

NUCLEAR POWER GENERATION
DIABLO CANYON POWER PLANT
JOB PERFORMANCE MEASURE

Number: NRCADM051-501A

Title: Startup Verifications

Examinee: _____

Evaluator: _____

Print

Signature

Date

Results: Sat _____ Unsat _____ Total Time: _____ minutes

Comments: Designed for RO Candidates in a classroom setting.

References: OP L-2, Hot Standby to Startup Mode, Rev. 36
Vol. 9 Table R19-1T-1, Rev. 17

Alternate Path: Yes _____ No X

Time Critical: Yes _____ No X

Time Allotment: 20 minutes

Critical Steps: 1, 2, 3

Job Designation: RO

Task Number: Generic K/A 2.1.23

Rating: 3.9

AUTHOR: _____ JACK BLACKWELL _____ DATE: 11/27/2006 _____

REVIEWED BY: _____ N/A _____ DATE: _____
JPM COORDINATOR

APPROVED BY: _____ TRAINING LEADER _____ DATE: _____
REV. 1

- Directions:** **No plant controls or equipment are to be operated during the performance of this Job Performance Measure.** All actions taken by the examinee should be clearly demonstrated and verbalized to the evaluator. The student will be given the initial conditions, initiating cue, and task standard. The examiner will then ask if any clarifications are needed. After identifying the appropriate procedure for the task, the examinee may be given the procedure and told the step with which to begin.
- Required Materials:** OP L-2, Hot Standby to Startup Mode, Rev. 36
Vol. 9 Table R19-1T-1, Rev. 17
- Initial Conditions:** Unit 1 is in MODE 3, preparing for Startup per OP L-2. Current ECP is 135 steps on Control Bank D, cycle 14.
- Initiating Cue:** The Shift Foreman has directed you to perform step 6.1.14 of OP L-2.
- Task Standard:** Step 6.1.14 of OP L-2 is completed.

Start Time: _____

<u>Step</u>	<u>Expected Operator Actions</u>
** 1. Calculate rod withdrawal hold points using Attachments 9.1 and 9.2.	** 1.1 Determines ARO = 228. ** 1.2 Determines ECP-100 = D @ 35 ** 1.3 Determines RIL = C @ 55 1.4 Determines ECP = D @ 135 1.5 Determines ECP + 100 = D @ 228 Step was: Sat: _____ Unsat _____*
** 2. Completes form for remaining hold points using 50 step increments.	** 2.1 Determines 50 step hold points per answer key: <ul style="list-style-type: none"> • CBA: 0,50,100,150,200 • CBB: 22,72,122,172,183 • CBC: 44, 55(RIL), 105, 155, 163, 213 • CBD: 27, 35(ECP-100), 85, 135(ECP), 228(ARO) Step was: Sat: _____ Unsat _____*

Stop Time: _____

Total Time: _____ (Enter total time on the cover page)

* Denotes an entry required on the JPM cover sheet.

** Denotes a Critical Step.

Initial Conditions: Unit 1 is in MODE 3, preparing for Startup per OP L-2. Current ECP is 135 steps on Control Bank D, cycle 14.

Initiating Cue: The Shift Foreman has directed you to perform step 6.1.14 of OP L-2.

Task Standard: Step 6.1.14 of OP L-2 is completed.

STUDENT HANDOUT

- The simulator is not needed for the performance of this JPM.

NUCLEAR POWER GENERATION
DIABLO CANYON POWER PLANT
JOB PERFORMANCE MEASURE

Number: NRCADM051-501B

Title: Startup Verifications

Examinee: _____

Evaluator: _____

Print

Signature

Date

Results: Sat _____ Unsat _____ Total Time: _____ minutes

Comments: Designed for SRO Candidates in a classroom setting.

References: OP L-2, Hot Standby to Startup Mode, Rev. 36
Vol. 9 Table R19-1T-1, Rev. 17

Alternate Path: Yes X No _____

Time Critical: Yes _____ No X

Time Allotment: 20 minutes

Critical Steps: 1, 2, 3

Job Designation: SRO

Task Number: Generic K/A 2.1.23

Rating: 4.0

AUTHOR: _____ JACK BLACKWELL _____ DATE: _____ 11/27/2006 _____

REVIEWED BY: _____ N/A _____ DATE: _____
JPM COORDINATOR

APPROVED BY: _____ TRAINING LEADER _____ DATE: _____
REV. 1

- Directions:** **No plant controls or equipment are to be operated during the performance of this Job Performance Measure.** All actions taken by the examinee should be clearly demonstrated and verbalized to the evaluator. The student will be given the initial conditions, initiating cue, and task standard. The examiner will then ask if any clarifications are needed. After identifying the appropriate procedure for the task, the examinee may be given the procedure and told the step with which to begin.
- Required Materials:** OP L-2, Hot Standby to Startup Mode, Rev. 36
Vol. 9 Table R19-1T-1, Rev. 17
- Initial Conditions:** Unit 1 is in MODE 3, preparing for Startup per OP L-2. Current ECP is 135 steps on Control Bank D, cycle 14.
- Initiating Cue:** Review step 6.1.14 of OP L-2 which had been performed by the Control Room Operator.
- Task Standard:** Step 6.1.14 of OP L-2 is reviewed and corrected as needed.

Start Time: _____

<u>Step</u>	<u>Expected Operator Actions</u>
** 1. Verify rod withdrawal hold points using Attachments 9.1 and 9.2.	** 1.1 Verifies ARO = 228. ** 1.2 Determines ECP-100 = D @ 35 and corrects Att. 9.1 ** 1.3 Verifies RIL = C @ 55 ** 1.4 Determines ECP = D @ 135 and corrects Att. 9.1 1.5 Verifies ECP + 100 = D @ 228 Step was: Sat: _____ Unsat _____*
** 2. Verify form for remaining hold points using 50 step increments and make corrections as needed.	** 2.1 Determines 50 step hold points per answer key and makes corrections to ECP-100 and ECP: <ul style="list-style-type: none"> • CBA: 0,50,100,150,200 • CBB: 22,72,122,172,183 • CBC: 44, 55(RIL), 105, 155, 163, 213 • CBD: 27, 35(ECP-100), 85, 135(ECP), 228(ARO) Step was: Sat: _____ Unsat _____*

Stop Time: _____

Total Time: _____ (Enter total time on the cover page)

* Denotes an entry required on the JPM cover sheet.

** Denotes a Critical Step.

EXAMINEE CUE SHEET

- Initial Conditions:** Unit 1 is in MODE 3, preparing for Startup per OP L-2. Current ECP is 135 steps on Control Bank D, cycle 14.
- Initiating Cue:** Review step 6.1.14 of OP L-2 which had been performed by the Control Room Operator.
- Task Standard:** Step 6.1.14 of OP L-2 is reviewed and corrected as needed.

STUDENT HANDOUT

- The simulator is not needed for the performance of this JPM.

NUCLEAR POWER GENERATION
DIABLO CANYON POWER PLANT
JOB PERFORMANCE MEASURE

Number: NRCADM051-301A

Title: PZR LOOP SEAL MONTHLY CHECKS

Examinee: _____

Evaluator: _____

Print

Signature

Date

Results: Sat _____ Unsat _____ Total Time: _____ minutes

Comments: Designed for RO Candidates.

Use pictures from PowerPoint of same file name.

