



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

## **Diablo Canyon 2 – Quarterly Performance Indicators**

The solid trend line represents the current reporting period.

Licensee's General Comments: none

### **1Q/2017 Performance Indicators**

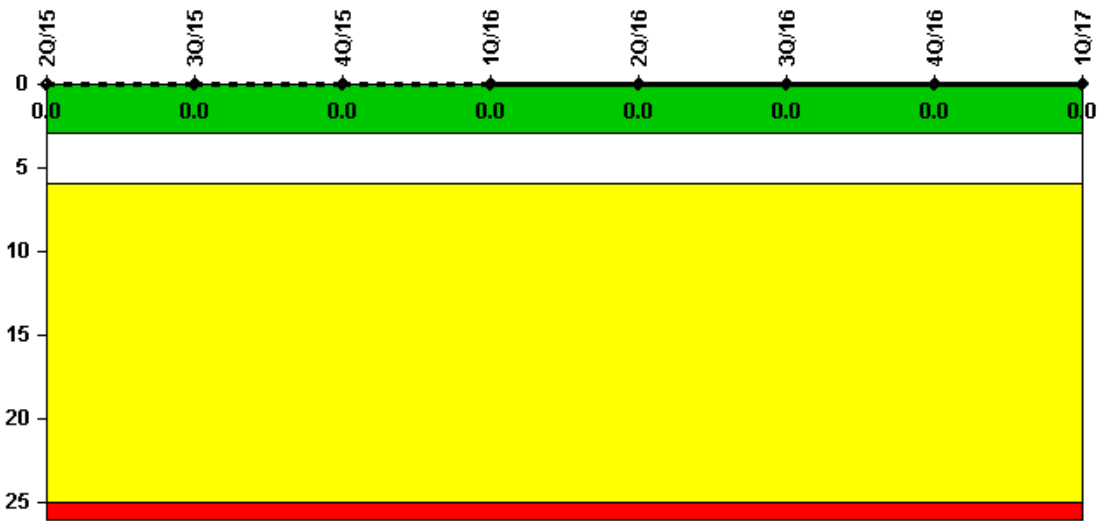
The solid trend line represents the current reporting period.

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

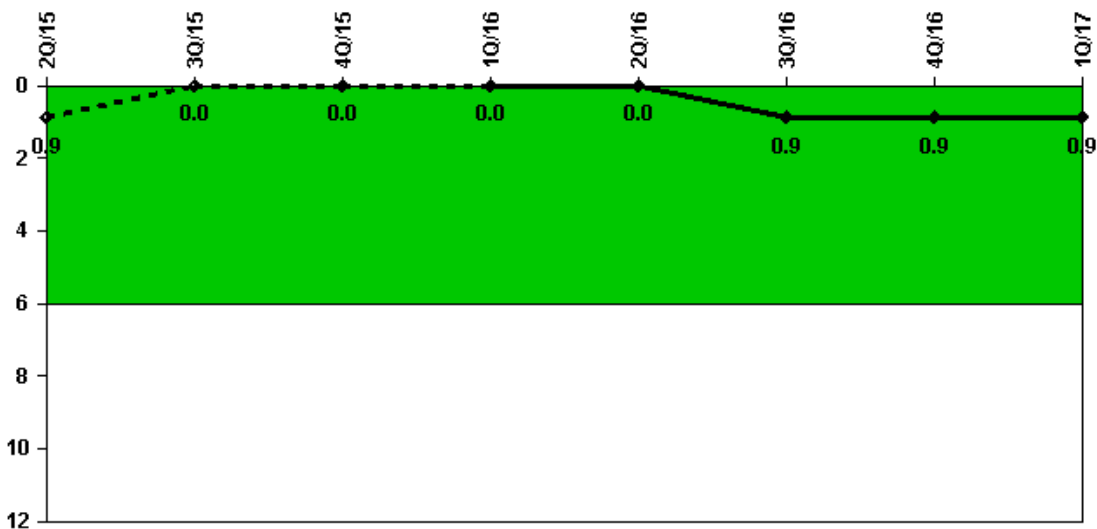
#### Notes

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	2184.0	2208.0	2209.0	2183.0	1436.5	2208.0	2209.0	2159.0
Indicator value	0	0	0	0	0	0	0	0

▲ TOP

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	0	0	0	1.0	0	0
Critical hours	2184.0	2208.0	2209.0	2183.0	1436.5	2208.0	2209.0	2159.0

<b>Indicator value</b>	<b>0.9</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.9</b>	<b>0.9</b>	<b>0.9</b>
------------------------	------------	----------	----------	----------	----------	------------	------------	------------

