

## San Onofre 2

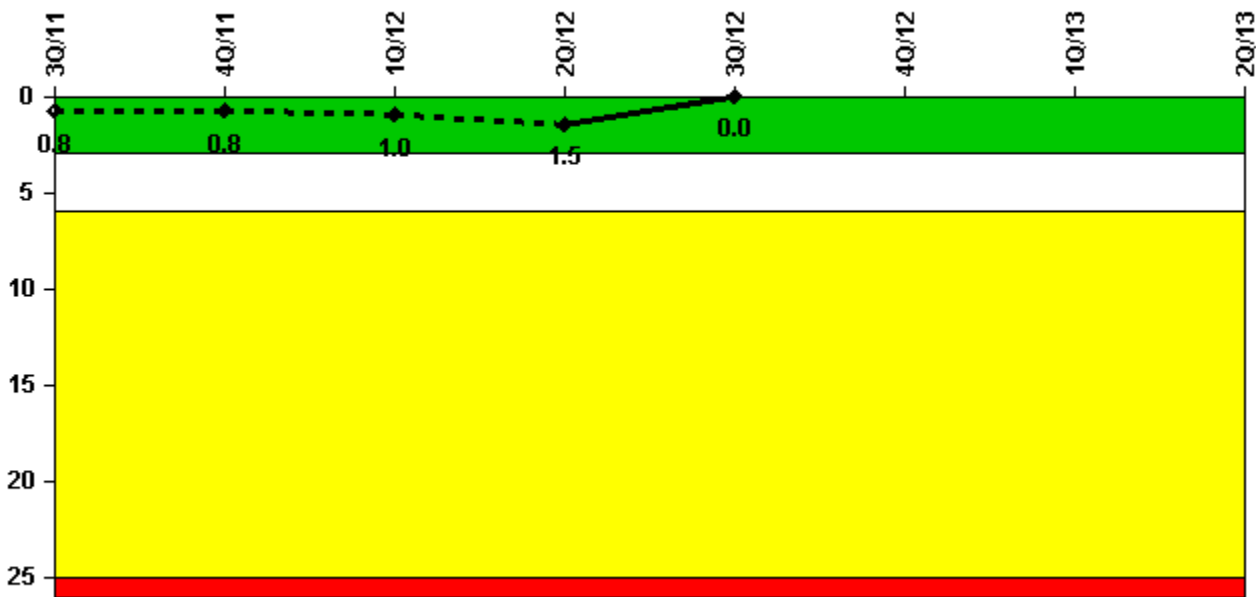
### 2Q/2013 Performance Indicators

*San Onofre, Unit 2, has been shutdown since January 2012. Because the Unplanned Scrams with Complications (USwC) and Mitigating Systems Performance Index (MSPI) performance indicators (PIs) are heavily influenced by the operational status of the reactor, NRC staff has evaluated the validity of these PIs. Because the reactor has not been critical, there have been no recent opportunities for a scram that would count in the USwC indicator. Similarly, the MSPI values can become skewed because of a lack of critical hours. For these reasons, the staff has determined that these PIs no longer provide valid indications of performance.*

The solid trend line represents the current reporting period.

Licensee's General Comments: none

#### Unplanned Scrams per 7000 Critical Hrs



**Thresholds: White > 3.0 Yellow > 6.0 Red > 25.0**

#### Notes

Unplanned Scrams per 7000 Critical Hrs	3Q/11	4Q/11	1Q/12	2Q/12	3Q/12	4Q/12	1Q/13	2Q/13
Unplanned scrams	1.0	0	0	0	0	0	0	0
Critical hours	2162.1	2209.0	212.7	0	0	0	0	0
<b>Indicator value</b>	<b>0.8</b>	<b>0.8</b>	<b>1.0</b>	<b>1.5</b>	<b>0</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>

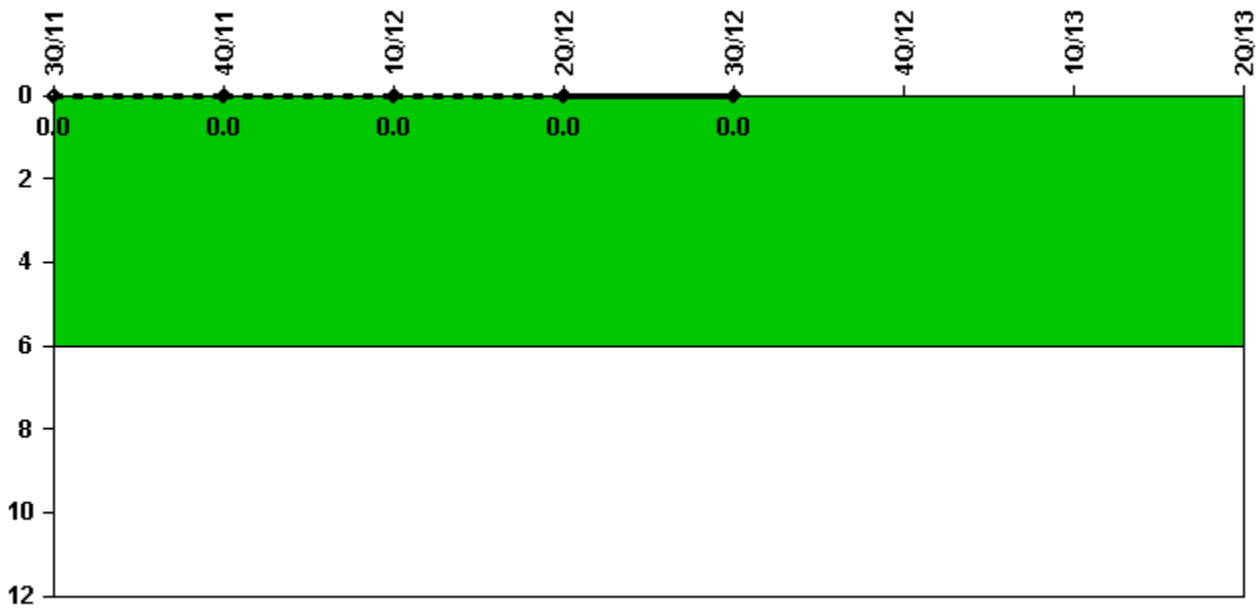
Licensee Comments:

2Q/13: This PI is N/A for 2Q13 due to less than 2400 critical hours in previous 4 quarters.

1Q/13: This PI is N/A for 1Q13 due to less than 2400 critical hours in previous 4 quarters.

4Q/12: This PI is N/A for 4Q12 due to less than 2400 critical hours in previous 4 quarters.