References: STP I-1D, Modes 1,2 and 3 Monthly Checks, Rev. 73
AR PK05-23, PZR Safety or Relief Line Temp, Rev. 17
T.S. 3.4.10, PZR Safety Valves

Alternate Path: Yes _____ X _____ No _____

Time Critical: Yes _____ No _____ X _____

Time Allotment: 10 minutes

Critical Steps: 2, 3

Job Designation: RO

Task Number: G2.1.33

Rating: 3.4

AUTHOR: _____ JACK BLACKWELL _____ DATE: _____ 11/27/2006 _____

REVIEWED BY: _____ N/A _____ DATE: _____
JPM COORDINATOR

APPROVED BY: _____ TRAINING LEADER _____ DATE: _____
REV. 0

- Directions:** **No plant controls or equipment are to be operated during the performance of this Job Performance Measure.** All actions taken by the examinee should be clearly demonstrated and verbalized to the evaluator. The student will be given the initial conditions, initiating cue, and task standard. The examiner will then ask if any clarifications are needed. After identifying the appropriate procedure for the task, the examinee may be given the procedure and told the step with which to begin.
- Required Materials:** STP I-1D, Modes 1,2 and 3 Monthly Checks
AR PK05-23, PZR Safety or Relief Line Temp
T.S. 3.4.10, PZR Safety Valves
PPC Pictures
- Initial Conditions:** Unit 1 is at 100% power.
- Initiating Cue:** The Shift Foreman has directed you to perform STP I-1D, Monthly Checks on Loop Seal Temperatures.
- Task Standard:** The STP, and all appropriate actions, are identified or completed, and results documented for report back to the SFM.

Start Time: _____

Step	Expected Operator Actions
1. Document data for STP I-1D Safety Valve Loop Seal Temps.	1.1 Documents temperatures from PPC picture on STP-I-1D for T1469A, T1468A, T1467A, T1466A, T1465A, and T1464A. 1.2 Notes T1469A, T1468A, T1465A, and T1464A are $\leq 500^\circ$ and $\geq 221^\circ$. Step was: Sat: _____ Unsat _____*
** 2. Determine Out of Specification parameter.	** 2.1 Determines T1466A and T1467A are $\leq 221^\circ$. 2.2 References AR PK05-23. Step was: Sat: _____ Unsat _____*
** 3. Perform AR PK05-23.	3.1 Determines step 5.8.1.e applies. ** 3.2 Determines that loop seal temperatures are $\leq 221^\circ$ and that TS 3.4.10 applies. ** 3.3 Determines All PZR Safety Valves should be declared inoperable. Step was: Sat: _____ Unsat _____*

Stop Time: _____

Total Time: _____ (Enter total time on the cover page)

* Denotes an entry required on the JPM cover sheet.

** Denotes a Critical Step.

EXAMINEE CUE SHEET

Initial Conditions: Unit 1 is at 100% power.

Initiating Cue: The Shift Foreman has directed you to perform STP I-1D, Monthly Checks on Loop Seal Temperatures.

Task Standard: The STP, and all appropriate actions, are identified or completed, and results documented for report back to the SFM.

Document your findings and feedback to the SFM here

STUDENT HANDOUT

- The simulator is not needed for the performance of this JPM.
- To setup the PPC for simulator use if desired, do the following:
- Use any at-power snap
- In the Expert Screen, enter:
 - Ramp tprssvls(1)=temp,0,0,0,d,0
 - Do this for instruments (1) through (3)
 - Temp (temperature of loop seal you want) should be varied according to original temperatures, ensuring one instrument is below the alarm setpoint of 221°F.

NUCLEAR POWER GENERATION
DIABLO CANYON POWER PLANT
JOB PERFORMANCE MEASURE

Number: NRCADM051-301B

Title: PZR LOOP SEAL MONTHLY CHECKS

Examinee: _____

Evaluator: _____

Print

Signature

Date

Results: Sat _____ Unsat _____ Total Time: _____ minutes

Comments: Designed for SRO Candidates.

Use pictures from PowerPoint of same file name.

References: STP I-1D, Modes 1,2 and 3 Monthly Checks, Rev. 73
AR PK05-23, PZR Safety or Relief Line Temp, Rev. 17
T.S. 3.4.10, PZR Safety Valves

Alternate Path: Yes _____ X _____ No _____

Time Critical: Yes _____ No _____ X _____

Time Allotment: 10 minutes

Critical Steps: 2, 3, 5

Job Designation: SRO

Task Number: G2.1.33

Rating: 4.0

AUTHOR: _____ JACK BLACKWELL _____ DATE: _____ 11/27/2006 _____

REVIEWED BY: _____ N/A _____ DATE: _____
JPM COORDINATOR

APPROVED BY: _____ TRAINING LEADER _____ DATE: _____
REV. 0

- Directions:** **No plant controls or equipment are to be operated during the performance of this Job Performance Measure.** All actions taken by the examinee should be clearly demonstrated and verbalized to the evaluator. The student will be given the initial conditions, initiating cue, and task standard. The examiner will then ask if any clarifications are needed. After identifying the appropriate procedure for the task, the examinee may be given the procedure and told the step with which to begin.
- Required Materials:** STP I-1D, Modes 1,2 and 3 Monthly Checks
AR PK05-23, PZR Safety or Relief Line Temp
T.S. 3.4.10, PZR Safety Valves
PPC Pictures
- Initial Conditions:** Unit 1 is at 100% power. During the performance of the monthly checks on loop seal temperatures per STP I-1D, AR PK05-23, PZR Safety Loop Seal Temp Hi/Lo, input 0008 alarmed. Action to contact System Engineering has been completed.
- Initiating Cue:** Review the completed checks on PZR Safety Valve Loop temperatures and identify any required actions.
- Task Standard:** The results of the STP I-1D for the Pressurizer Safety Loop Seal Temperatures is reviewed and required actions identified as needed.

Start Time: _____

Step	Expected Operator Actions
1. Review STP I-1D checklist for Safety Valve Loop Seal Temps.	1.1 Notes T1469A, T1468A, T1465A, and T1464A are $\leq 500^\circ$ and $\geq 221^\circ$. Step was: Sat: _____ Unsat _____*
** 2. Determine Out of Specification parameter.	** 2.1 Determines T1466A and T1467A are $\leq 221^\circ$. 2.2 Determines AR PK05-23 must be referenced. Step was: Sat: _____ Unsat _____*
** 3. Reviews AR PK05-23.	3.1 Determines step 5.8 applies. 3.2 Displays PPC group "PK05-23" ***** Cue: Give picture of GRPDIS PK05-23. ***** 3.3 Determines step 5.8.1.e applies. ** 3.4 Determines that loop seal temperatures are $\leq 221^\circ$ and that TS 3.4.10 applies. 3.5 Declares All PZR Safety Valves inoperable. Step was: Sat: _____ Unsat _____*

* Denotes an entry required on the JPM cover sheet.

** Denotes a Critical Step.

4. Apply TS 3.4.10.

4.1 References T.S. 3.4.10.

4.2 Determines Condition B applies with two or more safety valves inoperable.

Step was: Sat: _____ Unsat _____*

** 5. Determine operability.

5.1 Determines Required Action is to be in Mode 3 in 6 hours and Mode 4 in 12 hours.

Step was: Sat: _____ Unsat _____*

Stop Time: _____

Total Time: _____ (Enter total time on the cover page)

* Denotes an entry required on the JPM cover sheet.

** Denotes a Critical Step.

EXAMINEE CUE SHEET

Initial Conditions: Unit 1 is at 100% power. During the performance of the monthly checks on loop seal temperatures per STP I-1D, AR PK05-23, PZR Safety Loop Seal Temp Hi/Lo, input 0008 alarmed. Action to contact System Engineering has been completed.

Initiating Cue: Review the completed checks on PZR Safety Valve Loop temperatures and identify any required actions.