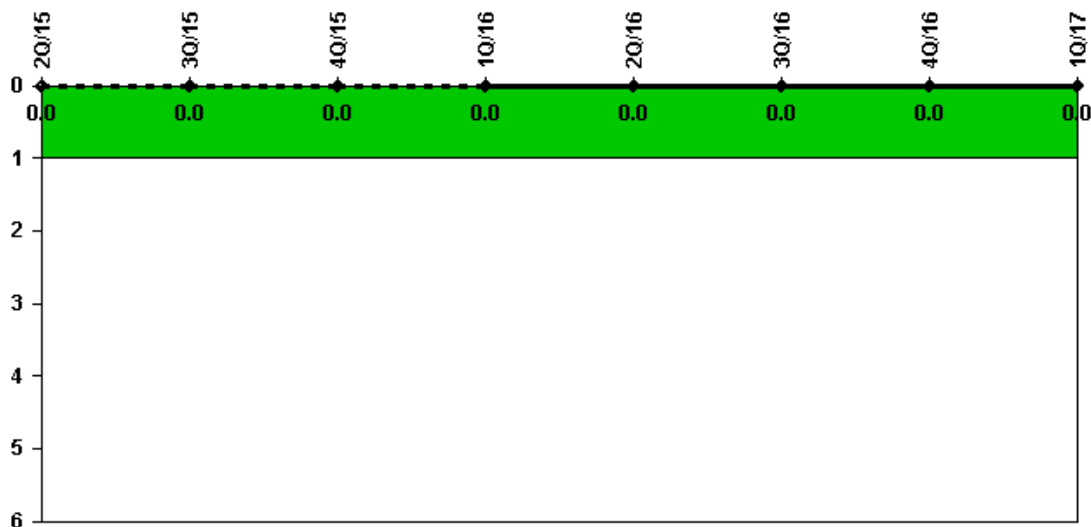
▲ TOP

Licensee Comments:

2Q/16: Diablo Canyon Unit 2 began planned refueling outage 2R19 on May 1, 2016. 2R19 was completed on June 2, 2016.

4Q/15: On December 11, 2015, Diablo Canyon Unit 2 was ramped to approximately 25 percent power due to ocean storm swells and biofouling of the condenser. The power change was made proactively in order to prevent a plant trip consistent with NEI 99-02, Revision 7, Appendix D FAQs for Diablo Canyon, and is therefore classified as unplanned, excluded per NEI 99-02. Reference SAPN 50828812.

**Unplanned Scrams with Complications**



Thresholds: White > 1.0

**Notes**

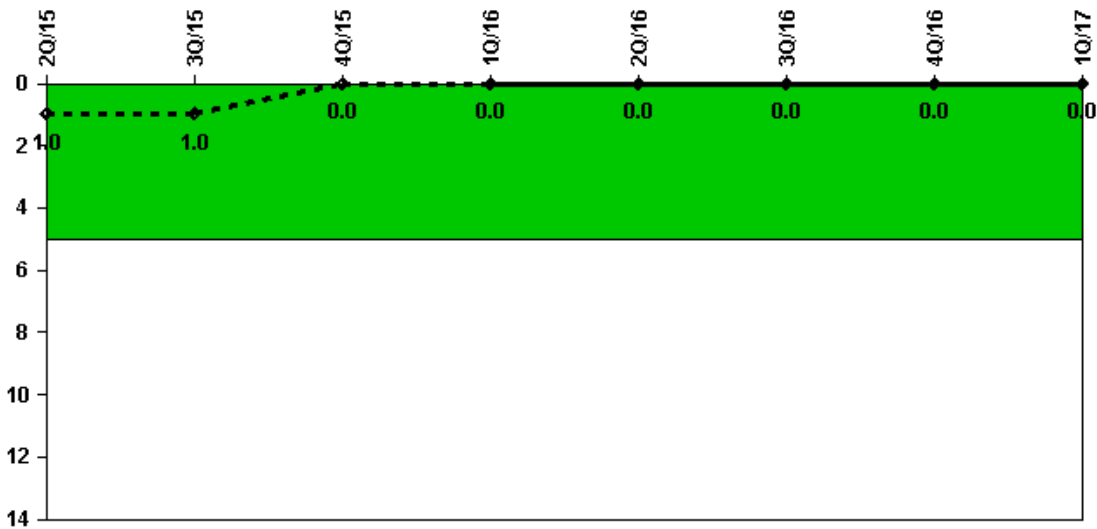
Unplanned Scrams with Complications	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17
Scrams with complications	0	0	0	0	0	0	0	0

<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>
------------------------	------------	------------	------------	------------	------------	------------	------------	------------

▲ TOP

Licensee Comments: none

### Safety System Functional Failures (PWR)



Thresholds: White > 5.0

**Notes**

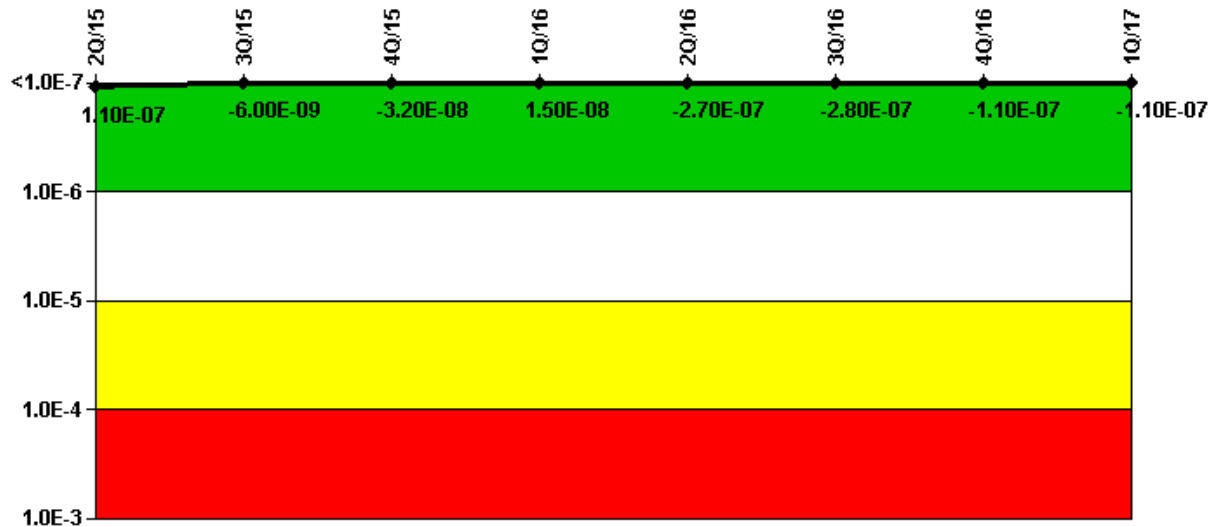
Safety System Functional Failures (PWR) 2Q/15 3Q/15 4Q/15 1Q/16 2Q/16 3Q/16 4Q/16 1Q/17  
 Safety System Functional Failures 0 0 0 0 0 0 0 0

