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Waterford 3 – Quarterly Performance Indicators

1Q/2017 Performance Indicators

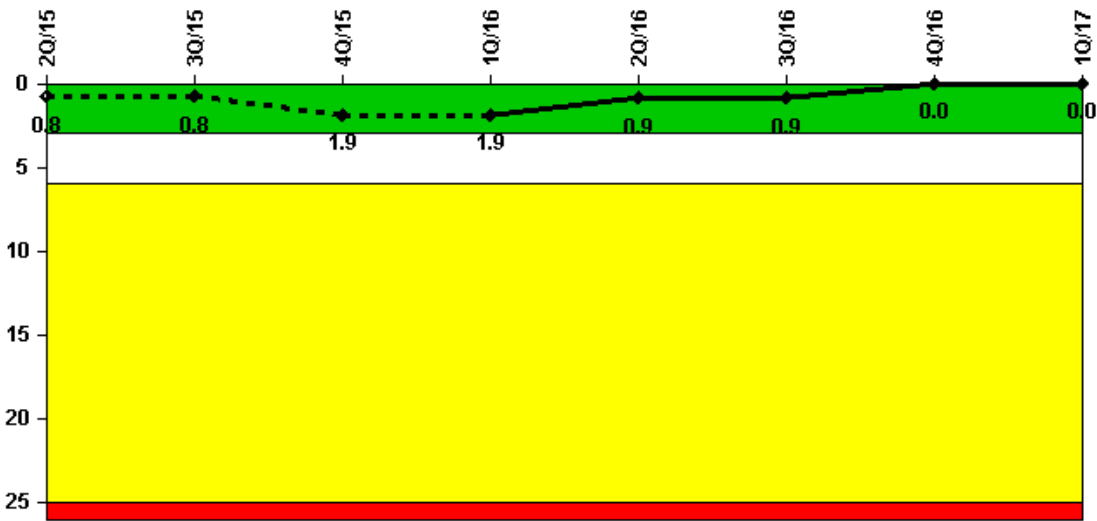
The solid trend line represents the current reporting period.

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

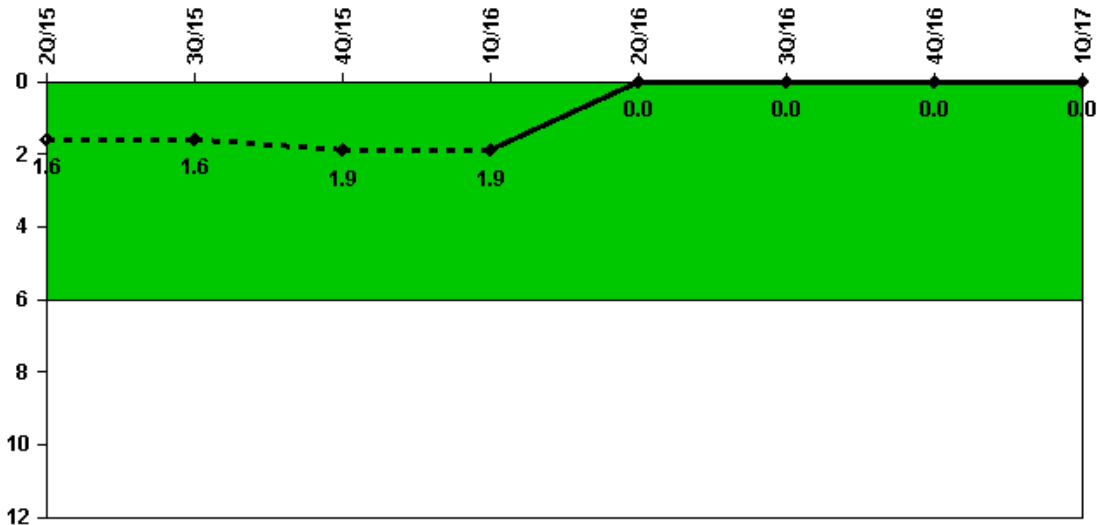
Unplanned Scrams per 7000 Critical Hrs	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17
Unplanned scrams	1.0	0	1.0	0	0	0	0	0
Critical hours	2079.8	2208.0	929.5	2183.0	2184.0	2208.0	2067.3	2159.0

Indicator value	0.8	0.8	1.9	1.9	0.9	0.9	0	0
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Licensee Comments: none