### Unplanned Power Changes per 7000 Critical Hrs



Thresholds: White > 6.0

**Notes**

Unplanned Power Changes per 7000 Critical Hrs	3Q/11	4Q/11	1Q/12	2Q/12	3Q/12	4Q/12	1Q/13	2Q/13
Unplanned power changes	0	0	0	0	0	0	0	0
Critical hours	2162.1	2209.0	212.7	0	0	0	0	0
<b>Indicator value</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>

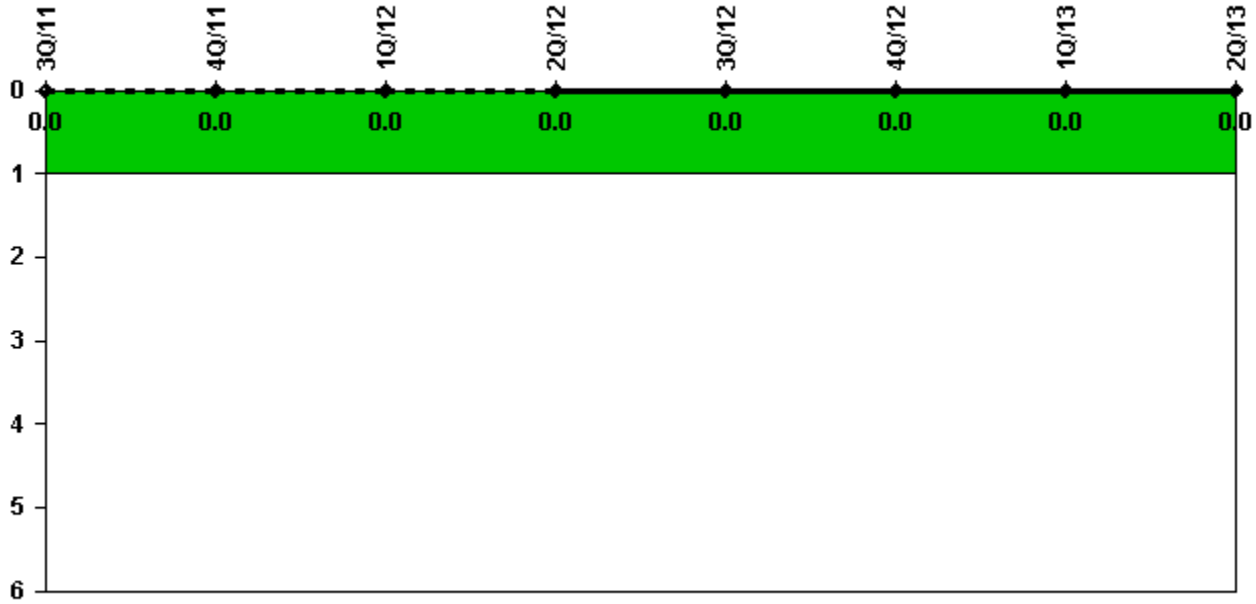
Licensee Comments:

2Q/13: This PI is N/A for 2Q13 due to less than 2400 critical hours in previous 4 quarters.

1Q/13: This PI is N/A for 1Q13 due to less than 2400 critical hours in previous 4 quarters.

4Q/12: This PI is N/A for 4Q12 due to less than 2400 critical hours in previous 4 quarters.

### Unplanned Scrams with Complications



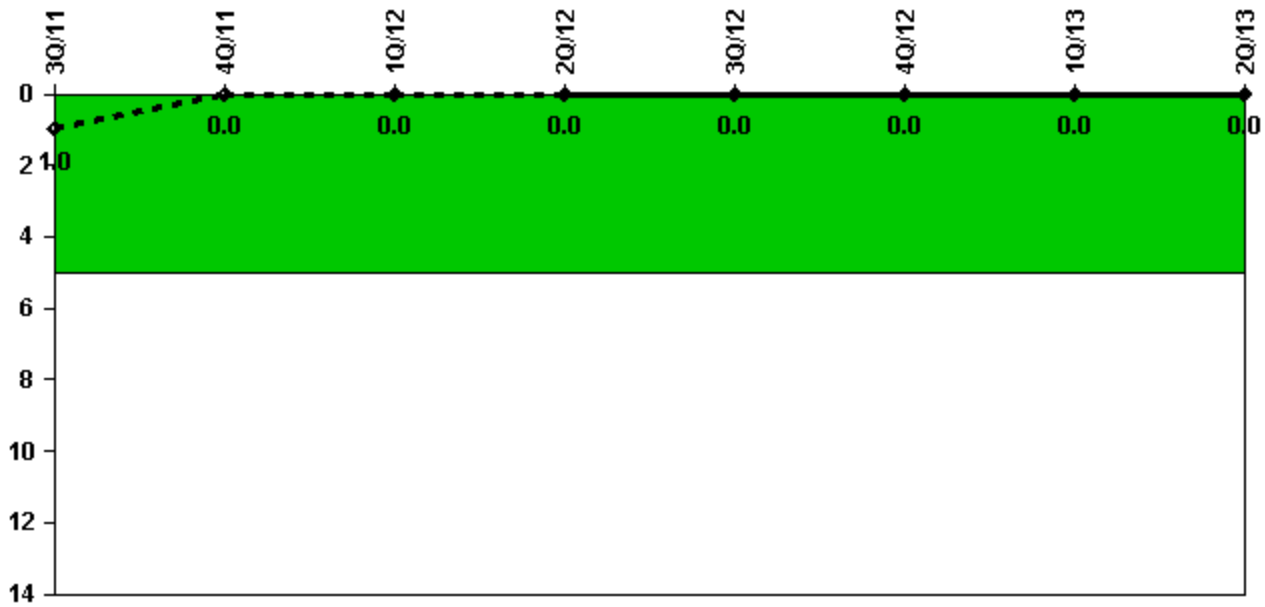
Thresholds: White > 1.0

#### Notes

Unplanned Scrams with Complications	3Q/11	4Q/11	1Q/12	2Q/12	3Q/12	4Q/12	1Q/13	2Q/13
Scrams with complications	0	0	0	0	0	0	0	0
<b>Indicator value</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