Indicator value 1 1 0 0 0 0 0 0

▲ TOP

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**

	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17
UAI (ΔCDF)	2.10E-08	1.99E-08	-5.17E-09	4.13E-08	4.54E-08	3.66E-08	3.19E-08	3.14E-08
URI (ΔCDF)	8.86E-08	-2.59E-08	-2.68E-08	-2.68E-08	-3.19E-07	-3.18E-07	-1.39E-07	-1.39E-07
PLE	NO	NO	NO	NO	NO	NO	NO	NO
<b>Indicator value</b>	<b>1.10E-07</b>	<b>-6.00E-09</b>	<b>-3.20E-08</b>	<b>1.50E-08</b>	<b>-2.70E-07</b>	<b>-2.80E-07</b>	<b>-1.10E-07</b>	<b>-1.10E-07</b>

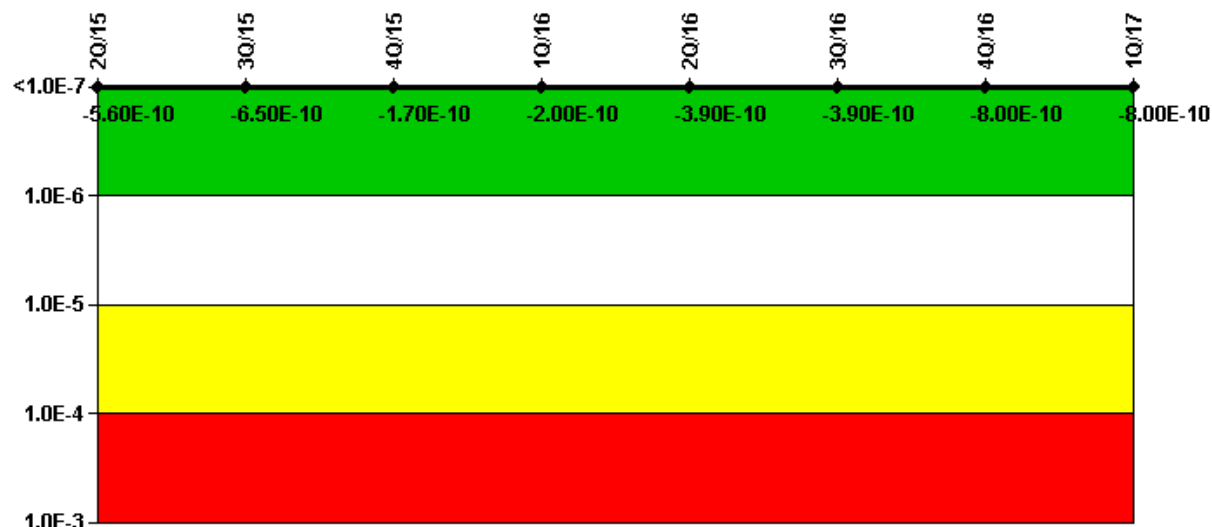
▲ TOP

**Licensee Comments:**

4Q/16: Changed PRA Parameter(s). Diablo Canyon Probabilistic Risk Assessment (PRA) model revision DC03A was approved on 9/30/2016. The Mitigating System Performance Index (MSPI) basis document revision 10 was approved on 10/6/2016 and contains the updated PRA parameters. The DC03A model revision is an update that incorporates the new Reactor Coolant Pump (RCP) shutdown seals and other minor system updates. As a result of this update, the Core Damage Frequency and Fussel-Vessely importance for all monitored trains and components were revised.

4Q/15: Changed PRA Parameter(s). Diablo Canyon Probabilistic Risk Assessment (PRA) model revision DC03 was approved on 7/30/2015. The Mitigating System Performance Index (MSPI) basis document revision 8 was approved on 1/20/2016 and contains the updated PRA parameters. The DC03 model revision is a periodic update that incorporates new model data for initiating events, equipment failures probabilities, and Human Reliability Analysis (HRA) probabilities. As a result of this update, the Core Damage Frequency, Fussel-Vessely, and basic event probabilities for all monitored trains and components were revised.

