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Palo Verde 1 – Quarterly Performance Indicators

2Q/2017 Performance Indicators

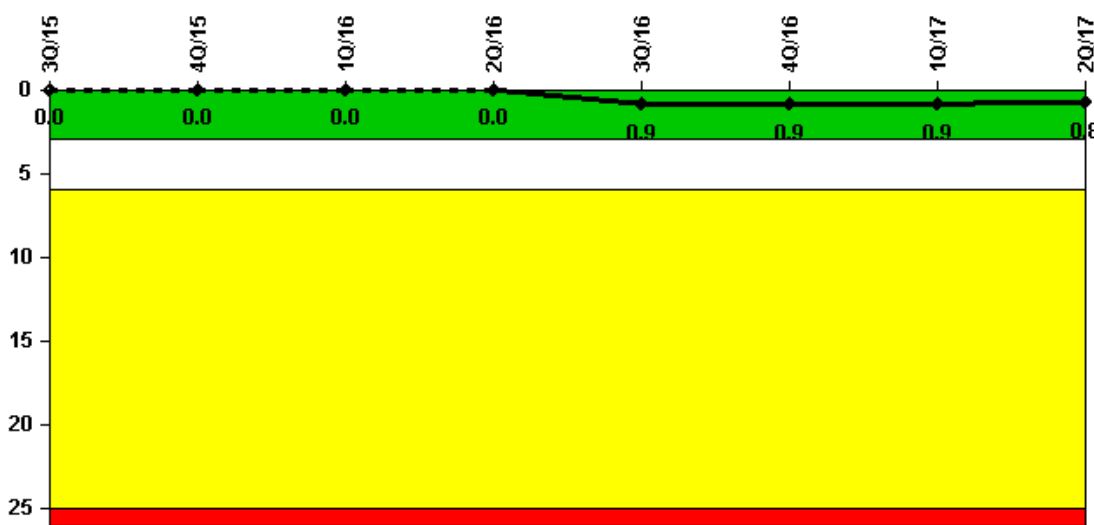
The solid trend line represents the current reporting period.

Licensee's General Comments: none

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- [Unplanned Power Changes per 7000 Critical Hours \(IE03\)](#)
- [Unplanned Scrams with Complications \(IE04\)](#)
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Unplanned Scrams per 7000 Critical Hrs



Thresholds: White > 3.0 Yellow > 6.0 Red > 25.0

Notes

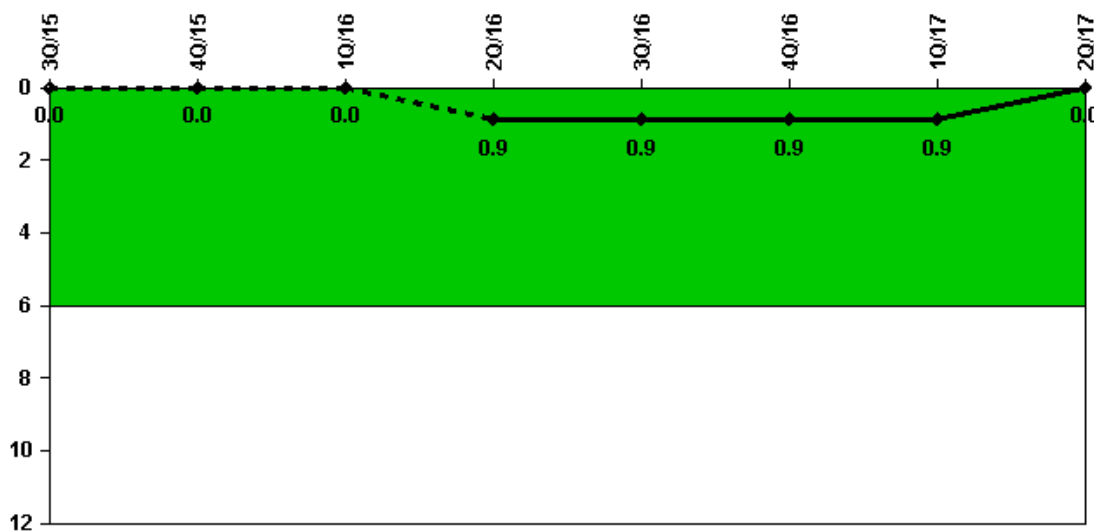
| Unplanned Scrams per 7000 Critical Hrs | 3Q/15 | 4Q/15 | 1Q/16 | 2Q/16 | 3Q/16 | 4Q/16 | 1Q/17 | 2Q/17 |
|--|--------|--------|--------|--------|--------|--------|--------|--------|
| Unplanned scrams | 0 | 0 | 0 | 0 | 1.0 | 0 | 0 | 0 |
| Critical hours | 2208.0 | 2208.0 | 2184.0 | 1346.9 | 2099.8 | 2208.0 | 2160.0 | 2184.0 |

| Indicator value | 0 | 0 | 0 | 0 | 0.9 | 0.9 | 0.9 | 0.8 |
|-----------------|---|---|---|---|-----|-----|-----|-----|
|-----------------|---|---|---|---|-----|-----|-----|-----|

