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Fort Calhoun – Quarterly Performance Indicators

3Q/2016 Performance Indicators

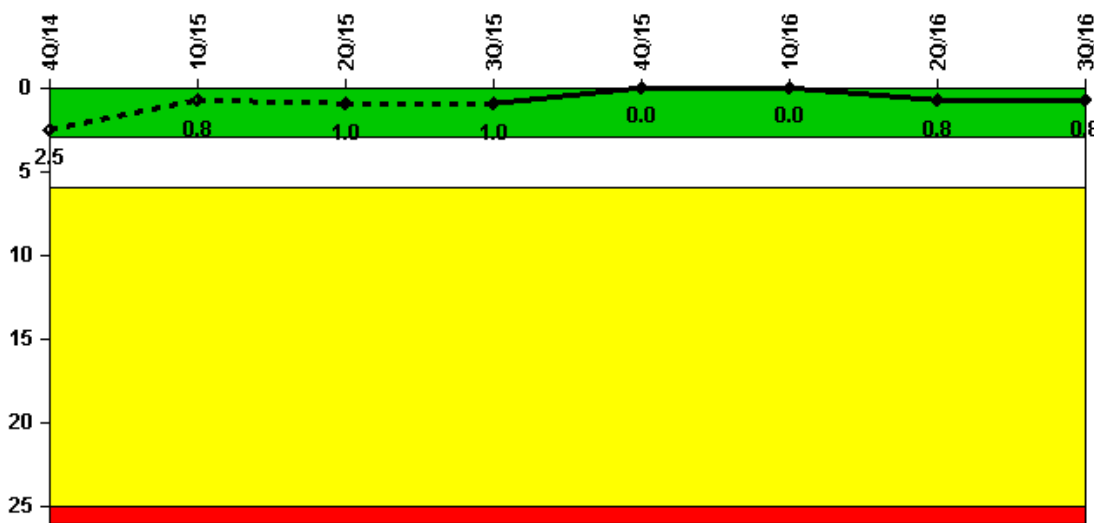
The solid trend line represents the current reporting period.

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

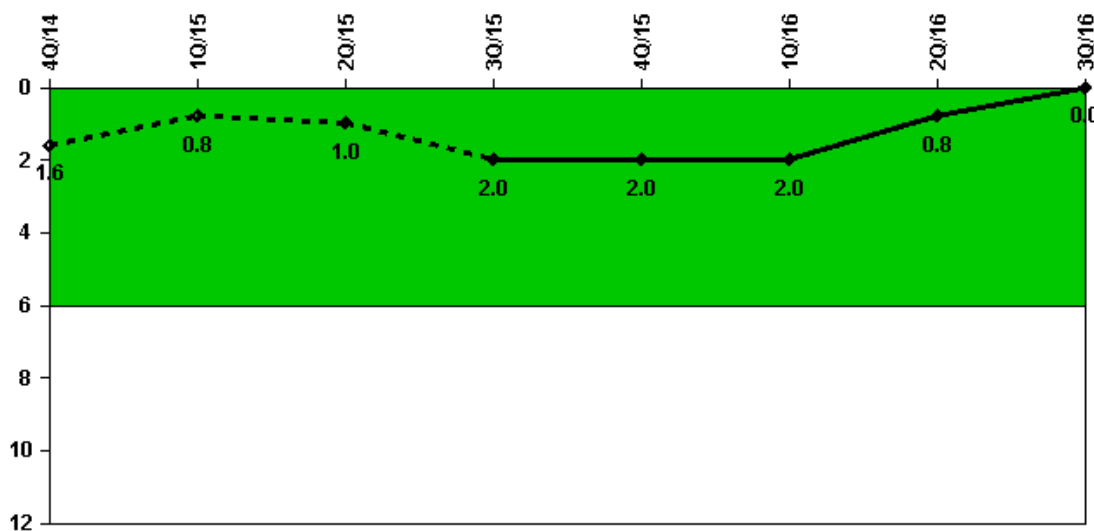
Unplanned Scrams per 7000 Critical Hrs	4Q/14	1Q/15	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16
Unplanned scrams	1.0	0	0	0	0	0	1.0	0
Critical hours	2140.2	2159.0	772.9	1999.9	2209.0	2183.0	2142.5	2208.0

