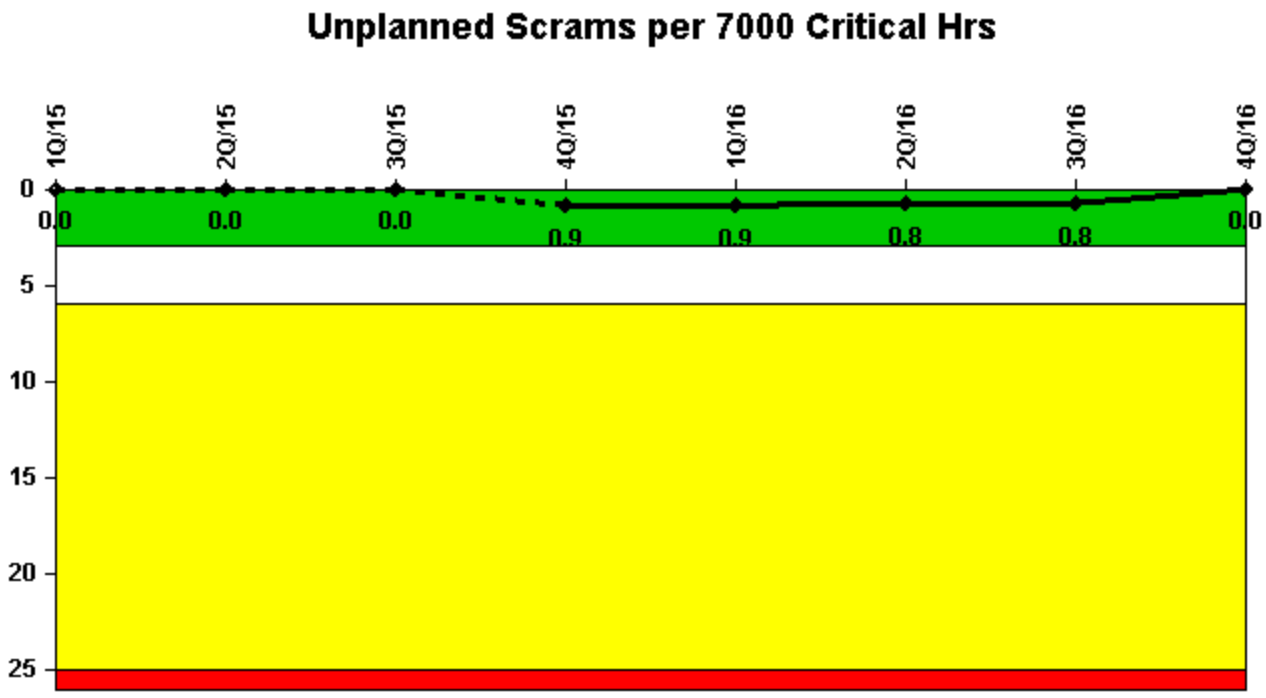
Monticello

4Q/2016 Performance Indicators

The solid trend line represents the current reporting period.

Licensee's General Comments: none



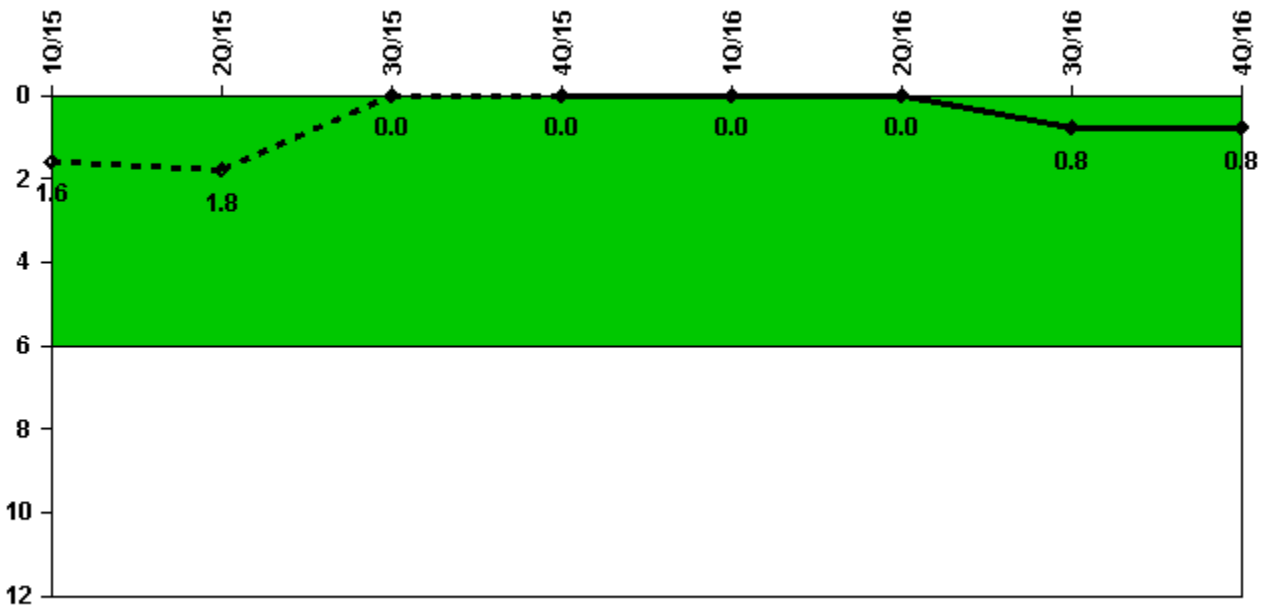
Thresholds: White > 3.0 Yellow > 6.0 Red > 25.0

Notes

Unplanned Scrams per 7000 Critical Hrs	1Q/15	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16
Unplanned scrams	0	0	0	1.0	0	0	0	0
Critical hours	2159.0	1075.2	2208.0	2050.0	2183.0	2184.0	2208.0	2209.0
Indicator value	**0**	**0**	**0**	**0.9**	**0.9**	**0.8**	**0.8**	**0**