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Licensee Comments: none

Unplanned Power Changes per 7000 Critical Hrs



Thresholds: White > 6.0

Notes

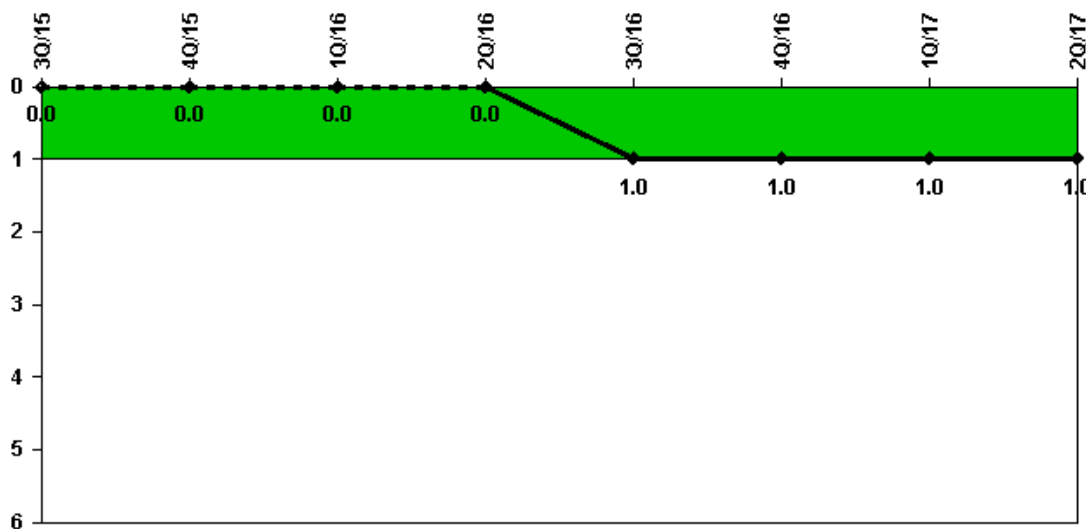
| Unplanned Power Changes per 7000 Critical Hrs | 3Q/15 | 4Q/15 | 1Q/16 | 2Q/16 | 3Q/16 | 4Q/16 | 1Q/17 | 2Q/17 |
|---|--------|--------|--------|--------|--------|--------|--------|--------|
| Unplanned power changes | 0 | 0 | 0 | 1.0 | 0 | 0 | 0 | 0 |
| Critical hours | 2208.0 | 2208.0 | 2184.0 | 1346.9 | 2099.8 | 2208.0 | 2160.0 | 2184.0 |

| | | | | | | | | |
|------------------------|----------|----------|----------|------------|------------|------------|------------|----------|
| Indicator value | 0 | 0 | 0 | 0.9 | 0.9 | 0.9 | 0.9 | 0 |
|------------------------|----------|----------|----------|------------|------------|------------|------------|----------|

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Licensee Comments: none

Unplanned Scrams with Complications



Thresholds: White > 1.0

Notes

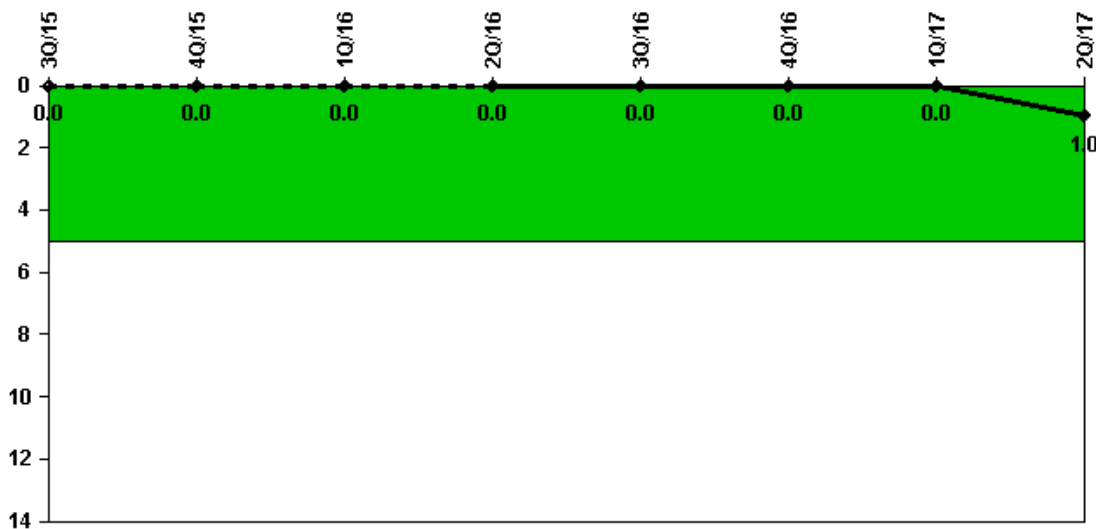
| Unplanned Scrams with Complications | 3Q/15 | 4Q/15 | 1Q/16 | 2Q/16 | 3Q/16 | 4Q/16 | 1Q/17 | 2Q/17 |
|-------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Scrams with complications | 0 | 0 | 0 | 0 | 1.0 | 0 | 0 | 0 |

| | | | | | | | | |
|------------------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Indicator value | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 1.0 | 1.0 |
|------------------------|------------|------------|------------|------------|------------|------------|------------|------------|

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Licensee Comments: none

Safety System Functional Failures (PWR)