Task Standard: The results of the STP I-1D for the Pressurizer Safety Loop Seal Temperatures is reviewed and required actions identified as needed.

Write Answer Here

STUDENT HANDOUT

- The simulator is not needed for the performance of this JPM.
- To setup the PPC for simulator use if desired, do the following:
- Use any at-power snap
- In the Expert Screen, enter:
 - Ramp tprssvls(1)=temp,0,0,0,d,0
 - Do this for instruments (1) through (3)
 - Temp (temperature of loop seal you want) should be varied according to original temperatures, ensuring one instrument is below the alarm setpoint of 221°F.

NUCLEAR POWER GENERATION
DIABLO CANYON POWER PLANT
JOB PERFORMANCE MEASURE

Number: NRCADM051-503

Title: Determine Clearance Points

Examinee: _____

Evaluator: _____

Print

Signature

Date

Results: Sat _____ Unsat _____ Total Time: _____ minutes

Comments: Designed for RO Candidates in a classroom setting.

References: OP D-1:III, AFW Shutdown and Clearing, Rev. 16
OVID 106703, Sheet 3, Rev. 71
Electrical Print 437903, Rev. 39
Electrical Print 437533, Rev. 35

Alternate Path: Yes _____ No X

Time Critical: Yes _____ No X

Time Allotment: 20 minutes

Critical Steps: 1, 2, 3

Job Designation: RO

Task Number: G 2.2.13

Rating: 3.6

AUTHOR: _____ JACK BLACKWELL _____ DATE: 01/09/2007 _____

REVIEWED BY: _____ N/A _____ DATE: _____
JPM COORDINATOR

APPROVED BY: _____ TRAINING LEADER _____ DATE: _____
REV. 1

- Directions:** **No plant controls or equipment are to be operated during the performance of this Job Performance Measure.** All actions taken by the examinee should be clearly demonstrated and verbalized to the evaluator. The student will be given the initial conditions, initiating cue, and task standard. The examiner will then ask if any clarifications are needed. After identifying the appropriate procedure for the task, the examinee may be given the procedure and told the step with which to begin.
- Required Materials:** OP D-1:III, AFW Shutdown and Clearing
OVID 106703, Sheet 3, Rev. 71
Electrical Print 437903, Rev. 39
Electrical Print 437533, Rev. 35
Color Pens and Highlighters
- Initial Conditions:** Unit one is at 100% power. Maintenance is planned for AFW Pump 1-2 to replace the pump seals. A clearance requiring the pump to be deenergized from all sources of energy is required.
- Initiating Cue:** The Work Control Shift Foreman has directed you to identify all clearance points and their respective position for this clearance, documenting them on the appropriate OVID.
- Task Standard:** All clearance points are identified with required position, and documented on the appropriate OVID with clear and understandable notations, and color coded as necessary.

Start Time: _____

Step	Expected Operator Actions
** 1. Identify breakers needing positioned for isolation of the MDAFWP.	** 1.1 Identifies the following breakers to be OPENED: <ul style="list-style-type: none">• 52-HH-8 (motor)• PJ 14-1 BKR 15 (motor heater) Step was: Sat: _____ Unsat _____*
** 2. Identify valves requiring to be closed to isolate the MDAFWP.	2.1 Identify the following valves CLOSED: <ul style="list-style-type: none">• FW-1-162• FW-1-168• FW-1-169• FW-1-173• FW-1-179 Step was: Sat: _____ Unsat _____*
** 3. Identify valves requiring to be opened to isolate the MDAFWP.	3.1 Identify the following valves OPEN. <ul style="list-style-type: none">• FW-1-163• FW-1-165• FW-1-167 Step was: Sat: _____ Unsat _____*

Stop Time: _____

Total Time: _____ (Enter total time on the cover page)

* Denotes an entry required on the JPM cover sheet.

** Denotes a Critical Step.

Initial Conditions: Unit one is at 100% power. Maintenance is planned for AFW Pump 1-2 to replace the pump seals. A clearance requiring the pump to be deenergized from all sources of energy is required.

Initiating Cue: The Work Control Shift Foreman has directed you to identify all clearance points and their respective position for this clearance, documenting them on the appropriate OVID.

Task Standard: All clearance points are identified with required position, and documented on the appropriate OVID with clear and understandable notations, and color coded as necessary.

STUDENT HANDOUT

- The simulator is not needed for the performance of this JPM.

NUCLEAR POWER GENERATION
DIABLO CANYON POWER PLANT
JOB PERFORMANCE MEASURE

Number: NRCADM051-502
Title: Perform IPTE Determination
Examinee: _____
Evaluator: _____

	Print	Signature	Date
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Results: Sat _____ Unsat _____ Total Time: _____ minutes
Comments: Designed for SRO Candidates in a classroom setting.

References: STP M-16Q7, Main Feedwater Control and Bypass Valve Time Response Determination, Rev. 5
OP1.ID4, Conduct of Infrequently Performed Tests or Evolutions, Rev. 0

Alternate Path: Yes _____ No X
Time Critical: Yes _____ No X
Time Allotment: 20 minutes
Critical Step: 4 or 6
Job Designation: SRO
Task Number: Generic K/A 2.2.9
Rating: 3.3

AUTHOR:	_____ JACK BLACKWELL	DATE:	_____ 01/09/2007
REVIEWED BY:	_____ N/A JPM COORDINATOR	DATE:	_____
APPROVED BY:	_____ TRAINING LEADER	DATE:	_____

REV. 1

- Directions:** **No plant controls or equipment are to be operated during the performance of this Job Performance Measure.** All actions taken by the examinee should be clearly demonstrated and verbalized to the evaluator. The student will be given the initial conditions, initiating cue, and task standard. The examiner will then ask if any clarifications are needed. After identifying the appropriate procedure for the task, the examinee may be given the procedure and told the step with which to begin.
- Required Materials:** STP M-16Q7, Main Feedwater Control and Bypass Valve Time Response Determination, Rev. 5
OP1.ID4, Conduct of Infrequently Performed Tests or Evolutions, Rev. 0
- Initial Conditions:** Unit one is at 8% power. Questions concerning Main Feedwater Bypass Valve FCV-1510 operability due to maintenance during the shutdown period will be resolved by performing portions of STP M-16Q7, “Main Feedwater Control and Bypass Valve Time Response Determination”
- Modifications to the performance of this procedure through the work planning process include:
- Swap control of feedwater from bypass valves to the main control valves by placing the main control valves to auto, slowly closing the feed bypass valves, and when feed control is verified, closing the bypass valve isolation to allow valve operation independent of the plant.
 - Lifting leads from the slave relay for all valves but the bypass valves to prevent their operation.
- The risk assessment per MA1.DC11, Risk Assessment, was determined to be a Medium Risk level, requiring only Shift Foreman approval on the risk assessment.
- Initiating Cue:** The Shift Manager has directed you to perform a screen per OP1.ID4 to determine whether the test should be considered an IPTE.
- Task Standard:** The screen is completed per OP1.ID4, determining whether the test is an IPTE or not.

Start Time: _____

Step	Expected Operator Actions
1. Evaluate Step One of Att. 7.1 of OP1.ID4	1.1 Determines STP M-16Q7 is performed every 24 months 1.2 Determines step 1 is YES Step was: Sat: _____ Unsat _____*
2. Evaluate Step Two of Att. 7.1 of OP1.ID4	2.1 Determines step 2.a is Yes NOTE: Step 2.b-d could vary Step was: Sat: _____ Unsat _____*
3. Evaluate Step Three of Att. 7.1 of OP1.ID4.	3.1 Determines step 3.a is YES 3.2 Determines step 3.b is YES 3.3 Determines step 3.c is YES NOTE: Steps 3.d-e could vary Step was: Sat: _____ Unsat _____*

* Denotes an entry required on the JPM cover sheet.