Licensee Comments: none

Unplanned Power Changes per 7000 Critical Hrs



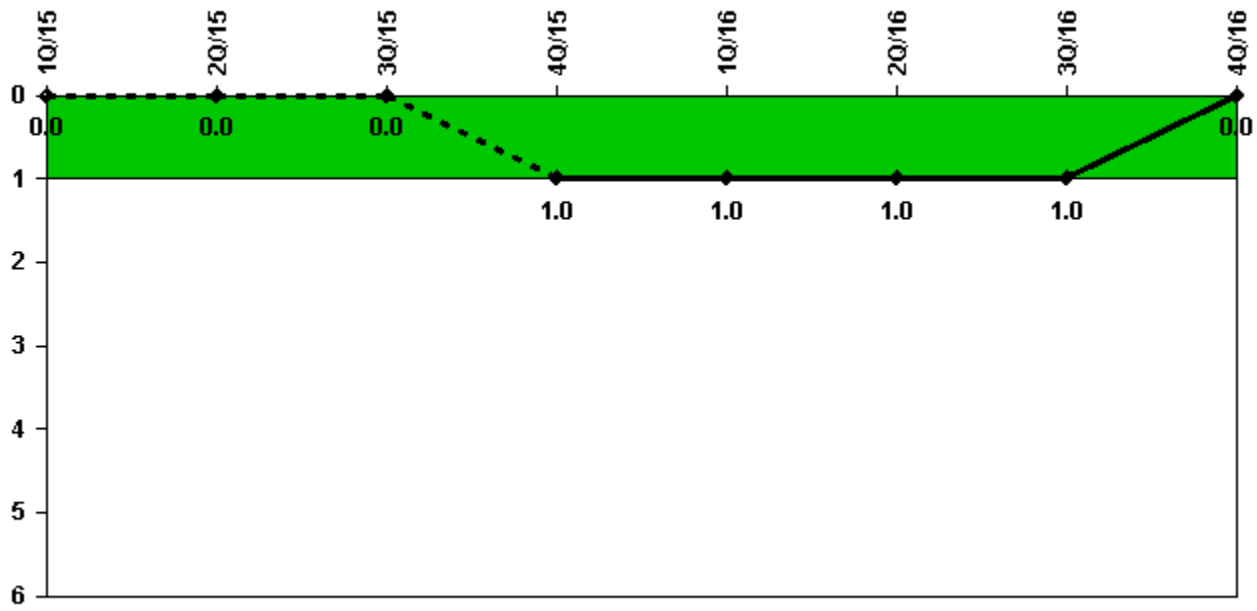
Thresholds: White > 6.0

Notes

Unplanned Power Changes per 7000 Critical Hrs	1Q/15	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16
Unplanned power changes	0	0	0	0	0	0	1.0	0
Critical hours	2159.0	1075.2	2208.0	2050.0	2183.0	2184.0	2208.0	2209.0
Indicator value	**1.6**	**1.8**	**0**	**0**	**0**	**0**	**0.8**	**0.8**

Licensee Comments: none

Unplanned Scrams with Complications

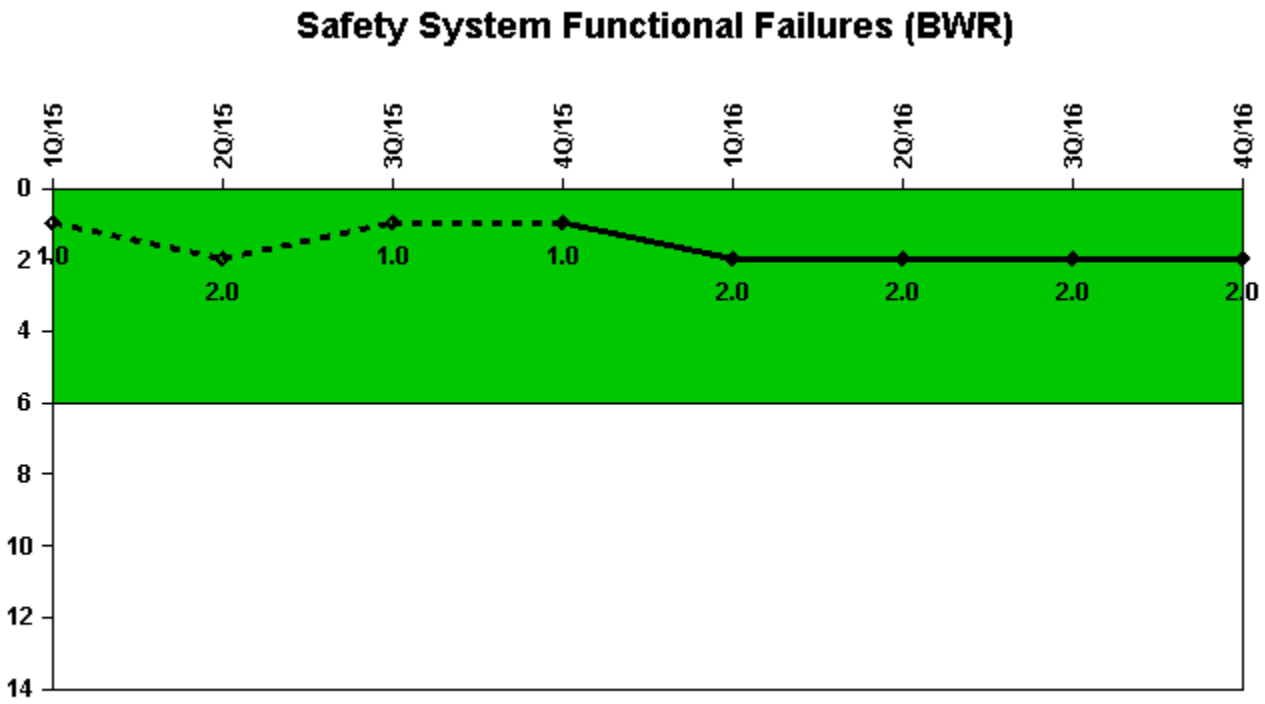


Thresholds: White > 1.0

Notes

Unplanned Scrams with Complications	1Q/15	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16
Scrams with complications	0	0	0	1.0	0	0	0	0
Indicator value	**0.0**	**0.0**	**0.0**	**1.0**	**1.0**	**1.0**	**1.0**	**0.0**

Licensee Comments: none



Thresholds: White > 6.0

Notes

Safety System Functional Failures (BWR)	1Q/15	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16
Safety System Functional Failures	0	1	0	0	1	1	0	0
Indicator value	**1**	**2**	**1**	**1**	**2**	**2**	**2**	**2**

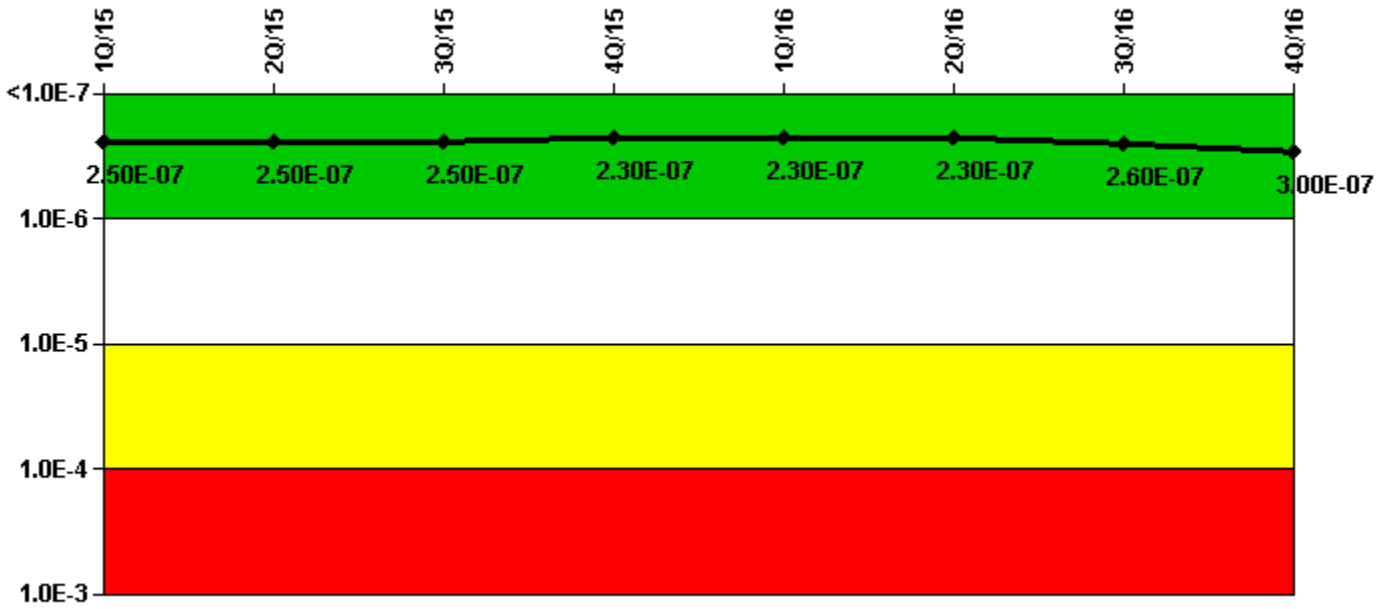
Licensee Comments:

2Q/16: LER 2016-001, High Pressure Coolant Injection System Cracked Pipe Nipple Caused Oil Leak, dated May 18, 2016. This does not change the color of this indicator.

