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Monticello – Quarterly Performance Indicators

4Q/2017 Performance Indicators

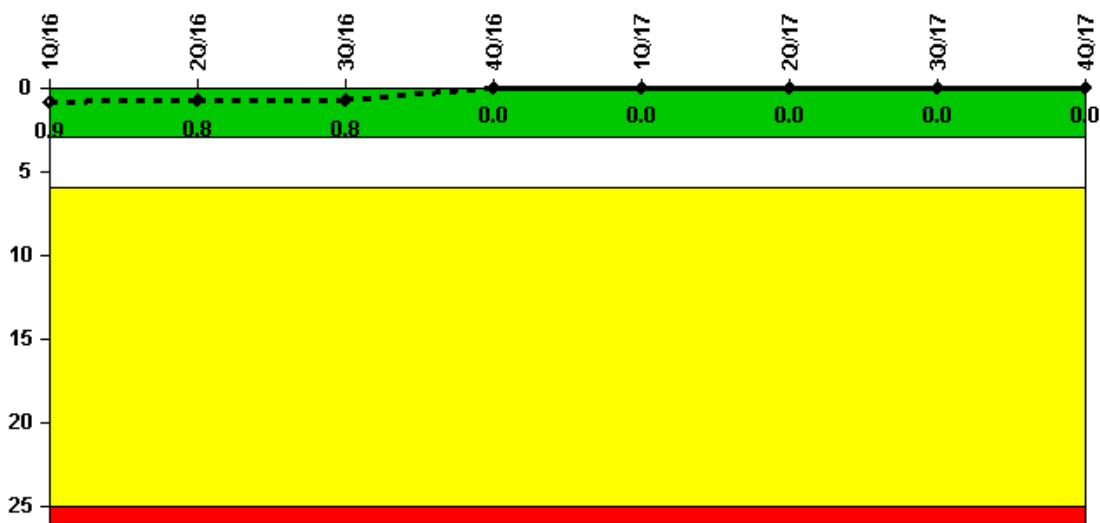
The solid trend line represents the current reporting period.

Licensee's General Comments: none

On this page:

- Unplanned Scrams (IE01)
- Unplanned Power Changes per 7000 Critical Hours (IE03)
- Unplanned Scrams with Complications (IE04)
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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)
- 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

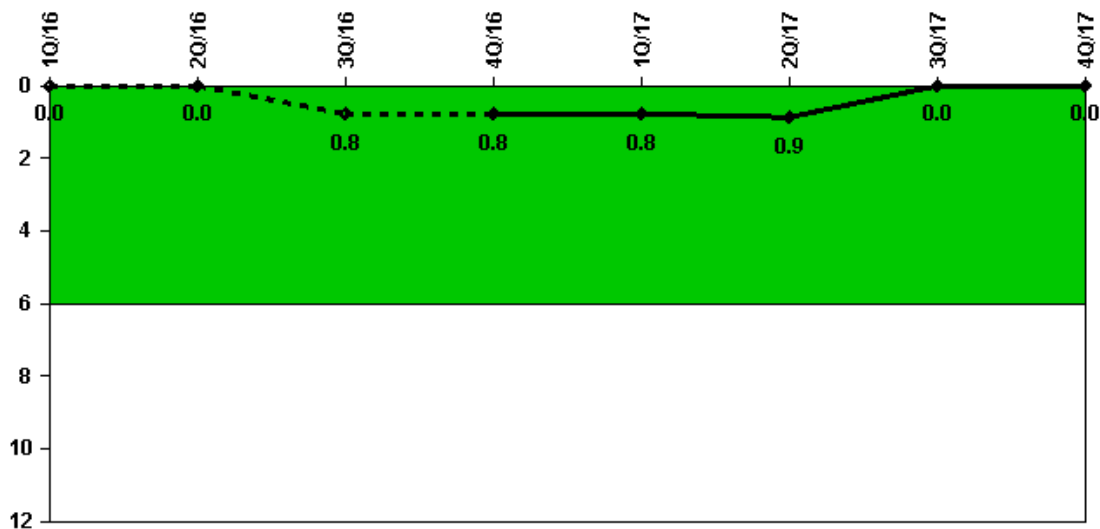
Unplanned Scrams per 7000 Critical Hrs	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17	4Q/17
Unplanned scrams	0	0	0	0	0	0	0	0
Critical hours	2183.0	2184.0	2208.0	2209.0	2159.0	1504.0	2208.0	2209.0

Indicator value	0.9	0.8	0.8	0	0	0	0	0
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Licensee Comments: none