Thresholds: White > 5.0

Notes

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

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

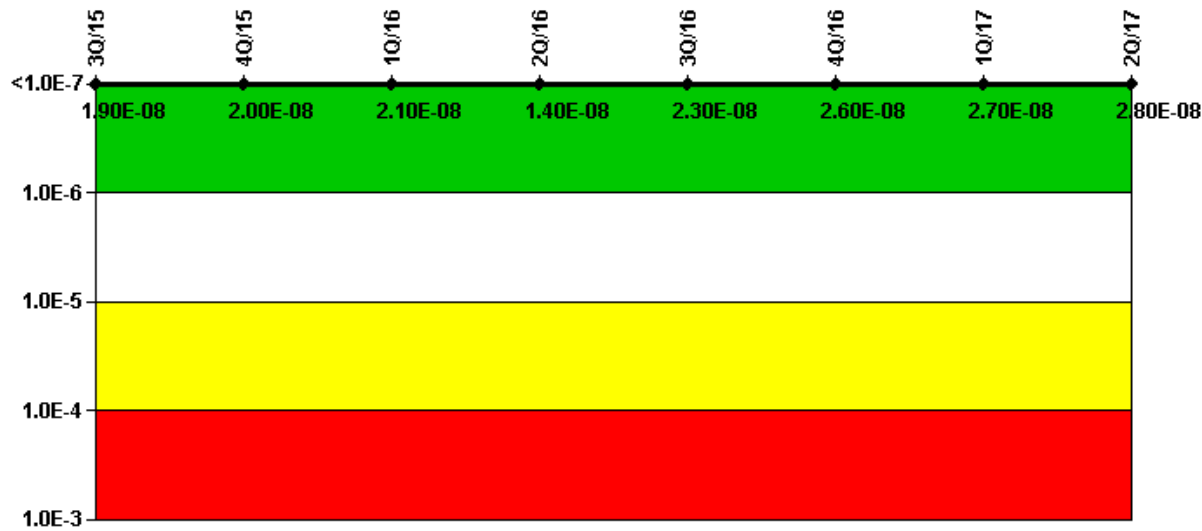
Indicator value 0 0 0 0 0 0 0 1

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Licensee Comments:

2Q/17: LER 2017-001-00 for the Unit 1 train B essential chilled water system chiller failure was reported on June 14, 2017.

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

| | 3Q/15 | 4Q/15 | 1Q/16 | 2Q/16 | 3Q/16 | 4Q/16 | 1Q/17 | 2Q/17 |
|------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| UAI (ΔCDF) | 3.35E-09 | 4.40E-09 | 5.38E-09 | -7.47E-10 | 8.26E-09 | 1.07E-08 | 1.16E-08 | 1.28E-08 |
| URI (ΔCDF) | 1.52E-08 | 1.52E-08 | 1.52E-08 | 1.52E-08 | 1.52E-08 | 1.52E-08 | 1.52E-08 | 1.52E-08 |
| PLE | NO | NO | NO | NO | NO | NO | NO | NO |
| Indicator value | 1.90E-08 | 2.00E-08 | 2.10E-08 | 1.40E-08 | 2.30E-08 | 2.60E-08 | 2.70E-08 | 2.80E-08 |

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Licensee Comments:

3Q/15: In 3rd Quarter 2015, updated unavailability for EDG 1A for interval March 2013 - October 2014, net change was (-) 12.43 hours and EDG 1B for May 2013, net change was (-) 10.62 hours , no color change as a result.

Mitigating Systems Performance Index, High Pressure Injection System



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

Notes

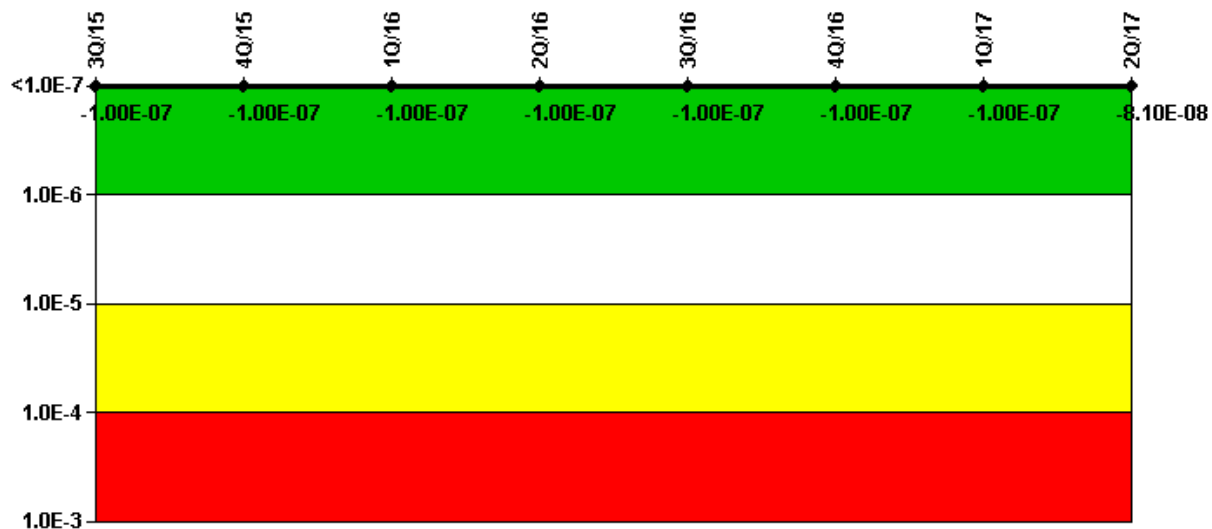
Mitigating Systems Performance Index, High Pressure Injection System