1Q/16: LER 2015-007, Loss of Residual Heat Removal Capability, reported as a Safety System Functional Failure on January 21, 2016.

2Q/15: LER 2015-002-00, Loss of Shutdown Cooling Due to Improperly Landed Jumper Wire, dated June 29, 2015. This event was submitted to the NRC as a SSFF.

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	1Q/15	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16
UAI (ΔCDF)	9.57E-09	1.06E-08	1.55E-08	1.77E-08	2.65E-08	2.63E-08	4.97E-08	7.78E-08
URI (ΔCDF)	2.40E-07	2.40E-07	2.39E-07	2.08E-07	2.08E-07	2.08E-07	2.08E-07	2.21E-07
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	**2.50E-07**	**2.50E-07**	**2.50E-07**	**2.30E-07**	**2.30E-07**	**2.30E-07**	**2.60E-07**	**3.00E-07**

Licensee Comments:

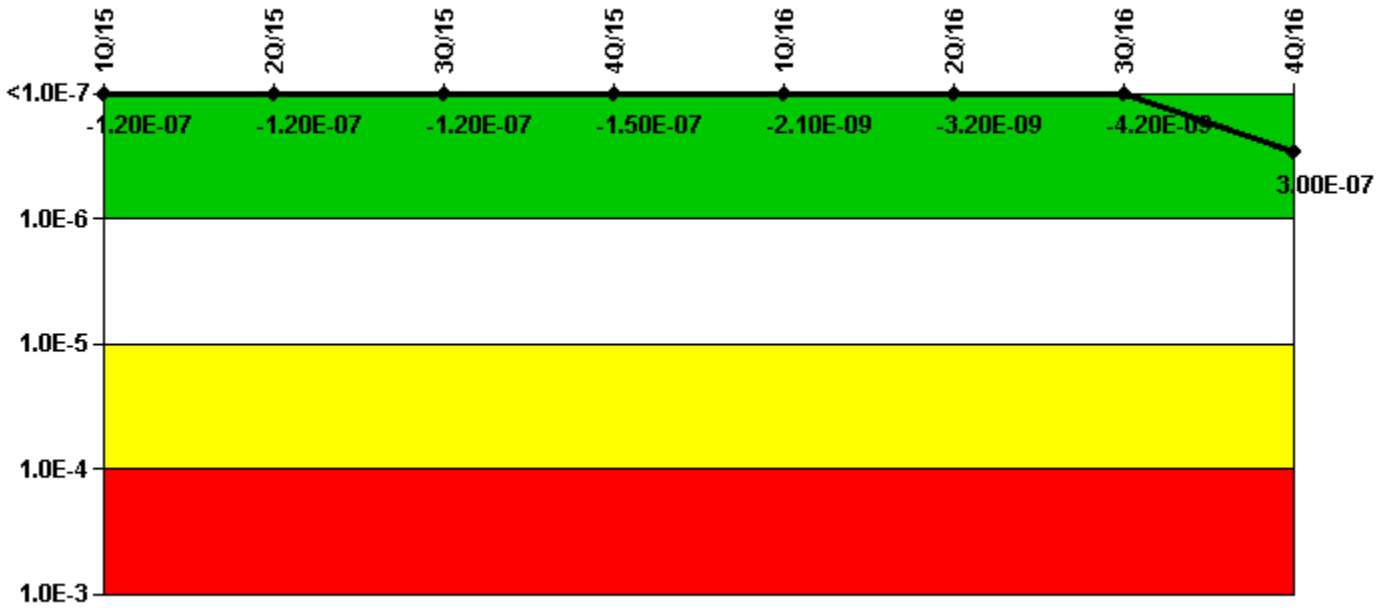
3Q/16: The MSPI basis document was updated to reflect the CDF number from PRA-CALC-05-003, Rev. 6. The CDF number was updated to 1.16E-6 for the Rev. 3.3 PRA model update.

4Q/15: Changed PRA Parameter(s). The site PRA model was revised during 3Q2015 to reflect the diesel fuel oil modification. The MSPI Basis document and new MSPI coefficients were updated effective 4Q2015. The modification did not result in a change to segment or train boundaries, monitored functions, nor success criteria.

3Q/15: MSPI Emergency AC Power System - 3Q2015: The site PRA model was revised during 3Q2015 to reflect the diesel fuel oil modification. The new MSPI coefficients will be updated for 4Q2015. The modification did not result in a change to segment or train boundaries, monitored functions, nor success criteria.

1Q/15: The engineering evaluation for the EDG event that occurred late in 4th Quarter 2014 (12/28/14) has been complete. The evaluation determined this event was a MSPI Demand Failure of the 11 EDG (G3A). This constitutes resolution of the incomplete engineering evaluation from last quarter, per NEI 99-02 Rev. 7 Section F 2.2.2. This does not change the MSPI color for the Emergency AC Power 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	**1Q/15**	**2Q/15**	**3Q/15**	**4Q/15**	**1Q/16**	**2Q/16**	**3Q/16**	**4Q/16**
UAI (ΔCDF)	-4.33E-08	-4.33E-08	-4.33E-08	-5.00E-08	-5.00E-08	-5.00E-08	-5.00E-08	-1.87E-08
URI (ΔCDF)	-7.62E-08	-7.71E-08	-7.80E-08	-9.51E-08	4.79E-08	4.68E-08	4.57E-08	3.19E-07
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	**-1.20E-07**	**-1.20E-07**	**-1.20E-07**	**-1.50E-07**	**-2.10E-09**	**-3.20E-09**	**-4.20E-09**	**3.00E-07**

Licensee Comments:

4Q/16: 4Q2016 MSPI High Pressure Injection System - MSPI Start/Demand Failure taken in November 2016 on the HPCI System due to water in the turbine. This does not result in a color change (remains Green).

3Q/16: The MSPI basis document was updated to reflect the CDF number from PRA-CALC-05-003, Rev. 6. The CDF number was updated to 1.16E-6 for the Rev. 3.3 PRA model update.