Unplanned Power Changes per 7000 Critical Hrs



Thresholds: White > 6.0

Notes

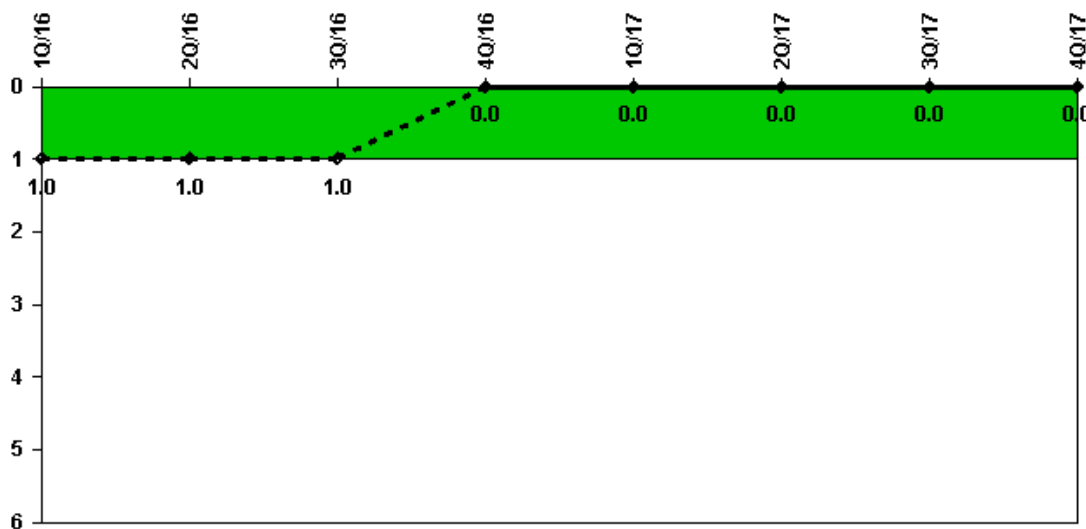
Unplanned Power Changes per 7000 Critical Hrs	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17	4Q/17
Unplanned power changes	0	0	1.0	0	0	0	0	0
Critical hours	2183.0	2184.0	2208.0	2209.0	2159.0	1504.0	2208.0	2209.0

Indicator value	0	0	0.8	0.8	0.8	0.9	0	0
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Licensee Comments: none

Unplanned Scrams with Complications



Thresholds: White > 1.0

Notes

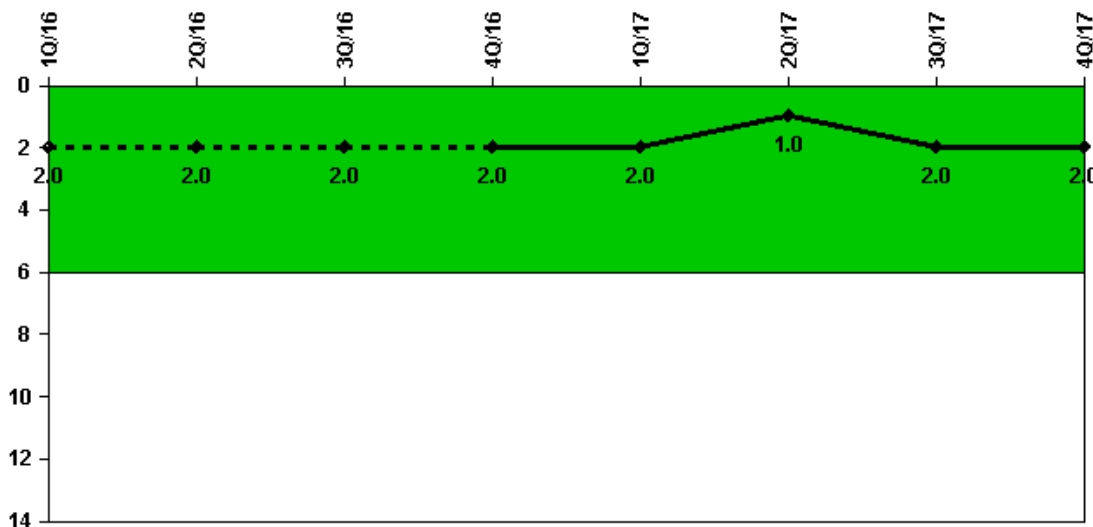
Unplanned Scrams with Complications	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17	4Q/17
Scrams with complications	0	0	0	0	0	0	0	0

Indicator value	1.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0
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Licensee Comments: none

Safety System Functional Failures (BWR)