Unplanned Power Changes per 7000 Critical Hrs



Thresholds: White > 6.0

Notes

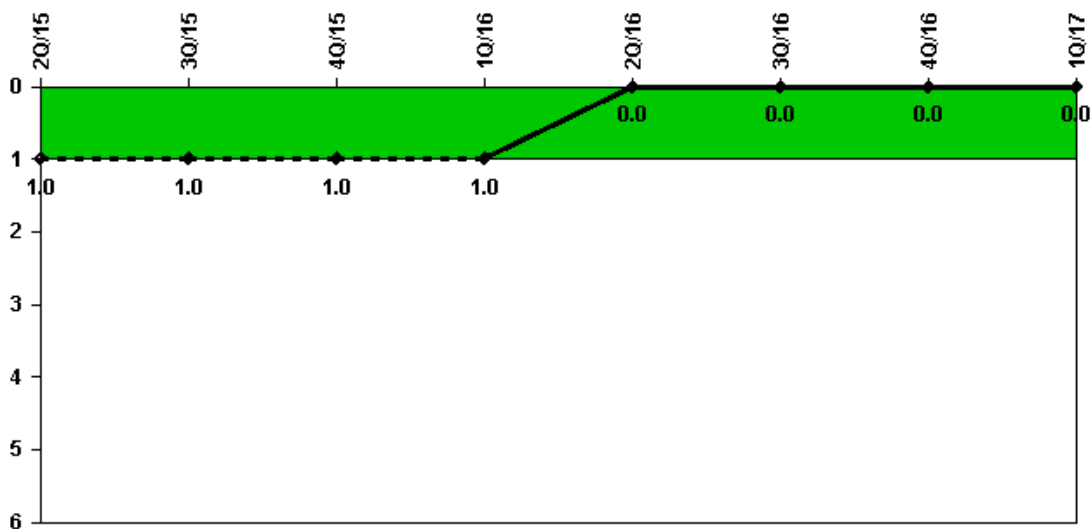
Unplanned Power Changes per 7000 Critical Hrs	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17
Unplanned power changes	2.0	0	0	0	0	0	0	0
Critical hours	2079.8	2208.0	929.5	2183.0	2184.0	2208.0	2067.3	2159.0

Indicator value 1.6 1.6 1.9 1.9 0 0 0 0

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Licensee Comments: none

Unplanned Scrams with Complications



Thresholds: White > 1.0

Notes

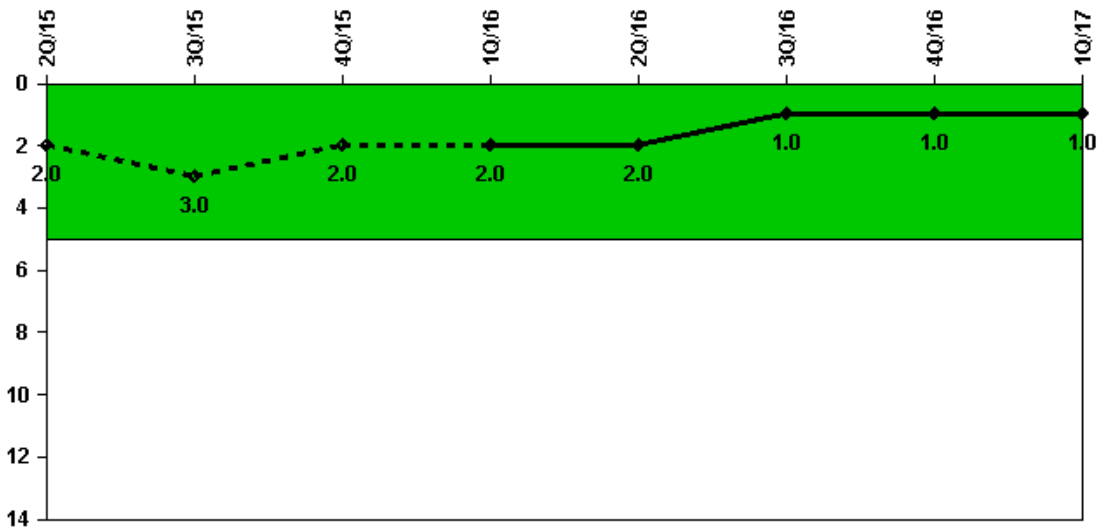
Unplanned Scrams with Complications	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17
Scrams with complications	1.0	0	0	0	0	0	0	0

Indicator value 1.0 1.0 1.0 1.0 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) 2Q/15 3Q/15 4Q/15 1Q/16 2Q/16 3Q/16 4Q/16 1Q/17