Licensee Comments: none

### Safety System Functional Failures (PWR)



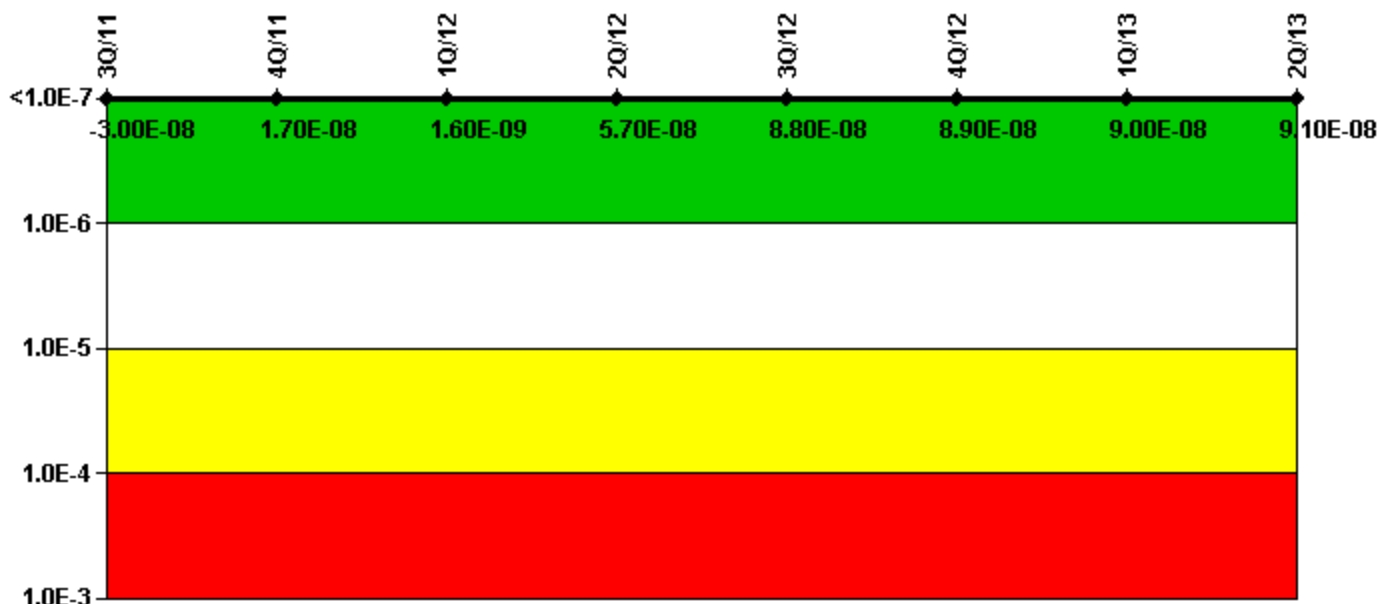
Thresholds: White > 5.0

#### Notes

Safety System Functional Failures (PWR)	3Q/11	4Q/11	1Q/12	2Q/12	3Q/12	4Q/12	1Q/13	2Q/13
Safety System Functional Failures	0	0	0	0	0	0	0	0
<b>Indicator value</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

Licensee Comments: none

### 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/11	4Q/11	1Q/12	2Q/12	3Q/12	4Q/12	1Q/13	2Q/13
UAI ( $\Delta$ CDF)	3.46E-08	6.44E-08	5.75E-08	7.66E-08	1.05E-07	1.05E-07	1.05E-07	1.04E-07
URI ( $\Delta$ CDF)	-6.46E-08	-4.77E-08	-5.59E-08	-1.93E-08	-1.79E-08	-1.65E-08	-1.50E-08	-1.34E-08
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	-3.00E-08	1.70E-08	1.60E-09	5.70E-08	8.80E-08	8.90E-08	9.00E-08	9.10E-08

#### Licensee Comments:

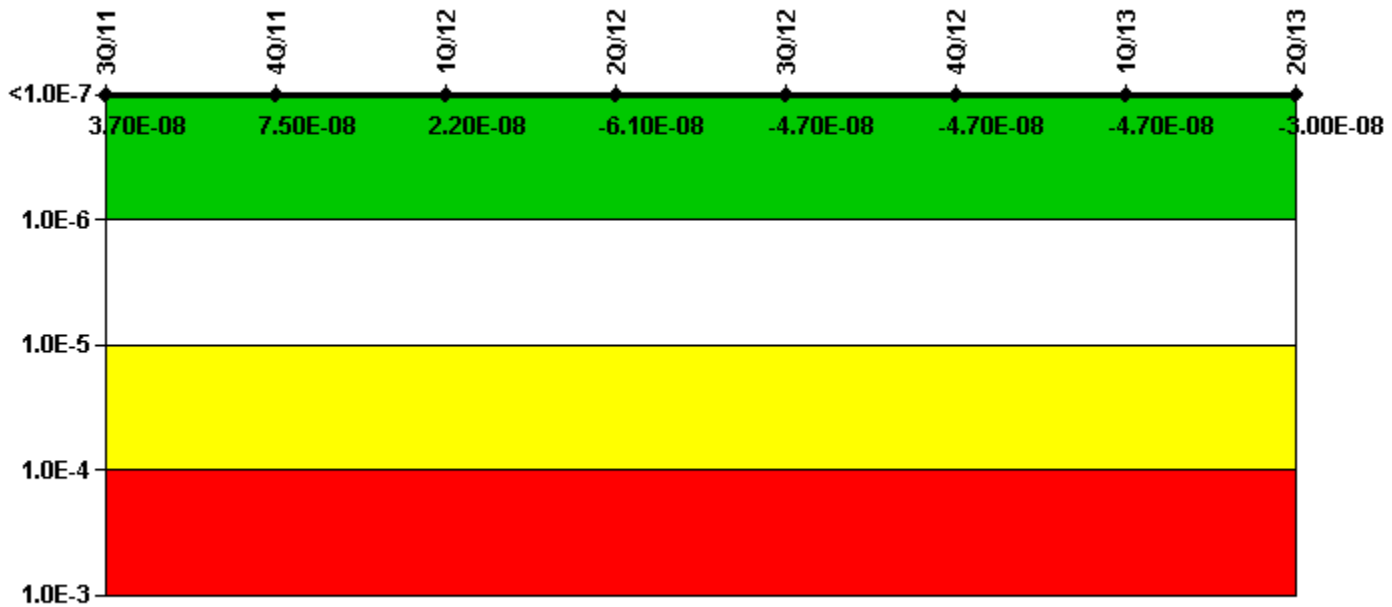
1Q/12: FAQ 11-06, MSPI EDG Run Hour Reporting, requires that the 1st hour of actual EDG run times be excluded when calculating EDG failure rates. Implementing this FAQ in PRA resulted in increased EDG failure to run probabilities and increase in Birnbaum for EDG components unreliability and train unavailability.

4Q/11: CDE Comment for PRA Parameter Changes for 4Q11. PRACP-11-0004 models the removal of credit for transferring RCP's power to the other unit on loss of offsite power. This would increase the failure probability of normal Pressurizer Spray, which is provided by the RCPs. Hence, the Auxiliary Spray becomes more important. The suction valve for the Auxiliary Spray is a Train B valve, which makes Train B EDG more important. The Birnbaum values for Train B EDG components increased up to 46%. The Birnbaum value for train unavailability increased 10%.

3Q/11: PRACP-11-0004 models the removal of credit for transferring RCPs power to the other unit on loss of offsite power. This would increase the failure probability of normal Pressurizer Spray, which is provided by the RCPs. Hence, the Auxiliary Spray becomes more important. The suction valve for the Auxiliary Spray is a Train B valve, which makes Train B EDG more important. The Birnbaum values for Train B EDG components increased up

to 46%. The Birnbaum value for train unavailability increased 10%.

### 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/11	4Q/11	1Q/12	2Q/12	3Q/12	4Q/12	1Q/13	2Q/13
UAI (ΔCDF)	9.13E-08	1.29E-07	6.74E-08	-1.58E-08	-1.81E-09	-1.81E-09	-1.81E-09	1.48E-08
URI (ΔCDF)	-5.41E-08	-5.42E-08	-4.50E-08	-4.50E-08	-4.50E-08	-4.50E-08	-4.50E-08	-4.46E-08
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	3.70E-08	7.50E-08	2.20E-08	-6.10E-08	-4.70E-08	-4.70E-08	-4.70E-08	-3.00E-08

