



Home > Nuclear Reactors > Operating Reactors > Reactor Oversight Process > Plant Summaries> Brunswick 2 > Quarterly Performance Indicators

Brunswick 2 – Quarterly Performance Indicators

1Q/2017 Performance Indicators

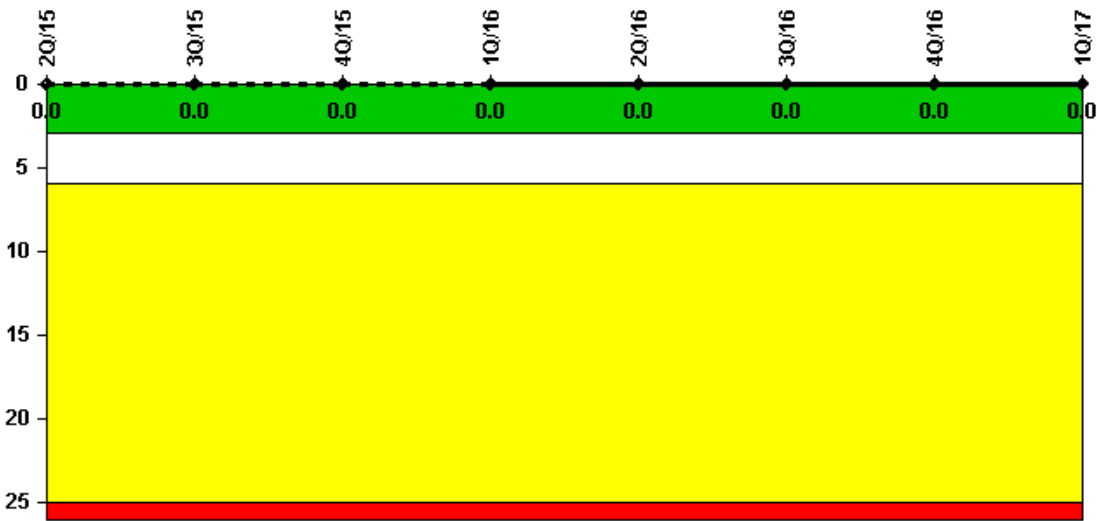
The solid trend line represents the current reporting period.

Licensee's General Comments: none

On this page:

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

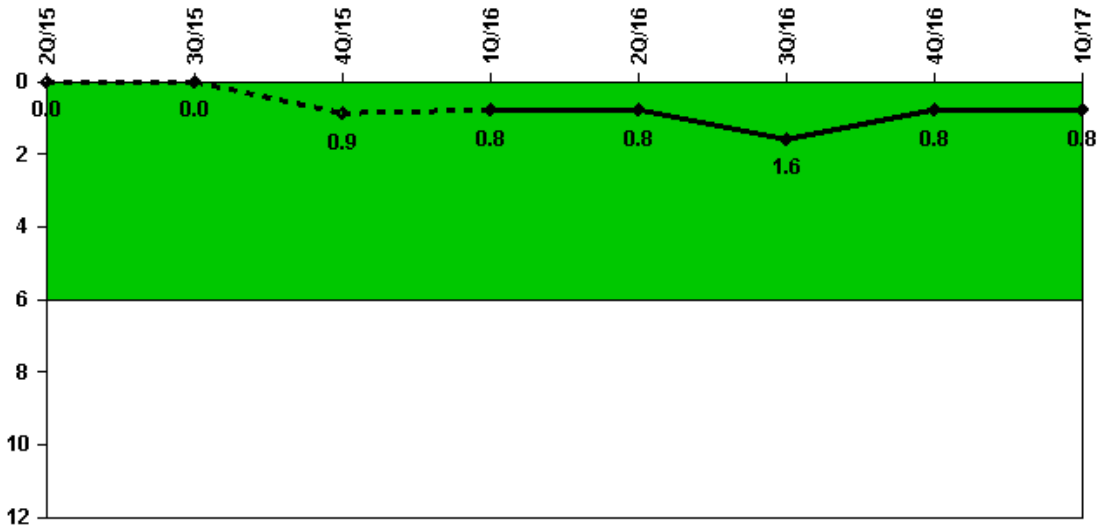
Unplanned Scrams per 7000 Critical Hrs	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17
Unplanned scrams	0	0	0	0	0	0	0	0
Critical hours	2102.0	2208.0	2209.0	2183.0	2184.0	2208.0	2209.0	1822.9

Indicator value	0	0	0	0	0	0	0	0
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Licensee Comments: none