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

Indicator value 2 3 2 2 2 1 1 1

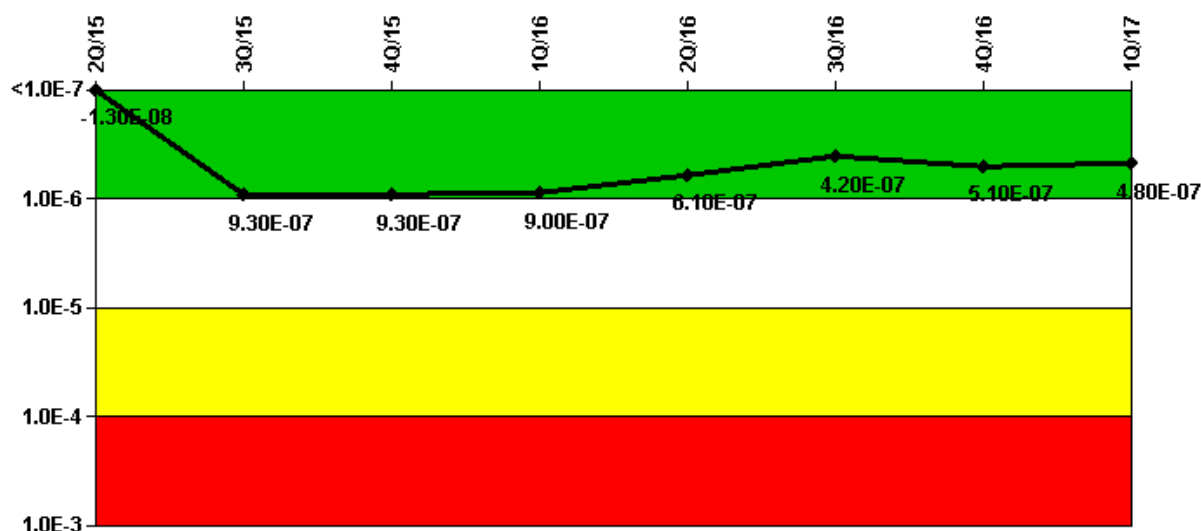
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Licensee Comments:

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

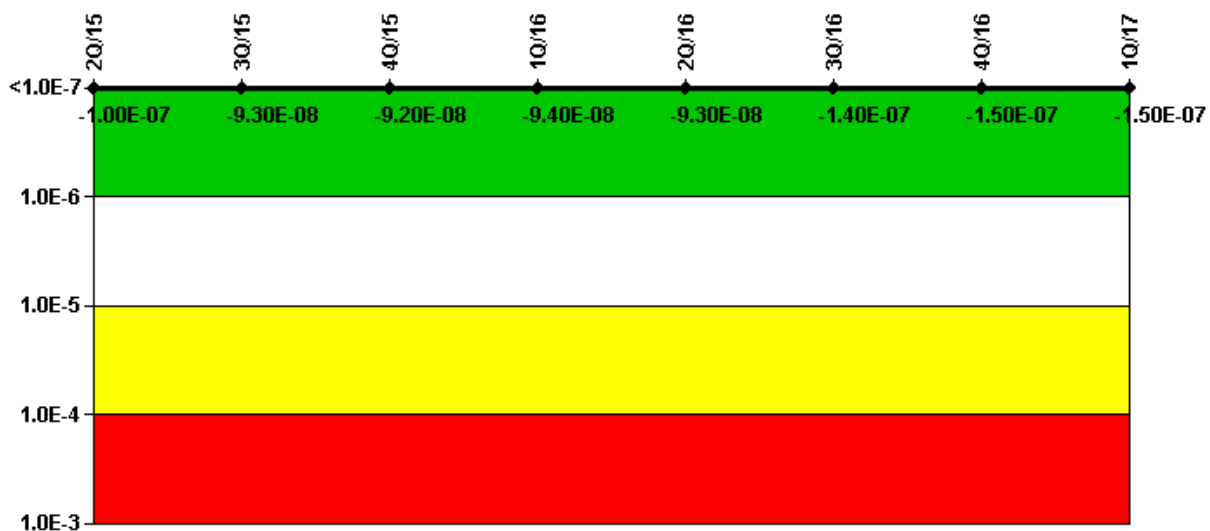
	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17
UAI (ΔCDF)	3.81E-07	5.69E-07	5.71E-07	5.55E-07	7.02E-07	1.61E-07	2.37E-07	1.56E-07
URI (ΔCDF)	-3.95E-07	3.57E-07	3.56E-07	3.49E-07	-9.46E-08	2.54E-07	2.78E-07	3.28E-07
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	-1.30E-08	9.30E-07	9.30E-07	9.00E-07	6.10E-07	4.20E-07	5.10E-07	4.80E-07

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Licensee Comments:

- 1Q/17: Risk Cap Invoked.
- 4Q/16: Risk Cap Invoked.
- 4Q/16: Risk Cap Invoked. Changed PRA Parameter(s).
- 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.
- 3Q/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