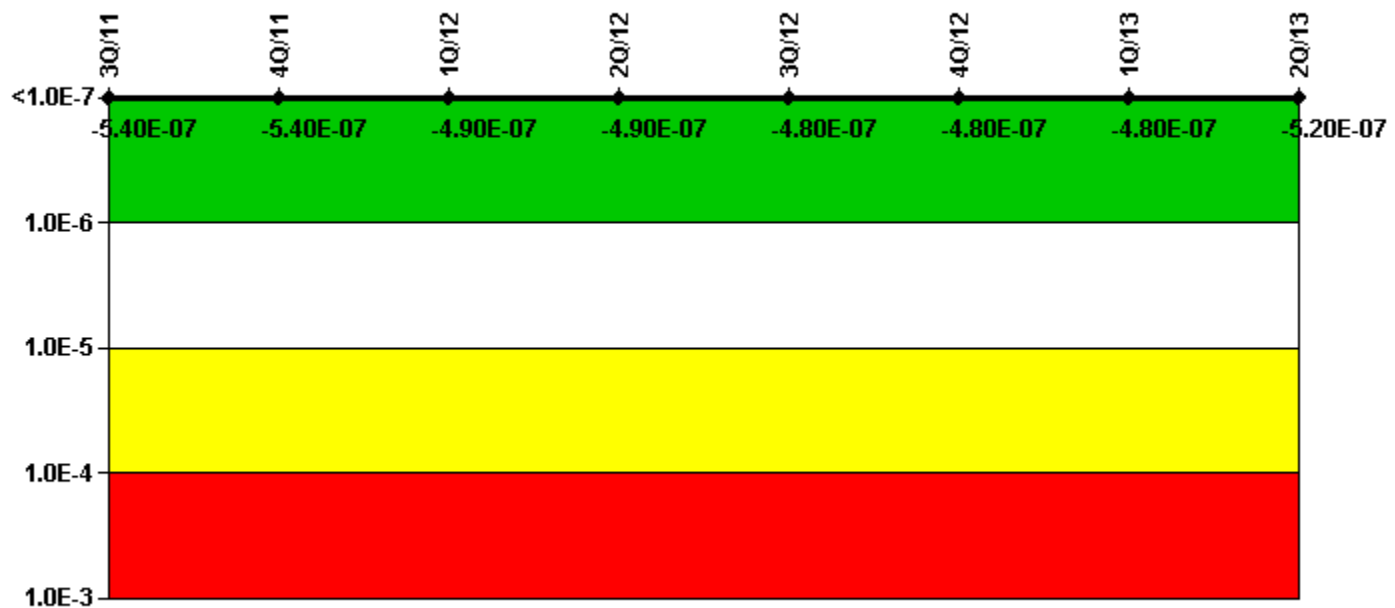
#### Licensee Comments:

1Q/12: FAQ 11-06, MSPI EDG Run Hour Reporting, requires that the 1st hour of actual EDG run times be excluded when calculating EDG failure rates. Implementing this FAQ in PRA has negligible impact on HPSI system Birnbaum for component unreliability and train unavailability.

4Q/11: CDE Comment for PRA Parameter Changes for 4Q11. For HPSI system, all Birnbaum values are within 1% change compared to last quarter's Birnbaum values.

3Q/11: For HPSI system, all Birnbaum values are within 1% change compared to last quarters Birnbaum values.

### 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/11	4Q/11	1Q/12	2Q/12	3Q/12	4Q/12	1Q/13	2Q/13
UAI ( $\Delta$ CDF)	-1.38E-07	-1.38E-07	-1.06E-07	-1.02E-07	-9.21E-08	-9.21E-08	-9.21E-08	-1.36E-07
URI ( $\Delta$ CDF)	-4.05E-07	-4.03E-07	-3.82E-07	-3.90E-07	-3.84E-07	-3.84E-07	-3.84E-07	-3.80E-07
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	-5.40E-07	-5.40E-07	-4.90E-07	-4.90E-07	-4.80E-07	-4.80E-07	-4.80E-07	-5.20E-07

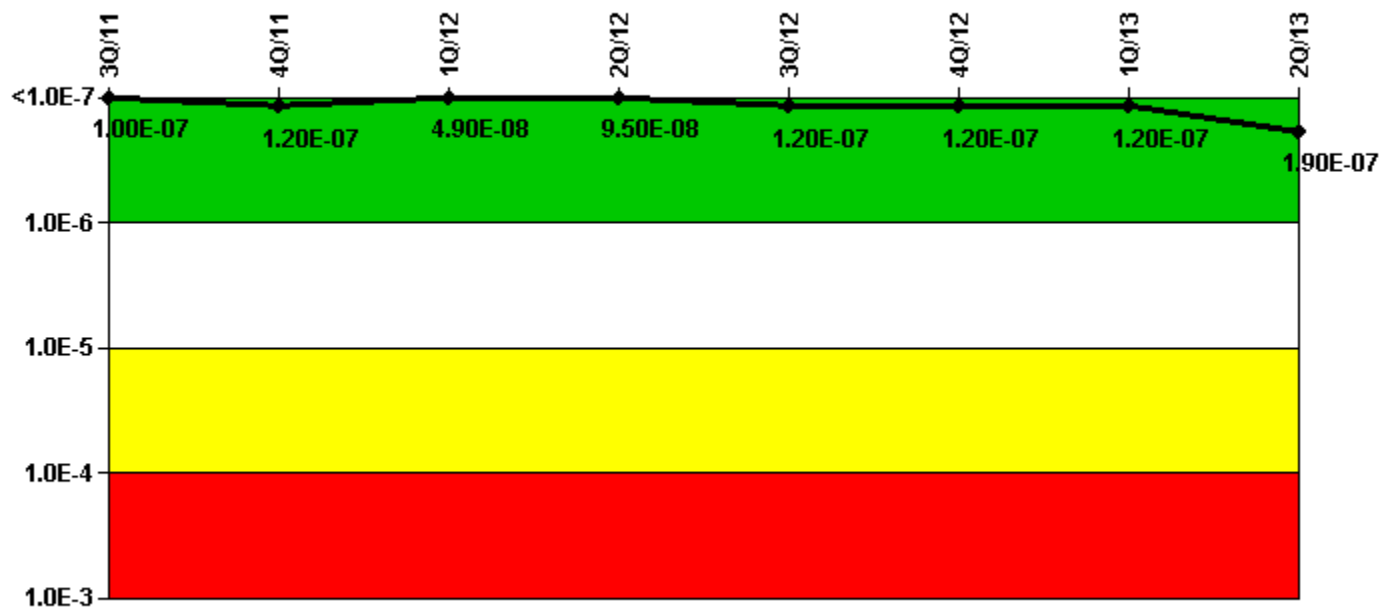
Licensee Comments:

1Q/12: FAQ 11-06, MSPI EDG Run Hour Reporting, requires that the 1st hour of actual EDG run times be excluded when calculating EDG failure rates. Implementing this FAQ in PRA resulted in increased EDG failure to run probabilities and slight increase in Birnbaum for Turbine Driven AFW pump train components unreliability and train unavailability.

4Q/11: CDE Comment for PRA Parameter Changes for 4Q11. For AFW system, all Birnbaum values are within 1% change compared to last quarter's Birnbaum values.

3Q/11: For AFW system, all Birnbaum values are within 1% change compared to last quarters Birnbaum values.