**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 (ΔCDF)	5.96E-10	5.10E-10	1.02E-10	6.96E-11				

					-1.21E-10	-1.21E-10	-1.13E-10	-1.13E-10
URI (ΔCDF)	-1.16E-09	-1.16E-09	-2.68E-10	-2.68E-10	-2.68E-10	-2.68E-10	-6.88E-10	-6.88E-10
PLE	NO	NO	NO	NO	NO	NO	NO	NO
<b>Indicator value</b>	<b>-5.60E-10</b>	<b>-6.50E-10</b>	<b>-1.70E-10</b>	<b>-2.00E-10</b>	<b>-3.90E-10</b>	<b>-3.90E-10</b>	<b>-8.00E-10</b>	<b>-8.00E-10</b>

▲ TOP

**Licensee Comments:**

4Q/16: Changed PRA Parameter(s). Diablo Canyon Probabilistic Risk Assessment (PRA) model revision DC03A was approved on 9/30/2016. The Mitigating System Performance Index (MSPI) basis document revision 10 was approved on 10/6/2016 and contains the updated PRA parameters. The DC03A model revision is an update that incorporates the new Reactor Coolant Pump (RCP) shutdown seals and other minor system updates. As a result of this update, the Core Damage Frequency and Fussel-Vessely importance for all monitored trains and components were revised.

4Q/15: Changed PRA Parameter(s). Diablo Canyon Probabilistic Risk Assessment (PRA) model revision DC03 was approved on 7/30/2015. The Mitigating System Performance Index (MSPI) basis document revision 8 was approved on 1/20/2016 and contains the updated PRA parameters. The DC03 model revision is a periodic update that incorporates new model data for initiating events, equipment failures probabilities, and Human Reliability Analysis (HRA) probabilities. As a result of this update, the Core Damage Frequency, Fussel-Vessely, and basic event probabilities for all monitored trains and components were revised.

**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)	-1.25E-08	-1.19E-08	-1.78E-08	-1.78E-08	-1.78E-08	-1.78E-08	-1.85E-08	-1.85E-08
URI (ΔCDF)	-5.33E-08	-5.33E-08	-2.62E-08	-2.62E-08	-2.62E-08	-2.55E-08	-5.92E-08	-5.74E-08

PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	-6.60E-08	-6.50E-08	-4.40E-08	-4.40E-08	-4.40E-08	-4.30E-08	-7.80E-08	-7.60E-08

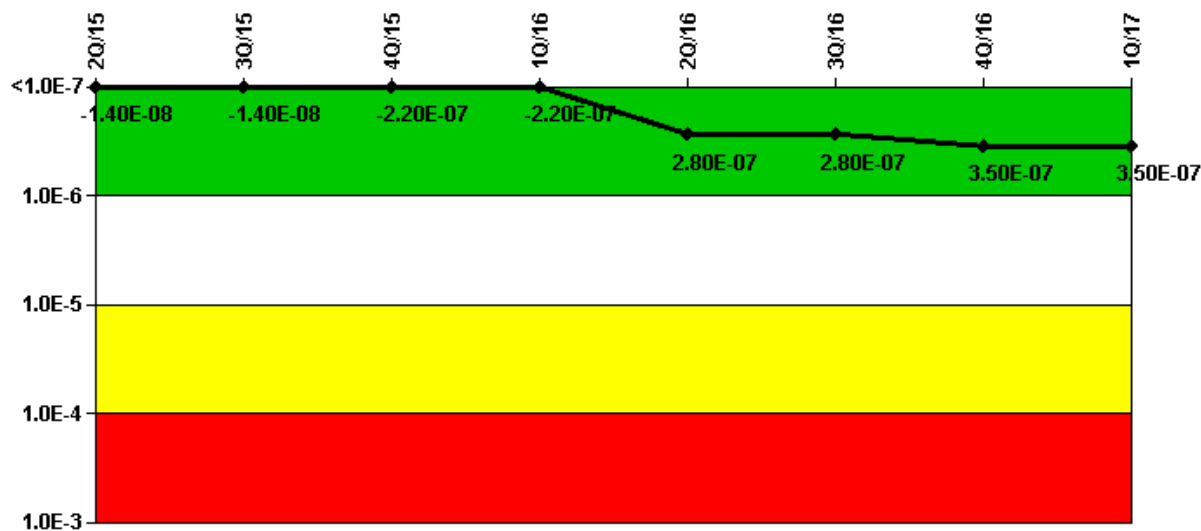
▲ TOP

**Licensee Comments:**

4Q/16: Changed PRA Parameter(s). Diablo Canyon Probabilistic Risk Assessment (PRA) model revision DC03A was approved on 9/30/2016. The Mitigating System Performance Index (MSPI) basis document revision 10 was approved on 10/6/2016 and contains the updated PRA parameters. The DC03A model revision is an update that incorporates the new Reactor Coolant Pump (RCP) shutdown seals and other minor system updates. As a result of this update, the Core Damage Frequency and Fussel-Vessely importance for all monitored trains and components were revised.

4Q/15: Changed PRA Parameter(s). Diablo Canyon Probabilistic Risk Assessment (PRA) model revision DC03 was approved on 7/30/2015. The Mitigating System Performance Index (MSPI) basis document revision 8 was approved on 1/20/2016 and contains the updated PRA parameters. The DC03 model revision is a periodic update that incorporates new model data for initiating events, equipment failures probabilities, and Human Reliability Analysis (HRA) probabilities. As a result of this update, the Core Damage Frequency, Fussel-Vessely, and basic event probabilities for all monitored trains and components were revised.

**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 (ΔCDF)	-2.41E-09	-2.41E-09	-3.22E-08	-3.18E-08	-2.97E-08	-3.00E-08	-1.91E-08	-1.91E-08
URI (ΔCDF)	-1.19E-08	-1.19E-08	-1.90E-07	-1.90E-07	3.10E-07	3.10E-07	3.74E-07	3.74E-07
PLE	NO	NO	NO	NO	NO	NO	NO	NO
Indicator value	-1.40E-08	-1.40E-08	-2.20E-07	-2.20E-07	2.80E-07	2.80E-07	3.50E-07	3.50E-07



**Licensee Comments:**

1Q/17: Risk Cap Invoked.