** Denotes a Critical Step.

** 4. Evaluate Step Four of Att. 7.1 of
OP1.ID4.

** 4.1 Determines from Step 4 that the
evolution should be classified as an
IPTE.

Step was: Sat: _____ Unsat _____*

5. Evaluate Step Five of Att. 7.1 of
OP1.ID4.

5.1 Determines step 5 is YES

Step was: Sat: _____ Unsat _____*

** 6. Evaluates Step 6 of Att. 7.1 of
OP1.ID4

** 6.1 Determines from step 6 that the
evolutions should be classified as an
ITPE.

Step was: Sat: _____ Unsat _____*

**NOTE: Either step 4 or 6 may be used as
the critical task as long as the
evolution is considered to be an
IPTE and justified.**

Stop Time: _____

Total Time: _____ (Enter total time on the cover page)

* Denotes an entry required on the JPM cover sheet.

** Denotes a Critical Step.

Initial Conditions: Unit one is at 8% power. Questions concerning Main Feedwater Bypass Valve FCV-1510 operability due to maintenance during the shutdown period will be resolved by performing portions of STP M-16Q7, “Main Feedwater Control and Bypass Valve Time Response Determination”

Modifications to the performance of this procedure through the work planning process include:

- Swap control of feedwater from bypass valves to the main control valves by placing the main control valves to auto, slowly closing the feed bypass valves, and when feed control is verified, closing the bypass valve isolation to allow valve operation independent of the plant.
- Lifting leads from the slave relay for all valves but the bypass valves to prevent their operation.

The risk assessment per MA1.DC11, Risk Assessment, was determined to be a Medium Risk level, requiring only Shift Foreman approval on the risk assessment.

Initiating Cue: The Shift Manager has directed you to perform a screen per OP1.ID4 to determine whether the test should be considered an IPTE.

Task Standard: The screen is completed per OP1.ID4, determining whether the test is an IPTE or not.

STUDENT HANDOUT

- The simulator is not needed for the performance of this JPM.

NUCLEAR POWER GENERATION
DIABLO CANYON POWER PLANT
JOB PERFORMANCE MEASURE

Number: NRCADM051-504

Title: Calculate Stay Time

Examinee: _____

Evaluator: _____

Print

Signature

Date

Results: Sat _____ Unsat _____ Total Time: _____ minutes

Comments: Designed for RO and SRO Candidates in a classroom setting.

References: RP1.ID6, Personnel Dose Limits and Monitoring Requirements, Rev. 7

Alternate Path: Yes _____ No X

Time Critical: Yes _____ No X

Time Allotment: 5 minutes

Critical Steps: 3

Job Designation: RO/SRO

Task Number: Generic K/A 2.3.4

Rating: 2.5 / 3.1

AUTHOR: _____ JACK BLACKWELL _____ DATE: _____ 11/27/2006 _____

REVIEWED BY: _____ N/A _____ DATE: _____
JPM COORDINATOR

APPROVED BY: _____ TRAINING LEADER _____ DATE: _____
REV. 0

- Directions:** **No plant controls or equipment are to be operated during the performance of this Job Performance Measure.** All actions taken by the examinee should be clearly demonstrated and verbalized to the evaluator. The student will be given the initial conditions, initiating cue, and task standard. The examiner will then ask if any clarifications are needed. After identifying the appropriate procedure for the task, the examinee may be given the procedure and told the step with which to begin.
- Required Materials:** RP1.ID6, Personnel Dose Limits and Monitoring Requirements, Rev. 7 Attachment 8.1
- Initial Conditions:** The Work Control Shift Foreman has requested you to hang a clearance in an area where the known radiation dose rate is 425 mrem/hr. Your current year exposure history, according to your NRC Form 4 is as follows:
- Committed Dose Equivalent (CDE) 20 mrem
 - Committed Effective Dose Equivalent (CEDE) 100 mrem
 - Deep Dose Equivalent (DDE) 200 mrem
 - Eye Dose Equivalent (LDE) 15 mrem
 - Shallow Dose Equivalent (SDE) 10 mrem
- Initiating Cue:** The SFM has directed you to determine your maximum stay time in the High Radiation Area while hanging clearance before exceeding the DCPP Administrative Dose Guideline for Whole Body Total Effective Dose Equivalent (TEDE).
- Task Standard:** Maximum Stay time is calculated.

Start Time: _____

Step

1. Determine TEDE

Expected Operator Actions

1.1 TEDE = DDE + CEDE

1.2 TEDE = 200 mrem + 100 mrem

1.3 TEDE = 300 mrem

Step was: Sat: _____ **Unsat** _____*

2. Determine DCPP Administrative Limits for TEDE

2.1 Determines DCPP Administrative Limit for TEDE = 4500 mrem

2.2 Determines DCPP Administrative Guideline for TEDE = 2000 mrem

2.3 Determine **MARGIN** to Administrative Guideline is:

$$2000 - 300 = 1700 \text{ mrem}$$

Step was: Sat: _____ **Unsat** _____*

** 3. Determine maximum stay time

3.1 Stay time = Margin / Dose Rate

3.2 Stay time = 1700 mrem / 425 mrem/hr

3.3 Stay time = 4 hours

ACCEPTABLE TIME: 3.8 – 4.0 hours

Step was: Sat: _____ **Unsat** _____*

Stop Time: _____

Total Time: _____ (Enter total time on the cover page)

* Denotes an entry required on the JPM cover sheet.

** Denotes a Critical Step.

EXAMINEE CUE SHEET

Initial Conditions: The Work Control Shift Foreman has requested you to hang a clearance in an area where the known radiation dose rate is 425 mrem/hr. Your current year exposure history, according to your NRC Form 4 is as follows:

- Committed Dose Equivalent (CDE) 20 mrem
- Committed Effective Dose Equivalent (CEDE) 100 mrem
- Deep Dose Equivalent (DDE) 200 mrem
- Eye Dose Equivalent (LDE) 15 mrem
- Shallow Dose Equivalent (SDE) 10 mrem

Initiating Cue: The SFM has directed you to determine your maximum stay time in the High Radiation Area while hanging clearance before exceeding the DCPD Administrative Dose Guideline for Whole Body Total Effective Dose Equivalent (TEDE).

Task Standard: Maximum Stay time is calculated.

Document Your Answer Here

STUDENT HANDOUT

- The simulator is not needed for the performance of this JPM.

NUCLEAR POWER GENERATION
DIABLO CANYON POWER PLANT
JOB PERFORMANCE MEASURE

Number: NRCADM051-150

Title: PERFORM AN OFF-SITE DOSE ASSESSMENT - SGTR WITH A 10% STEAM DUMP LIFT

Examinee: _____

Evaluator: _____
Print Signature Date

Results: Sat _____ Unsat _____ Total Time: _____ minutes

Comments: EP R-2, Attachment 10.1 & 10.2 answer key is included for evaluator use
Modified LJC-150, designed for Classroom or Control Room.