Thresholds: White > 6.0

Notes

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

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

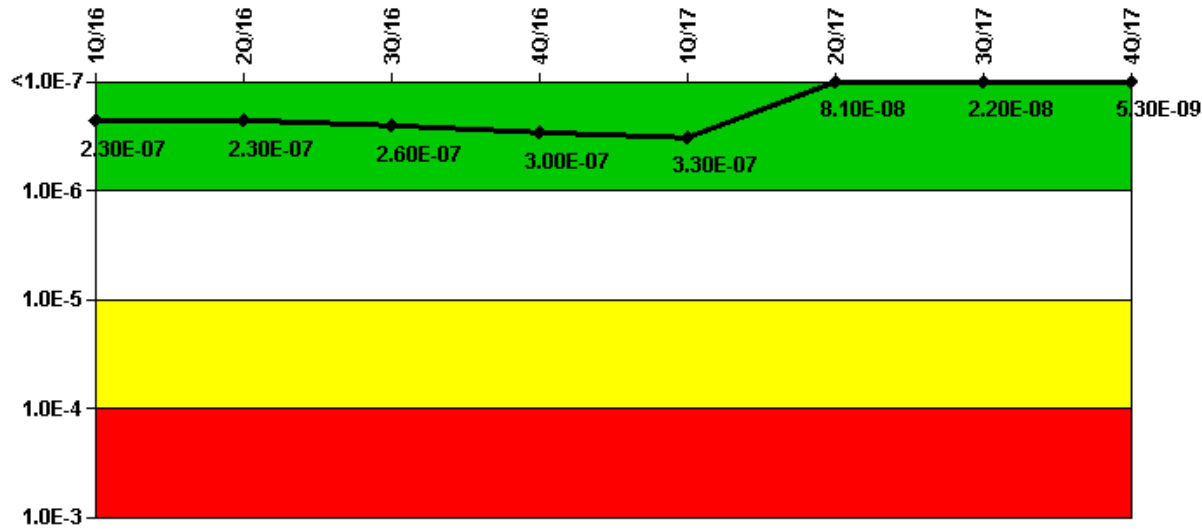
Indicator value 2 2 2 2 2 1 2 2

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Licensee Comments:

- 3Q/17: LER 2017-004, High Pressure Coolant Injection Steam Stop Valve Failed to Open During Test, dated August 16, 2017.
- 1Q/17: LER 2016-003, HPCI Declared Inoperable Due to Excessive Water Level in Turbine
- 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.

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/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17	4Q/17
UAI (ΔCDF)	2.65E-08	2.63E-08	4.97E-08	7.78E-08	1.09E-07	9.35E-08	1.94E-08	2.26E-08
URI (ΔCDF)	2.08E-07	2.08E-07	2.08E-07	2.21E-07	2.21E-07	-1.27E-08	2.77E-09	-1.73E-08
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	2.30E-07	2.30E-07	2.60E-07	3.00E-07	3.30E-07	8.10E-08	2.20E-08	5.30E-09

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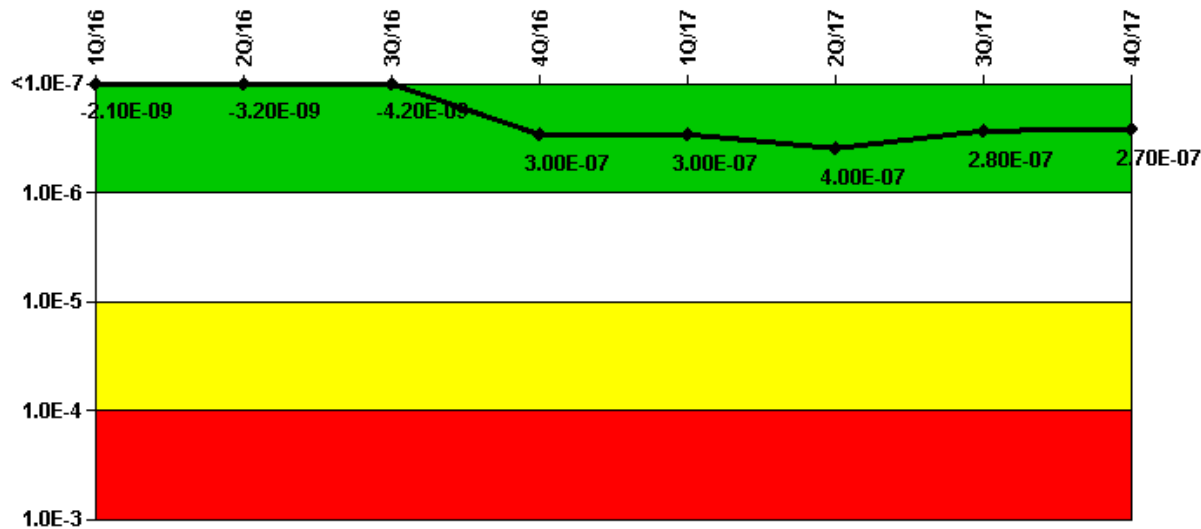
Licensee Comments:

4Q/17: Changed PRA Parameter(s). Effective 3Q17, PRA Model was updated to Revision 3.4 which drove a MSPI Basis Document change and revised the MSPI coefficients.

3Q/17: Changed PRA Parameter(s). Effective 3Q17, PRA Model was updated to Revision 3.4 which drove a MSPI Basis Document change and revised the MSPI coefficients.

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.

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/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17	4Q/17
UAI (ΔCDF)	-5.00E-08	-5.00E-08	-5.00E-08	-1.87E-08	-1.47E-08	4.89E-08	2.90E-08	2.42E-08
URI (ΔCDF)	4.79E-08	4.68E-08	4.57E-08	3.19E-07	3.19E-07	3.52E-07	2.46E-07	2.46E-07
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	-2.10E-09	-3.20E-09	-4.20E-09	3.00E-07	3.00E-07	4.00E-07	2.80E-07	2.70E-07

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Licensee Comments:

4Q/17: Changed PRA Parameter(s). Effective 3Q17, PRA Model was updated to Revision 3.4 which drove a MSPI Basis Document change and revised the MSPI coefficients.

3Q/17: Changed PRA Parameter(s). Effective 3Q17, PRA Model was updated to Revision 3.4 which drove a MSPI Basis Document change and revised the MSPI coefficients.

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.