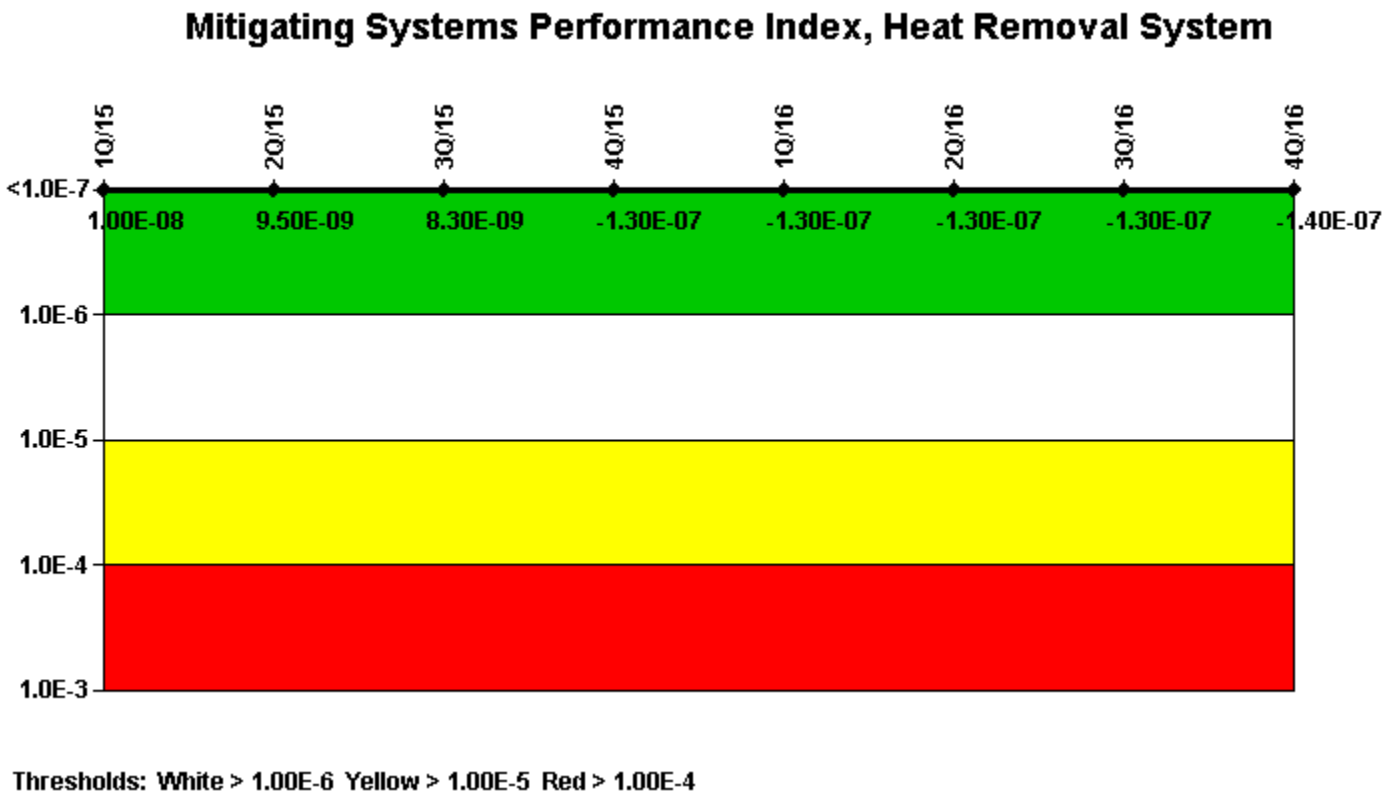
2Q/16: The engineering evaluation for the HPCI event that occurred in 1Q2016 (3/22/16) has been complete. The evaluation determined this event was a MSPI Run Failure against the High Pressure Injection indicator. The MSPI unavailability hours for the HPCI in the 1Q2016 submittal included the HPCI event and accurately reflect the

total unavailability. This constitutes resolution of the incomplete engineering evaluation from 1Q2016. This does not change the MSPI color for the High Pressure Injection indicator.

1Q/16: Monticello is evaluating an event associated with HPCI that occurred late in 1st Quarter 2016. The associated engineering evaluation is not yet complete for the 1st quarter 2016 data submittal. Preliminary determination is a MSPI Run Failure against the High Pressure Injection indicator . This does not result in a color change (remains Green). Resolution to be submitted in the next quarterly submittal, per NEI 99-02 Rev. 7 Section F 2.2.2.

1Q/16: Monticello is evaluating an event associated with HPCI that occurred late in 1st Quarter 2016. The associated engineering evaluation is not yet complete for the 1st quarter 2016 data submittal. Preliminary determination is a MSPI Run Failure against the High Pressure Injection indicator . This does not result in a color change (remains Green). Resolution to be submitted in the next quarterly submittal, per NEI 99-02 Rev. 7 Section F 2.2.2. The engineering evaluation for the HPCI event that occurred in 1Q2016 (3/22/16) has been complete. The evaluation determined this event was a MSPI Run Failure against the High Pressure Injection indicator. The MSPI unavailability hours for the HPCI in the 1Q2016 submittal included the HPCI event and accurately reflect the total unavailability. This constitutes resolution of the incomplete engineering evaluation from 1Q2016. This does not change the MSPI color for the High Pressure Injection indicator.

4Q/15: Changed PRA Parameter(s). The site PRA model was revised during 3Q2015 to reflect the diesel fuel oil modification. The MSPI Basis document and new MSPI coefficients were updated effective 4Q2015. The modification did not result in a change to segment or train boundaries, monitored functions, nor success criteria.



Notes

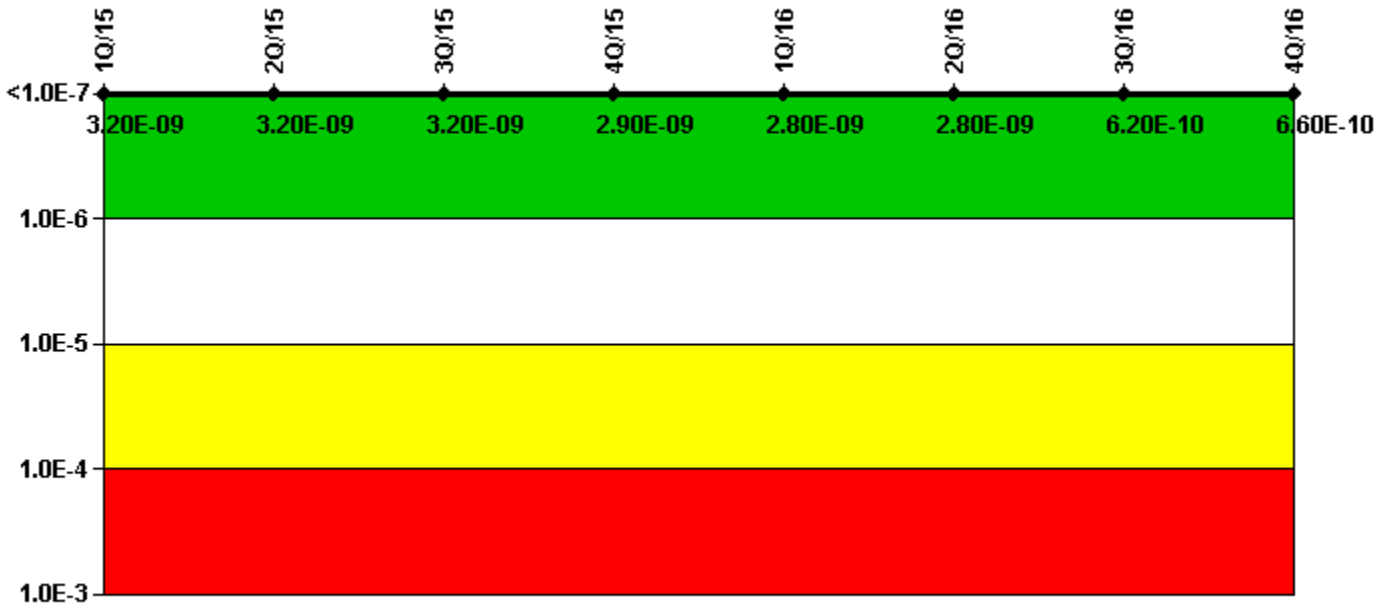
Mitigating Systems Performance Index, Heat Removal System	1Q/15	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16
UAI (ΔCDF)	-2.74E-08	-2.71E-08	-2.71E-08	-4.71E-08	-4.71E-08	-4.71E-08	-4.71E-08	-5.01E-08
URI (ΔCDF)	3.77E-08	3.65E-08	3.54E-08	-7.95E-08	-8.07E-08	-8.20E-08	-8.32E-08	-8.99E-08
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	**1.00E-08**	**9.50E-09**	**8.30E-09**	**-1.30E-07**	**-1.30E-07**	**-1.30E-07**	**-1.30E-07**	**-1.40E-07**

Licensee Comments:

3Q/16: The MSPI basis document was updated to reflect the CDF number from PRA-CALC-05-003, Rev. 6. The CDF number was updated to 1.16E-6 for the Rev. 3.3 PRA model update.