Indicator value: 2.5 0.8 1.0 1.0 0 0 0.8 0.8

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Licensee Comments: none

Unplanned Power Changes per 7000 Critical Hrs



Thresholds: White > 6.0

Notes

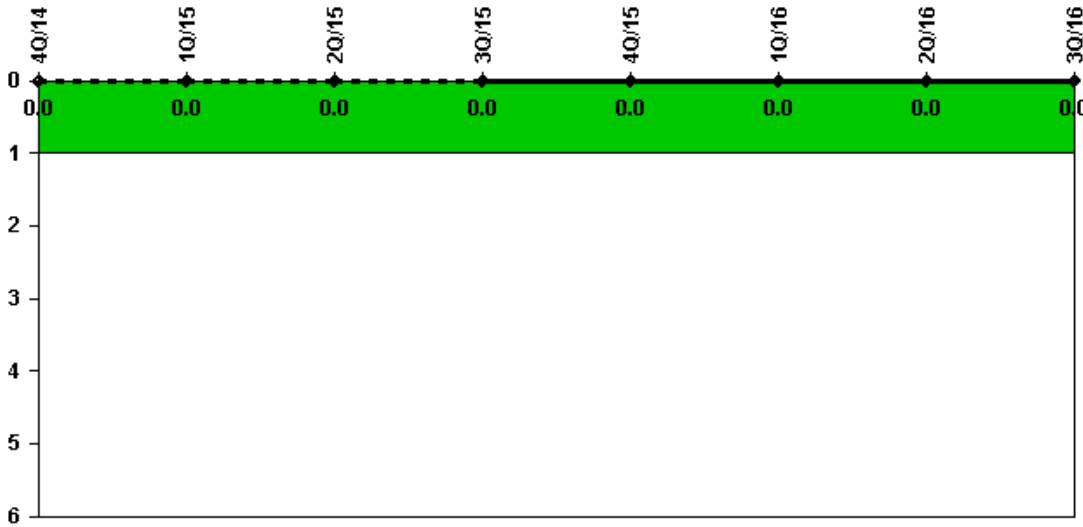
Unplanned Power Changes per 7000 Critical Hrs	4Q/14	1Q/15	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16
Unplanned power changes	0	0	1.0	1.0	0	0	0	0
Critical hours	2140.2	2159.0	772.9	1999.9	2209.0	2183.0	2142.5	2208.0
Indicator value	1.6	0.8	1.0	2.0	2.0	2.0	0.8	0

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Licensee Comments:

4Q/15: An oversight in the third quarter submittal has been corrected adding an additional unplanned power change to the performance indicator. There has been no change in the color of the indicator.

Unplanned Scrams with Complications



Thresholds: White > 1.0

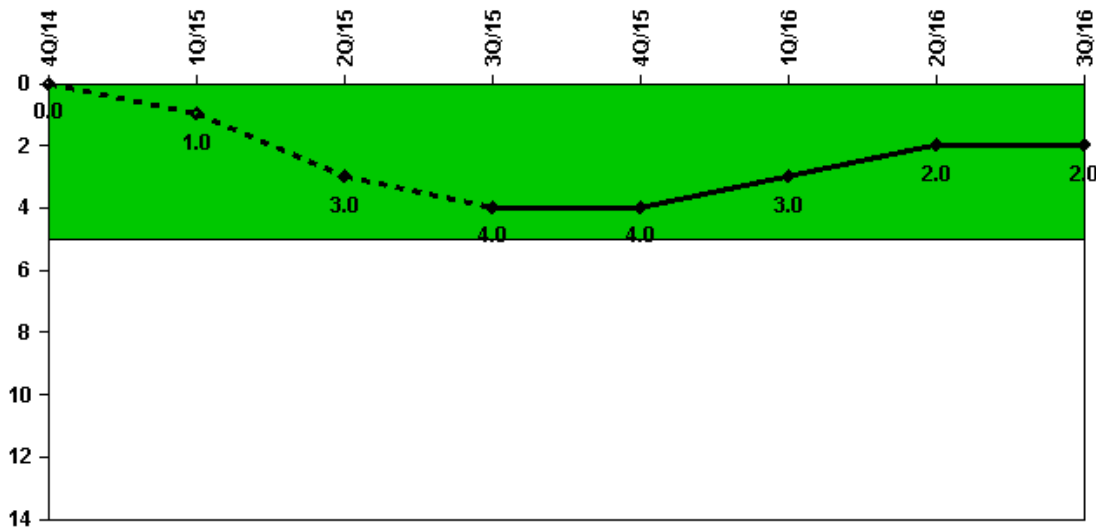
Notes

Unplanned Scrams with Complications	4Q/14	1Q/15	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16
Scrams with complications	0	0	0	0	0	0	0	0
Indicator value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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Licensee Comments: none

Safety System Functional Failures (PWR)



Thresholds: White > 5.0

Notes

Safety System Functional Failures (PWR) 4Q/14 1Q/15 2Q/15 3Q/15 4Q/15 1Q/16 2Q/16 3Q/16

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

Indicator value 0 1 3 4 4 3 2 2

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Licensee Comments:

3Q/16: LER 2016-002 Unanalyzed Condition Shutdown Heat Exchanger Isolations

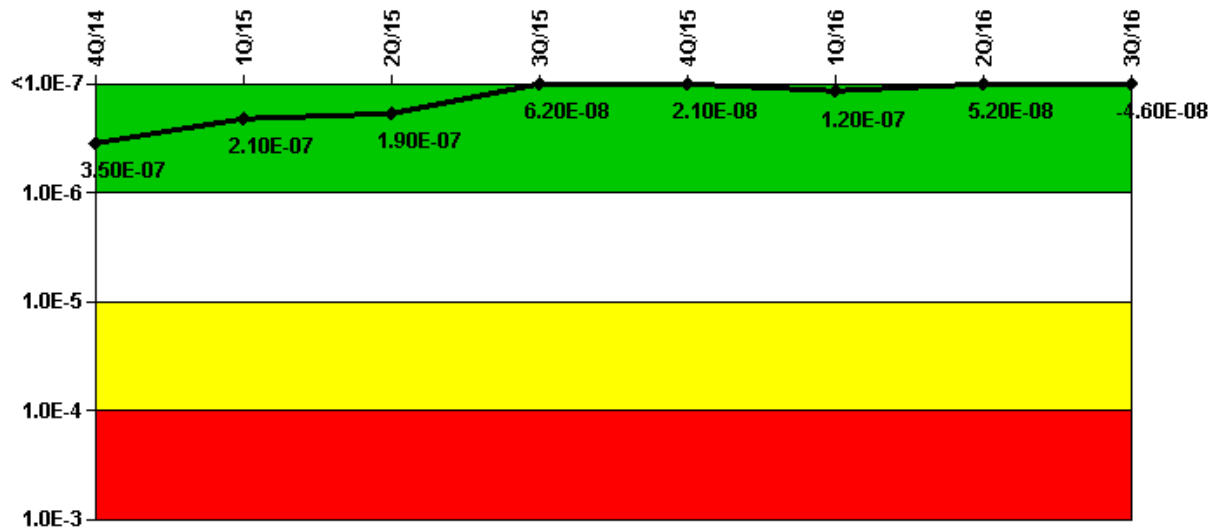
2Q/16: LER 2016-01, Technical Specification Violation due to Installation of an Unqualified Part in a Radiation Monitor

3Q/15: LER 2015-004 Inoperability of Auxiliary Feedwater Trains Due to Failure of a Steam Generator Isolation Valve

2Q/15: LER 2015-002, Inoperable Auxiliary Feedwater System Due to Inadequate Procedure Change; LER 3015-003 Containment Spray Inoperable Due to Original Design

1Q/15: LER 2013-014 Rev 2 Unqualified Components used in Safety System Control Circuit

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

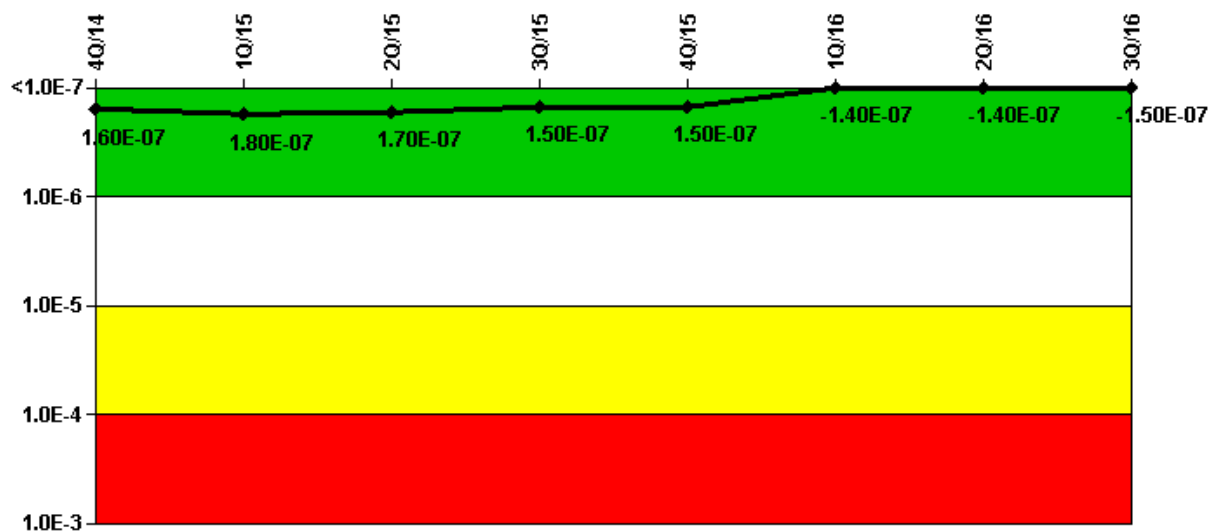
	4Q/14	1Q/15	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16
UAI (ΔCDF)	4.66E-07	5.38E-07	4.99E-07	3.75E-07	2.93E-07	3.93E-07	3.21E-07	2.32E-07
URI (ΔCDF)	-1.15E-07	-3.24E-07	-3.13E-07	-3.13E-07	-2.72E-07	-2.69E-07	-2.69E-07	-2.78E-07
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	3.50E-07	2.10E-07	1.90E-07	6.20E-08	2.10E-08	1.20E-07	5.20E-08	4.60E-08

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Licensee Comments:

4Q/15: For the third quarter of 2014 and forward the PRA parameters were updated to the revised model.