References: EP R-2, Release of Airborne Radioactive Materials Initial Assessment, Rev. 23
EP G-1, Accident Classification and Emergency Plan Activation, Rev. 34

Alternate Path: Yes X No _____

Time Critical: Yes _____ No X

Time Allotment: 20 minutes

Critical Steps: 3, 5

Job Designation: SRO

Task Number: Generic K/A 2.4.41

Rating: 4.1

AUTHOR: _____ JACK L BLACKWELL _____ DATE: 01/09/2007

REVIEWED BY: _____ DATE: _____
TRAINING LEADER

APPROVED BY: _____ DATE: _____
LINE MANAGER REV. 1

- Directions:** **No PLANT controls or equipment are to be operated during the performance of this Job Performance Measure.** All actions taken by the examinee should be clearly demonstrated and verbalized to the evaluator. The student will be given the initial conditions, initiating cue, and task standard. The examiner will then ask if any clarifications are needed. The examinee may be given the applicable procedure and step with which to begin.
- Required Materials:** Calculator

EP R-2, Release of Airborne Radioactive Materials Initial Assessment

EP G-1, Accident Classification and Emergency Plan Activation

PPC Pictures
- Initial Conditions:** Unit 1 has experienced a SGTR in Steam Generator 14. Vacuum has been broken.
- Initiating Cue:** EOP E-3 is in progress, with early isolation completed for Steam Generator 14. The 10% steam dump on steam generator 14 has been open for 15 minutes and has just been isolated locally. The Shift Manager directs you to perform a dose assessment and recommend an emergency classification, based on your dose assessment. The PPC program for R-2 calculations is unavailable.
- Task Standard:** Dose assessment is completed and a recommendation is made for the emergency classification.

**Start
Time:** _____

Step	Expected Operator Actions
1. Obtain the correct procedure.	1.1 References EP R-2. Step was: Sat: _____ Unsat _____*
2. Determine the total effluent release rate.	2.1 References Attachment 10.1, page 2, of EP R-2, leaving page one blank (only applicable for plant vent releases). 2.2 Fills out section 1 and notes the CAUTION referencing RE-74 readings. 2.3 Determines RE-74 reading from PPC trend recorder photo provided. 2.4 Determines SG level from picture of LI-547 to be approximately 80%. 2.5 Determines SG flowrate < 4E5 lbs/hr, and enters 4.0E+05 per the instructions in section 2A. 2.6 Uses section 2A or 2B alternate steam flow rate of 4.0 E+5 lbm/hr. (section 2A and 2B <u>may both</u> indicate 4.0E+05 lbm/hr, but <u>only one</u> of them <u>must</u> have this value for the critical step) 2.7 Determines monitor factor is 6.75 E-10 for NORMAL S/G level. 2.8 Determines total effluent release rate of 0.06075 ci/sec (6.075E-02 Ci/sec). 2.9 Ignores the DEFAULT release rate page 3 (leaves blank) and goes to attachment 10.2. Step was: Sat: _____ Unsat _____*

* Denotes an entry required on the JPM cover sheet.

** Denotes Critical Step and Sub Steps.

<u>Step</u>	<u>Expected Operator Actions</u>
** 3. Perform dose calculations.	3.1 References Attachment 10.2 of EP R-2. 3.2 Fills out section 1. 3.3 Obtains met data from PPC picture provided. 3.4 Determines Wind Speed @ 10M level is 2.6 meters/sec. 3.5 Determines Wind Direction @ 10M level is 200 Degrees. 3.6 Determines Site Boundary X/Q @ 0.8km is 3.93 E-4 sec/m ³ . 3.7 Determines DCF to be 4.3 E+04 (SG - Normal). ** 3.8 Calculates TEDE rate of 1.026 mR/hr (1.014 – 1.031), and a TEDE total dose of 0.2565 mR (0.25325 – 0.25775). ** 3.9 Calculates thyroid CDE rate of 3.581 mRem/hr (3.53 – 3.596) and a total dose of 0.8953 mRem (0.882 – 0.899). Step was: Sat: _____ Unsat _____*
4. Obtain the correct procedure.	4.1 References EP G-1, Attachment 7.1. Step was: Sat: _____ Unsat _____*

* Denotes an entry required on the JPM cover sheet.

** Denotes Critical Step and Sub Steps.

<u>Step</u>	<u>Expected Operator Actions</u>
** 5. Recommends event classification	** 5.1 Recommends event classification as an ALERT. (Based on dose RATE being exceeded) (G-1, ALERT #4 or ALERT #25)
	Step was: Sat: _____ Unsat _____*

Stop Time: _____

Total Time: _____ (Enter total time on the cover page)

* Denotes an entry required on the JPM cover sheet.

** Denotes Critical Step and Sub Steps.

- Initial Conditions:** Unit 1 has experienced a SGTR in Steam Generator 14. Vacuum has been broken.
- Initiating Cue:** EOP E-3 is in progress, with early isolation completed for Steam Generator 14. The 10% steam dump on steam generator 14 has been open for 15 minutes, and has just been isolated locally. The Shift Manager directs you to perform a dose assessment and recommend an emergency classification, based on your dose assessment. The PPC program for R-2 calculations is unavailable.
- Task Standard:** Dose assessment is completed and a recommendation is made for the emergency classification.

STUDENT HANDOUT

- Initialize the simulator to IC-510 (100%, MOL).
- Setup PPC Trnd on Quick Plot (or other type of plot) to trend RM-74 (QP SGLEAK)
- Enter drill file 6150 or manually insert the following:

Command	Description
1. audio off	turns off sound gen during setup
2. xmt rms43 5,225,0,0,d,0	Set RM-43 high limit to 225 cpm
3. mal rcs4d act,100,0,0,d,0	100 gpm SG 14 tube leak
4. mal ppl2a act,0,0,10,d,2	Inadvertent SI, train A
5. mal ppl2b act,0,0,10,d,2	Inadvertent SI, train B
6. cnv mss25 2,1,0,0,c,fnispr.lt.10,0	Fails PCV-22 SG 14 10% stm dump vlv open
7. xmt mfw40 3,81,120,0,c,fnispr.lt.10,0	SG 14 NR level (LI-547) to 81%
8. xmt mfw43 3,80,120,0,c,fnispr.lt.10,0	SG 14 NR level (LI-548) to 80%
9. xmt mfw46 3,79,120,0,c,fnispr.lt.10,0	SG 14 NR level (LI-549) to 79%
10. xmt mfw12 3,94,120,0,c,fnispr.lt.10,0	SG 14 WR level (LR-537) to 94%
11. set cmetchiq=3.93E-04	Sets CHI/Q @ 3.93E-04 at 0.8km
12. pmp cnd6 3,0,0,0,d,0	Blocks start on CB PP set PP 1-3
13. ovr xc3i224o ACT,1,0,0,c,fnispr.lt.10,0	Stops CND/BSTR PP 1-2
14. ovr xc3i194C ACT,1,0,0,c,fnispr.lt.10,0	Places FCV-53 in RECIRC
15. ovr xc3i197C ACT,1,0,0,c,fnispr.lt.10,0	Places FCV-54 in RECIRC
16. vlv afw3 2,0,0,0,d,0	Throttles AFW PP 1-1 LCVs
17. vlv afw4 2,0,0,0,d,0	"
18. vlv afw5 2,0,0,0,d,0	Throttles AFW PP 1-1 LCVs
19. vlv mss10 2,0,0,5,c,fnispr.lt.10,0	Closes MSIV 4
20. vlv sgb8 2,0,0,60,c,fnispr.lt.5,0	Closes I.C. blowdwn isol vlv (FCV-763)
21. vlv afw6 2,0,0,0,d,0	Closes AFW pp 1-1 LCV-109
22. cnv afw4 2,0,10,0,c,fnispr.lt.5,0	Places LCV-113 in manual and closes vlv
23. ovr xv3o152a act,0,0,10,c,fnispr.lt.5,0	"
24. ovr xv3o152m act,0,0,10,c,fnispr.lt.5,0	"
25. run 900	Freezes simulator after 900 seconds

- Perform the following, while the simulator is running:
 1. Place FCV-53/54 in RECIRC.
 2. Place CND/BST pp set 1-3 in manual.
 3. Verify MSR vlvs are closed (hit RESET to close vlvs).
 4. Set PCV-22 10% steam dump pot to 8.67 turns.
 5. Cutout loop 4 WR TH on the PAM panel.
 6. turn the simulator SOUND ON
- Inform the examiner that the simulator setup is complete.
- EXAMINER'S DISCRETION: Go to RUN when the examinee is given the cue sheet.