4Q/15: Changed PRA Parameter(s). The site PRA model was revised during 3Q2015 to reflect the diesel fuel oil modification. The MSPI Basis document and new MSPI coefficients were updated effective 4Q2015. The modification did not result in a change to segment or train boundaries, monitored functions, nor success criteria.

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	1Q/15	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16

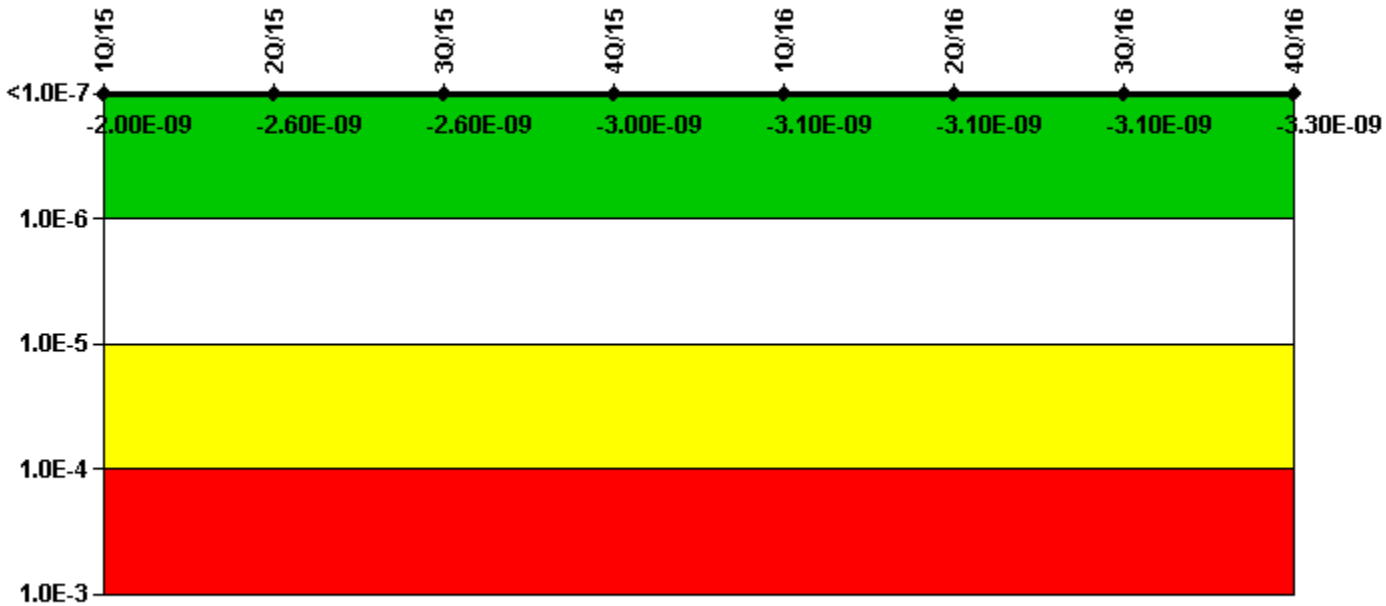
UAI (ΔCDF)	-3.51E-10	-3.37E-10	-3.32E-10	-1.88E-10	-2.76E-10	-2.43E-10	-2.65E-10	-2.82E-10
URI (ΔCDF)	3.57E-09	3.57E-09	3.57E-09	3.05E-09	3.05E-09	3.05E-09	8.80E-10	9.46E-10
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	**3.20E-09**	**3.20E-09**	**3.20E-09**	**2.90E-09**	**2.80E-09**	**2.80E-09**	**6.20E-10**	**6.60E-10**

Licensee Comments:

3Q/16: The MSPI basis document was updated to reflect the CDF number from PRA-CALC-05-003, Rev. 6. The CDF number was updated to 1.16E-6 for the Rev. 3.3 PRA model update.

4Q/15: Changed PRA Parameter(s). The site PRA model was revised during 3Q2015 to reflect the diesel fuel oil modification. The MSPI Basis document and new MSPI coefficients were updated effective 4Q2015. The modification did not result in a change to segment or train boundaries, monitored functions, nor success criteria.

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	**1Q/15**	**2Q/15**	**3Q/15**	**4Q/15**	**1Q/16**	**2Q/16**	**3Q/16**	**4Q/16**
UAI (ΔCDF)	-2.03E-09	-2.60E-09	-2.65E-09	-3.04E-09	-3.06E-09	-3.06E-09	-3.06E-09	-3.25E-09

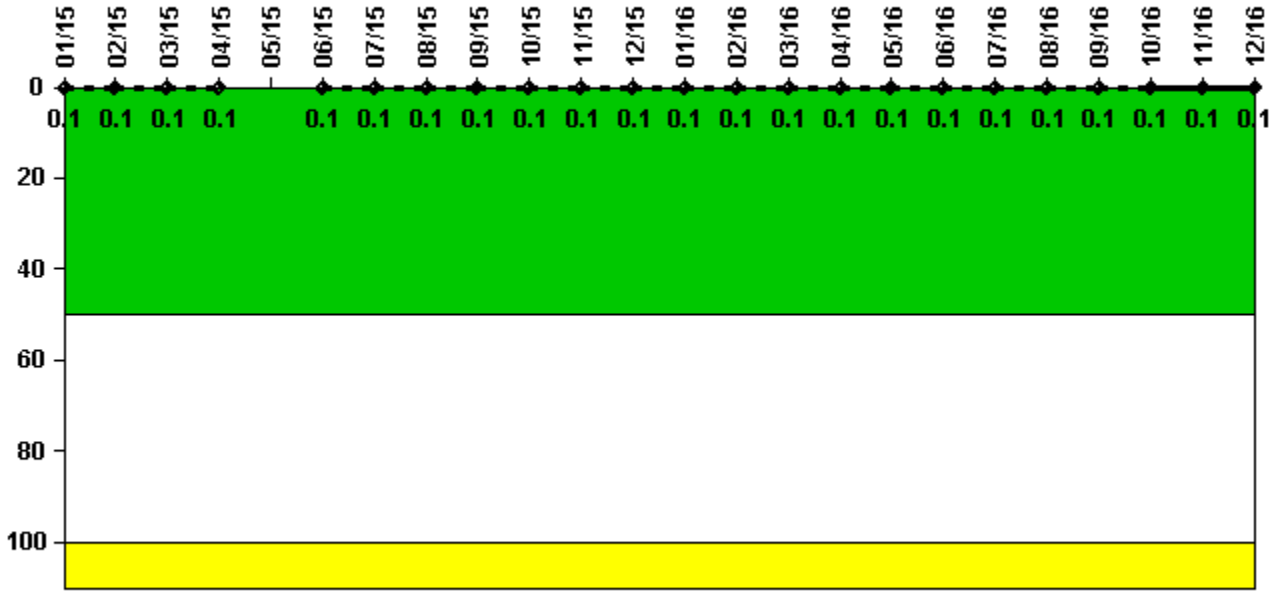
URI (ΔCDF)	6.72E-12	7.25E-12	7.80E-12	3.03E-13	3.25E-13	3.47E-13	3.70E-13	-1.07E-12
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	**-2.00E-09**	**-2.60E-09**	**-2.60E-09**	**-3.00E-09**	**-3.10E-09**	**-3.10E-09**	**-3.10E-09**	**-3.30E-09**

Licensee Comments:

3Q/16: The MSPI basis document was updated to reflect the CDF number from PRA-CALC-05-003, Rev. 6. The CDF number was updated to 1.16E-6 for the Rev. 3.3 PRA model update.