Mitigating Systems Performance Index, High Pressure Injection System



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

Notes

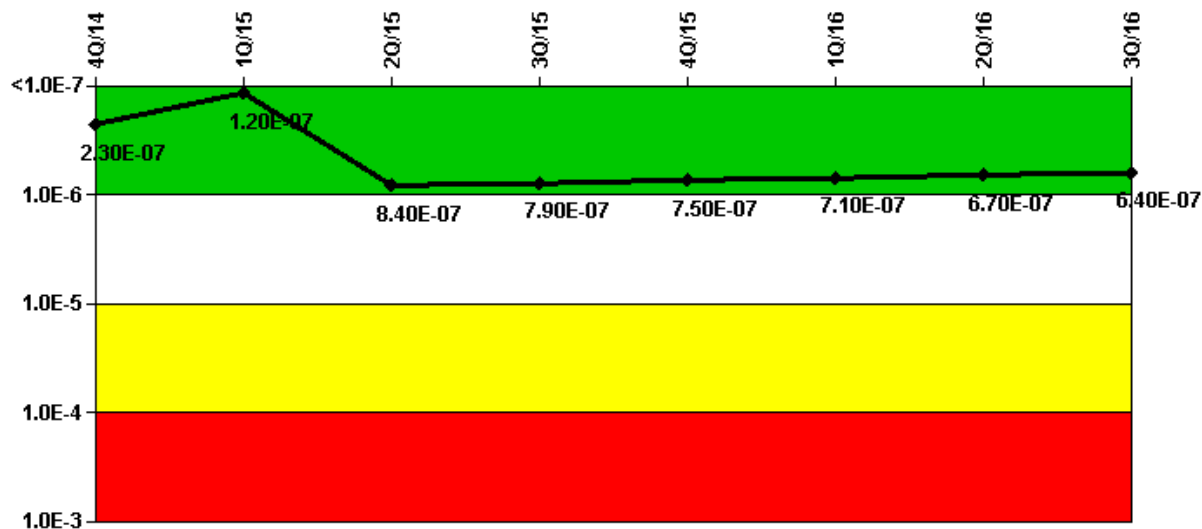
Mitigating Systems Performance Index, High Pressure Injection System

	4Q/14	1Q/15	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16
UAI (ΔCDF)	-7.74E-08	-5.58E-08	-6.34E-08	-7.74E-08	-7.74E-08	-6.19E-08	-6.79E-08	-7.25E-08
URI (ΔCDF)	2.36E-07	2.37E-07	2.33E-07	2.32E-07	2.26E-07	-7.54E-08	-7.60E-08	-7.43E-08
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	1.60E-07	1.80E-07	1.70E-07	1.50E-07	1.50E-07	-1.40E-07	-1.40E-07	-1.50E-07

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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/14	1Q/15	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16
UAI (ΔCDF)	-1.04E-08	-9.62E-08	-9.62E-08	-9.62E-08	-9.62E-08	-9.62E-08	-9.62E-08	-9.62E-08
URI (ΔCDF)	2.43E-07	2.20E-07	9.38E-07	8.88E-07	8.44E-07	8.09E-07	7.69E-07	7.40E-07
PLE	NO	NO	NO	NO	NO	NO	NO	NO

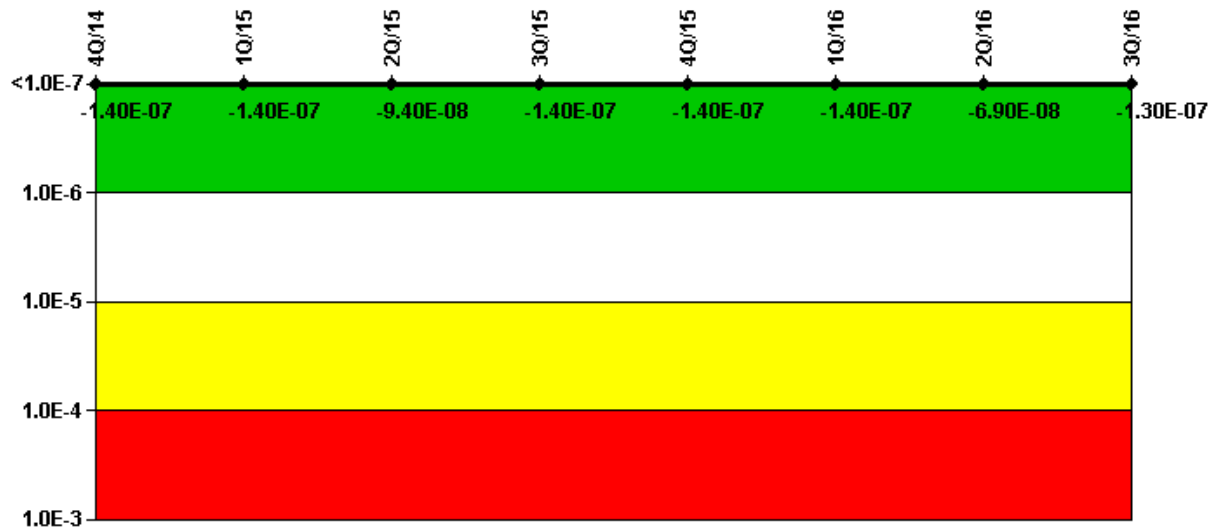
Indicator value 2.30E-07 1.20E-07 8.40E-07 7.90E-07 7.50E-07 7.10E-07 6.70E-07 6.40E-07

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Licensee Comments:

- 3Q/16: Risk Cap Invoked.
- 2Q/16: Risk Cap Invoked.
- 1Q/16: Risk Cap Invoked.
- 4Q/15: Risk Cap Invoked.
- 3Q/15: Risk Cap Invoked.
- 2Q/15: Risk Cap Invoked.
- 1Q/15: Risk Cap Invoked.
- 4Q/14: Risk Cap Invoked.