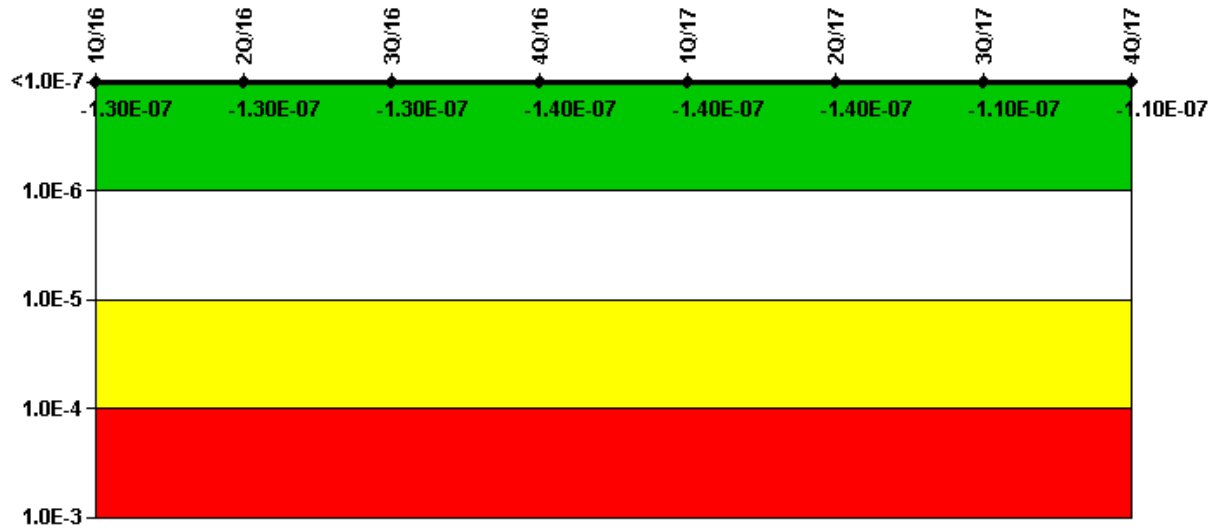
2Q/16: The engineering evaluation for the HPCI event that occurred in 1Q2016 (3/22/16) has been complete. The evaluation determined this event was a MSPI Run Failure against the High Pressure Injection indicator. The MSPI unavailability hours for the HPCI in the 1Q2016 submittal included the HPCI event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

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

	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17	4Q/17
UAI (ΔCDF)	-4.71E-08	-4.71E-08	-4.71E-08	-5.01E-08	-5.01E-08	-5.01E-08	-3.93E-08	-3.93E-08
URI (ΔCDF)	-8.07E-08	-8.20E-08	-8.32E-08	-8.99E-08	-9.12E-08	-9.12E-08	-7.40E-08	-7.40E-08
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	-1.30E-07	-1.30E-07	-1.30E-07	-1.40E-07	-1.40E-07	-1.40E-07	-1.10E-07	-1.10E-07

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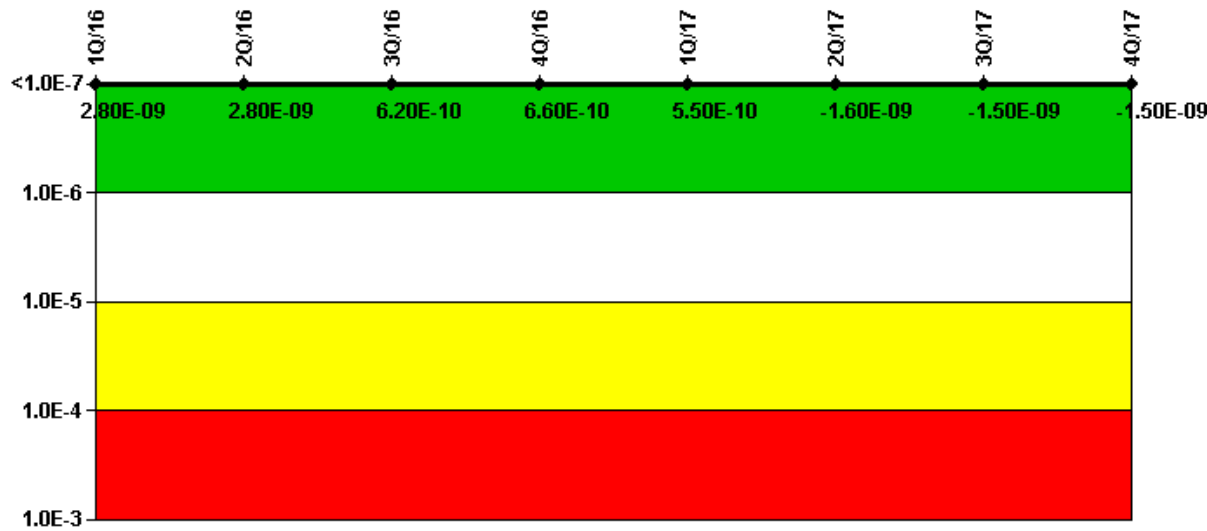
Licensee Comments:

4Q/17: Changed PRA Parameter(s). Effective 3Q17, PRA Model was updated to Revision 3.4 which drove a MSPI Basis Document change and revised the MSPI coefficients.