4Q/15: Changed PRA Parameter(s). The site PRA model was revised during 3Q2015 to reflect the diesel fuel oil modification. The MSPI Basis document and new MSPI coefficients were updated effective 4Q2015. The modification did not result in a change to segment or train boundaries, monitored functions, nor success criteria.

Reactor Coolant System Activity



Thresholds: White > 50.0 Yellow > 100.0

Notes

Reactor Coolant System Activity	**1/15**	**2/15**	**3/15**	**4/15**	**5/15**	**6/15**	**7/15**	**8/15**	**9/15**	**10/15**	**11/15**	**12/15**
Maximum activity	0.000136	0.000146	0.000129	0.000125	N/A	0.000124	0.000107	0.000113	0.000104	0.000115	0.000109	0.000195
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

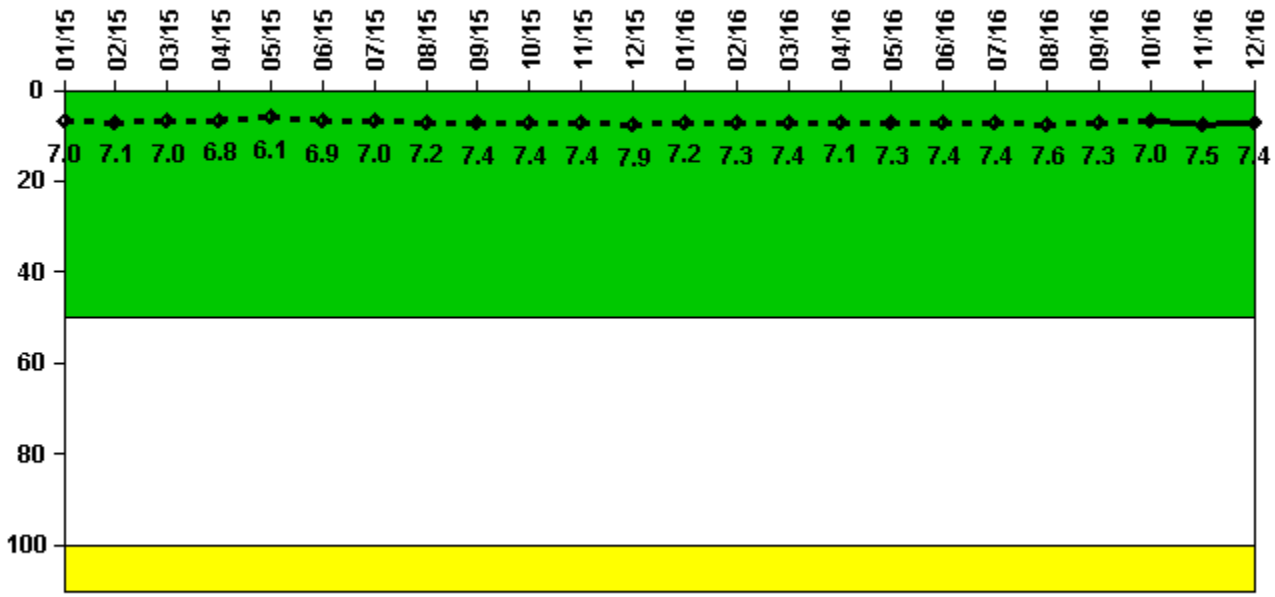
Indicator value	**0.1**	**0.1**	**0.1**	**0.1**	**N/A**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**

Reactor Coolant System Activity	**1/16**	**2/16**	**3/16**	**4/16**	**5/16**	**6/16**	**7/16**	**8/16**	**9/16**	**10/16**	**11/16**	**12/16**
Maximum activity	0.000189	0.000215	0.000153	0.000128	0.000286	0.000149	0.000161	0.000141	0.000125	0.000190	0.000142	0.000113
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	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**

Licensee Comments:

6/15: Plant conditions for May 2015 did not meet criteria for Maximum I-131 Activity due to RFO.

Reactor Coolant System Leakage



Thresholds: White > 50.0 Yellow > 100.0

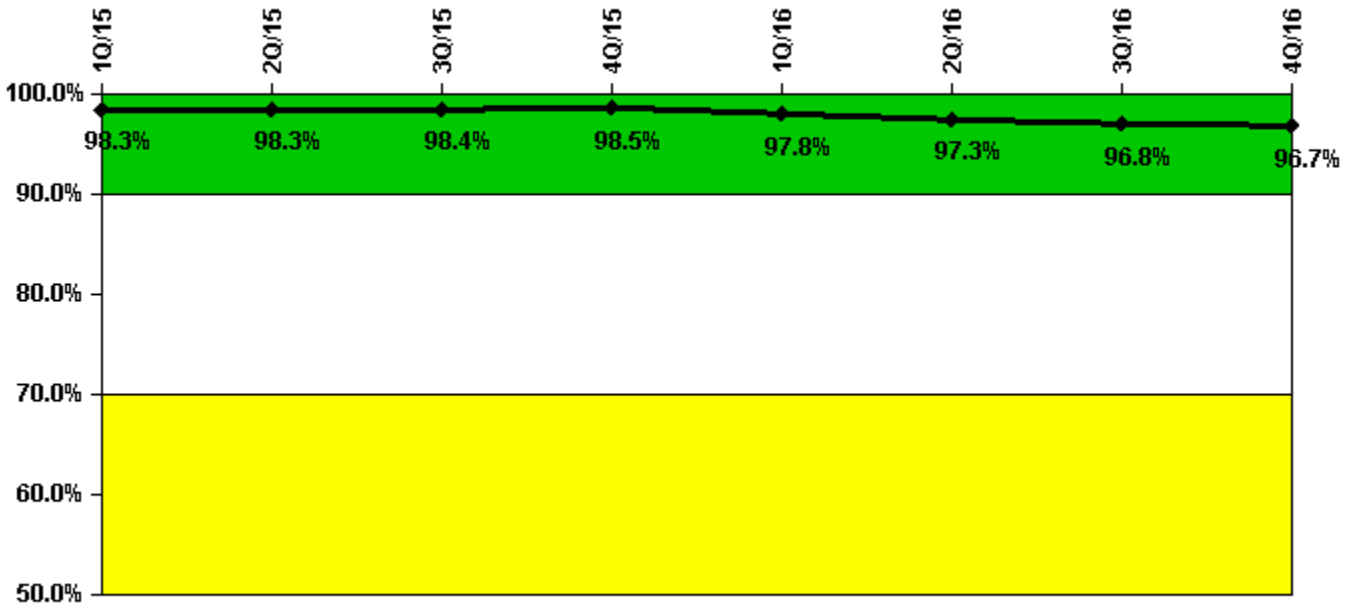
Notes

Reactor Coolant System Leakage	**1/15**	**2/15**	**3/15**	**4/15**	**5/15**	**6/15**	**7/15**	**8/15**	**9/15**	**10/15**	**11/15**	**12/15**
Maximum leakage	1.740	1.770	1.750	1.710	1.520	1.720	1.740	1.810	1.840	1.860	1.840	1.980