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

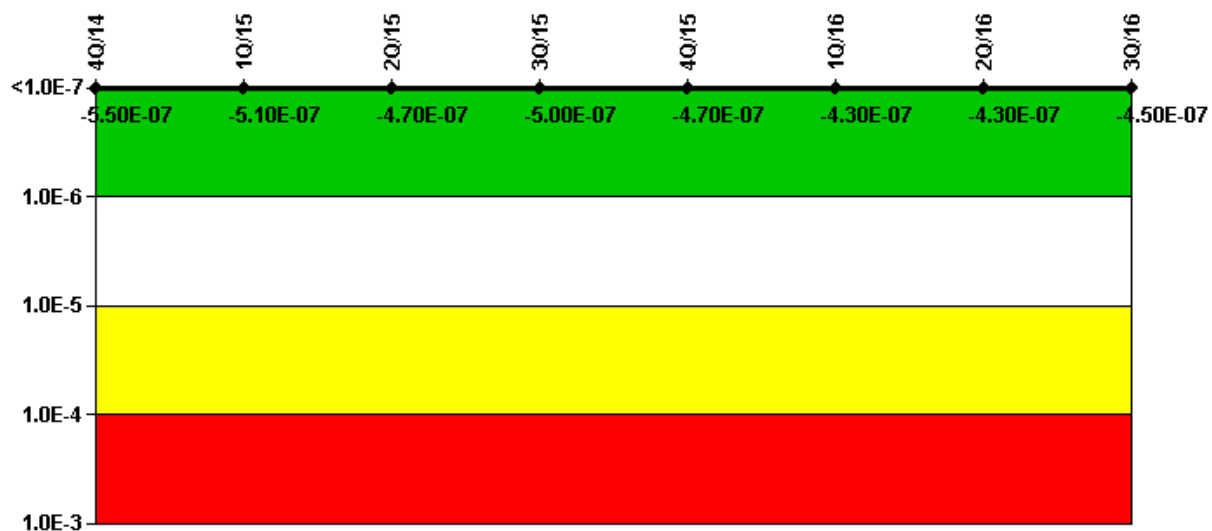
	4Q/14	1Q/15	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16
UAI (ΔCDF)	-1.31E-07	-1.31E-07	-8.00E-08	-1.31E-07	-1.31E-07	-1.31E-07	-6.14E-08	-1.22E-07
URI (ΔCDF)	-9.22E-09	-8.66E-09	-1.38E-08	-1.31E-08	-1.25E-08	-9.44E-09	-8.04E-09	-7.25E-09
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	-1.40E-07	-1.40E-07	-9.40E-08	-1.40E-07	-1.40E-07	-1.40E-07	-6.90E-08	-1.30E-07

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Licensee Comments:

- 4Q/15: Changed PRA Parameter(s). During an update to the MSPI basis document an error was discovered in three of the PRA parameters for this indicator. The correction is applied for third quarter 2014 through third quarter 2015. The change did not affect the color of the PI over this period.
- 3Q/15: Changed PRA Parameter(s).
- 2Q/15: Changed PRA Parameter(s).
- 1Q/15: Changed PRA Parameter(s).
- 4Q/14: 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

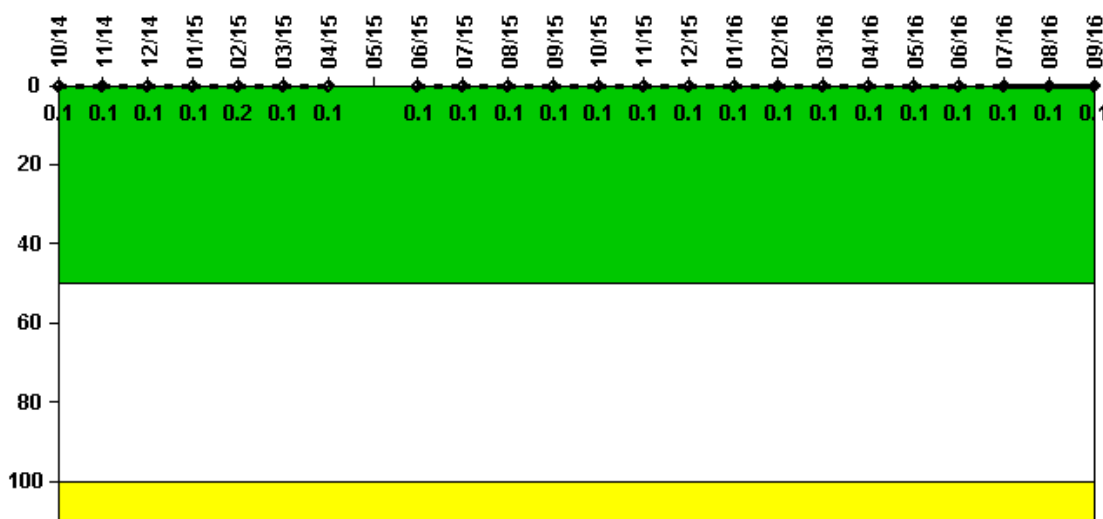
Mitigating Systems Performance Index, Cooling Water Systems

	4Q/14	1Q/15	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16
UAI (Δ CDF)	-5.67E-07	-5.25E-07	-5.40E-07	-5.67E-07	-5.42E-07	-5.03E-07	-5.04E-07	-5.27E-07
URI (Δ CDF)	1.23E-08	1.35E-08	7.33E-08	6.80E-08	7.00E-08	7.49E-08	7.79E-08	8.00E-08
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	-5.50E-07	-5.10E-07	-4.70E-07	-5.00E-07	-4.70E-07	-4.30E-07	-4.30E-07	-4.50E-07