Unplanned Power Changes per 7000 Critical Hrs



Thresholds: White > 6.0

Notes

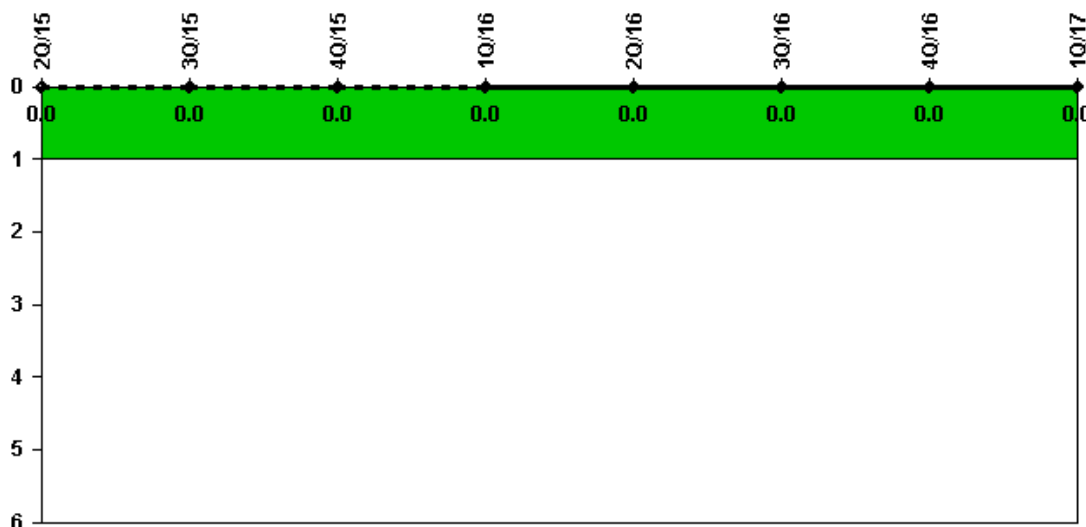
Unplanned Power Changes per 7000 Critical Hrs	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17
Unplanned power changes	0	0	1.0	0	0	1.0	0	0
Critical hours	2102.0	2208.0	2209.0	2183.0	2184.0	2208.0	2209.0	1822.9
Indicator value	0	0	0.9	0.8	0.8	1.6	0.8	0.8

▲ TOP

Licensee Comments:

1Q/16: On March 4, 2016, the NRC approved a Notice of Enforcement Discretion (NOED) associated with the entry into LCO 3.0.3 as directed by Technical Specification (TS) 3.8.1, AC Sources - Operating, for the Brunswick Nuclear Plant, Unit 2. This LCO would have required Unit 2 to initiate actions within 1 hour to place the Unit in Mode 2 within 7 hours. The NOED extended this required action for up to 17 hours, allowing enough time to troubleshoot, repair, and declare Emergency Diesel Generator #3 operable. EDG3 was declared operable within this timeframe, and Unit 2 remained at full power for the entire duration. If the NOED had not been granted, it may have resulted in an unplanned power change of greater than 20% for Unit 2.

Unplanned Scrams with Complications



Thresholds: White > 1.0

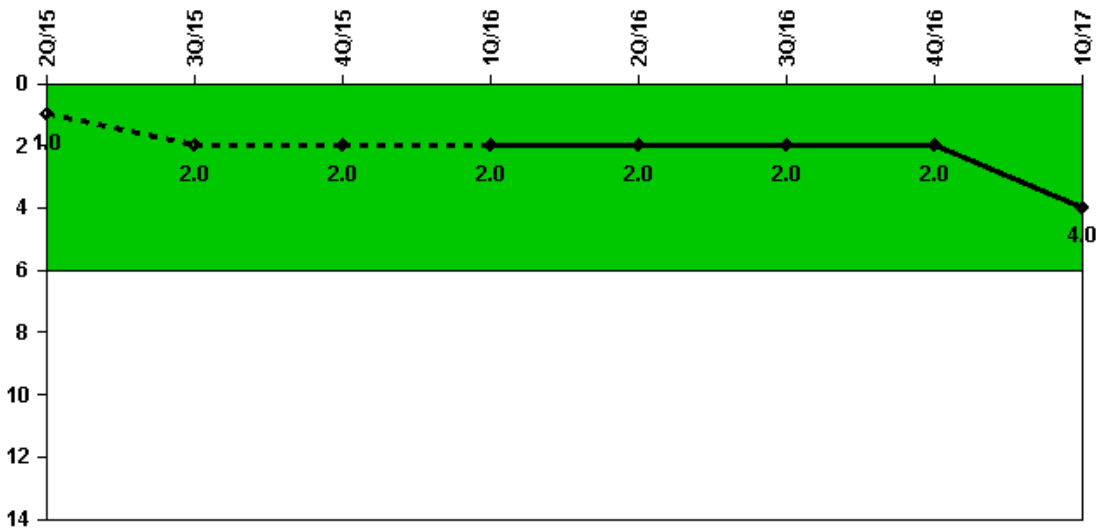
Notes

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

▲ TOP

Licensee Comments: none

Safety System Functional Failures (BWR)



Thresholds: White > 6.0

Notes

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

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

Indicator value 1 2 2 2 2 2 2 4

[TOP](#)

Licensee Comments:

1Q/17: LER 1-2017-001, submitted on March 22, 2017, reports a safety system functional failure (SSFF) of the on-site Emergency AC System. EDG 1 was inoperable coincident with other EDGs at various times. Since it was not known that EDG 1 was inoperable, only one SSFF is counted, consistent with NEI 99-02 guidance. Due to the shared electrical distribution system, this affects Units 1 and 2.

LER 1-2016-006, submitted on Feb. 13, 2017, reports a safety system functional failure (SSFF) of the Control Room Air Conditioning System. Due to the shared control room configuration, this affects Units 1 and 2.