NUCLEAR POWER GENERATION
DIABLO CANYON POWER PLANT

Job Performance Measure

Number: NRCLJC051-501

Title: PERFORM OP AP-15 IMMEDIATE ACTIONS

Examinee: _____

Evaluator: _____

Print	Signature	Date
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Results: Sat _____ Unsat _____ Total Time: _____ minutes

Comments:

References: OP AP-15, Loss of Feedwater Flow, Rev. 17

Alternate Path: Yes No _____

Time Critical: Yes _____ No

Time Allotment: 5 minutes

Critical Steps: 1, 2, 4

Job Designation: RO/SRO

KA Number: 04s/059/A2.07

Rating: 3.0/3.3

AUTHOR: _____ JACK BLACKWELL _____ DATE: _____ 11/13/2006 _____

APPROVED BY: _____ N/A _____ DATE: _____
JPM COORDINATOR

APPROVED BY: _____ N/A _____ DATE: _____
TRAINING LEADER

REV. 0

- Directions:** **No plant controls or equipment are to be operated during the performance of this Job Performance Measure.** All actions taken by the examinee should be clearly demonstrated and verbalized to the evaluator. The student will be given the initial conditions, initiating cue, and task standard. The examiner will then ask if any clarifications are needed. After identifying the appropriate procedure for the task, the examinee may be given the procedure and told the step with which to begin.
- Required Materials:** None
- Initial Conditions:** Unit 1 is at 67% and increasing to 100% power following a power reduction for maintenance. All systems aligned for normal full power operation.
- Initiating Cue:** PK09-12, Main Feedwater Pump Trip, and PK09-13, Main Feedwater Pump No. 11, alarms are in. The SFM directs you to perform the immediate actions for a Loss of Feedwater Flow.
- Task Standard:** The Immediate Actions for a Loss of Feedwater are performed in accordance to procedures and Operations standards, with follow up using the appropriate procedure.

Start Time: _____

Step	Expected Operator Actions
**1. CHECK Reactor Power Less Than 80% **	1.1 Checks power at 67% Step SAT: _____ UNSAT: _____*
**2. REDUCE Turbine Load:	
<ul style="list-style-type: none"> • Check turbine load > 650 MW • Verify programmed ramp occurring 	2.1 Checks turbine load at 700 MW 2.2 Determines programmed ramp NOT occurring ** 2.3 Manually initiates ramp <ul style="list-style-type: none"> • Places DEH MW and IMP feedback in service • Sets TARGET LOAD for < 650 MW • Sets RAMP RATE for > 200 MW/min • Presses GO Step SAT: _____ UNSAT: _____*
3. CHECK Load Transient Bypass Actuated	3.1 Checks LTB actuated Step SAT: _____ UNSAT: _____*
**4. VERIFY Rod Control in AUTO	4.1 Checks Rod Control in MANUAL ** 4.2 Places Rods in Auto and Verifies rods inserting to control T_{AVG} to T_{REF} Step SAT: _____ UNSAT: _____*

Stop Time: _____

Total Time: _____

*Denotes an entry required on the JPM cover sheet.

**Denotes a Critical Step.

- Initial Conditions:** Unit 1 is at 67% and increasing to 100% power following a power reduction for maintenance. All systems aligned for normal full power operation.
- Initiating Cue:** PK09-12, Main Feedwater Pump Trip, and PK09-13, Main Feedwater Pump No. 11, alarms are in. The SFM directs you to perform the immediate actions for a Loss of Feedwater Flow.
- Task Standard:** The Immediate Actions for a Loss of Feedwater are performed in accordance to procedures and Operations standards, with follow up using the appropriate procedure.

STUDENT HANDOUT

- Initialize the simulator in Expert Screen using “init j3bc001c.”
- Ensure Simulator is in FREEZE just at MFP TRIP alarm
- Inform the examiner that the simulator setup is complete.
- Go to RUN when the examinee is given the cue sheet.

OR

- Initialize to IC-510
- Ramp unit to 67% power and stabilize
- Place Rods in Manual
- On Triconex Panel, BYPASS MFP 11 RUNBACK.
- Insert MAL mfw2a act 25,0,30,d,0
- Insert MAL cnd1 act1,0,0,d
- Go to RUN until MFP Trip alarm actuates
- FREEZE Simulator
- Inform the examiner that the simulator setup is complete.
- Go to RUN when the examinee is given the cue sheet.

NUCLEAR POWER GENERATION
DIABLO CANYON POWER PLANT
JOB PERFORMANCE MEASURE

Number: NRCLJC051-049

Title: DEPRESSURIZE THE RCS FOR STEAM GENERATOR BACKFILL

Examinee: _____

Evaluator: _____
Print Signature Date

Results: Sat _____ Unsat _____ Total Time: _____ minutes

Comments:

References: EOP E-3.1, Post-SGTR Cooldown Using Backfill, Rev. 14

Alternate Path: Yes _____ No X

Time Critical: Yes _____ No X

Time Allotment: 20 minutes

Critical Steps: 4, 6

Job Designation: RO/SRO

SF/Sys/KA: 03/038/EA2.15

Rating: 4.2/4.4

AUTHOR: _____ **JACK BLACKWELL** _____ **DATE:** 12/01/2006

REVIEWED BY: _____ **TRAINING LEADER** _____ **DATE:** _____

APPROVED BY: _____ **LINE MANAGER** _____ **DATE:** _____ **REV. 0**

- Directions:** No PLANT controls or equipment are to be operated during the performance of this Job Performance Measure. All actions taken by the examinee should be clearly demonstrated and verbalized to the evaluator. The student will be given the initial conditions, initiating cue, and task standard. The examiner will then ask if any clarifications are needed. The examinee may be given the applicable procedure and step with which to begin.
- Required Materials:** None
- Initial Conditions:** A steam generator tube rupture has occurred on S/G 12. All required actions of EOP E-0 and EOP E-3 have been completed. EOP E-3.1 has been completed up to and including Step 7.
- Initiating Cue:** The Shift Foreman directs you to perform EOP E-3.1 Steps 8 and 9 to control pressurizer level and depressurize the RCS to backfill from S/G 12.
- Task Standard:** RCS depressurization in progress with RCS pressure less than ruptured S/G pressure (backfilling) and with adequate RCS subcooling verified in accordance with EOP E-3.1.

Start Time: _____

Step	Expected Operator Actions
1. Obtain the correct procedure.	1.1 References EOP E-3.1. Step was: Sat: _____ Unsat _____*
2. Control charging flow and letdown to maintain pressurizer level.	2.1. Controls charging, letdown, and seal injection flows to maintain PZR level 17% to 74% and stable during RCS depressurization. Step was: Sat: _____ Unsat _____*
3. Review CAUTIONS and NOTES.	3.1 Reviews CAUTIONS and NOTES prior to Step 8. Step was: Sat: _____ Unsat _____*
** 4. Depressurize RCS to backfill from ruptured steam generator.	4.1 Observes that PCV-455A & B are already in MANUAL. 4.2 Opens PCV-455B and/or PCV-455A. 4.3 Verifies PCV-455B and/or PCV-455A open and RCS pressure is lowering. Depressurize using one PORV if needed. ** 4.4 Continues depressurization until RCS pressure is less than ruptured S/G pressure (backfilling) Step was: Sat: _____ Unsat _____*

* Denotes an entry required on the JPM cover sheet.