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Licensee Comments: none

Reactor Coolant System Activity



Thresholds: White > 50.0 Yellow > 100.0

Notes

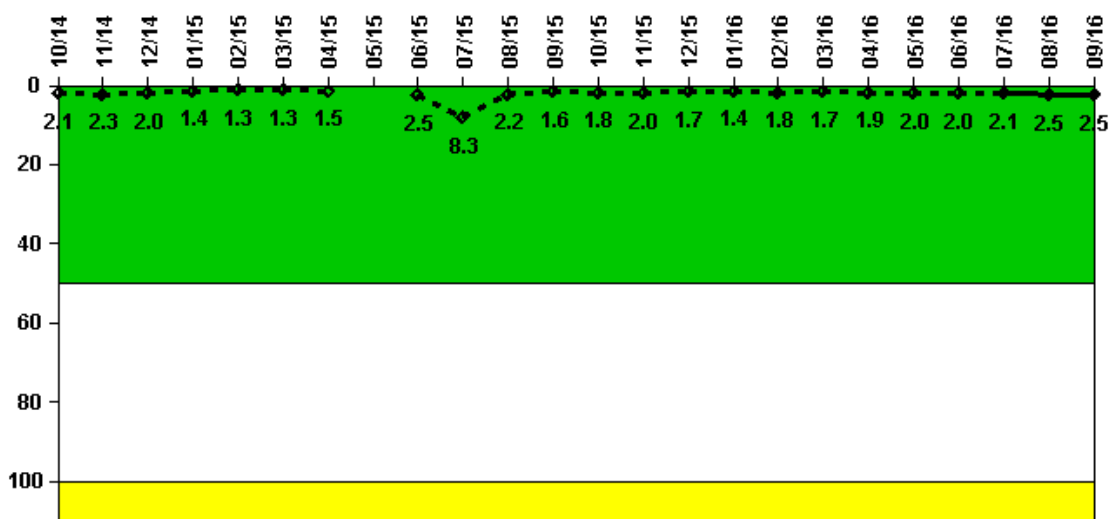
Reactor Coolant System Activity	10/14	11/14	12/14	1/15	2/15	3/15	4/15	5/15	6/15	7/15	8/15	9/15
Maximum activity	0.001300	0.001380	0.001340	0.001380	0.001500	0.001420	0.001400	N/A	0.000633	0.000741	0.000772	0.000837
Technical specification limit	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Indicator value	0.1	0.1	0.1	0.1	0.2	0.1	0.1	N/A	0.1	0.1	0.1	0.1

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	0.000925	0.000839	0.000907	0.000971	0.000949	0.001020	0.001030	0.001020	0.001010	0.001140	0.001090	0.001240
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	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	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	10/14	11/14	12/14	1/15	2/15	3/15	4/15	5/15	6/15	7/15	8/15	9/15
Maximum leakage	0.211	0.231	0.198	0.138	0.134	0.129	0.148	N/A	0.247	0.828	0.218	0.157
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

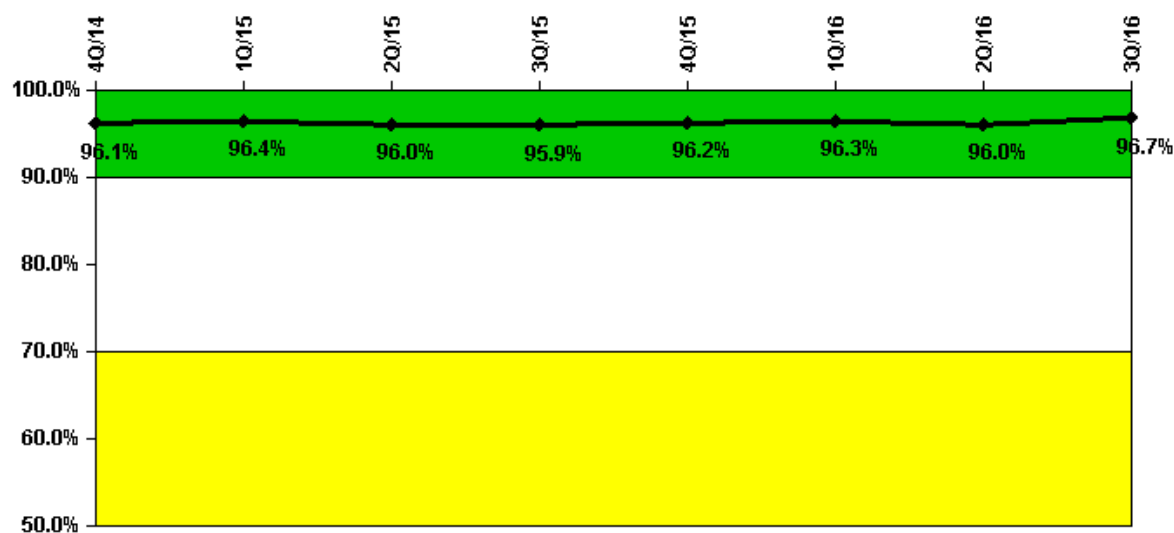
Indicator value	2.1	2.3	2.0	1.4	1.3	1.3	1.5	N/A	2.5	8.3	2.2	1.6
Reactor Coolant System Leakage	10/15	11/15	12/15	1/16	2/16	3/16	4/16	5/16	6/16	7/16	8/16	9/16
Maximum leakage	0.175	0.196	0.174	0.140	0.176	0.165	0.188	0.202	0.203	0.212	0.245	0.254
Technical specification limit	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Indicator value	1.8	2.0	1.7	1.4	1.8	1.7	1.9	2.0	2.0	2.1	2.5	2.5

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Licensee Comments:

12/15: A review of performance indicator data determined that the data for third quarter 2015 contained small errors. The changes did not result in a change in color to the performance indicator.