3Q/17: Changed PRA Parameter(s). Effective 3Q17, PRA Model was updated to Revision 3.4 which drove a MSPI Basis Document change and revised the MSPI coefficients.

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.

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/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17	4Q/17
UAI (Δ CDF)	-2.76E-10	-2.43E-10	-2.65E-10	-2.82E-10	-4.06E-10	-3.56E-10	0.00E+00	0.00E+00
URI (Δ CDF)	3.05E-09	3.05E-09	8.80E-10	9.46E-10	9.54E-10	-1.24E-09	-1.47E-09	-1.47E-09
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	2.80E-09	2.80E-09	6.20E-10	6.60E-10	5.50E-10	-1.60E-09	-1.50E-09	-1.50E-09

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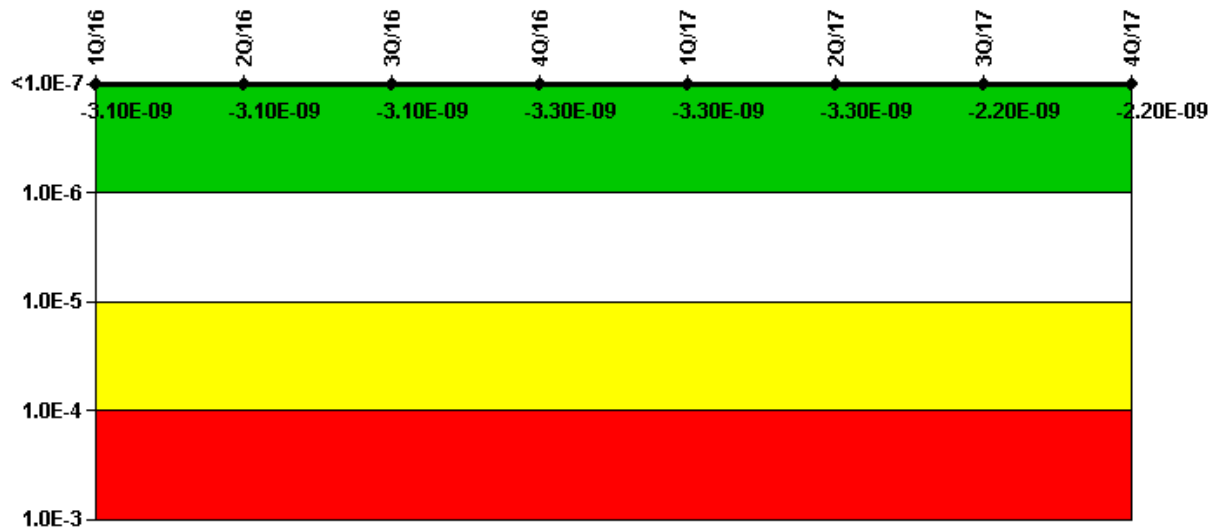
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3Q/16: The MSPI basis document was updated to reflect the CDF number from PRA-CALC-05-003, Rev. 6. The CDF number was updated to 1.16E-6 for the Rev. 3.3 PRA model update.

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/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17	4Q/17
UAI (ΔCDF)	-3.06E-09	-3.06E-09	-3.06E-09	-3.25E-09	-3.25E-09	-3.25E-09	-2.18E-09	-2.18E-09
URI (ΔCDF)	3.25E-13	3.47E-13	3.70E-13	-1.07E-12	-1.06E-12	-1.06E-12	-4.73E-12	-4.73E-12
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	-3.10E-09	-3.10E-09	-3.10E-09	-3.30E-09	-3.30E-09	-3.30E-09	-2.20E-09	-2.20E-09

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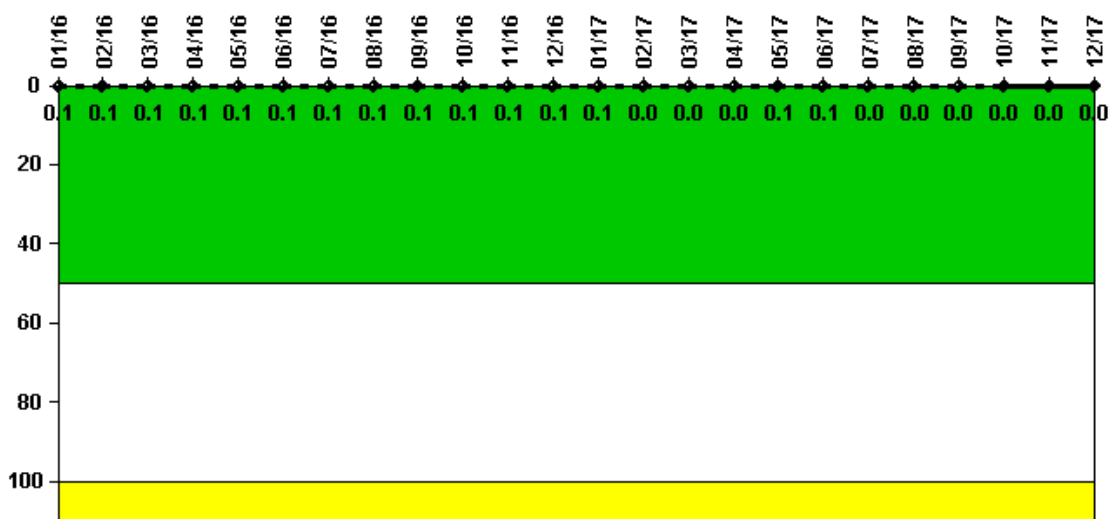
Licensee Comments:

4Q/17: Changed PRA Parameter(s). Effective 3Q17, PRA Model was updated to Revision 3.4 which drove a MSPI Basis Document change and revised the MSPI coefficients.