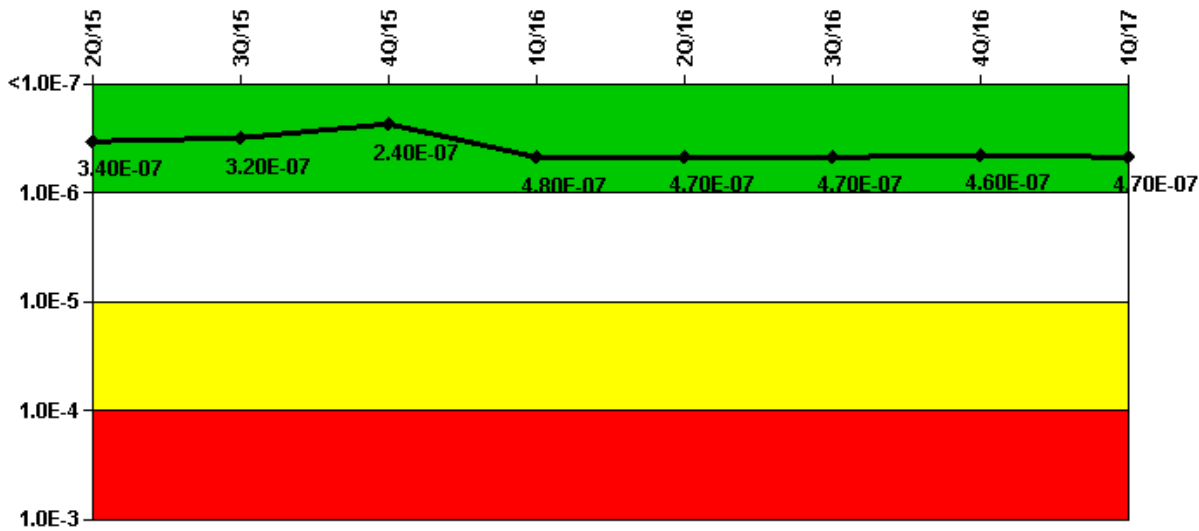
3Q/16: LER 2-2016-002, submitted on 08/29/2016, reported the High Pressure Coolant Injection System becoming inoperable due to a failed relay coil, which resulted in a safety system functional failure.

2Q/16: LER 1-2016-002, dated 5/2/16, reported one event where EDG 3 failed to start and was considered inoperable. Therefore, this event was counted as a SSFF. This was applicable to both Unit 1 and 2.

3Q/15: LER 2-2015-003, Revision 1, dated 8/5/15 reported a loss of safety function on the RHRSW system due to an oil leak that rendered an RHRSW system pump inoperable.

2Q/15: LER 1-2015-002, dated 5/20/15, reported one event where DG3 and DG4 were simultaneously inoperable and considered a SSFF for the onsite standby AC power source. LER 1-2015-002 counted for both Unit 1 and Unit 2.

Mitigating Systems Performance Index, Emergency AC Power System



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

Notes

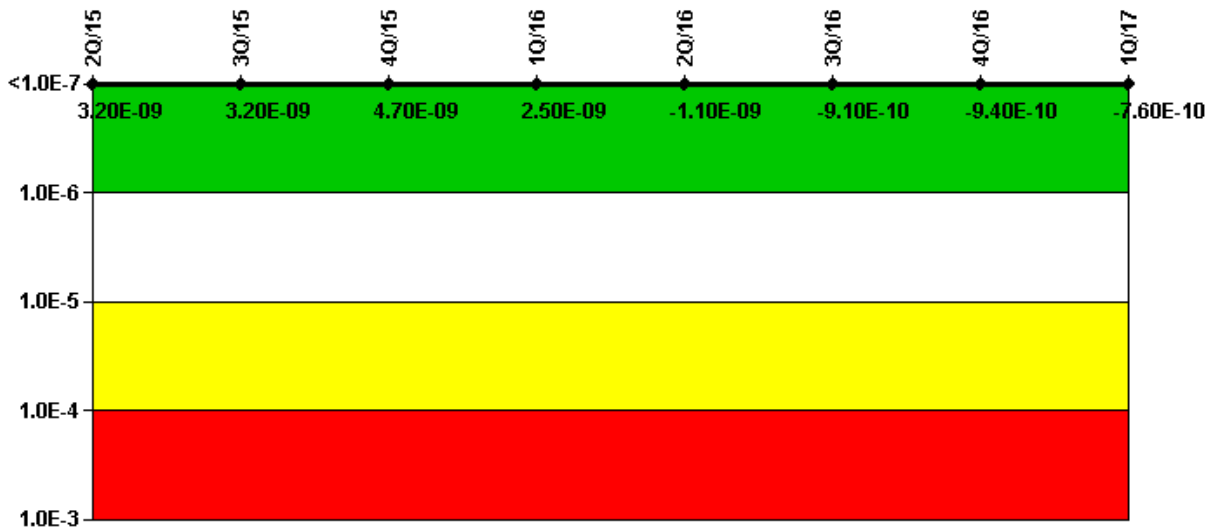
Mitigating Systems Performance Index, Emergency AC Power System

	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17
UAI (ΔCDF)	1.95E-07	1.75E-07	1.72E-07	2.76E-07	2.59E-07	2.58E-07	2.56E-07	1.27E-07
URI (ΔCDF)	1.43E-07	1.43E-07	7.26E-08	2.06E-07	2.07E-07	2.07E-07	2.07E-07	3.45E-07
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	3.40E-07	3.20E-07	2.40E-07	4.80E-07	4.70E-07	4.70E-07	4.60E-07	4.70E-07