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
Indicator value	**7.0**	**7.1**	**7.0**	**6.8**	**6.1**	**6.9**	**7.0**	**7.2**	**7.4**	**7.4**	**7.4**	**7.9**
Reactor Coolant System Leakage	**1/16**	**2/16**	**3/16**	**4/16**	**5/16**	**6/16**	**7/16**	**8/16**	**9/16**	**10/16**	**11/16**	**12/16**
Maximum leakage	1.810	1.830	1.840	1.770	1.820	1.860	1.860	1.890	1.830	1.750	1.870	1.840
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
Indicator value	**7.2**	**7.3**	**7.4**	**7.1**	**7.3**	**7.4**	**7.4**	**7.6**	**7.3**	**7.0**	**7.5**	**7.4**

Licensee Comments: none

Drill/Exercise Performance



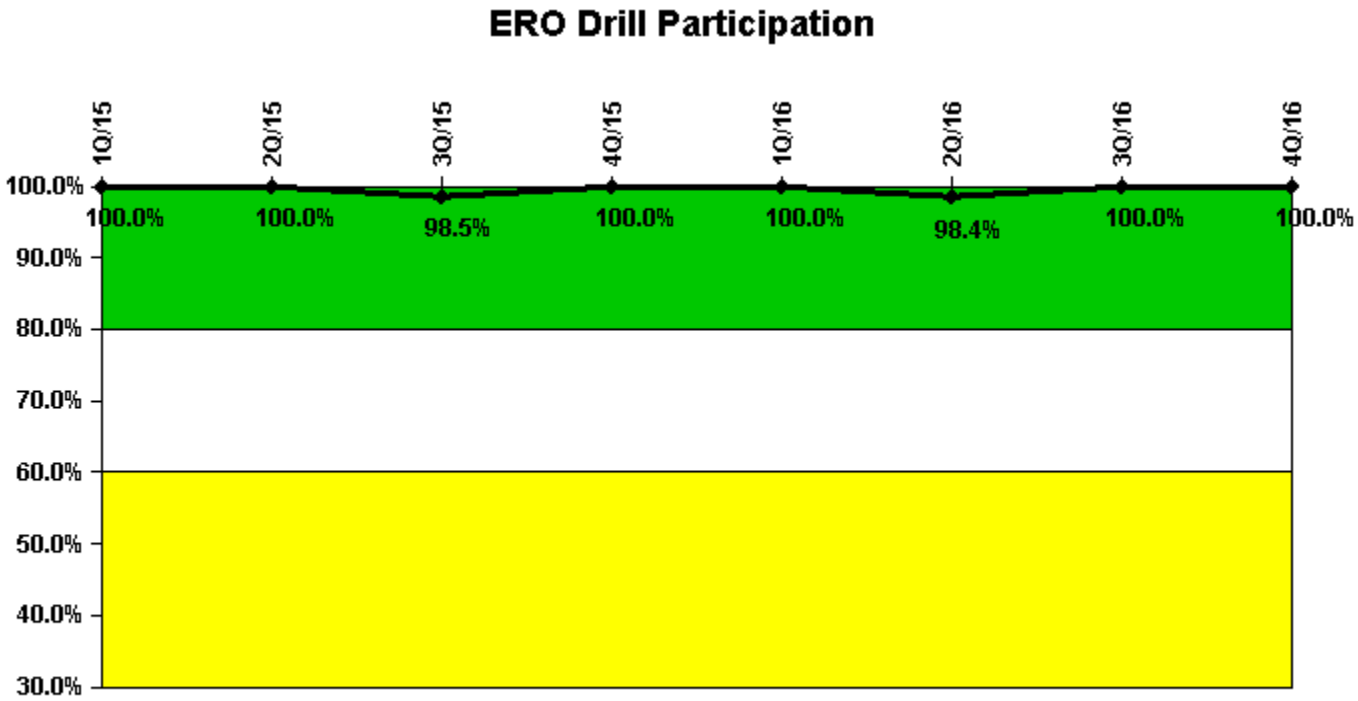
Thresholds: White < 90.0% Yellow < 70.0%

Notes

Drill/Exercise Performance	1Q/15	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16
Successful opportunities	21.0	19.0	42.0	43.0	52.0	65.0	52.0	31.0
Total opportunities	23.0	19.0	44.0	44.0	55.0	66.0	54.0	31.0
Indicator value	**98.3%**	**98.3%**	**98.4%**	**98.5%**	**97.8%**	**97.3%**	**96.8%**	**96.7%**

Licensee Comments:

4Q/15: There is a correction to the Drill / Exercise Performance indicator for November 2015. A retroactive failure was identified during a site self-assessment. This resulted in a change to the KPI from 14 out of 14 to the corrected results of 13 out of 14. Indicator color did not change as a result and remains green.

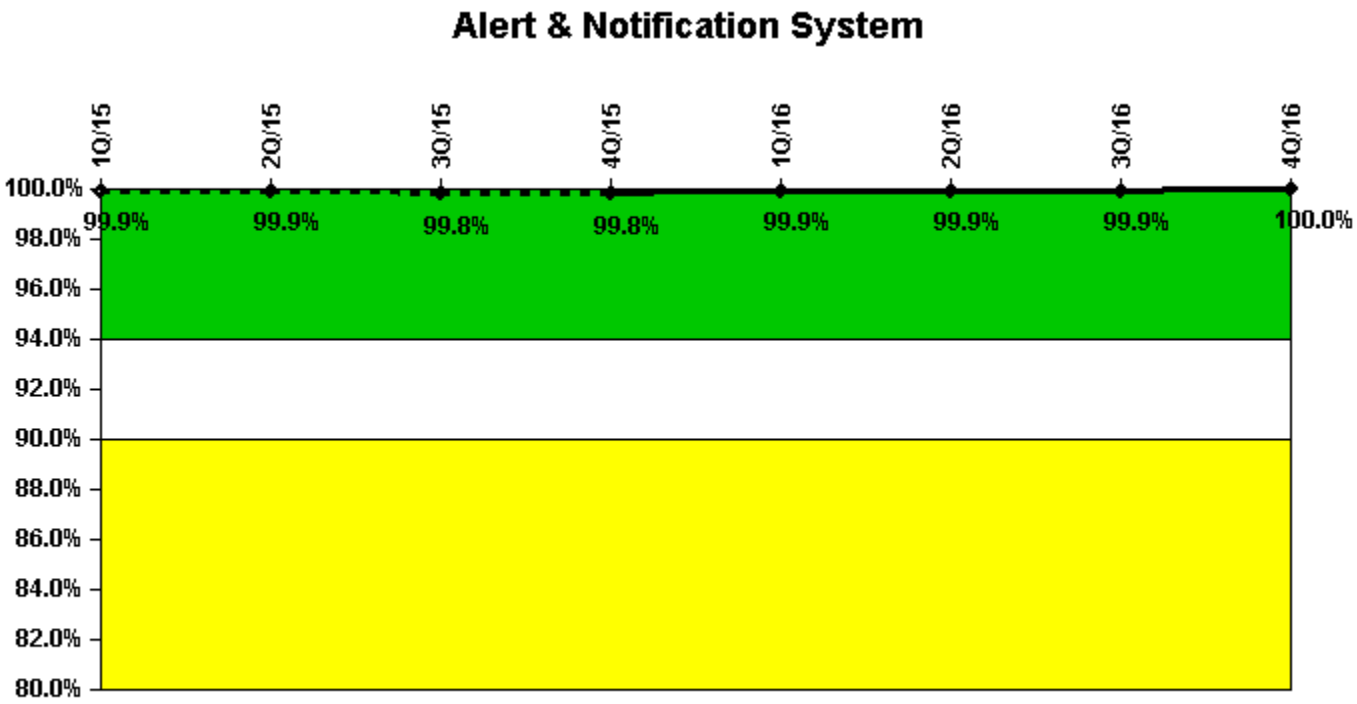


Thresholds: White < 80.0% Yellow < 60.0%

Notes

ERO Drill Participation	1Q/15	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16
Participating Key personnel	148.0	136.0	129.0	136.0	133.0	123.0	121.0	124.0
Total Key personnel	148.0	136.0	131.0	136.0	133.0	125.0	121.0	124.0
Indicator value	**100.0%**	**100.0%**	**98.5%**	**100.0%**	**100.0%**	**98.4%**	**100.0%**	**100.0%**