| | 3Q/15 | 4Q/15 | 1Q/16 | 2Q/16 | 3Q/16 | 4Q/16 | 1Q/17 | 2Q/17 |
|------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| UAI (Δ CDF) | -1.52E-09 | -1.52E-09 | -1.52E-09 | -1.52E-09 | -1.52E-09 | -1.52E-09 | -1.52E-09 | -1.52E-09 |
| URI (Δ CDF) | -1.03E-08 | -1.03E-08 | -1.03E-08 | -1.03E-08 | -1.03E-08 | -1.03E-08 | -1.03E-08 | -1.03E-08 |
| PLE | NO | NO | NO | NO | NO | NO | NO | NO |
| Indicator value | -1.20E-08 | -1.20E-08 | -1.20E-08 | -1.20E-08 | -1.20E-08 | -1.20E-08 | -1.20E-08 | -1.20E-08 |

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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

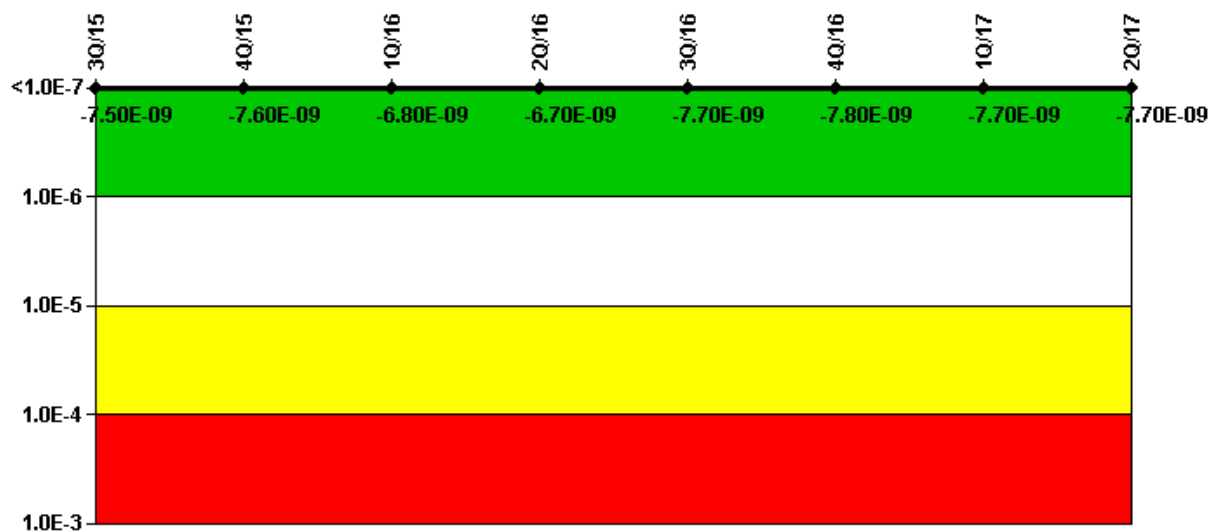
Mitigating Systems Performance Index, Heat Removal System

| | 3Q/15 | 4Q/15 | 1Q/16 | 2Q/16 | 3Q/16 | 4Q/16 | 1Q/17 | 2Q/17 |
|------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| UAI (Δ CDF) | -4.84E-08 | -4.84E-08 | -4.84E-08 | -4.84E-08 | -4.84E-08 | -4.84E-08 | -4.84E-08 | -2.90E-08 |
| URI (Δ CDF) | -5.15E-08 | -5.15E-08 | -5.15E-08 | -5.15E-08 | -5.15E-08 | -5.15E-08 | -5.15E-08 | -5.15E-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 | -8.10E-08 |

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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

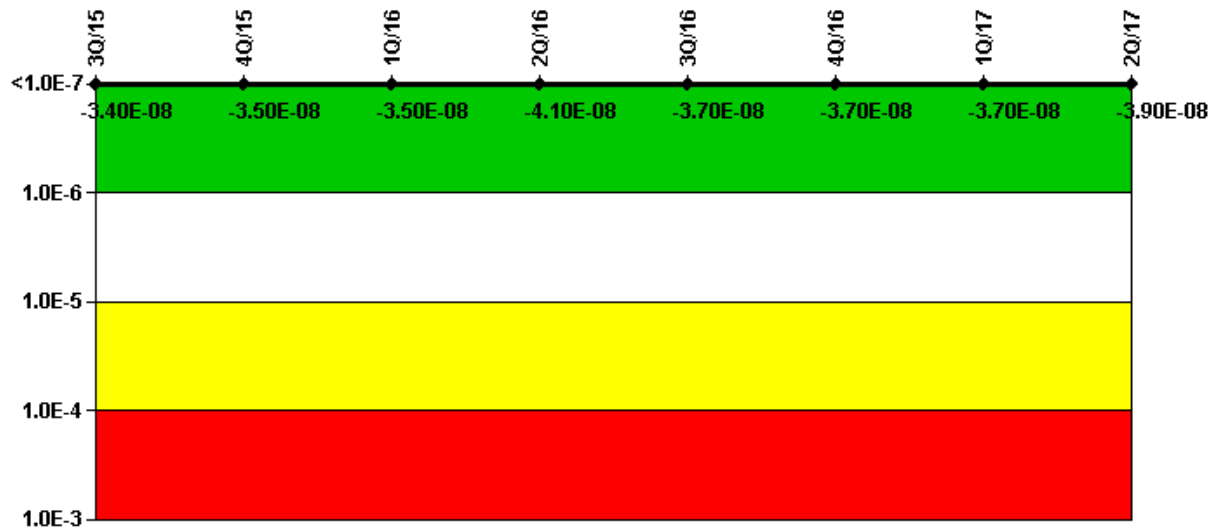
Mitigating Systems Performance Index, Residual Heat Removal System