3Q/17: Changed PRA Parameter(s). Effective 3Q17, PRA Model was updated to Revision 3.4 which drove a MSPI Basis Document change and revised the MSPI coefficients.

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.

Reactor Coolant System Activity



Thresholds: White > 50.0 Yellow > 100.0

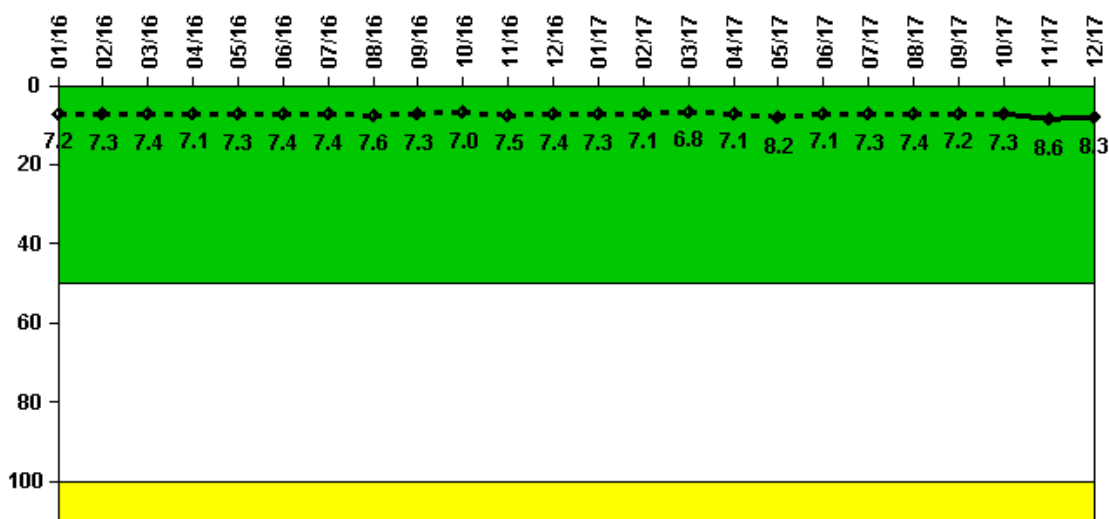
Notes

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
Reactor Coolant System Activity	1/17	2/17	3/17	4/17	5/17	6/17	7/17	8/17	9/17	10/17	11/17	12/17
Maximum activity	0.000111	0.000055	0.000063	0.000058	0.000105	0.000110	0.000097	0.000080	0.000070	0.000064	0.000097	0.000070
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	0	0	0.1	0.1	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	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

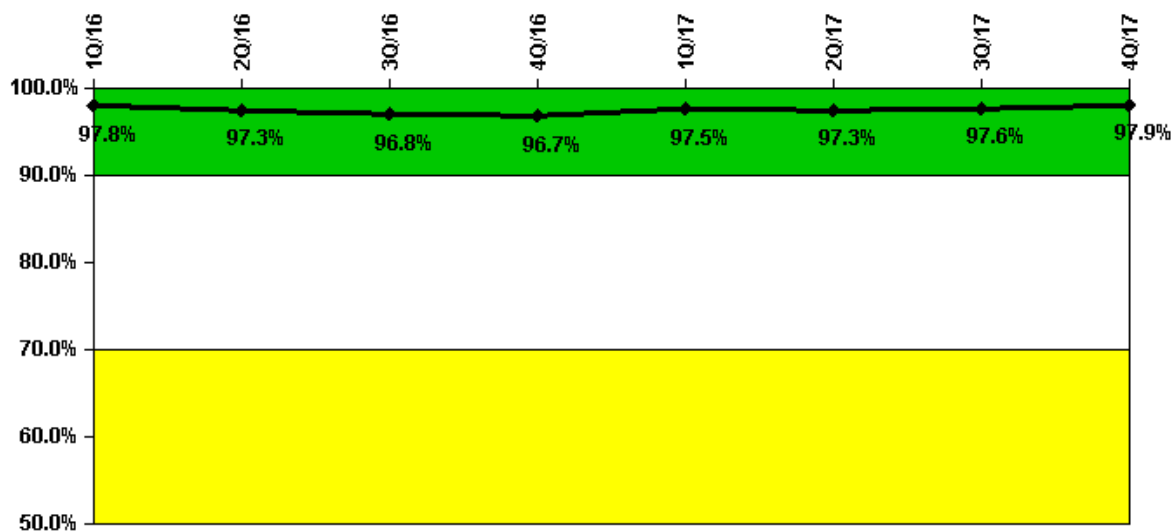
Indicator value	7.2	7.3	7.4	7.1	7.3	7.4	7.4	7.6	7.3	7.0	7.5	7.4
Reactor Coolant System Leakage	1/17	2/17	3/17	4/17	5/17	6/17	7/17	8/17	9/17	10/17	11/17	12/17
Maximum leakage	1.820	1.780	1.710	1.780	2.060	1.770	1.830	1.840	1.790	1.820	2.150	2.070
Technical specification limit	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0