Licensee Comments: none



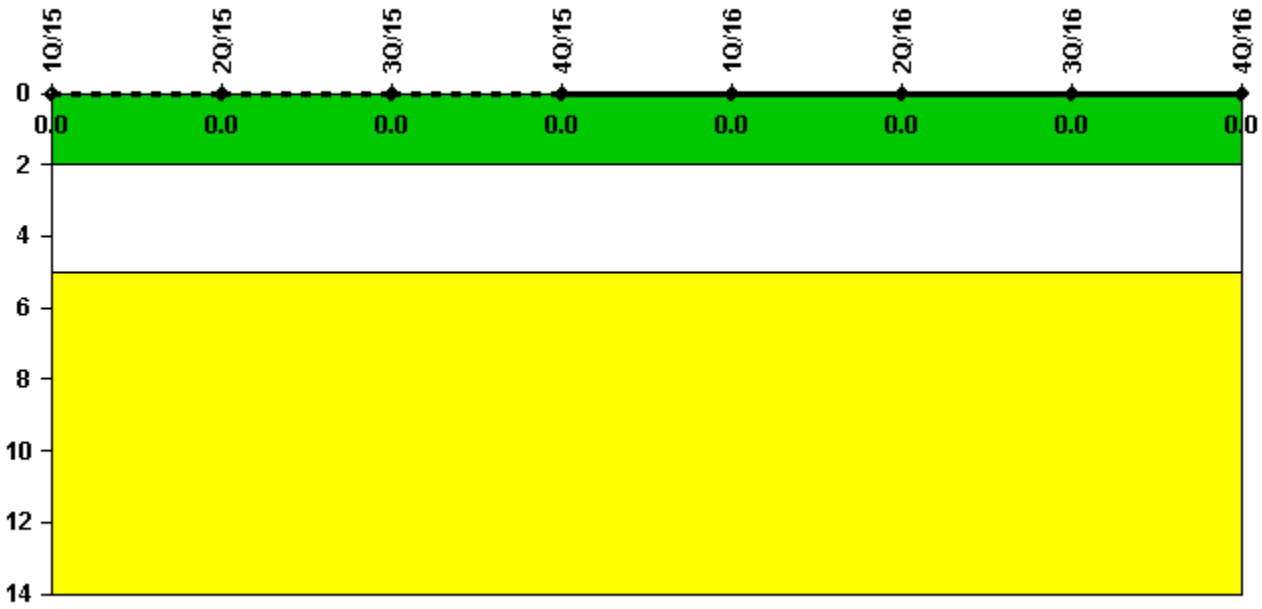
Thresholds: White < 94.0% Yellow < 90.0%

Notes

Alert & Notification System	1Q/15	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16
Successful siren-tests	1270	1377	1479	1376	1378	1377	1377	1378
Total sirens-tests	1272	1378	1484	1378	1378	1378	1378	1378
Indicator value	**99.9%**	**99.9%**	**99.8%**	**99.8%**	**99.9%**	**99.9%**	**99.9%**	**100.0%**

Licensee Comments: none

Occupational Exposure Control Effectiveness

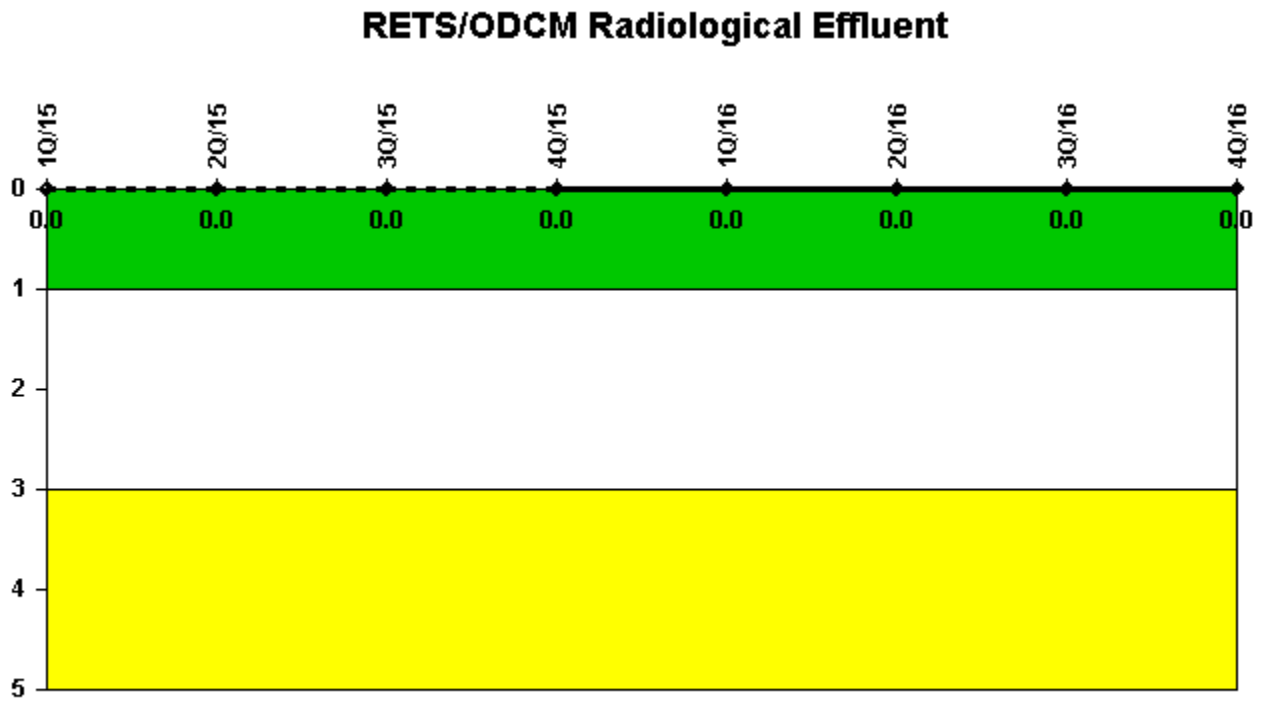


Thresholds: White > 2.0 Yellow > 5.0

Notes

Occupational Exposure Control Effectiveness	1Q/15	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16
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
Indicator value	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Licensee Comments: none



Thresholds: White > 1.0 Yellow > 3.0

Notes

RETS/ODCM Radiological Effluent	1Q/15	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16
RETS/ODCM occurrences	0	0	0	0	0	0	0	0
Indicator value	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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.

Action Matrix Summary | Inspection Findings Summary | PI Summary | Reactor Oversight Process

Last Modified: January 24, 2017