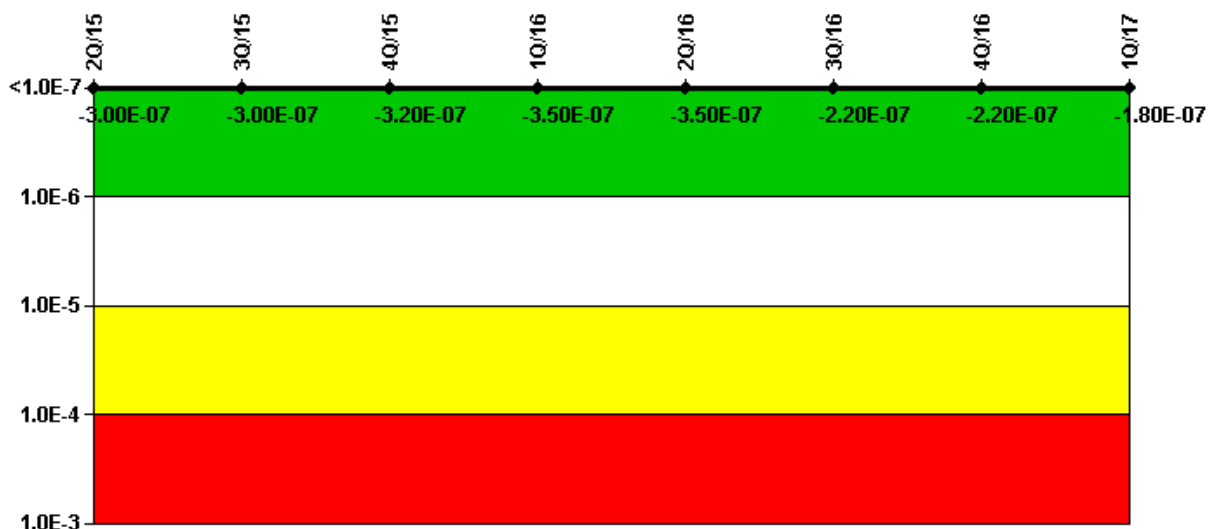
	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17
UAI (Δ CDF)	-1.01E-08	-3.32E-10	-1.32E-09	-5.11E-09	-4.45E-09	-3.01E-09	-9.75E-09	-1.16E-08
URI (Δ CDF)	-9.24E-08	-9.26E-08	-9.11E-08	-8.93E-08	-8.88E-08	-1.41E-07	-1.41E-07	-1.39E-07
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	-1.00E-07	-9.30E-08	-9.20E-08	-9.40E-08	-9.30E-08	-1.40E-07	-1.50E-07	-1.50E-07

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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

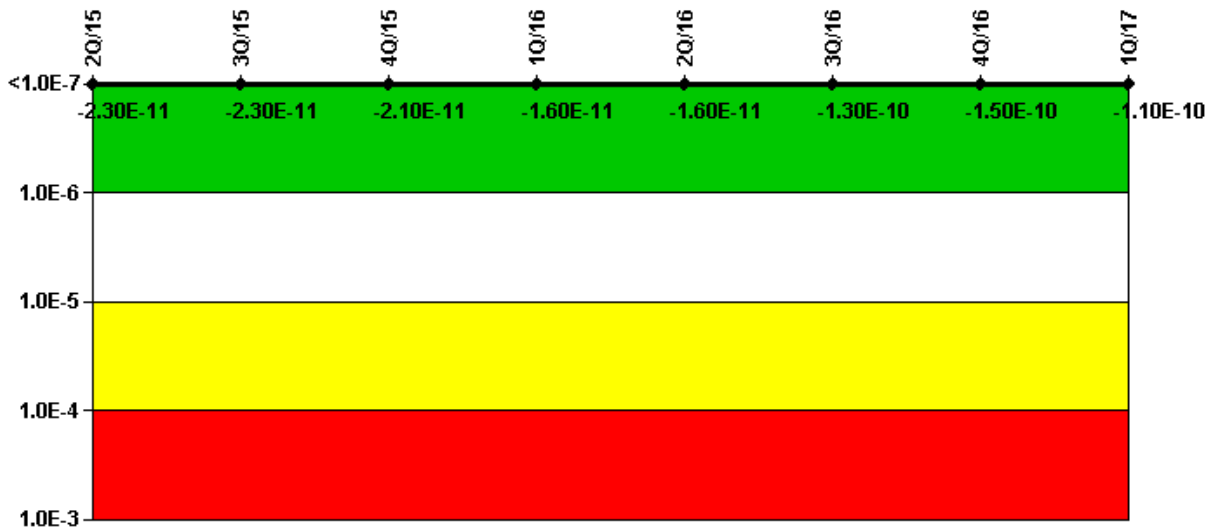
	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17
UAI (Δ CDF)	1.92E-08	1.86E-08	5.12E-09	-4.01E-08	-4.03E-08	-6.13E-08	-6.20E-08	-4.70E-08
URI (Δ CDF)	-3.19E-07	-3.21E-07	-3.26E-07	-3.13E-07	-3.13E-07	-1.63E-07	-1.60E-07	-1.30E-07
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	-3.00E-07	-3.00E-07	-3.20E-07	-3.50E-07	-3.50E-07	-2.20E-07	-2.20E-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