### 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/11	4Q/11	1Q/12	2Q/12	3Q/12	4Q/12	1Q/13	2Q/13
UAI ( $\Delta$ CDF)	1.27E-07	1.49E-07	6.94E-08	1.15E-07	1.40E-07	1.40E-07	1.40E-07	2.06E-07
URI ( $\Delta$ CDF)	-2.50E-08	-2.50E-08	-2.06E-08	-2.05E-08	-2.05E-08	-2.05E-08	-2.05E-08	-2.04E-08
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	1.00E-07	1.20E-07	4.90E-08	9.50E-08	1.20E-07	1.20E-07	1.20E-07	1.90E-07

#### Licensee Comments:

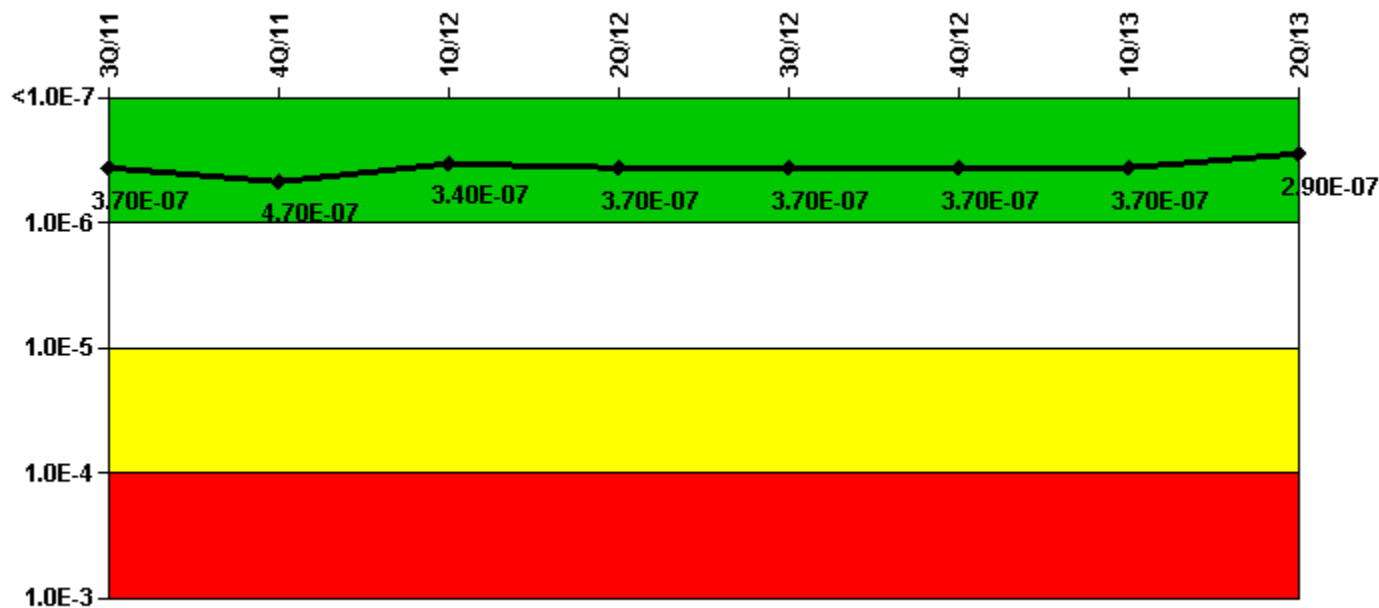
1Q/12: FAQ 11-06, MSPI EDG Run Hour Reporting, requires that the 1st hour of actual EDG run times be excluded when calculating EDG failure rates. Implementing this FAQ in PRA has negligible impact on Containment Spray (RHR) system Birnbaum for component unreliability and train unavailability.

4Q/11: CDE Comment for PRA Parameter Changes for 4Q11. For RHR system, all Birnbaum values are within 1% change compared to last quarter's Birnbaum values.



3Q/11: For RHR system, all Birnbaum values are within 1% change compared to last quarters Birnbaum values.

### 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/11	4Q/11	1Q/12	2Q/12	3Q/12	4Q/12	1Q/13	2Q/13
UAI (ΔCDF)	4.93E-07	5.93E-07	4.15E-07	4.42E-07	4.48E-07	4.48E-07	4.48E-07	3.69E-07
URI (ΔCDF)	-1.19E-07	-1.19E-07	-7.50E-08	-7.48E-08	-7.48E-08	-7.48E-08	-7.48E-08	-7.42E-08
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	3.70E-07	4.70E-07	3.40E-07	3.70E-07	3.70E-07	3.70E-07	3.70E-07	2.90E-07

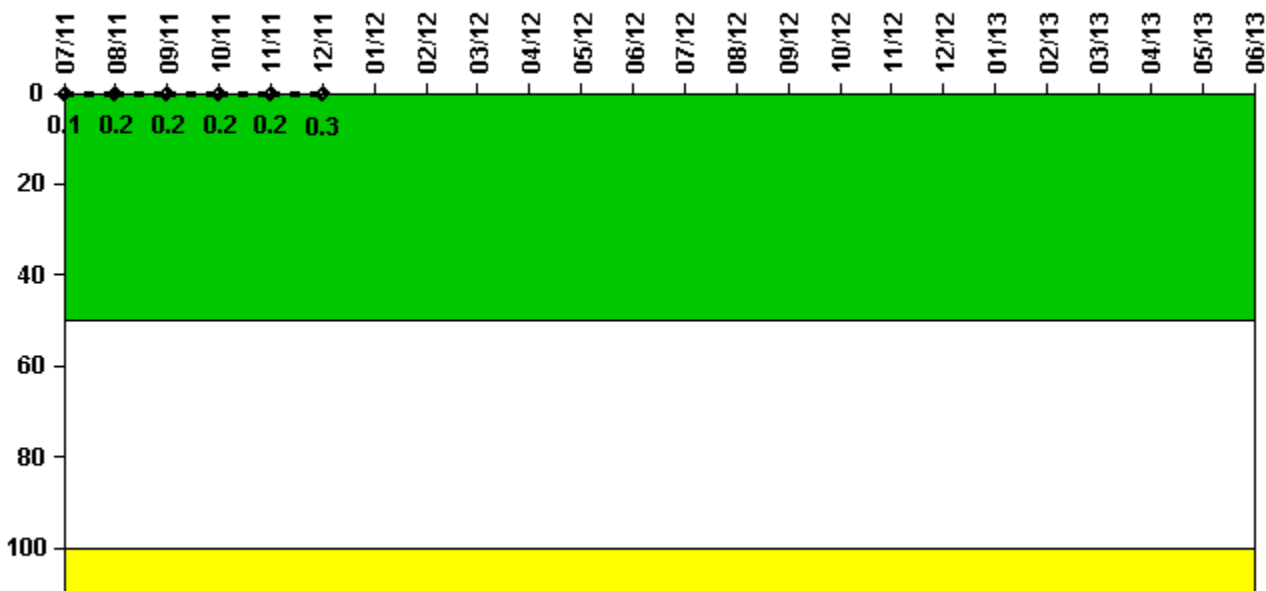
#### Licensee Comments:

1Q/12: FAQ 11-06, MSPI EDG Run Hour Reporting, requires that the 1st hour of actual EDG run times be excluded when calculating EDG failure rates. Implementing this FAQ in PRA has negligible impact on Support System Cooling Birnbaum for component unreliability and train unavailability.

4Q/11: CDE Comment for PRA Parameter Changes for 4Q11. For Supporting System Cooling system, all Birnbaum values are within 1% change compared to last quarter's Birnbaum values.