** Denotes Critical Step and Sub Steps.

INSTRUCTOR WORKSHEET

<u>Step</u>	<u>Expected Operator Actions</u>
5. Turn on pressurizer heaters as necessary.	5.1 Turns on pressurizer heaters as necessary. Step was: Sat: _____ Unsat _____*
** 6. Maintain RCS subcooling greater than 20°F.	** 6.1 Maintains RCS subcooling greater than 20°F using the subcooled margin monitor, YI-31, or Appendix C, Subcooled Liquid Curve. Step was: Sat: _____ Unsat _____*

Stop Time: _____

Total Time: _____ (Enter total time on the cover page)

* Denotes an entry required on the JPM cover sheet.

** Denotes Critical Step and Sub Steps.

- Initial Conditions:** A steam generator tube rupture has occurred on S/G 12. All required actions of EOP E-0 and EOP E-3 have been completed. EOP E-3.1 has been completed up to and including Step 7.
- Initiating Cue:** The Shift Foreman directs you to perform EOP E-3.1 Steps 8 and 9 to control pressurizer level and depressurize the RCS to backfill from S/G 12.
- Task Standard:** RCS depressurization in progress with RCS pressure less than ruptured S/G pressure (backfilling) and with adequate RCS subcooling verified in accordance with EOP E-3.1.

STUDENT HANDOUT

- Type “init 649” on the expert screen command line. Click the BYPASS SWCK button on the expert screen to continue after control boards are aligned.
- Cutout Loop 2 WR T_H on PAM4; then, return to the main screen.
- This SNAP allows entry into EOP E-3.1 at Step 8. An RCS cooldown is in progress on group 1 condenser dumps is in progress. Ruptured S/G 12 level is 74% and increasing very slowly. RCS pressure is 55 psi above Steam Generator 12 pressure. RCPs 11 and 12 are running.
- Perform the following:
 1. Display PPC screen “E3” on one of the CC2 PPC monitors.
 2. Display the THERMOCOUPLE MAP on SPDS panel B.
- Inform the examiner that the simulator setup is complete.
- Go to RUN when the examinee is given the cue sheet.

NUCLEAR POWER GENERATION
DIABLO CANYON POWER PLANT
JOB PERFORMANCE MEASURE

Number: NRCLJC051-051

Title: REMOVE POWER RANGE CHANNEL N42 FROM SERVICE

Examinee: _____

Evaluator: _____
Print Signature Date

Results: Sat _____ Unsat _____ Total Time: _____ minutes

Comments:

References: OP AP-5, Malfunction of Protection or Control Channel, Attachment 4.1, Rev. 27

Alternate Path: Yes _____ No X

Time Critical: Yes _____ No X

Time Allotment: 10 minutes

Critical Steps: 2, 3, 4, 5, 6

Job Designation: RO/SRO

SF/Sys/KA: 07/15/A2.02

Rating: 3.1/3.5

AUTHOR: _____ JACK BLACKWELL _____ DATE: 12/01/2006

REVIEWED BY: _____ DATE: _____
TRAINING LEADER

APPROVED BY: _____ DATE: _____
LINE MANAGER

INSTRUCTOR WORKSHEET

Directions: **No PLANT controls or equipment are to be operated during the performance of this Job Performance Measure.** All actions taken by the examinee should be clearly demonstrated and verbalized to the evaluator. The student will be given the initial conditions, initiating cue, and task standard. The examiner will then ask if any clarifications are needed. The examinee may be given the applicable procedure and step with which to begin.

Required Materials: None

Initial Conditions: Unit 1 is at 100% power. A malfunction caused power range channel N42 to fail high. Rod control was placed in MANUAL after rods stepped in five (5) steps.

The Shift Foreman has requested the Maintenance to:

- o trip bistables BS421C and BS421D, and
- o remove the control power and instrument power fuses.

Initiating Cue: The Shift Foreman directs you to remove power range channel N42 from service, with the exception of pulling fuses, in accordance with OP AP-5, Attachment 4.1.

Task Standard: Power range channel N42 has been removed from service, with the exception of tripping bistables and pulling fuses, in accordance with OP AP-5.

Start Time: _____

Step	Expected Operator Actions
1. Obtain the correct procedure.	1.1 References OP AP-5, Attachment 4.1, "Actions to be performed for NI failure." Note: Operator may review STP I-2C1. Step was: Sat: _____ Unsat _____ *
** 2. Place rod stop bypass switch the failed channel position.	***** Cue: If the operator refers to the requirement to use concurrent verification, state that requirement is waived for this JPM. ***** ** 2.1 Places the ROD STOP BYPASS switch in the BYPASS PR N42 position. Note: May verify PK07-07, PWR RNG 42 ROD STOP BYPASSED -- ON. Step was: Sat: _____ Unsat _____ *
** 3. Place power mismatch bypass switch to the failed channel position.	** 3.1 Places the POWER MISMATCH BYPASS switch in the BYPASS PR N42 position. Step was: Sat: _____ Unsat _____ *
** 4. Place quadrant power tilt alarm upper section switch to the failed channel position.	** 4.1 Places the QUADRANT POWER TILT ALARM UPPER SECTION switch in the PRN42 position. 4.2 Verifies that the CHANNEL DEFEAT light has lit. Step was: Sat: _____ Unsat _____ *

* Denotes an entry required on the JPM cover sheet.

** Denotes Critical Step and Sub Steps.

INSTRUCTOR WORKSHEET

Step	Expected Operator Actions
** 5. Place quadrant power tilt alarm lower section switch to the failed channel position.	** 5.1 Places the QUADRANT POWER TILT ALARM LOWER SECTION switch in the PRN42 position. 5.2 Verifies that the CHANNEL DEFEAT light has lit. Step was: Sat: _____ Unsat _____*
** 6. Place the comparator defeat switch to the failed channel position.	** 6.1 Places the COMPARATOR CHANNEL DEFEAT switch in the N42 position. 6.2 Verifies that the COMPARATOR DEFEAT light has lit. ***** Cue: The SFM has responsibility for ECGs. Maintenance Services will remove the control power and instrument power fuses. ***** Step was: Sat: _____ Unsat _____*

Stop Time: _____

Total Time: _____ (Enter total time on the cover page)

* Denotes an entry required on the JPM cover sheet.

** Denotes Critical Step and Sub Steps.

EXAMINEE CUE SHEET

Initial Conditions: Unit 1 is at 100% power. A malfunction caused power range channel N42 to fail high. Rod control was placed in MANUAL after rods stepped in five (5) steps.

The Shift Foreman has requested the Maintenance to:
trip bistables BS421C and BS421D, and
o remove the control power and instrument power fuses.

Initiating Cue: The Shift Foreman directs you to remove power range channel N42 from service, with the exception of pulling fuses, in accordance with OP AP-5, Attachment 4.1.

Task Standard: Power range channel N42 has been removed from service, with the exception of tripping bistables and pulling fuses, in accordance with OP AP-5.

STUDENT HANDOUT

- Initialize the simulator to IC-510 (100%, MOL).
- Enter drill file 1051 or manually insert the following:

Command	Description
1. mal nis6b act,200,0,20,d,0	Fails power range channel N42 high
2. run 30	Runs simulator to allow rods to step in 5 steps.

- Perform the following:

Place rod control in MANUAL as soon as the Rods step in 5 steps. (Done manually vice in drill file to prevent rod motion after returning to Run.)
- Inform the examiner that the simulator setup is complete.
- Go to RUN when the examinee is given the cue sheet.