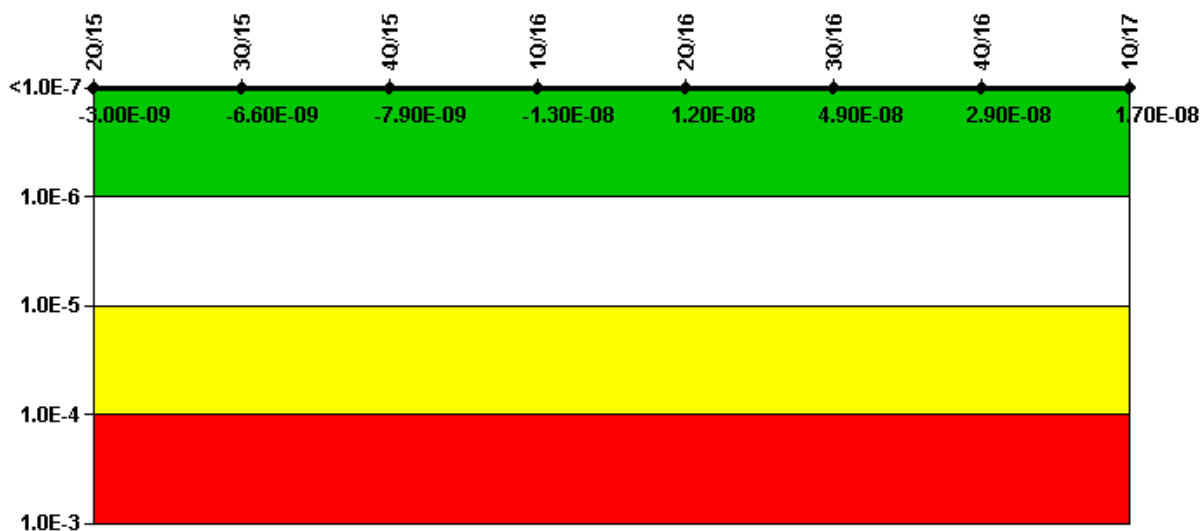
	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17
UAI (Δ CDF)	-1.07E-11	-1.07E-11	-8.56E-12	-3.88E-12	-3.47E-12	2.58E-11	0.00E+00	0.00E+00
URI (Δ CDF)	-1.25E-11	-1.22E-11	-1.22E-11	-1.20E-11	-1.22E-11	-1.57E-11	-1.54E-10	-1.10E-10
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	-2.30E-11	-2.30E-11	-2.10E-11	-1.60E-11	-1.60E-11	-1.30E-10	-1.50E-10	-1.10E-10

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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

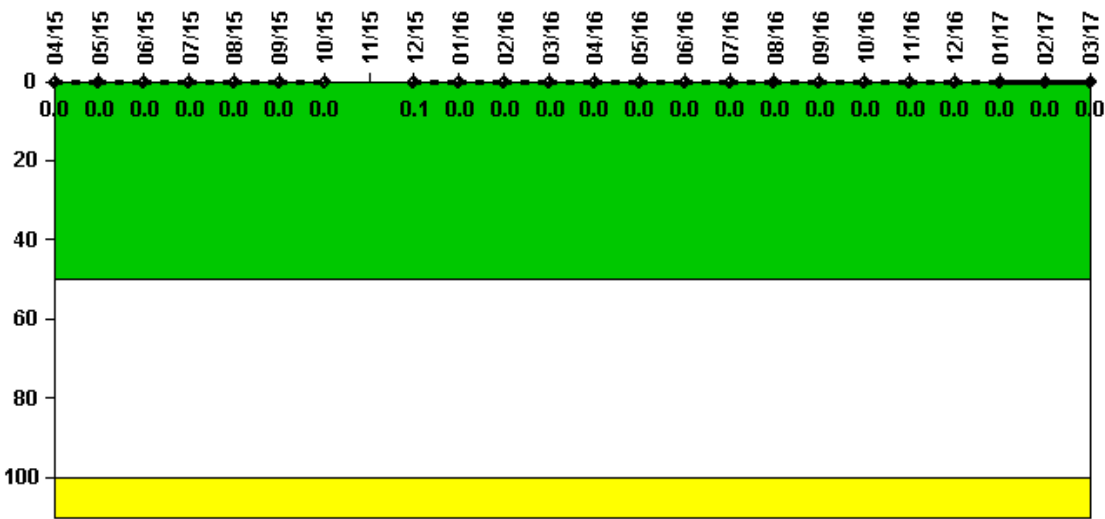
	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17
UAI (Δ CDF)	3.98E-08	3.61E-08	3.47E-08	3.52E-08	5.42E-08	2.61E-07	2.42E-07	2.03E-07
URI (Δ CDF)	-4.28E-08	-4.27E-08	-4.26E-08	-4.81E-08	-4.20E-08	-2.12E-07	-2.13E-07	-1.86E-07
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	-3.00E-09	-6.60E-09	-7.90E-09	-1.30E-08	1.20E-08	4.90E-08	2.90E-08	1.70E-08

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Licensee Comments:

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

Reactor Coolant System Activity



Thresholds: White > 50.0 Yellow > 100.0

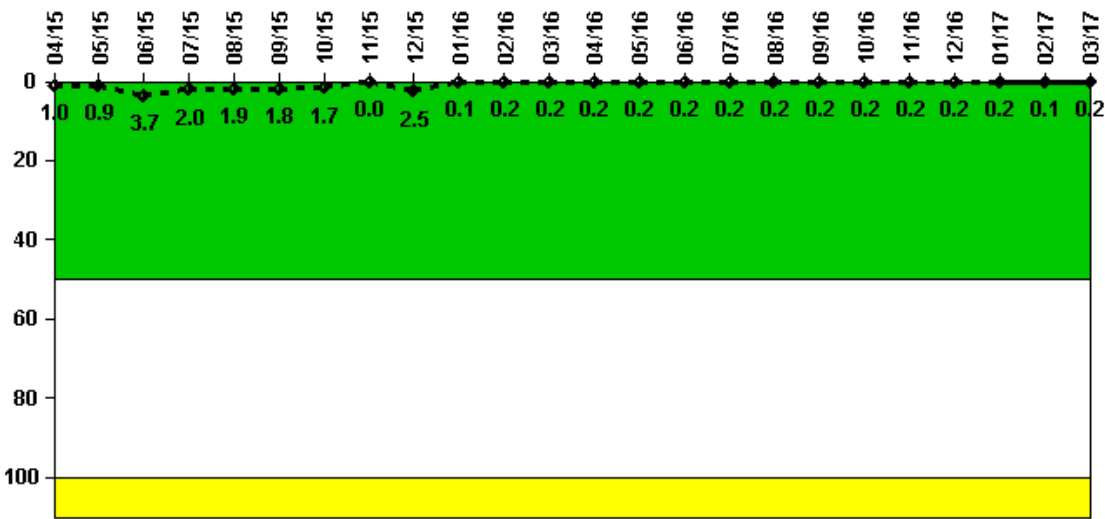
Notes

Reactor Coolant System Activity	4/15	5/15	6/15	7/15	8/15	9/15	10/15	11/15	12/15	1/16	2/16	3/16
Maximum activity	0.000164	0.000151	0.000165	0.000178	0.000183	0.000178	0.000182	N/A	0.000984	0.000106	0.000183	0.000185
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	N/A	0.1	0	0	0
Reactor Coolant System Activity	4/16	5/16	6/16	7/16	8/16	9/16	10/16	11/16	12/16	1/17	2/17	3/17
Maximum activity	0.000200	0.000216	0.000200	0.000208	0.000214	0.000220	0.000216	0.000247	0.000245	0.000245	0.000247	0.000250
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

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Licensee Comments: none

Reactor Coolant System Leakage



Thresholds: White > 50.0 Yellow > 100.0

Notes

Reactor Coolant System Leakage	4/15	5/15	6/15	7/15	8/15	9/15	10/15	11/15	12/15	1/16	2/16	3/16
Maximum leakage	0.100	0.090	0.370	0.200	0.190	0.180	0.170	0	0.249	0.010	0.020	0.017
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

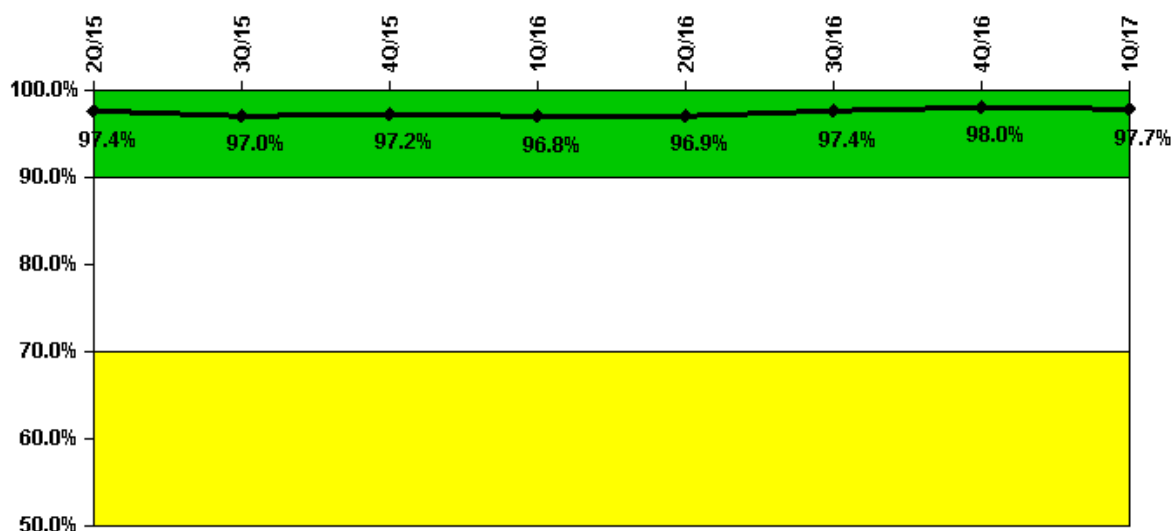
Indicator value	1.0	0.9	3.7	2.0	1.9	1.8	1.7	0	2.5	0.1	0.2	0.2
Reactor Coolant System Leakage	4/16	5/16	6/16	7/16	8/16	9/16	10/16	11/16	12/16	1/17	2/17	3/17
Maximum leakage	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.010	0.020
Technical specification limit	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0