3Q/11: For Supporting System Cooling system, all Birnbaum values are within 1% change compared to last quarters Birnbaum values.

### Reactor Coolant System Activity



Thresholds: White > 50.0 Yellow > 100.0

**Notes**

Reactor Coolant System Activity	7/11	8/11	9/11	10/11	11/11	12/11	1/12	2/12	3/12	4/12	5/12	6/12
Maximum activity	0.001410	0.001820	0.001670	0.001580	0.002050	0.002500	N/A	N/A	N/A	N/A	N/A	N/A
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	0.2	0.2	0.2	0.2	0.3	N/A	N/A	N/A	N/A	N/A	N/A

Reactor Coolant System Activity	7/12	8/12	9/12	10/12	11/12	12/12	1/13	2/13	3/13	4/13	5/13	6/13
Maximum activity	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
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	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Licensee Comments:

6/13: RCS activity data not required for 2Q13 due to unit shutdown.

3/13: RCS activity data not required for 1Q13 due to unit shutdown.

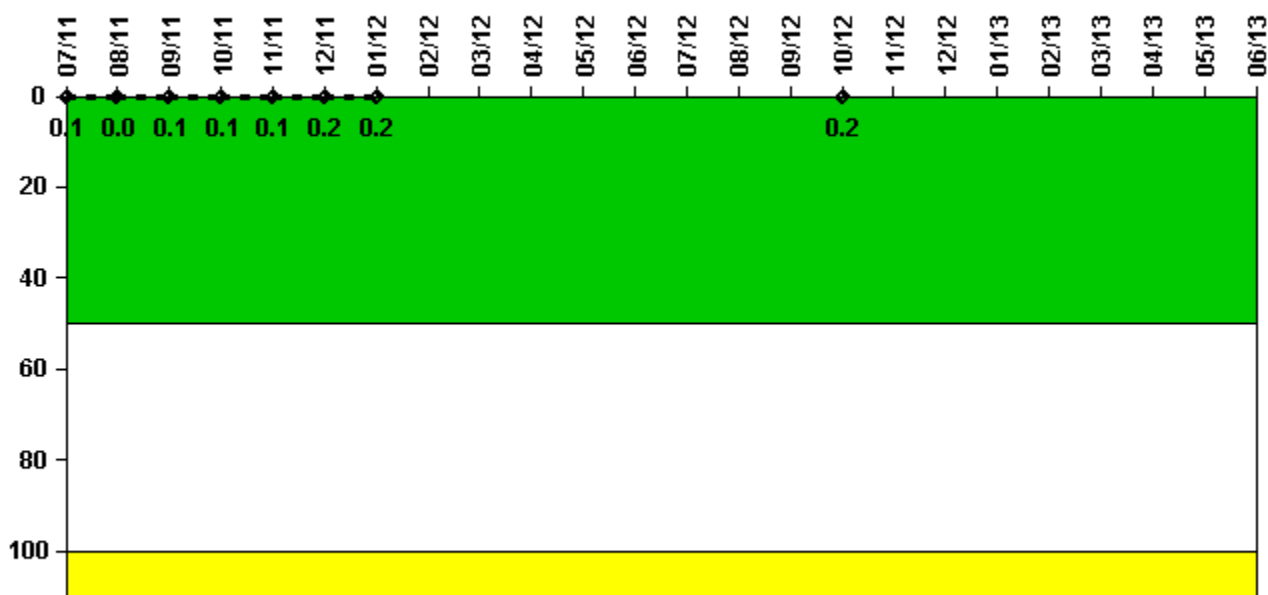
12/12: RCS activity data not required for 4Q12 due to unit shutdown.

9/12: RCS activity data not required for 3Q12 due to both units offline.

6/12: RCS activity data not required for 2Q12 due to both units offline.

3/12: Unit 2 RCS activity data not required for Jan 2012 - Mar 2012

### Reactor Coolant System Leakage



Thresholds: White > 50.0 Yellow > 100.0

### Notes

Reactor Coolant System Leakage	7/11	8/11	9/11	10/11	11/11	12/11	1/12	2/12	3/12	4/12	5/12	6/12
Maximum leakage	0.010	0	0.010	0.010	0.010	0.020	0.020	N/A	N/A	N/A	N/A	N/A
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	0.1	0	0.1	0.1	0.1	0.2	0.2	N/A	N/A	N/A	N/A	N/A
Reactor Coolant System Leakage	7/12	8/12	9/12	10/12	11/12	12/12	1/13	2/13	3/13	4/13	5/13	6/13
Maximum leakage	N/A	N/A	N/A	0.020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
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	N/A	N/A	N/A	0.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Licensee Comments:

6/13: RCS leakage data not required for 2Q13 due to unit shutdown.

3/13: RCS leakage data not required for 1Q13 due to unit shutdown.

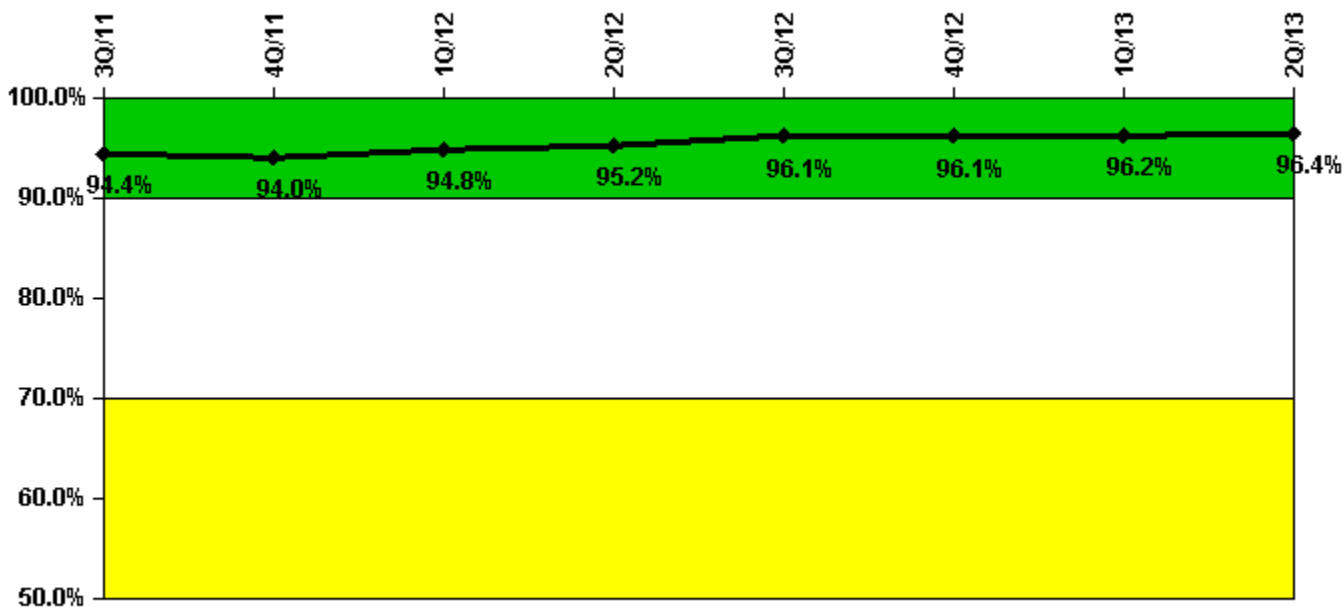
12/12: RCS leakage data not required for November and December 2012 due to unit shutdown. Data required in October during Mode 3/4 operation.