Drill/Exercise Performance



Thresholds: White < 90.0% Yellow < 70.0%

Notes

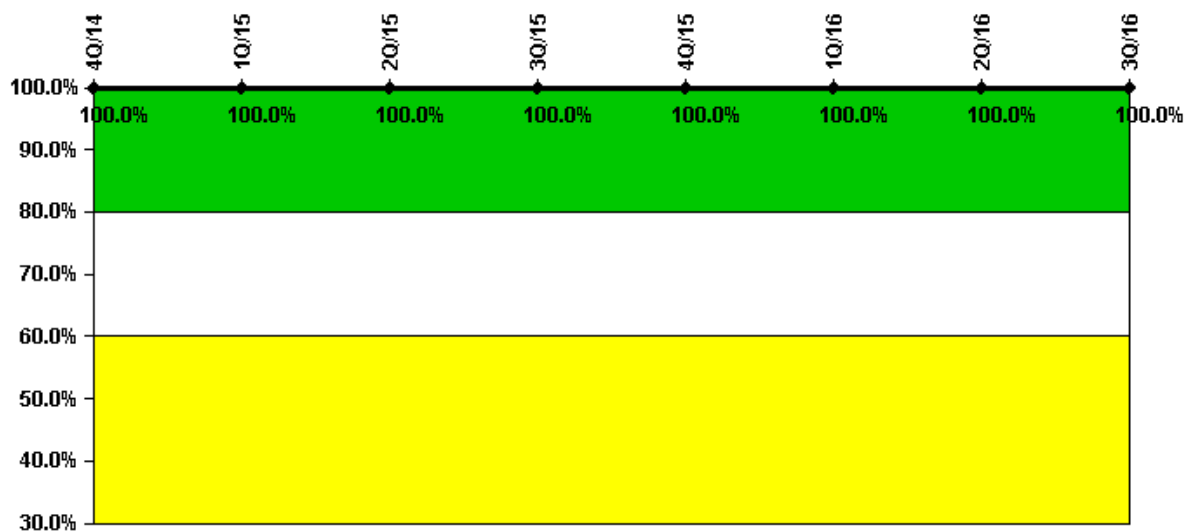
Drill/Exercise Performance	4Q/14	1Q/15	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16
Successful opportunities	82.0	49.0	12.0	73.0	60.0	26.0	34.0	68.0
Total opportunities	85.0	49.0	15.0	75.0	62.0	28.0	35.0	69.0

Indicator value **96.1% 96.4% 96.0% 95.9% 96.2% 96.3% 96.0% 96.7%**

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Licensee Comments: none

ERO Drill Participation



Thresholds: White < 80.0% Yellow < 60.0%

Notes

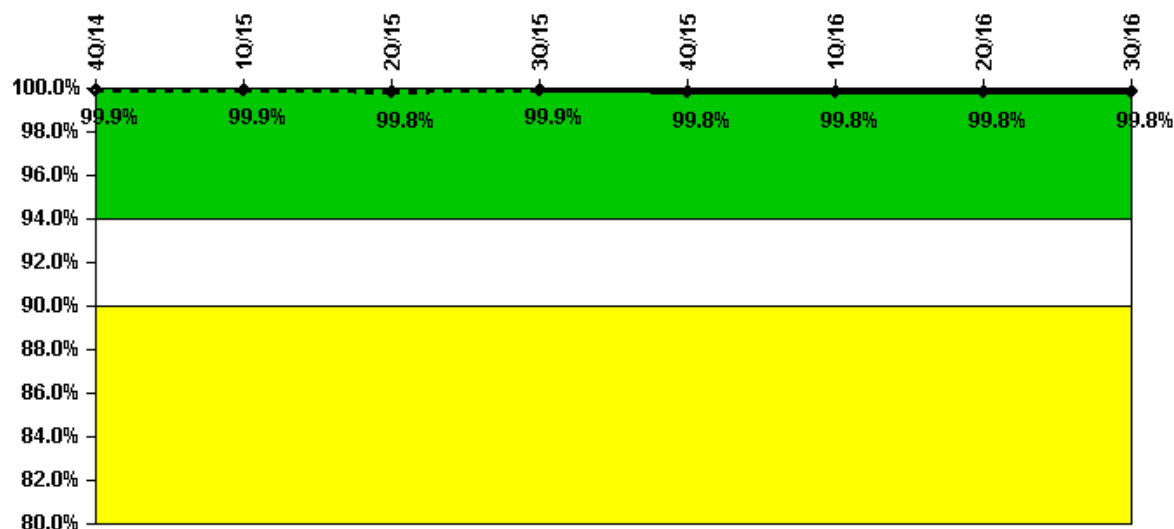
ERO Drill Participation	4Q/14	1Q/15	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16
Participating Key personnel	112.0	115.0	115.0	121.0	121.0	109.0	52.0	53.0
Total Key personnel	112.0	115.0	115.0	121.0	121.0	109.0	52.0	53.0