Indicator value	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2
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Licensee Comments: none

Drill/Exercise Performance



Thresholds: White < 90.0% Yellow < 70.0%

Notes

Drill/Exercise Performance	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17
Successful opportunities	36.0	47.0	2.0	60.0	148.0	28.0	4.0	109.0
Total opportunities	36.0	49.0	2.0	62.0	151.0	28.0	4.0	112.0

Indicator value **97.4% 97.0% 97.2% 96.8% 96.9% 97.4% 98.0% 97.7%**

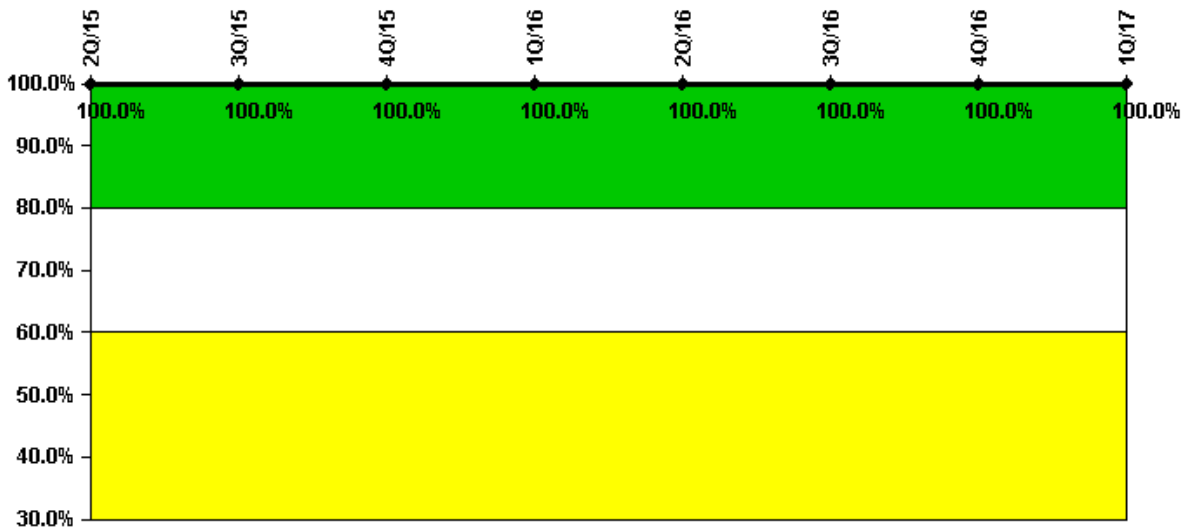
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Licensee Comments:

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.

3Q/15: DEP miss in 2nd Month of 3rd quarter was re-evaluated based on discussion of similar issue identified in evaluated session in 2016 with NRC. The number of successful opportunities was increased to 22.

ERO Drill Participation



Thresholds: White < 80.0% Yellow < 60.0%

Notes

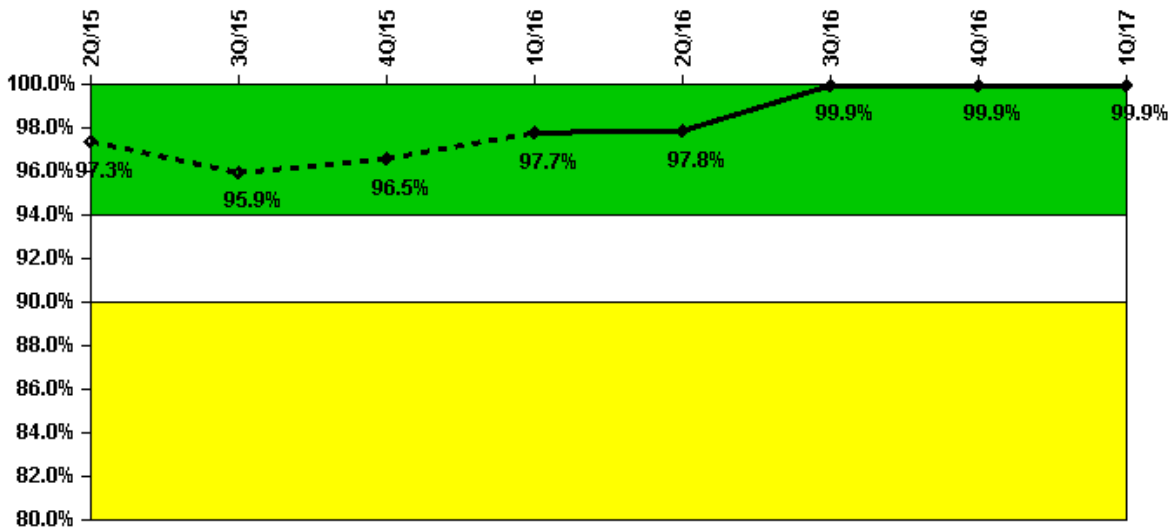
ERO Drill Participation	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17
Participating Key personnel	113.0	104.0	100.0	98.0	99.0	102.0	99.0	97.0
Total Key personnel	113.0	104.0	100.0	98.0	99.0	102.0	99.0	97.0