9/12: RCS leakage data not required for 3Q12 due to both units offline.

6/12: RCS leakage data not required for 2Q12 due to both units offline.

3/12: Unit 2 RCS leakage data not required for Feb 2012 - Mar 2012

### Drill/Exercise Performance



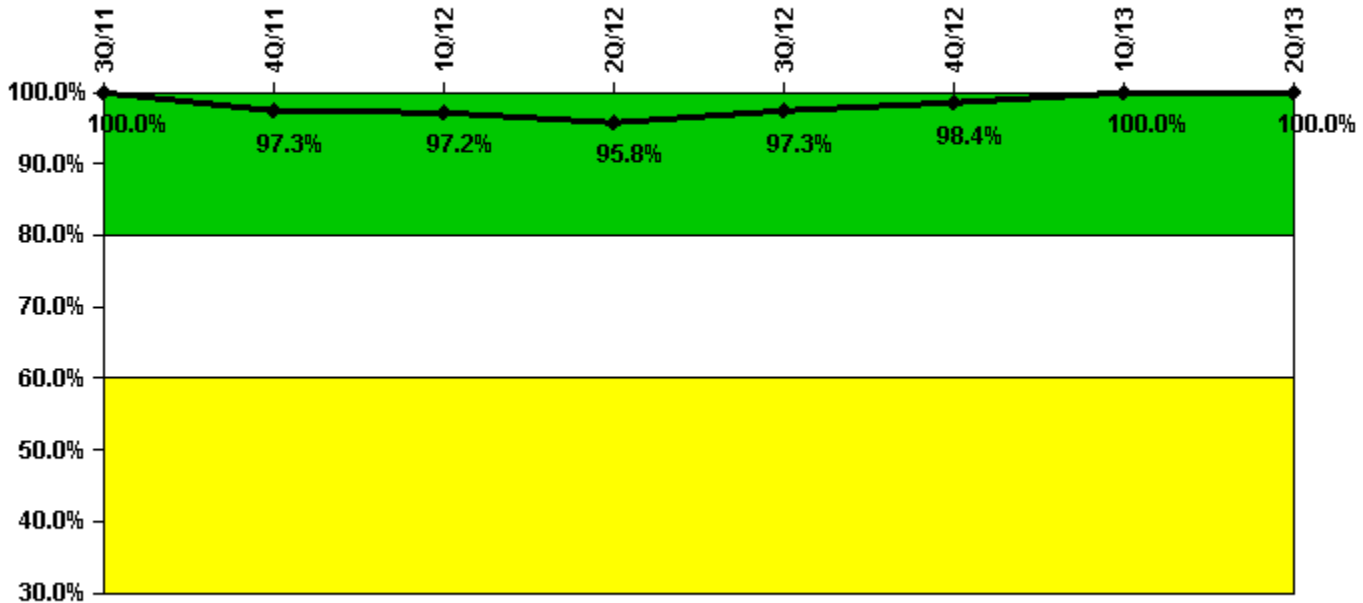
Thresholds: White < 90.0% Yellow < 70.0%

### Notes

Drill/Exercise Performance	3Q/11	4Q/11	1Q/12	2Q/12	3Q/12	4Q/12	1Q/13	2Q/13
Successful opportunities	60.0	128.0	21.0	150.0	44.0	56.0	12.0	61.0
Total opportunities	65.0	136.0	22.0	153.0	44.0	58.0	13.0	61.0
Indicator value	94.4%	94.0%	94.8%	95.2%	96.1%	96.1%	96.2%	96.4%

Licensee Comments: none

### ERO Drill Participation



Thresholds: White < 80.0% Yellow < 60.0%

#### Notes

ERO Drill Participation	3Q/11	4Q/11	1Q/12	2Q/12	3Q/12	4Q/12	1Q/13	2Q/13
Participating Key personnel	72.0	71.0	70.0	69.0	73.0	61.0	64.0	85.0
Total Key personnel	72.0	73.0	72.0	72.0	75.0	62.0	64.0	85.0
Indicator value	100.0%	97.3%	97.2%	95.8%	97.3%	98.4%	100.0%	100.0%

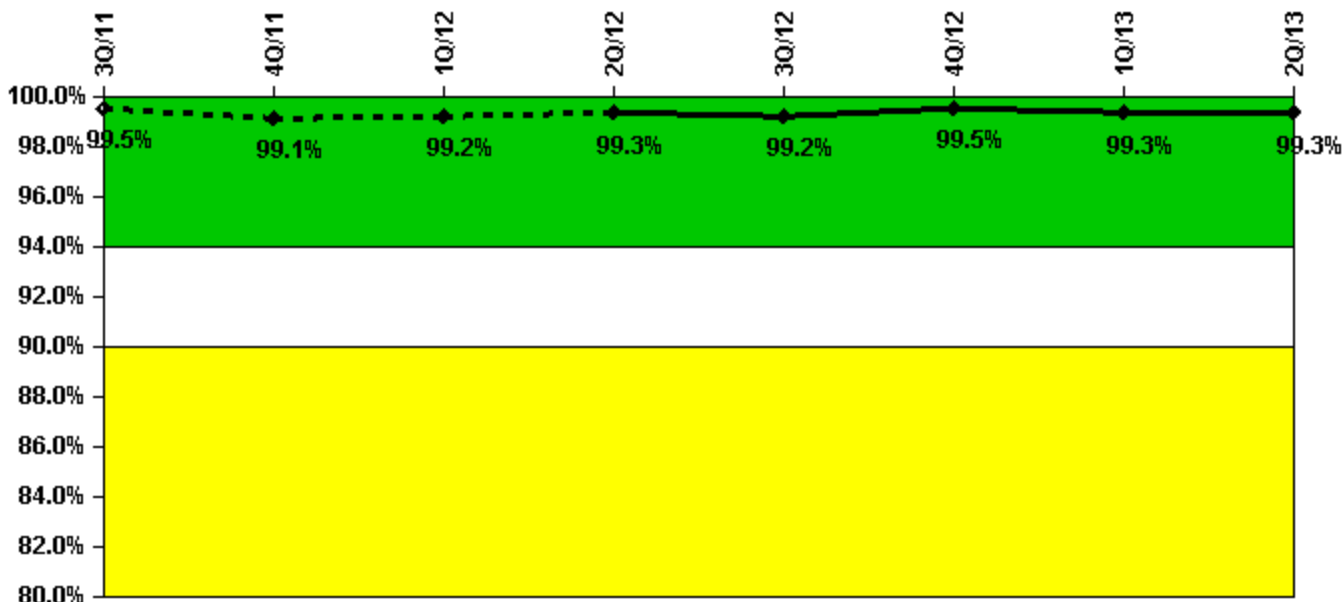
#### Licensee Comments:

2Q/12: Previous data from 4Q11 and 1Q12 has been corrected.