▲ TOP

Licensee Comments: none

Mitigating Systems Performance Index, High Pressure Injection System



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

Notes

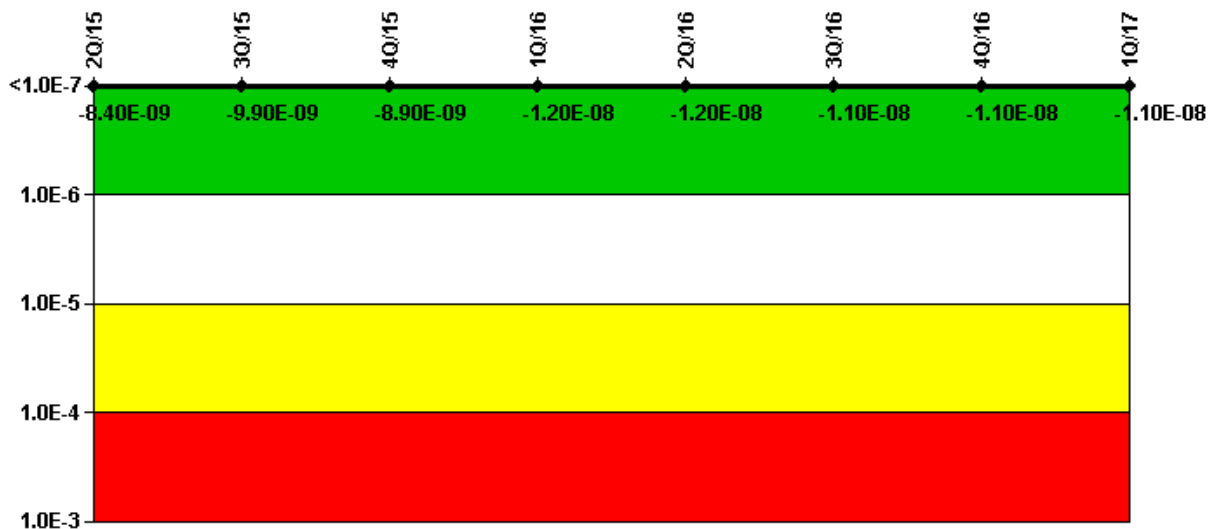
Mitigating Systems Performance Index, High Pressure Injection System

	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17
UAI (Δ CDF)	9.26E-09	9.27E-09	1.08E-08	8.60E-09	5.00E-09	5.20E-09	5.17E-09	5.35E-09
URI (Δ CDF)	-6.11E-09	-6.11E-09	-6.11E-09	-6.11E-09	-6.11E-09	-6.11E-09	-6.11E-09	-6.11E-09
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	3.20E-09	3.20E-09	4.70E-09	2.50E-09	-1.10E-09	-9.10E-10	-9.40E-10	-7.60E-10

▲ TOP

Licensee Comments: none

Mitigating Systems Performance Index, Heat Removal System



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

Notes

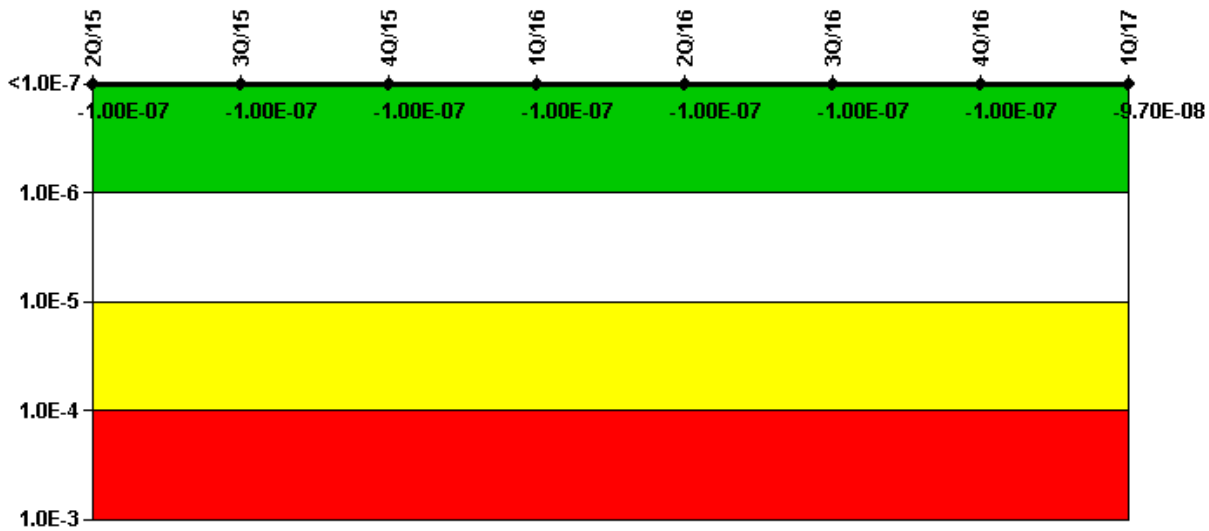
Mitigating Systems Performance Index, Heat Removal System