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

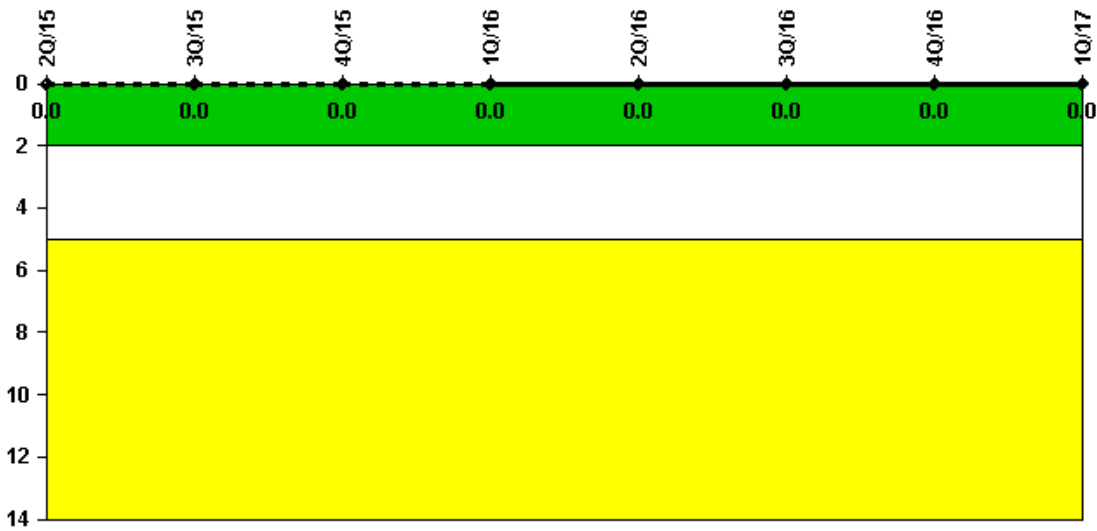
Alert & Notification System	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17
Successful siren-tests	435	401	438	437	438	437	438	438
Total sirens-tests	438	438	438	438	438	438	438	438

Indicator value 97.3% 95.9% 96.5% 97.7% 97.8% 99.9% 99.9% 99.9%

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Licensee Comments: none

Occupational Exposure Control Effectiveness



Thresholds: White > 2.0 Yellow > 5.0

Notes

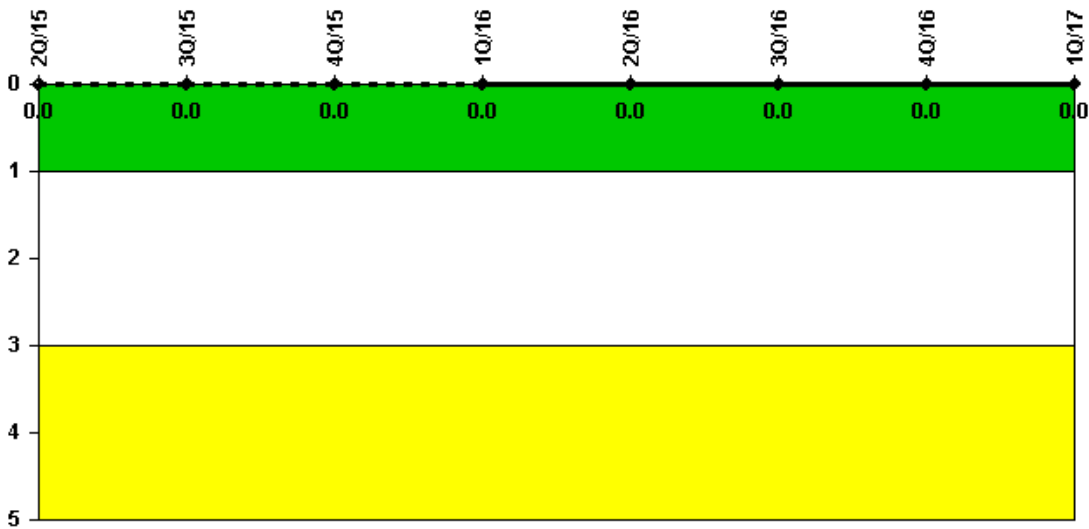
Occupational Exposure Control Effectiveness 2Q/15 3Q/15 4Q/15 1Q/16 2Q/16 3Q/16 4Q/16 1Q/17

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 2Q/15 3Q/15 4Q/15 1Q/16 2Q/16 3Q/16 4Q/16 1Q/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: May 5, 2017

Page Last Reviewed/Updated Wednesday, June 07, 2017