1Q/12: Data corrected for 1Q12 to reflect reduction of participating key personnel due to insufficient objective evidence (NN 202042541). No change to indicator color (green).

4Q/11: Data corrected for Dec11 to reflect reduction of participating key personnel due to insufficient objective evidence (NN 202042541). No change to indicator color (green).

### Alert & Notification System



Thresholds: White < 94.0% Yellow < 90.0%

#### Notes

Alert & Notification System	3Q/11	4Q/11	1Q/12	2Q/12	3Q/12	4Q/12	1Q/13	2Q/13
Successful siren-tests	399	440	400	343	398	494	348	349
Total sirens-tests	399	450	400	344	400	500	350	350
Indicator value	99.5%	99.1%	99.2%	99.3%	99.2%	99.5%	99.3%	99.3%

#### Licensee Comments:

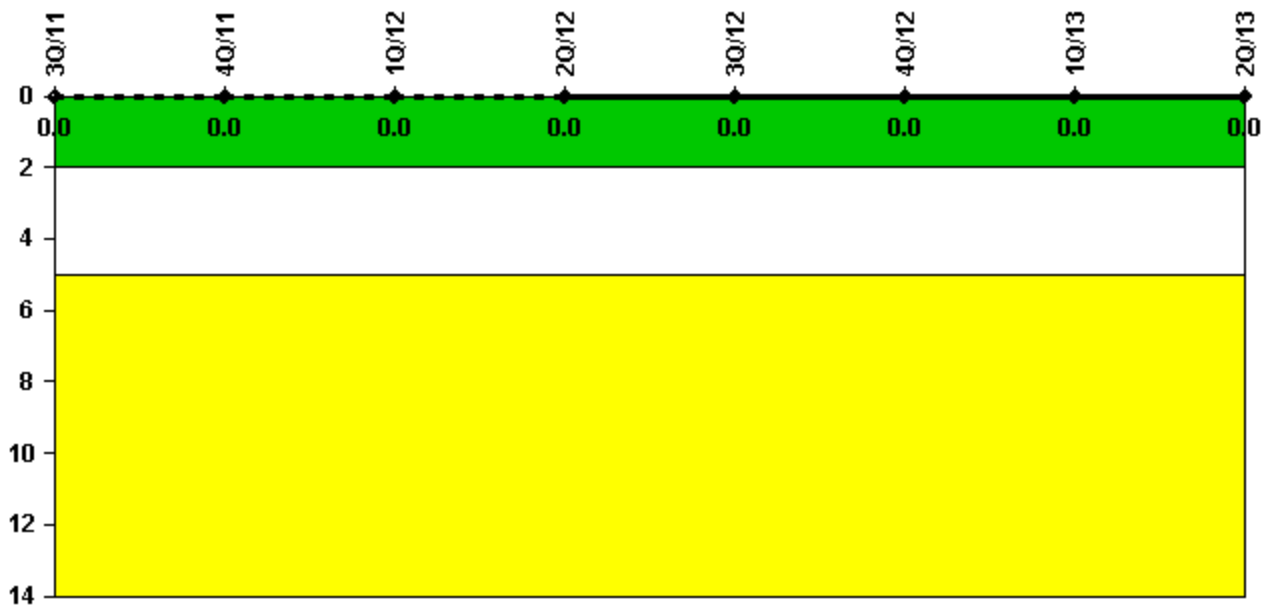
3Q/12: Previous data from June 2012 has been corrected.

2Q/12: Data corrected for June 2012 to reflect one additional siren test failure because the siren had been declared inoperable at the scheduled time of the test (NN 201971744). No change to indicator color (green). Previous data from 4Q11 has been corrected.

2Q/12: Previous data from 4Q11 has been corrected.

4Q/11: Data corrected for Nov-Dec11 to reflect additional siren test failures due to procedures not aligned with Siren Design Report (NN 202043181). No change to indicator color (green).

### Occupational Exposure Control Effectiveness



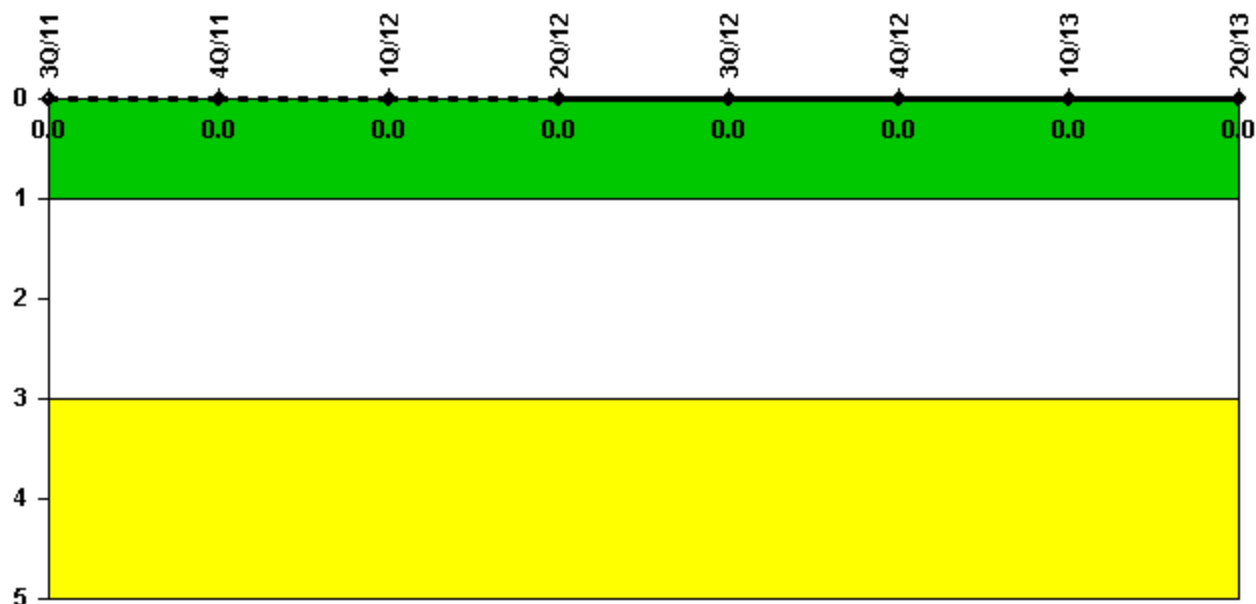
Thresholds: White > 2.0 Yellow > 5.0

#### Notes

Occupational Exposure Control Effectiveness	3Q/11	4Q/11	1Q/12	2Q/12	3Q/12	4Q/12	1Q/13	2Q/13
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
<b>Indicator value</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

Licensee Comments: none

### RETS/ODCM Radiological Effluent



Thresholds: White > 1.0 Yellow > 3.0

#### Notes

RETS/ODCM Radiological Effluent	3Q/11	4Q/11	1Q/12	2Q/12	3Q/12	4Q/12	1Q/13	2Q/13
RETS/ODCM occurrences	0	0	0	0	0	0	0	0
Indicator value	0	0	0	0	0	0	0	0

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.



 [Action Matrix Summary](#) | [Inspection Findings Summary](#) | [PI Summary](#) | [Reactor Oversight Process](#)

*Last Modified: August 19, 2013*