| | 3Q/15 | 4Q/15 | 1Q/16 | 2Q/16 | 3Q/16 | 4Q/16 | 1Q/17 | 2Q/17 |
|------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| UAI (ΔCDF) | -1.16E-09 | -1.19E-09 | -4.58E-10 | -2.81E-10 | -1.28E-09 | -1.38E-09 | -1.29E-09 | -1.29E-09 |
| URI (ΔCDF) | -6.37E-09 | -6.37E-09 | -6.37E-09 | -6.37E-09 | -6.37E-09 | -6.37E-09 | -6.37E-09 | -6.37E-09 |
| PLE | NO | NO | NO | NO | NO | NO | NO | NO |
| Indicator value | -7.50E-09 | -7.60E-09 | -6.80E-09 | -6.70E-09 | -7.70E-09 | -7.80E-09 | -7.70E-09 | -7.70E-09 |

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Licensee Comments: none

Mitigating Systems Performance Index, Cooling Water Systems



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

Notes

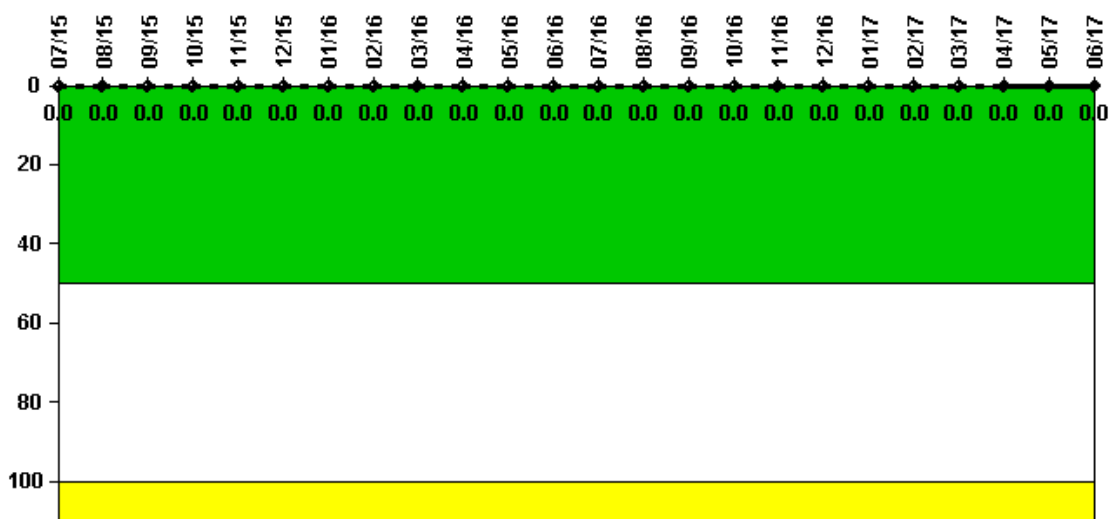
Mitigating Systems Performance Index, Cooling Water Systems

| | 3Q/15 | 4Q/15 | 1Q/16 | 2Q/16 | 3Q/16 | 4Q/16 | 1Q/17 | 2Q/17 |
|------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| UAI (ΔCDF) | 1.12E-08 | 1.11E-08 | 1.06E-08 | 4.84E-09 | 8.65E-09 | 8.53E-09 | 8.37E-09 | 6.35E-09 |
| URI (ΔCDF) | -4.57E-08 | -4.57E-08 | -4.57E-08 | -4.57E-08 | -4.57E-08 | -4.57E-08 | -4.57E-08 | -4.57E-08 |
| PLE | NO | NO | NO | NO | NO | NO | NO | NO |
| Indicator value | -3.40E-08 | -3.50E-08 | -3.50E-08 | -4.10E-08 | -3.70E-08 | -3.70E-08 | -3.70E-08 | -3.90E-08 |

