-4.26E-08	-4.81E-08	-4.20E-08	-2.12E-07	-2.13E-07	-1.86E-07	-1.89E-07	-1.93E-07
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	-7.90E-09	-1.30E-08	1.20E-08	4.90E-08	2.90E-08	1.70E-08	8.40E-08	6.90E-08

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Licensee Comments:

3Q/16: Changed PRA Parameter(s).

### Reactor Coolant System Activity



Thresholds: White > 50.0 Yellow > 100.0

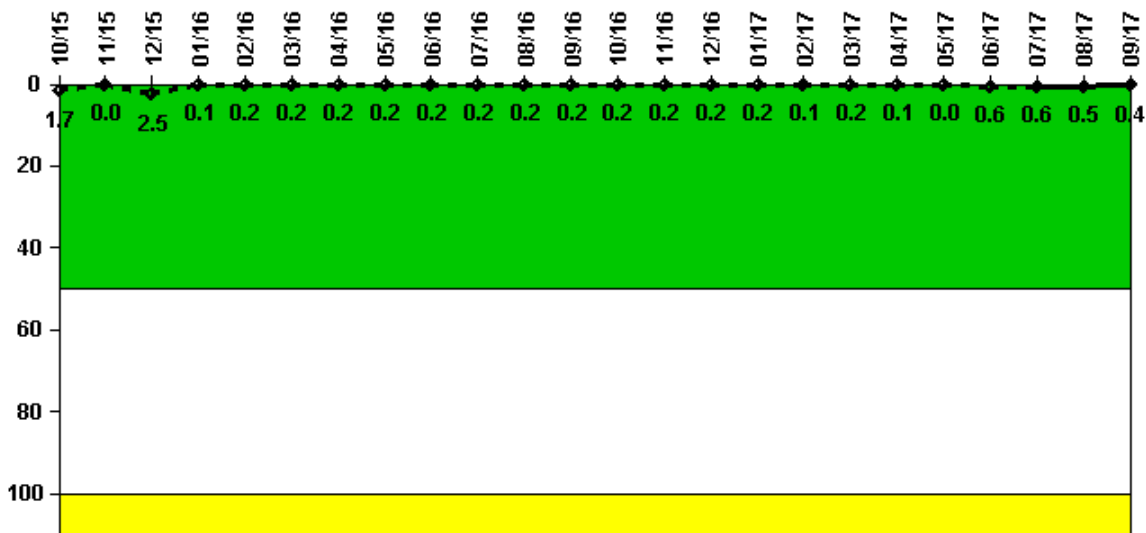
#### Notes

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	0.000182	N/A	0.000984	0.000106	0.000183	0.000185	0.000200	0.000216	0.000200	0.000208	0.000214	0.000220
Technical specification limit	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Indicator value	0	N/A	0.1	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	0.000216	0.000247	0.000245	0.000245	0.000247	0.000250	0.000160	0	0.000088	0.000153	0.000119	0.000110
Technical specification limit	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Indicator value	0	0	0	0	0	0	0	0	0	0	0	0

▲ TOP

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	0.170	0	0.249	0.010	0.020	0.017	0.020	0.020	0.020	0.020	0.020	0.020
Technical specification limit	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
<b>Indicator value</b>	<b>1.7</b>	<b>0</b>	<b>2.5</b>	<b>0.1</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>