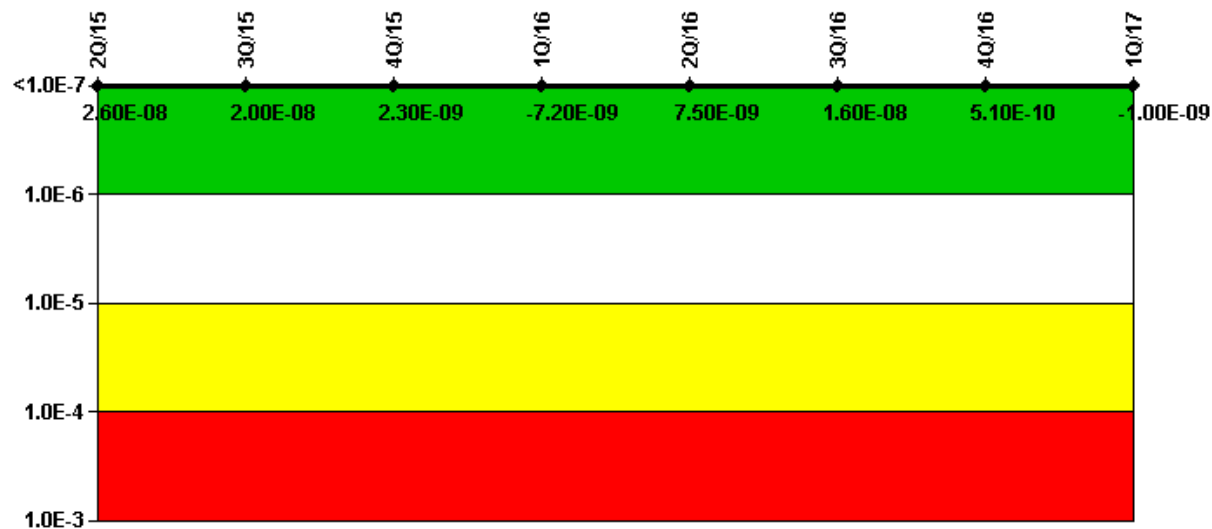
4Q/16: Risk Cap Invoked. Changed PRA Parameter(s). Diablo Canyon Probabilistic Risk Assessment (PRA) model revision DC03A was approved on 9/30/2016. The Mitigating System Performance Index (MSPI) basis document revision 10 was approved on 10/6/2016 and contains the updated PRA parameters. The DC03A model revision is an update that incorporates the new Reactor Coolant Pump (RCP) shutdown seals and other minor system updates. As a result of this update, the Core Damage Frequency and Fussel-Vessely importance for all monitored trains and components were revised.

3Q/16: Risk Cap Invoked.

2Q/16: Risk Cap Invoked.

4Q/15: Changed PRA Parameter(s). Diablo Canyon Probabilistic Risk Assessment (PRA) model revision DC03 was approved on 7/30/2015. The Mitigating System Performance Index (MSPI) basis document revision 8 was approved on 1/20/2016 and contains the updated PRA parameters. The DC03 model revision is a periodic update that incorporates new model data for initiating events, equipment failures probabilities, and Human Reliability Analysis (HRA) probabilities. As a result of this update, the Core Damage Frequency, Fussel-Vessely, and basic event probabilities for all monitored trains and components were revised.

**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)	7.24E-08	6.66E-08	1.94E-08	9.90E-09	2.46E-08	3.32E-08	4.98E-09	3.42E-09
URI (ΔCDF)	-4.68E-08	-4.68E-08	-1.71E-08	-1.71E-08	-1.71E-08	-1.71E-08	-4.47E-09	-4.46E-09
PLE	NO	NO	NO	NO	NO	NO	NO	NO
<b>Indicator value</b>	<b>2.60E-08</b>	<b>2.00E-08</b>	<b>2.30E-09</b>	<b>-7.20E-09</b>	<b>7.50E-09</b>	<b>1.60E-08</b>	<b>5.10E-10</b>	<b>-1.00E-09</b>



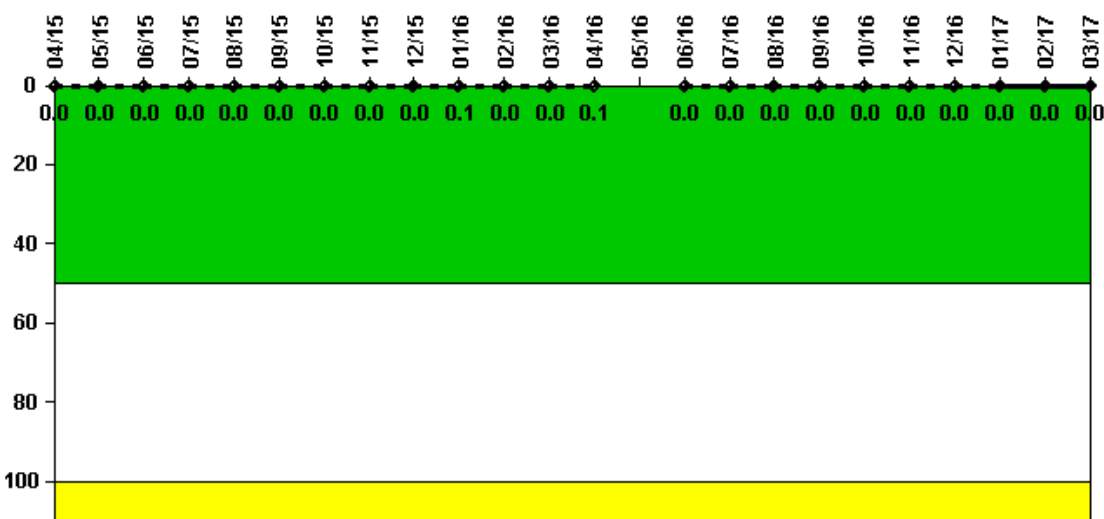


Licensee Comments:

4Q/16: Changed PRA Parameter(s). Diablo Canyon Probabilistic Risk Assessment (PRA) model revision DC03A was approved on 9/30/2016. The Mitigating System Performance Index (MSPI) basis document revision 10 was approved on 10/6/2016 and contains the updated PRA parameters. The DC03A model revision is an update that incorporates the new Reactor Coolant Pump (RCP) shutdown seals and other minor system updates. As a result of this update, the Core Damage Frequency and Fussel-Vessely importance for all monitored trains and components were revised.

4Q/15: Changed PRA Parameter(s). Diablo Canyon Probabilistic Risk Assessment (PRA) model revision DC03 was approved on 7/30/2015. The Mitigating System Performance Index (MSPI) basis document revision 8 was approved on 1/20/2016 and contains the updated PRA parameters. The DC03 model revision is a periodic update that incorporates new model data for initiating events, equipment failures probabilities, and Human Reliability Analysis (HRA) probabilities. As a result of this update, the Core Damage Frequency, Fussel-Vessely, and basic event probabilities for all monitored trains and components were revised.

**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	0.000212	0.000218	0.000323	0.000265	0.000269	0.000273	0.000286	0.000290	0.000313	0.000611	0.000352	0.000352
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	0.1	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	0.000530	N/A	0.000146	0.000143	0.000149	0.000157	0.000168	0.000161	0.000167	0.000172	0.000176	0.000186
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

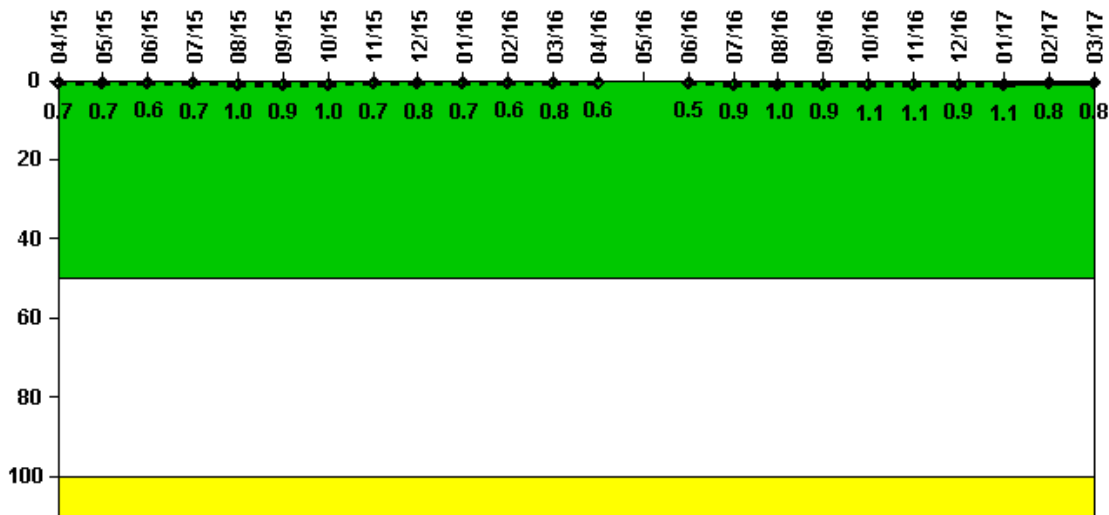
Technical specification limit

**Indicator value**      0.1 N/A      0      0      0      0      0      0      0      0      0      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	0.074	0.071	0.061	0.074	0.097	0.091	0.099	0.069	0.082	0.073	0.064	0.080
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**      0.7   0.7   0.6   0.7   1.0   0.9   1.0   0.7   0.8   0.7   0.6   0.8