Indicator value	7.3	7.1	6.8	7.1	8.2	7.1	7.3	7.4	7.2	7.3	8.6	8.3
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Licensee Comments: none

Drill/Exercise Performance



Thresholds: White < 90.0% Yellow < 70.0%

Notes

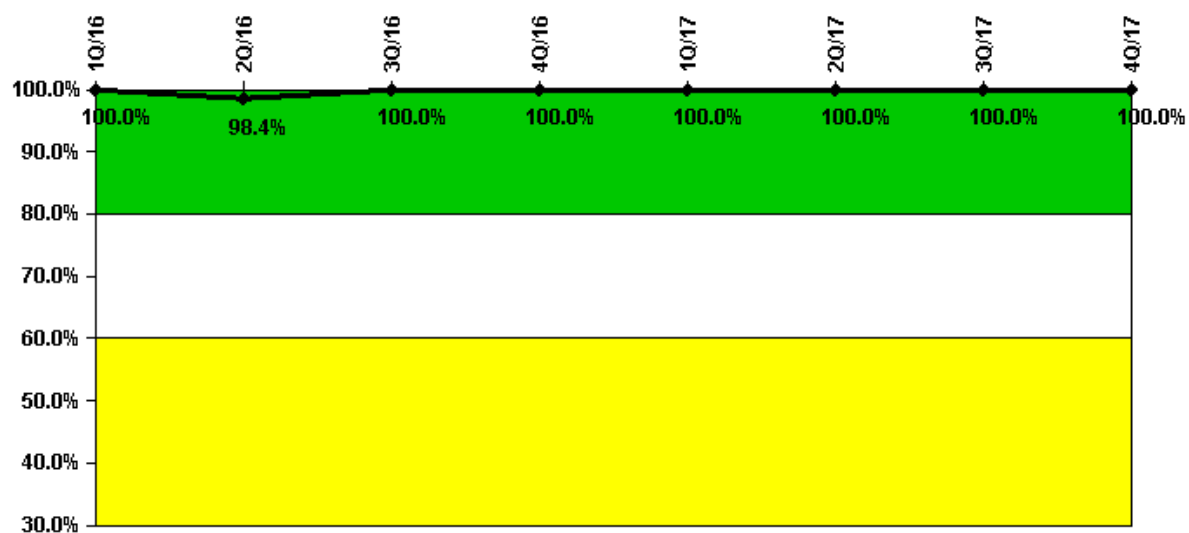
Drill/Exercise Performance	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17	4Q/17
Successful opportunities	52.0	65.0	52.0	31.0	44.0	0	35.0	52.0
Total opportunities	55.0	66.0	54.0	31.0	44.0	0	36.0	52.0

Indicator value 97.8% 97.3% 96.8% 96.7% 97.5% 97.3% 97.6% 97.9%

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Licensee Comments: none

ERO Drill Participation



Thresholds: White < 80.0% Yellow < 60.0%

Notes

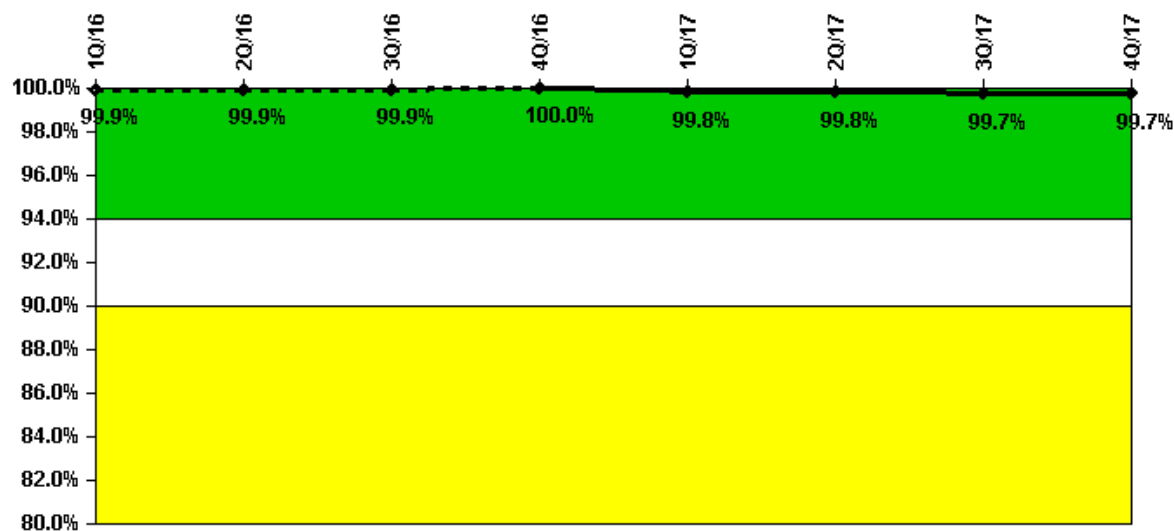
ERO Drill Participation	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17	4Q/17
Participating Key personnel	133.0	123.0	121.0	124.0	124.0	118.0	118.0	122.0
Total Key personnel	133.0	125.0	121.0	124.0	124.0	118.0	118.0	122.0