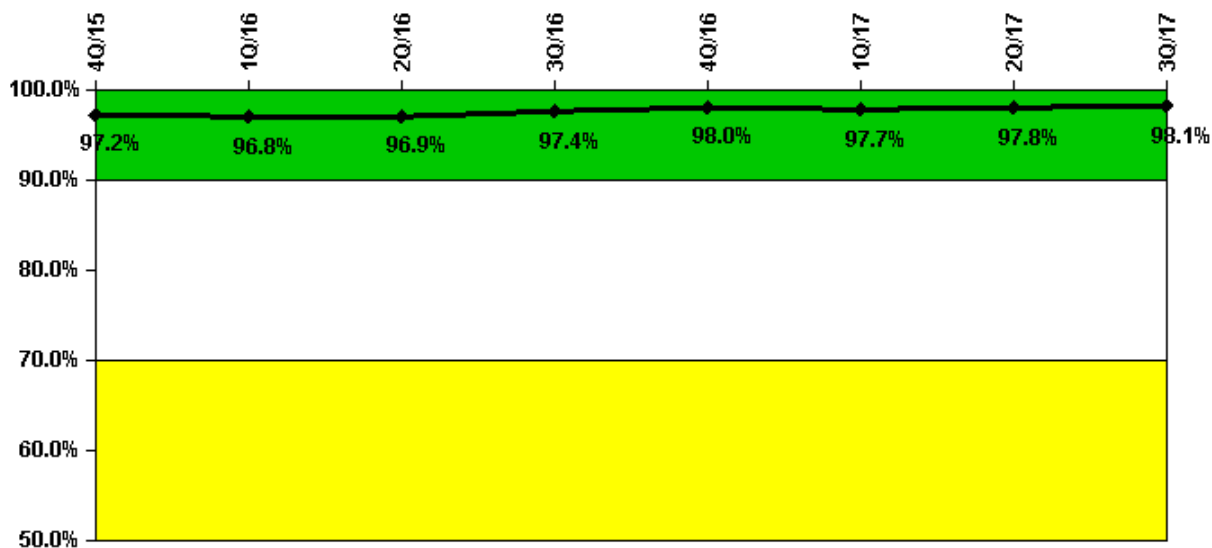
  

Reactor Coolant System Leakage	10/16	11/16	12/16	1/17	2/17	3/17	4/17	5/17	6/17	7/17	8/17	9/17
Maximum leakage	0.020	0.020	0.020	0.020	0.010	0.020	0.010	0	0.060	0.060	0.050	0.040
Technical specification limit	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
<b>Indicator value</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.2</b>	<b>0.1</b>	<b>0.2</b>	<b>0.1</b>	<b>0</b>	<b>0.6</b>	<b>0.6</b>	<b>0.5</b>	<b>0.4</b>

▲ TOP

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	2.0	60.0	148.0	28.0	4.0	109.0	38.0	65.0
Total opportunities	2.0	62.0	151.0	28.0	4.0	112.0	38.0	66.0

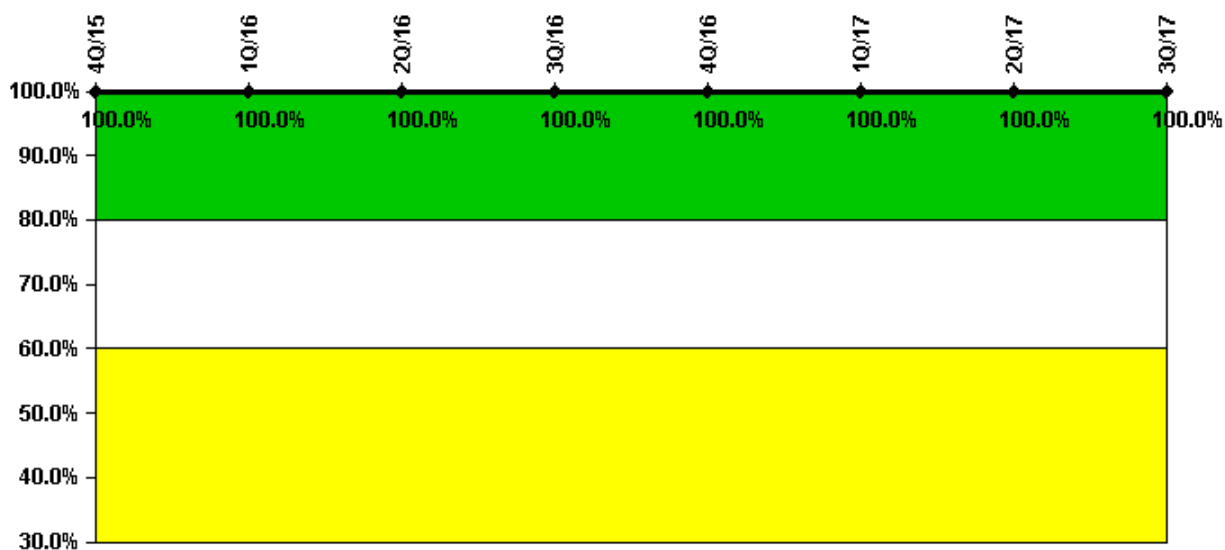
**Indicator value**                    **97.2% 96.8% 96.9% 97.4% 98.0% 97.7% 97.8% 98.1%**