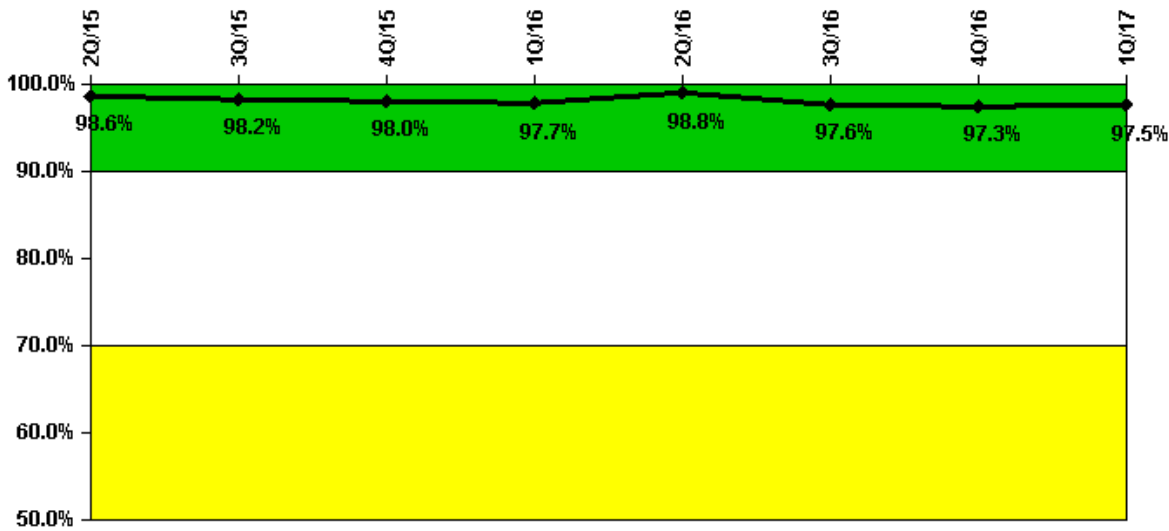
Reactor Coolant System Leakage	4/16	5/16	6/16	7/16	8/16	9/16	10/16	11/16	12/16	1/17	2/17	3/17
Maximum leakage	0.064	N/A	0.052	0.092	0.101	0.085	0.105	0.108	0.088	0.113	0.083	0.076
Technical specification limit	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0

**Indicator value**      0.6 N/A   0.5   0.9   1.0   0.9   1.1   1.1   0.9   1.1   0.8   0.8

▲ TOP

Licensee Comments: none

### Drill/Exercise Performance



Thresholds: White < 90.0% Yellow < 70.0%

#### Notes

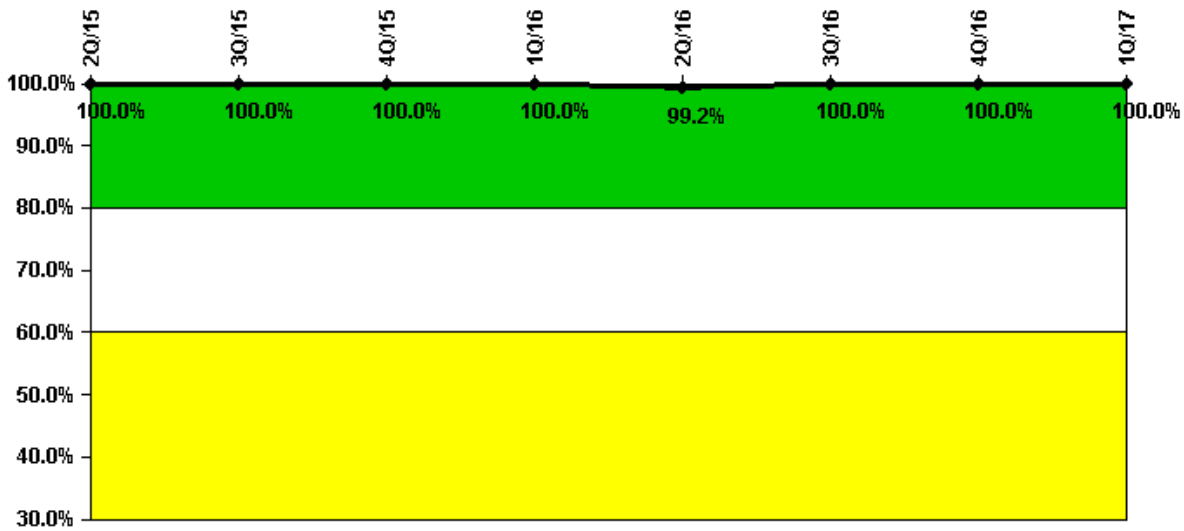
Drill/Exercise Performance	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17
Successful opportunities	43.0	22.0	4.0	37.0	48.0	33.0	37.0	44.0
Total opportunities	44.0	23.0	4.0	38.0	48.0	36.0	38.0	44.0

Indicator value                    98.6% 98.2% 98.0% 97.7% 98.8% 97.6% 97.3% 97.5%

▲ TOP

Licensee Comments: none

### ERO Drill Participation



Thresholds: White < 80.0% Yellow < 60.0%

**Notes**

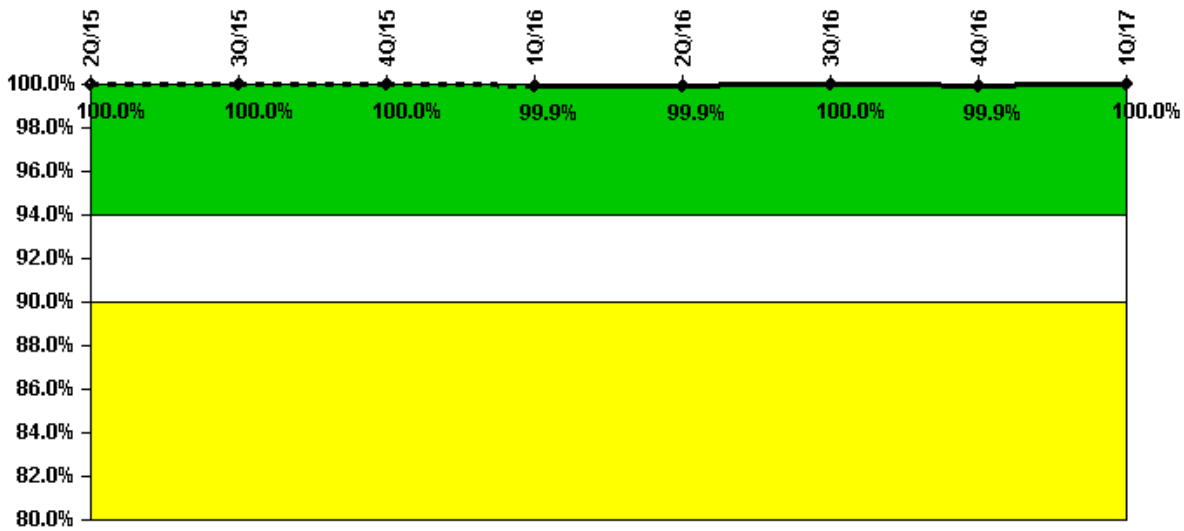
ERO Drill Participation	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17
Participating Key personnel	117.0	121.0	119.0	121.0	122.0	127.0	124.0	132.0
Total Key personnel	117.0	121.0	119.0	121.0	123.0	127.0	124.0	132.0