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Licensee Comments: none

Reactor Coolant System Activity



Thresholds: White > 50.0 Yellow > 100.0

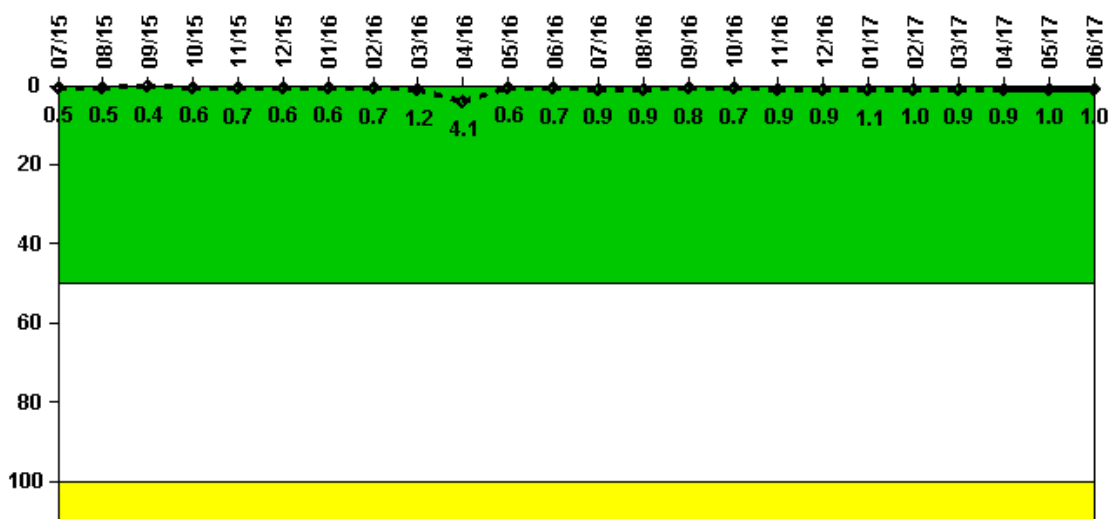
Notes

| Reactor Coolant System Activity | 7/15 | 8/15 | 9/15 | 10/15 | 11/15 | 12/15 | 1/16 | 2/16 | 3/16 | 4/16 | 5/16 | 6/16 |
|---------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Maximum activity | 0.000210 | 0.000230 | 0.000281 | 0.000257 | 0.000254 | 0.000278 | 0.000307 | 0.000286 | 0.000292 | 0.000314 | 0.000178 | 0.000182 |
| 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 |
| Reactor Coolant System Activity | 7/16 | 8/16 | 9/16 | 10/16 | 11/16 | 12/16 | 1/17 | 2/17 | 3/17 | 4/17 | 5/17 | 6/17 |
| Maximum activity | 0.000193 | 0.000306 | 0.000207 | 0.000216 | 0.000223 | 0.000225 | 0.000217 | 0.000248 | 0.000230 | 0.000269 | 0.000274 | 0.000265 |
| 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 | 7/15 | 8/15 | 9/15 | 10/15 | 11/15 | 12/15 | 1/16 | 2/16 | 3/16 | 4/16 | 5/16 | 6/16 |
|--------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Maximum leakage | 0.052 | 0.046 | 0.036 | 0.058 | 0.068 | 0.056 | 0.060 | 0.071 | 0.122 | 0.411 | 0.062 | 0.072 |
| 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 |

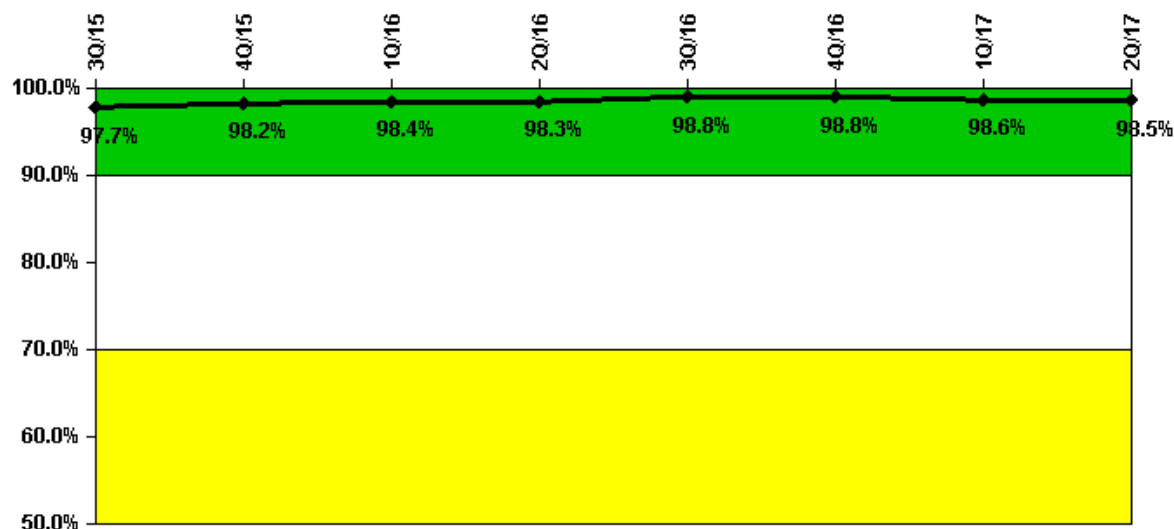
| Indicator value | 0.5 | 0.5 | 0.4 | 0.6 | 0.7 | 0.6 | 0.6 | 0.7 | 1.2 | 4.1 | 0.6 | 0.7 |
|--------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Reactor Coolant System Leakage | 7/16 | 8/16 | 9/16 | 10/16 | 11/16 | 12/16 | 1/17 | 2/17 | 3/17 | 4/17 | 5/17 | 6/17 |
| Maximum leakage | 0.085 | 0.087 | 0.084 | 0.065 | 0.088 | 0.093 | 0.110 | 0.096 | 0.085 | 0.091 | 0.097 | 0.103 |
| 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 | 0.9 | 0.9 | 0.8 | 0.7 | 0.9 | 0.9 | 1.1 | 1.0 | 0.9 | 0.9 | 1.0 | 1.0 |
|------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|

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Licensee Comments: none

Drill/Exercise Performance



Thresholds: White < 90.0% Yellow < 70.0%

Notes

| Drill/Exercise Performance | 3Q/15 | 4Q/15 | 1Q/16 | 2Q/16 | 3Q/16 | 4Q/16 | 1Q/17 | 2Q/17 |
|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Successful opportunities | 50.0 | 163.0 | 203.0 | 3.0 | 46.0 | 51.0 | 80.0 | 4.0 |
| Total opportunities | 50.0 | 164.0 | 206.0 | 3.0 | 48.0 | 52.0 | 82.0 | 4.0 |