▲ TOP

#### Licensee Comments:

3Q/16: Individual performed DEP (Drill Exercise Performance) session 3rd quarter 2016 not placed into ERO until 4th quarter 2016. Value chg. from 19 to 20.

### ERO Drill Participation



Thresholds: White < 80.0% Yellow < 60.0%

#### Notes

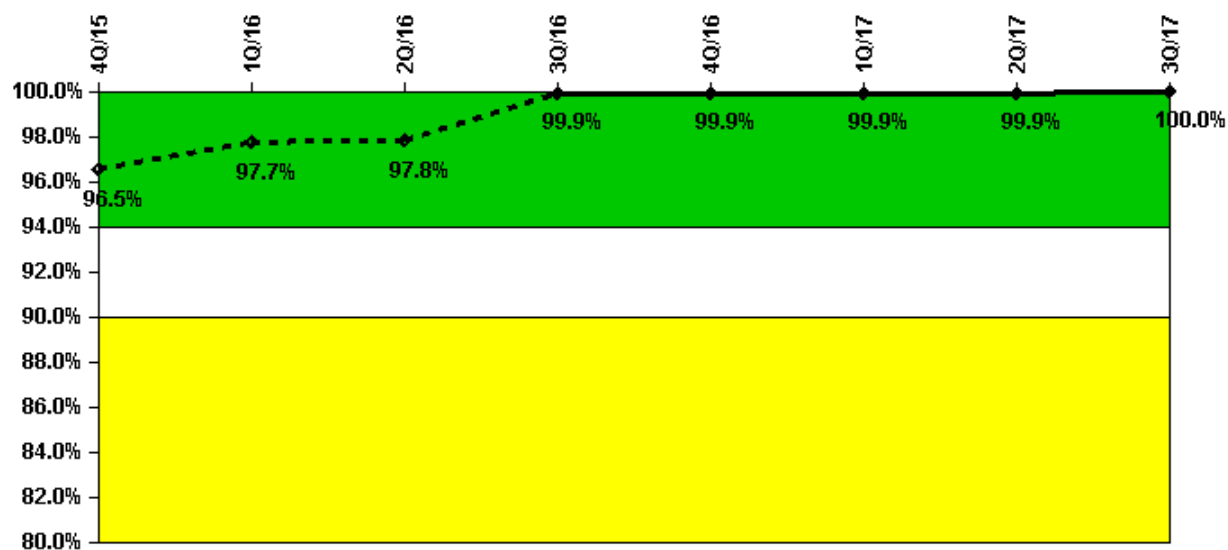
ERO Drill Participation	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17
Participating Key personnel	100.0	98.0	99.0	102.0	99.0	97.0	94.0	92.0
Total Key personnel	100.0	98.0	99.0	102.0	99.0	97.0	94.0	92.0