**Indicator value**                **100.0% 100.0% 100.0% 100.0% 99.2% 100.0% 100.0% 100.0%**

▲ TOP

Licensee Comments: none

### Alert & Notification System



Thresholds: White < 94.0% Yellow < 90.0%

**Notes**

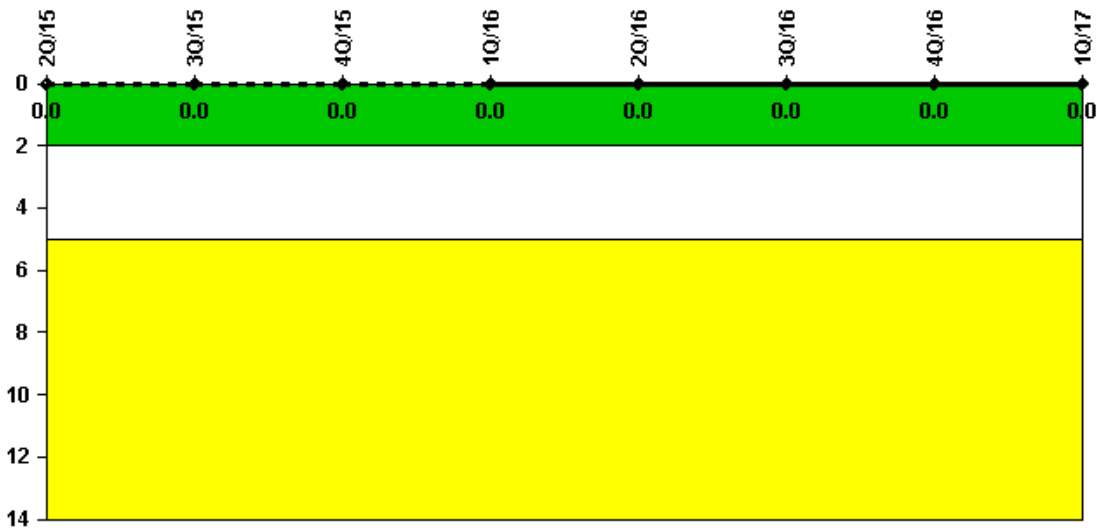
Alert & Notification System	2Q/15	3Q/15	4Q/15	1Q/16	2Q/16	3Q/16	4Q/16	1Q/17
Successful siren-tests	1047	1178	1048	916	1047	1179	1047	917
Total sirens-tests	1048	1179	1048	917	1048	1179	1048	917

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

▲ TOP

Licensee Comments: none

### Occupational Exposure Control Effectiveness



Thresholds: White > 2.0 Yellow > 5.0

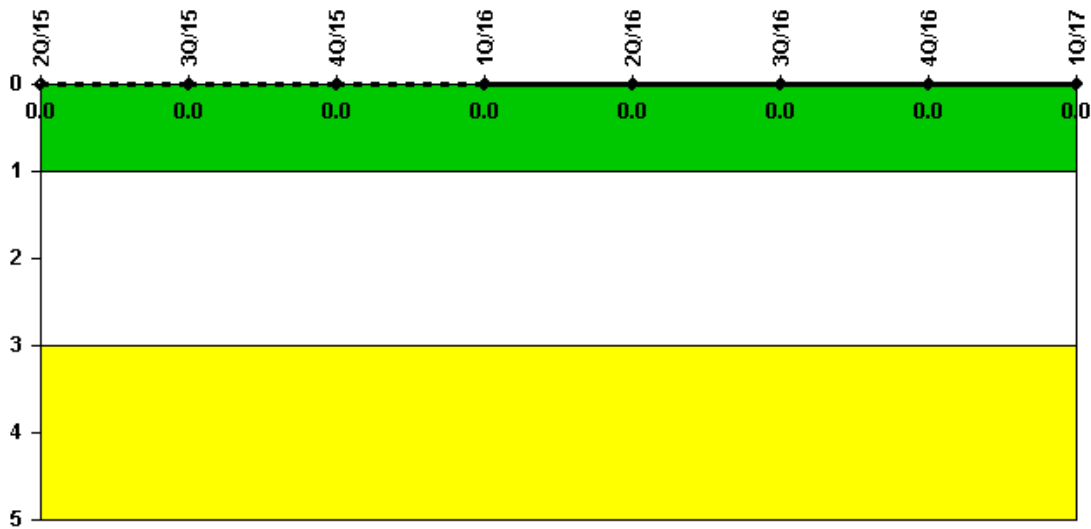
**Notes**

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
<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>

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