	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17
UAI (ΔCDF)	2.58E-09	1.12E-09	2.11E-09	-1.05E-09	-1.08E-09	-3.07E-10	-1.41E-10	4.66E-11
URI (ΔCDF)	-1.10E-08	-1.10E-08	-1.10E-08	-1.10E-08	-1.10E-08	-1.10E-08	-1.10E-08	-1.10E-08
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	-8.40E-09	-9.90E-09	-8.90E-09	-1.20E-08	-1.20E-08	-1.10E-08	-1.10E-08	-1.10E-08

▲ TOP

Licensee Comments: none

Mitigating Systems Performance Index, Residual Heat Removal System



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

Notes

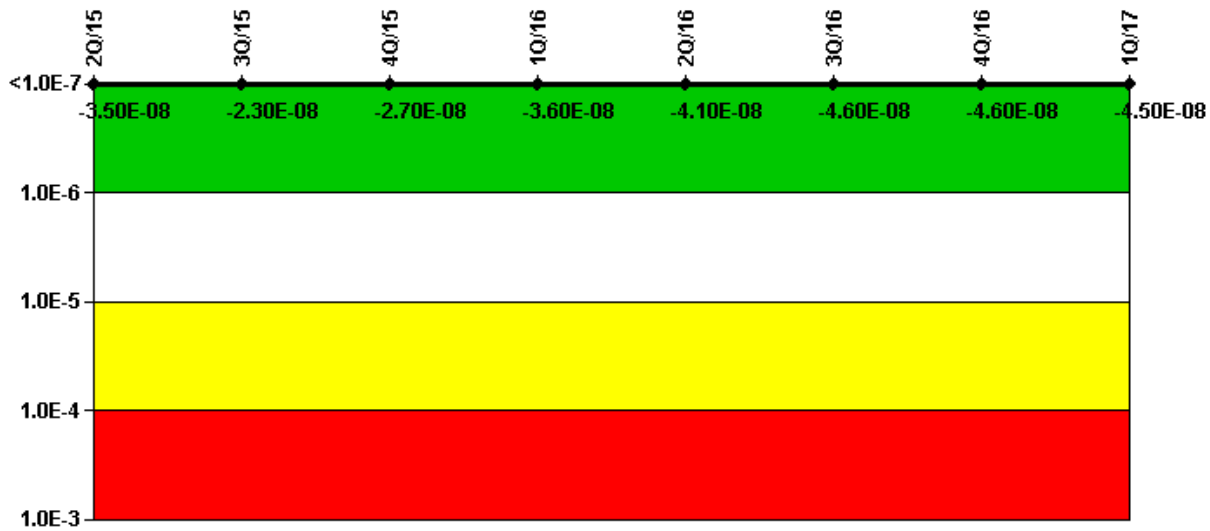
Mitigating Systems Performance Index, Residual Heat Removal System

	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17
UAI (Δ CDF)	-3.38E-08	-3.38E-08	-3.38E-08	-3.38E-08	-3.38E-08	-3.38E-08	-3.38E-08	-2.87E-08
URI (Δ CDF)	-6.81E-08	-6.81E-08	-6.81E-08	-6.81E-08	-6.81E-08	-6.81E-08	-6.81E-08	-6.81E-08
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	-1.00E-07	-1.00E-07	-1.00E-07	-1.00E-07	-1.00E-07	-1.00E-07	-1.00E-07	-9.70E-08

▲ TOP

Licensee Comments: none

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 (ΔCDF)	-2.05E-08	-8.13E-09	-1.23E-08	-2.12E-08	-2.25E-08	-2.95E-08	-2.95E-08	-2.88E-08
URI (ΔCDF)	-1.45E-08	-1.45E-08	-1.45E-08	-1.45E-08	-1.83E-08	-1.61E-08	-1.61E-08	-1.61E-08
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	-3.50E-08	-2.30E-08	-2.70E-08	-3.60E-08	-4.10E-08	-4.60E-08	-4.60E-08	-4.50E-08

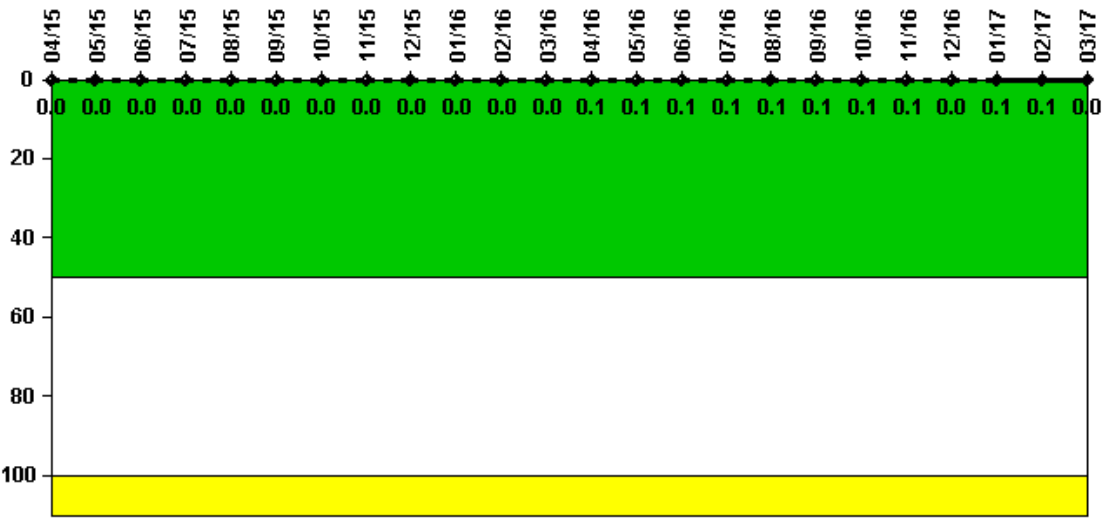
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Licensee Comments:

3Q/15: Changed PRA Parameter(s). The MSPI Basis document (BNP-PSA-069), Revision 13, was approved on 3/24/14 that corrected data for the Service Water (Cooling Water) pump alignments and various valves. This data was not updated within CDE until 8/24/15 due to lack of communication of the change to the MSPI Basis Document. CDE values for Cooling Water were updated back to the approval date of the MSPI Basis Document. No thresholds were crossed due to this change and the greatest delta in calculated unavailability margin due to this change was only 3%.

2Q/15: Changed PRA Parameter(s). The MSPI Basis document (BNP-PSA-069), Revision 13, was approved on 3/24/14 that corrected data for the Service Water (Cooling Water) pump alignments and various valves. This data was not updated within CDE until 8/24/15 due to lack of communication of the change to the MSPI Basis Document. CDE values for Cooling Water were updated back to the approval date of the MSPI Basis Document. No thresholds were crossed due to this change and the greatest delta in calculated unavailability margin due to this change was only 3%.

Reactor Coolant System Activity



Thresholds: White > 50.0 Yellow > 100.0

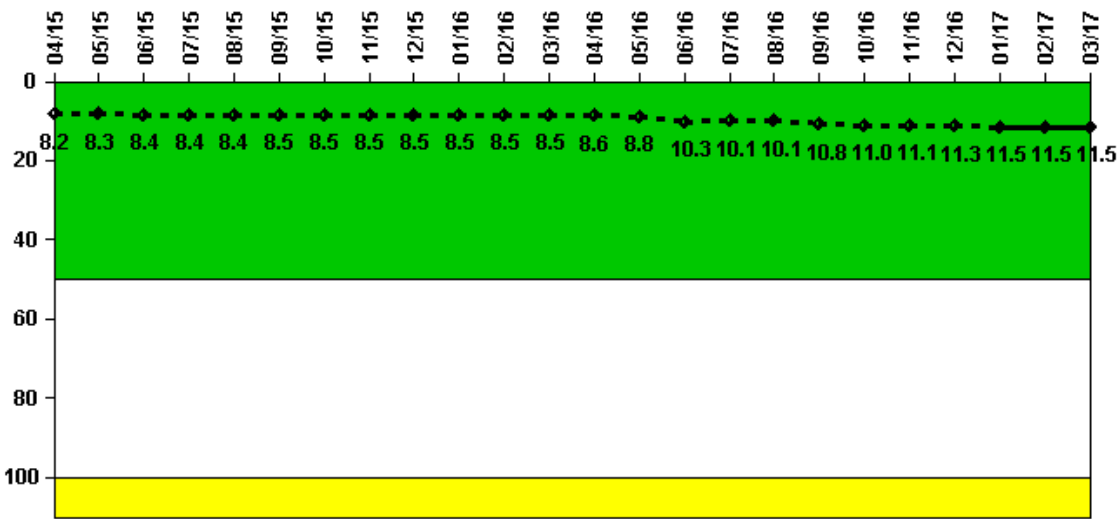
Notes

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	0.000060	0.000056	0.000057	0.000070	0.000070	0.000061	0.000073	0.000070	0.000078	0.000079	0.000082	0.000089
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	0	0	0	0	0	0	0	0	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	0.000105	0.000102	0.000109	0.000110	0.000119	0.000119	0.000100	0.000104	0.000097	0.000116	0.000116	0.000098
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	0.1	0.1	0

▲ TOP

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	2.053	2.070	2.090	2.090	2.110	2.130	2.130	2.120	2.120	2.120	2.120	2.130
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

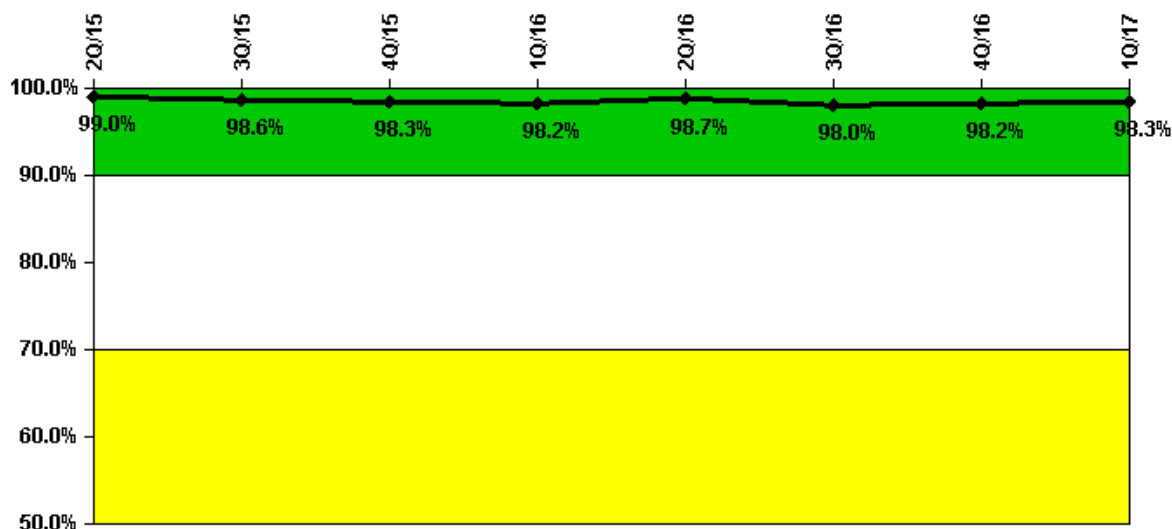
Indicator value	8.2	8.3	8.4	8.4	8.4	8.5	8.5	8.5	8.5	8.5	8.5	8.5
Reactor Coolant System Leakage	4/16	5/16	6/16	7/16	8/16	9/16	10/16	11/16	12/16	1/17	2/17	3/17
Maximum leakage	2.140	2.190	2.570	2.530	2.530	2.690	2.750	2.780	2.820	2.880	2.870	2.870
Technical specification limit	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0