Indicator value **97.7% 98.2% 98.4% 98.3% 98.8% 98.8% 98.6% 98.5%**

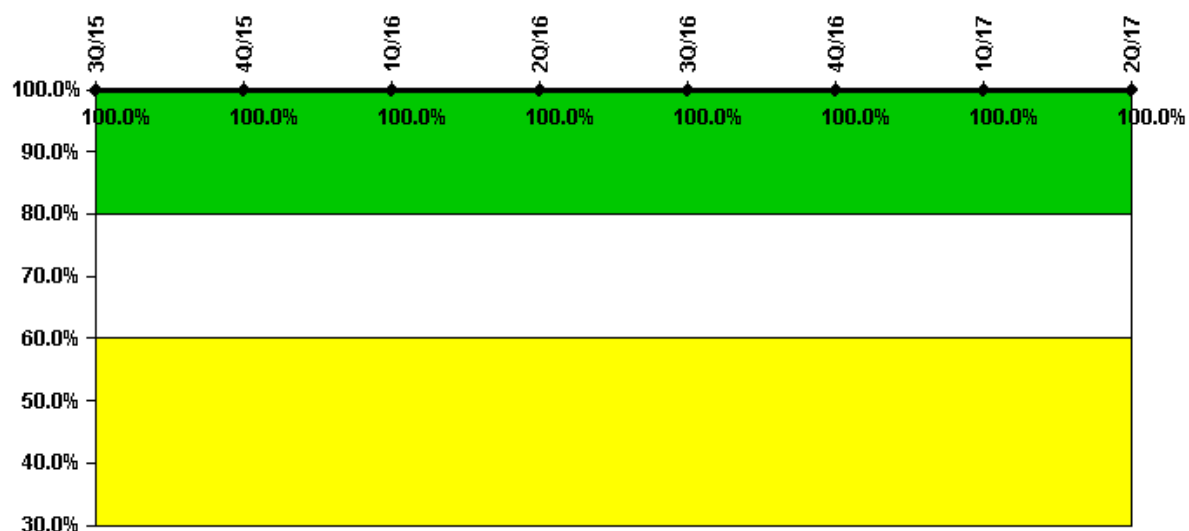
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Licensee Comments:

1Q/16: On March 29, 2016, a new shift manager became qualified in two key ERO positions and completed two opportunities and successes which were not included in the previously submitted data. No color change.

4Q/15: The total number of drill / exercise opportunities and successes was revised from 87 to 86 each (no additional failures). No color change resulted.

ERO Drill Participation



Thresholds: White < 80.0% Yellow < 60.0%

Notes

| ERO Drill Participation | 3Q/15 | 4Q/15 | 1Q/16 | 2Q/16 | 3Q/16 | 4Q/16 | 1Q/17 | 2Q/17 |
|-----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Participating Key personnel | 95.0 | 91.0 | 91.0 | 95.0 | 93.0 | 94.0 | 91.0 | 85.0 |
| Total Key personnel | 95.0 | 91.0 | 91.0 | 95.0 | 93.0 | 94.0 | 91.0 | 85.0 |

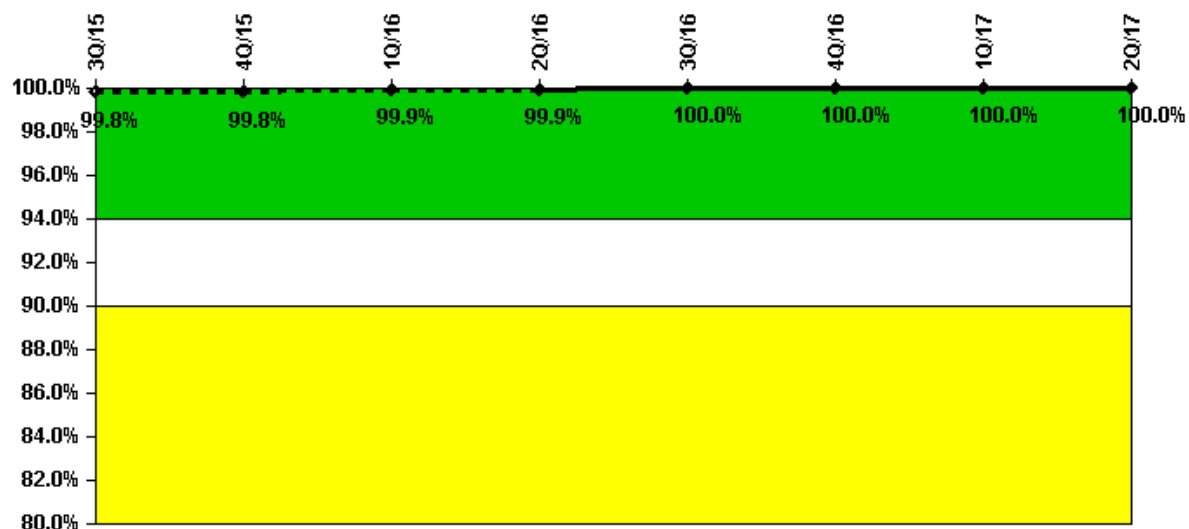
Indicator value **100.0% 100.0% 100.0% 100.0% 100.0% 100.0% 100.0% 100.0%**

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Licensee Comments:

1Q/16: On March 29, 2016, a new shift manager became qualified in two key ERO positions which were not included in the previously submitted data. No color change.