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

▲ TOP

Licensee Comments: none

### Alert & Notification System



Thresholds: White < 94.0% Yellow < 90.0%

#### Notes

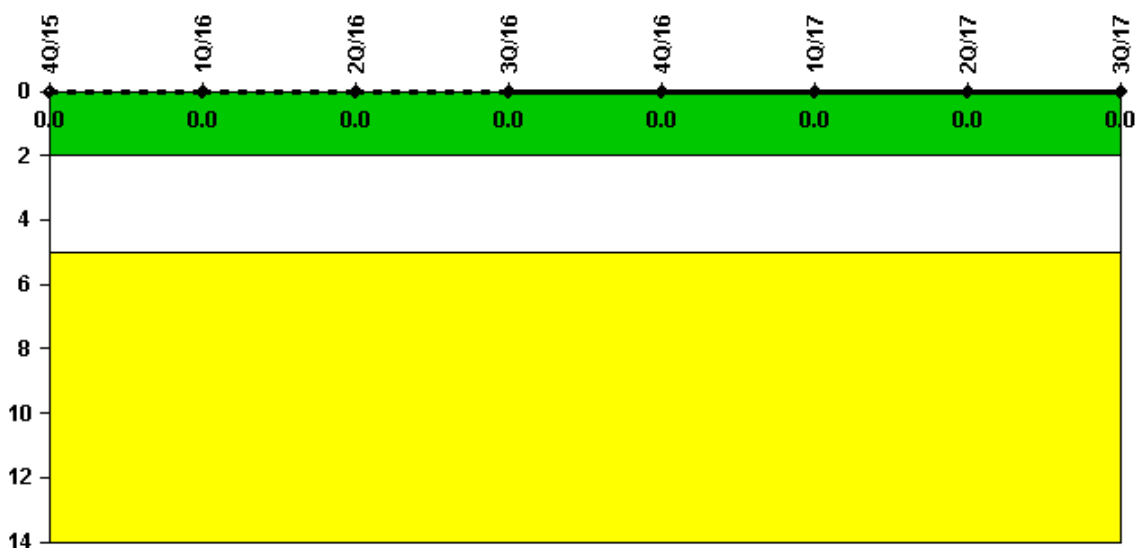
Alert & Notification System	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17
Successful siren-tests	438	437	438	437	438	438	438	438
Total sirens-tests	438	438	438	438	438	438	438	438

**Indicator value**                    **96.5% 97.7% 97.8% 99.9% 99.9% 99.9% 99.9% 100.0%**

▲ TOP

Licensee Comments: none

### Occupational Exposure Control Effectiveness



Thresholds: White > 2.0 Yellow > 5.0

#### Notes

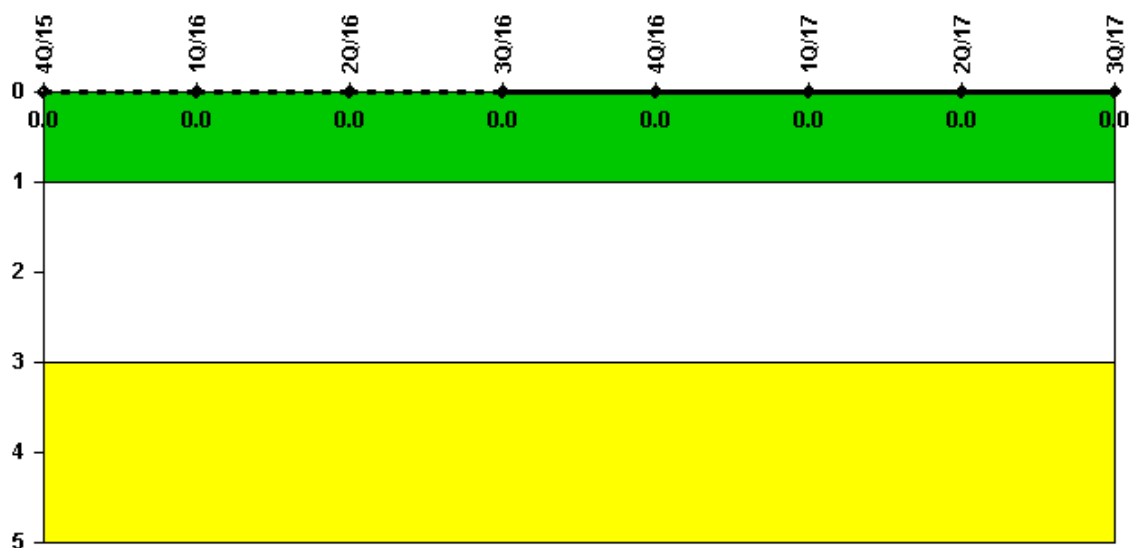
Occupational Exposure Control Effectiveness	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17
High radiation area occurrences	0	0	0	0	0	0	0	0
Very high radiation area occurrences	0	0	0	0	0	0	0	0
Unintended exposure occurrences	0	0	0	0	0	0	0	0
<b>Indicator value</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

▲ TOP

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

▲ TOP

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*