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

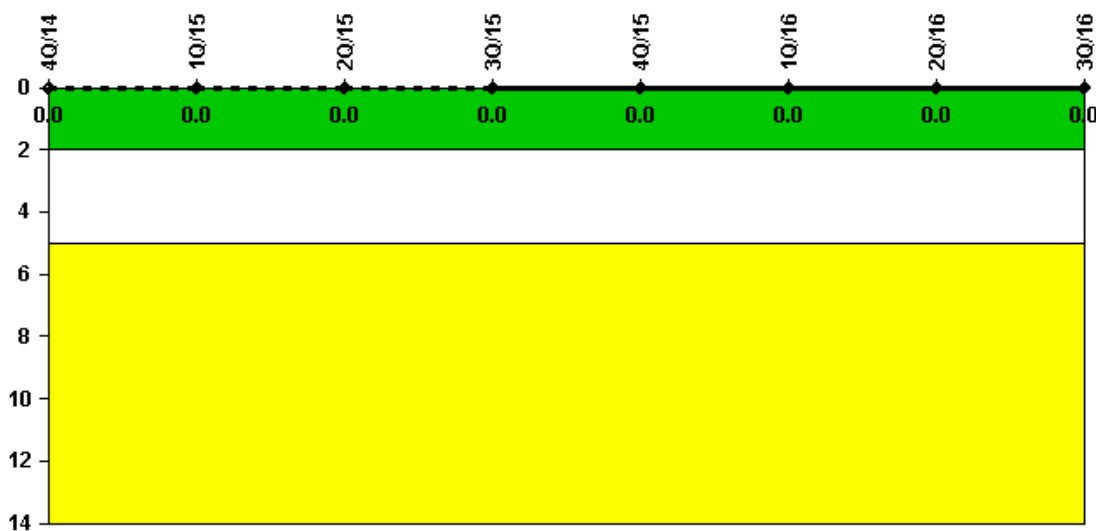
Alert & Notification System	4Q/14	1Q/15	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16
Successful siren-tests	706	807	706	909	703	807	705	909
Total sirens-tests	707	808	707	909	707	808	707	909

Indicator value 99.9% 99.9% 99.8% 99.9% 99.8% 99.8% 99.8% 99.8%

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Licensee Comments: none

Occupational Exposure Control Effectiveness



Thresholds: White > 2.0 Yellow > 5.0

Notes

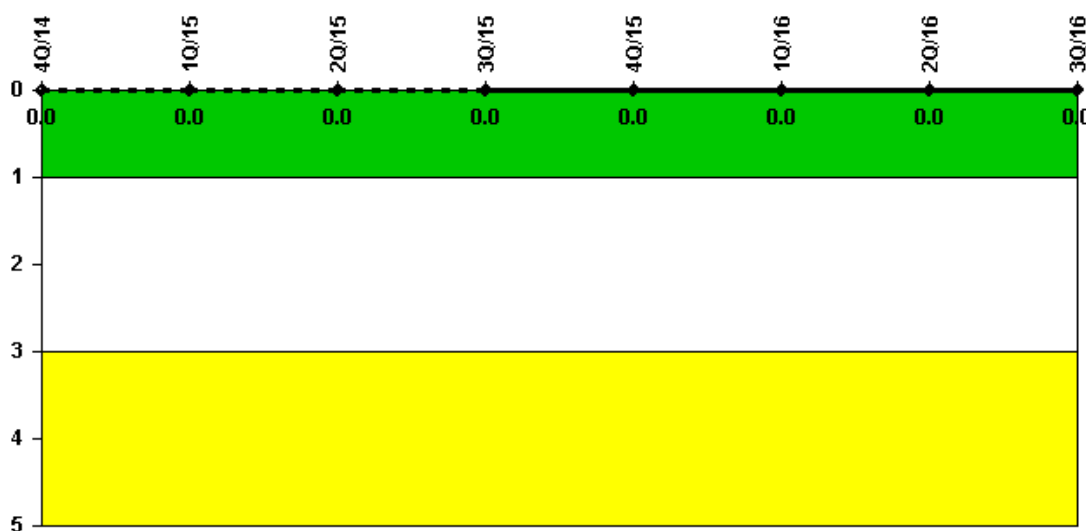
Occupational Exposure Control Effectiveness 4Q/14 1Q/15 2Q/15 3Q/15 4Q/15 1Q/16 2Q/16 3Q/16

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

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Licensee Comments: none

RETS/ODCM Radiological Effluent



Thresholds: White > 1.0 Yellow > 3.0

Notes

RETS/ODCM Radiological Effluent 4Q/14 1Q/15 2Q/15 3Q/15 4Q/15 1Q/16 2Q/16 3Q/16

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: December 12, 2016

Page Last Reviewed/Updated Wednesday, June 07, 2017