Indicator value	8.6	8.8	10.3	10.1	10.1	10.8	11.0	11.1	11.3	11.5	11.5	11.5
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Licensee Comments: none

Drill/Exercise Performance



Thresholds: White < 90.0% Yellow < 70.0%

Notes

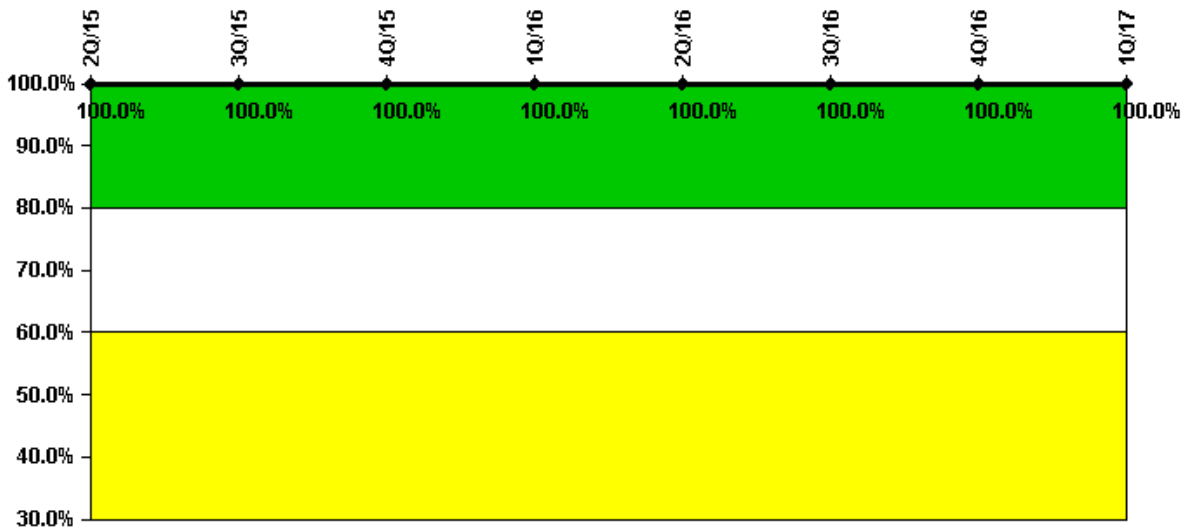
Drill/Exercise Performance	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17
Successful opportunities	21.0	30.0	22.0	8.0	9.0	29.0	35.0	23.0
Total opportunities	22.0	31.0	22.0	8.0	9.0	30.0	35.0	23.0

Indicator value 99.0% 98.6% 98.3% 98.2% 98.7% 98.0% 98.2% 98.3%

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Licensee Comments: none

ERO Drill Participation



Thresholds: White < 80.0% Yellow < 60.0%

Notes

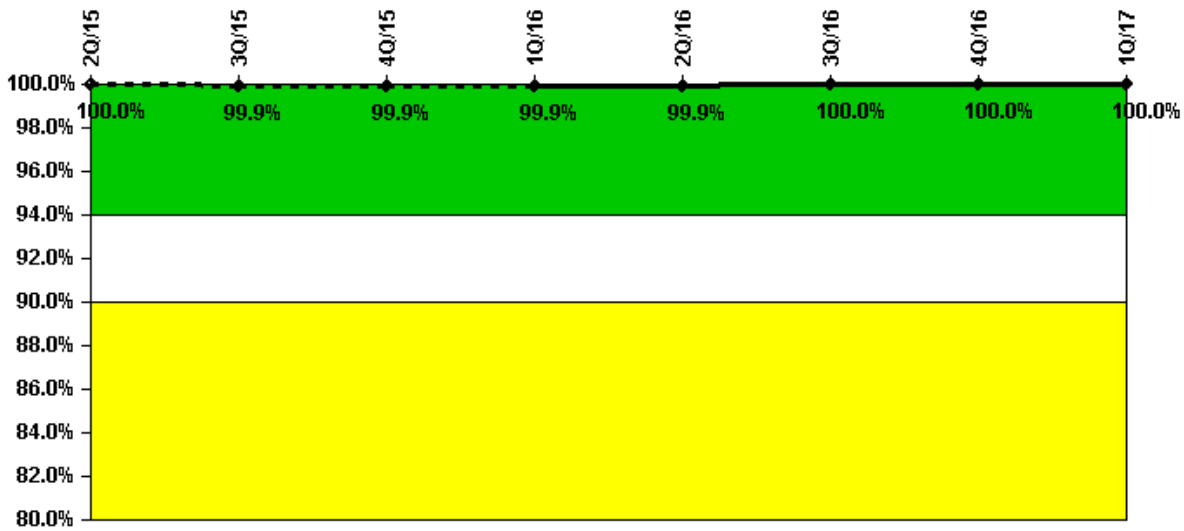
ERO Drill Participation	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17
Participating Key personnel	101.0	106.0	112.0	108.0	102.0	109.0	112.0	102.0
Total Key personnel	101.0	106.0	112.0	108.0	102.0	109.0	112.0	102.0