Alert & Notification System



Thresholds: White < 94.0% Yellow < 90.0%

Notes

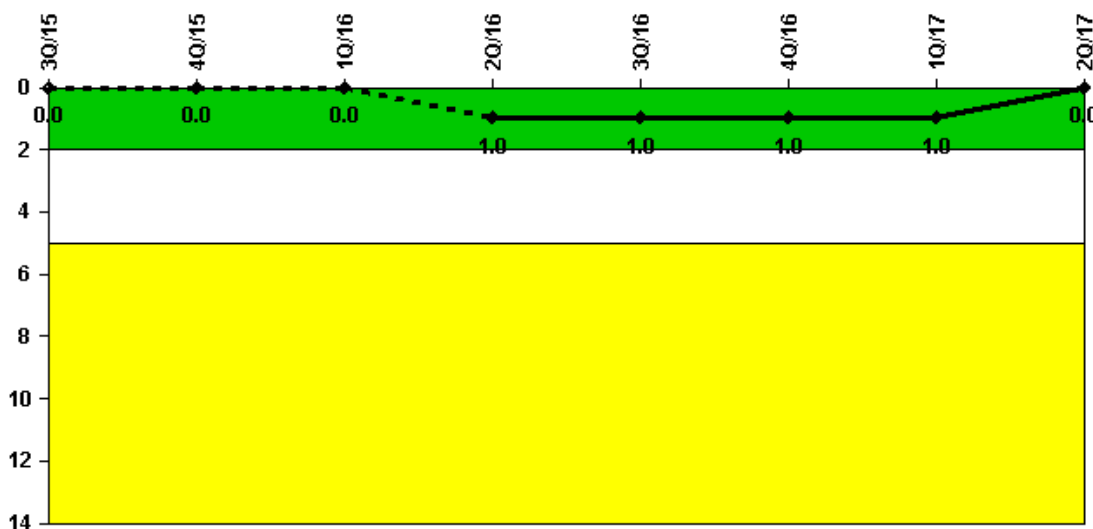
| Alert & Notification System | 3Q/15 | 4Q/15 | 1Q/16 | 2Q/16 | 3Q/16 | 4Q/16 | 1Q/17 | 2Q/17 |
|-----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Successful siren-tests | 909 | 1008 | 1102 | 1044 | 1102 | 1218 | 1102 | 1102 |
| Total sirens-tests | 912 | 1008 | 1102 | 1044 | 1102 | 1218 | 1102 | 1102 |

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

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Licensee Comments: none

Occupational Exposure Control Effectiveness



Thresholds: White > 2.0 Yellow > 5.0

Notes

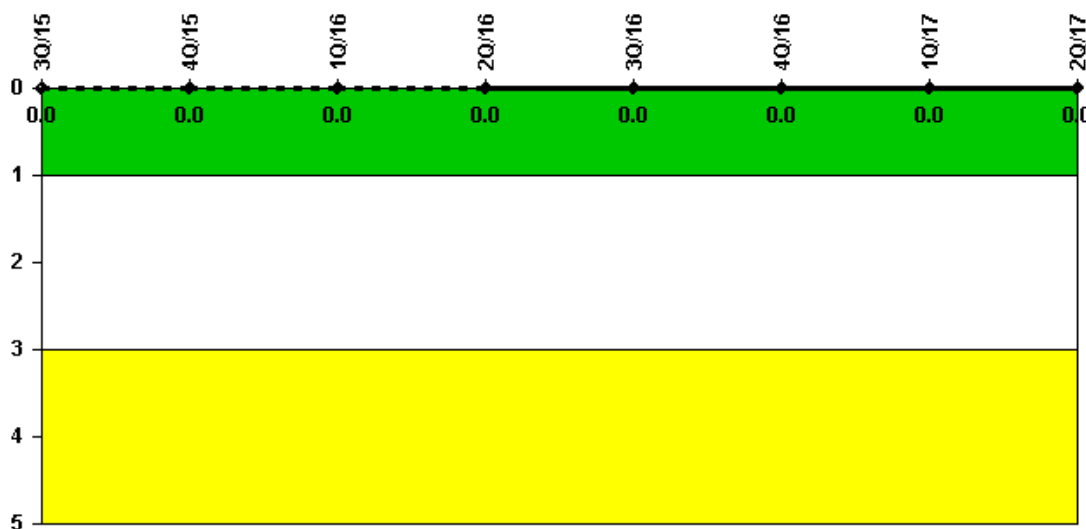
Occupational Exposure Control Effectiveness 3Q/15 4Q/15 1Q/16 2Q/16 3Q/16 4Q/16 1Q/17 2Q/17

| | | | | | | | | |
|--------------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|
| High radiation area occurrences | 0 | 0 | 0 | 1 | 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 | 1 | 1 | 1 | 1 | 0 |

TOP

Licensee Comments: none

RETS/ODCM Radiological Effluent



Thresholds: White > 1.0 Yellow > 3.0

Notes

RETS/ODCM Radiological Effluent 3Q/15 4Q/15 1Q/16 2Q/16 3Q/16 4Q/16 1Q/17 2Q/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: July 26, 2017

Page Last Reviewed/Updated Wednesday, June 07, 2017