Indicator value **100.0% 98.4% 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

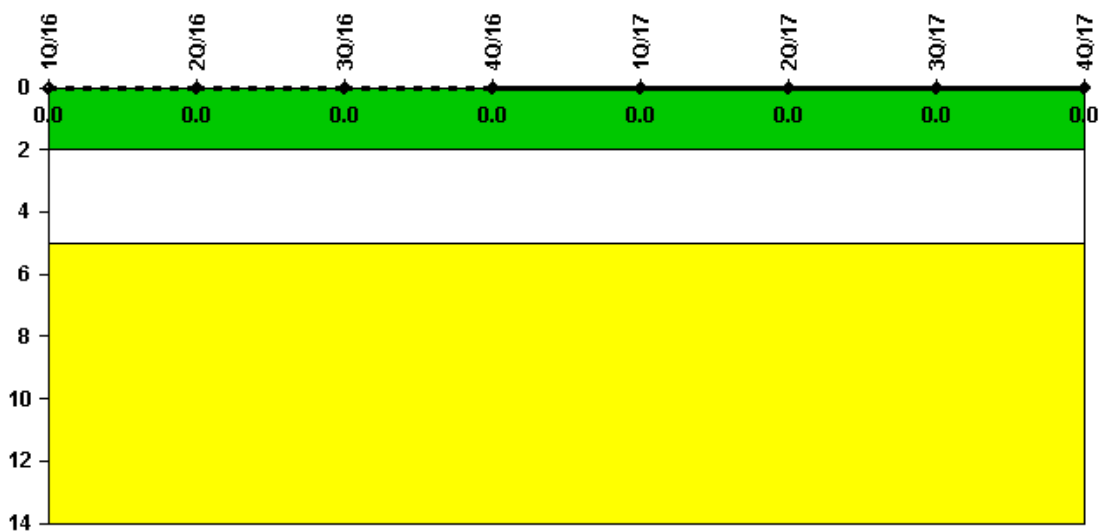
Alert & Notification System	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17	2Q/17	3Q/17	4Q/17
Successful siren-tests	1378	1377	1377	1378	1371	1376	1372	1376
Total sirens-tests	1378	1378	1378	1378	1378	1378	1378	1378

Indicator value **99.9% 99.9% 99.9% 100.0% 99.8% 99.8% 99.7% 99.7%**

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Licensee Comments: none

Occupational Exposure Control Effectiveness



Thresholds: White > 2.0 Yellow > 5.0

Notes

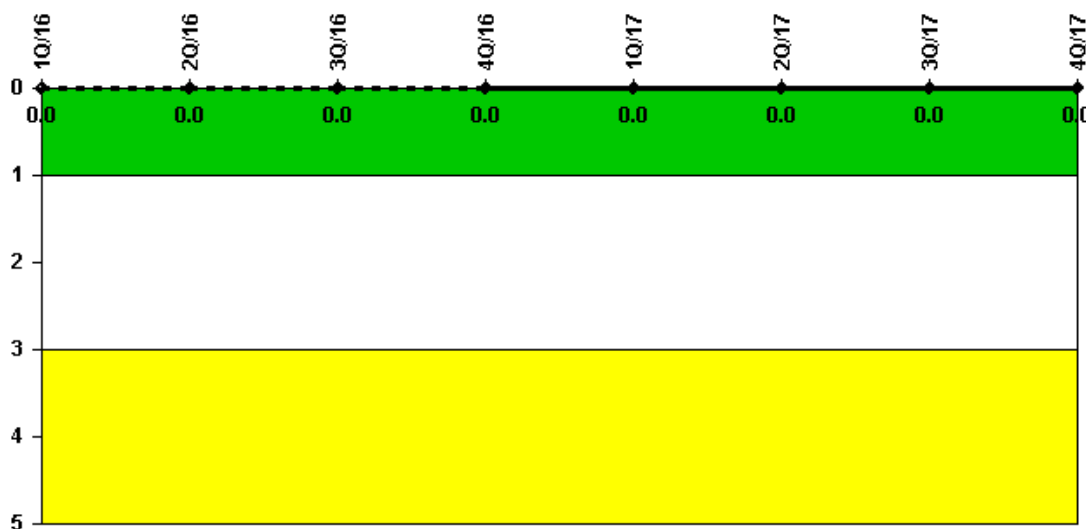
Occupational Exposure Control Effectiveness 1Q/16 2Q/16 3Q/16 4Q/16 1Q/17 2Q/17 3Q/17 4Q/17

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
Indicator value	0	0	0	0	0	0	0	0

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Licensee Comments: none

RETS/ODCM Radiological Effluent



Thresholds: White > 1.0 Yellow > 3.0

Notes

RETS/ODCM Radiological Effluent 1Q/16 2Q/16 3Q/16 4Q/16 1Q/17 2Q/17 3Q/17 4Q/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: February 1, 2018

Page Last Reviewed/Updated Monday, November 06, 2017