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

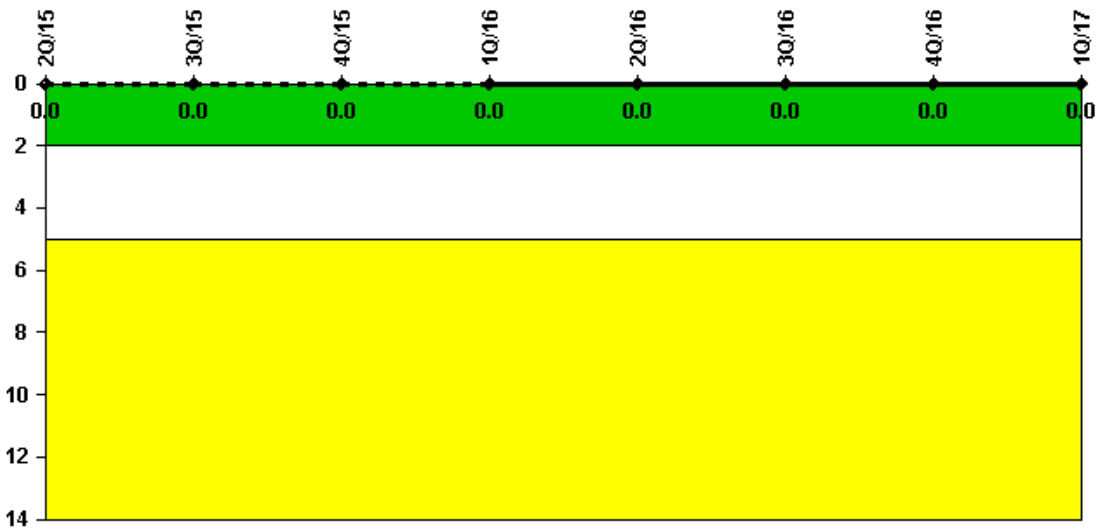
Alert & Notification System	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17
Successful siren-tests	532	530	570	532	532	532	532	532
Total sirens-tests	532	532	570	532	532	532	532	532

Indicator value **100.0% 99.9% 99.9% 99.9% 99.9% 100.0% 100.0% 100.0%**

▲ TOP

Licensee Comments: none

Occupational Exposure Control Effectiveness



Thresholds: White > 2.0 Yellow > 5.0

Notes

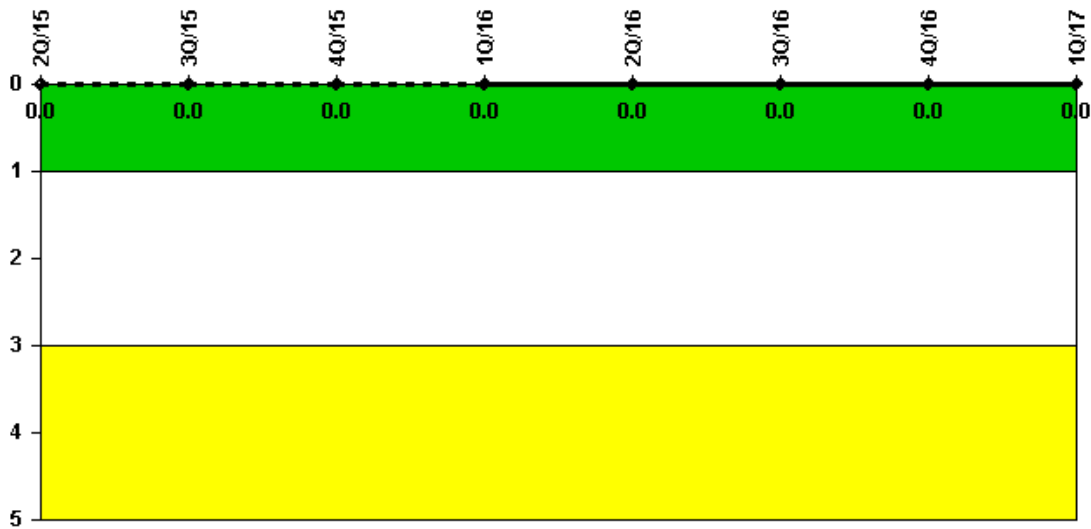
Occupational Exposure Control Effectiveness 2Q/15 3Q/15 4Q/15 1Q/16 2Q/16 3Q/16 4Q/16 1Q/17

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

TOP

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

[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: May 5, 2017

Page Last Reviewed/Updated Wednesday, June 07, 2017