Directions: **No PLANT controls or equipment are to be operated during the performance of this Job Performance Measure.** All actions taken by the examinee should be clearly demonstrated and verbalized to the evaluator. The student will be given the initial conditions, initiating cue, and task standard. The examiner will then ask if any clarifications are needed. The examinee may be given the applicable procedure and step with which to begin.

Required Materials: None

Initial Conditions: Unit 1 is shutdown in MODE 3 and an unexplained increase in reactivity is causing source range counts to increase.

Initiating Cue: The Shift Foreman directs you to emergency borate.

Task Standard: Emergency boration has been established.

Start Time: _____

Step	Expected Operator Actions
1. Obtain the correct procedure.	1.1 References OP AP-6. 1.2 Reads NOTES prior to Step 1. Note: This is an alternate path JPM. Emergency boration will be accomplished via the RWST due to FCV-110B and CVCS-8104 failing closed. Step was: Sat: _____ Unsat _____*
2. Initiate emergency boration using make-up controls.	2.1 Verifies charging in service. 2.2 Places VCT makeup control in the BORATE position. 2.3 Sets HC-110 pot setting to 9.0 turns. 2.4 Determines amount of boric acid required per Appendix A. Note: Appendix A guidance is to borate until control is regained. ***** Cue: The SFM is referring to EOP FR-S.1 Appendix D to isolate dilution flow paths and directs you to continue emergency boration. ***** 2.5 Sets desired gallons of boric acid using the BATCH function and data entry keys. 2.6 Press RESET and START keys to enable the integrator <i>Step continued on next page</i>

* Denotes an entry required on the JPM cover sheet.

** Denotes Critical Step and Sub Steps.

Step	Expected Operator Actions
	<p>2.7 Places makeup controller to the START position and attempts to adjust HC-110 pot setting to 30 gpm boric acid.</p> <p>Note: Operator may attempt to open FCV-110B manually.</p> <p>2.8 Diagnoses that FCV-110B is failed closed.</p> <p>2.9 Shifts (or verifies) boric acid transfer pump to high speed.</p> <p>2.10 Closes HCV-104 (BATP 1-1) or HCV-105 (BATP 1-2), as applicable.</p> <p>2.11 Verifies HCV-104 (BATP 1-1) or HCV-105 (BATP 1-2) has closed, as applicable.</p> <p>2.12 Verifies that VCT pressure is less than 30 psig.</p> <p>2.12 Determines that emergency boration flow of at least 30 gpm is NOT attainable.</p> <p>Step was: Sat: _____ Unsat _____*</p>
<p>3. Initiate alternate boration method using CVCS-8104.</p>	<p>3.1 Reads NOTE prior to Step 2.</p> <p>3.2 Attempts to open 8104.</p> <p>3.3 Diagnoses that 8104 will NOT open.</p> <p>3.4 Determines that emergency boration flow of at least 30 gpm is NOT attainable.</p> <p>Step was: Sat: _____ Unsat _____*</p>

* Denotes an entry required on the JPM cover sheet.

** Denotes Critical Step and Sub Steps.

Step	Expected Operator Actions
** 4. Initiate alternate boration method using the RWST.	4.1 Opens 8805A <u>and</u> 8805B. ** 4.2 Verifies 8805A <u>and</u> 8805B have opened. 4.3 Closes LCV-112B <u>and</u> LCV-112C. ** 4.4 Verifies LCV-112B <u>and</u> LCV-112C have closed. 4.5 Adjusts charging flow to greater than 90 gpm by increasing the speed of the recip charging pump. **
Step was: Sat: _____ Unsat _____ *	

Stop Time: _____

Total Time: _____ (Enter total time on the cover page)

* Denotes an entry required on the JPM cover sheet.

** Denotes Critical Step and Sub Steps.

Initial Conditions: Unit 1 is shutdown in MODE 3 and an unexplained increase in reactivity is causing source range counts to increase.

Initiating Cue: The Shift Foreman directs you to emergency borate.

Task Standard: Emergency boration has been established.

STUDENT HANDOUT

- Initialize the simulator to IC-514 (HSB, 550°F, MOL).
- Trip the reactor.
- Reset all shutdown bank step counters to zero.
- Perform a rod bank update on the PPC.
- Verify NR-45 is displaying source ranges.
- Enter drill file 1063 or manually insert the following:

Command	Description
set acvcvctw=12000	Increase VCT level
ramp pcvcvct=40,5,0	Ensures VCT pressure < 30 psig
mal nislact,4,600,0,d,0 mal nislb act,4,600,0,d,0	Causes source range NIs to increase by four decades over 10 minutes.
vlv cvc13 2,0,0,0,d,0 #rcvf110b	FCV-110B fails closed.
vlv cvc28 2,0,0,0,d,0 #rcvh8104	8104 fails closed.
run 10	Runs for 10 sec.
anack	Acknowledges alarms

- Inform the examiner that the simulator setup is complete.
- Go to RUN when the examinee is given the cue sheet.

NUCLEAR POWER GENERATION
DIABLO CANYON POWER PLANT
JOB PERFORMANCE MEASURE

Number: NRCLJC051-077

Title: INCREASE ACCUMULATOR PRESSURE

Examinee: _____

Evaluator: _____

	Print	Signature	Date
Results:	Sat _____	Unsat _____	Total Time: _____ minutes

Comments:

References: AR PK02-05, ACCUM PRESSURE HI-LO, Rev. 18A
OP B-3B:I, Accumulators – Fill and Pressurize, Rev. 25

Alternate Path: Yes _____ No X

Time Critical: Yes _____ No X

Time Allotment: 15 minutes

Critical Steps: 5

Job Designation: RO/SRO

Task Number: 02/006/A1.13

Rating: 3.5/3.7

AUTHOR: _____ JACK BLACKWELL _____ DATE: 01/09/2007

REVIEWED BY: _____ TRAINING LEADER _____ DATE: _____

APPROVED BY: _____ LINE MANAGER _____ DATE: _____

INSTRUCTOR WORKSHEET

- Directions:** **No PLANT controls or equipment are to be operated during the performance of this Job Performance Measure.** All actions taken by the examinee should be clearly demonstrated and verbalized to the evaluator. The student will be given the initial conditions, initiating cue, and task standard. The examiner will then ask if any clarifications are needed. The examinee may be given the applicable procedure and step with which to begin.
- Required Materials:** None
- Initial Conditions:** Unit 1 is 100% power, steady state conditions.
- Initiating Cue:** Annunciator PK02-05, ACCUM PRESSURE HI-LO, is in alarm, and an investigation indicates low pressure in Accumulator 1-1.
- Task Standard:** Accumulator pressure is restored and associated alarms are cleared.

Start Time: _____

Step	Expected Operator Actions
1. Obtain the correct procedure.	1.1 References AR PK02-05. Step was: Sat: _____ Unsat: _____*
2. Verify abnormal condition.	2.1 Reads NOTE. ***** Cue: Operability requirements do not have to be addressed at this time. ***** 2.2 Checks PI-960 and PI-961 to verify the alarm is not due to an instrument failure. Step was: Sat: _____ Unsat: _____*
3. Check accumulator level.	3.1 Checks accumulator level 1-1 within alarm limits. Step was: Sat: _____ Unsat: _____*
4. Goes to Section 2.3 Low pressure	4.1 Determines that OP B-3B:I is to be entered to recover pressure. Step was: Sat: _____ Unsat: _____*

* Denotes an entry required on the JPM cover sheet.

** Denotes Critical Step and Sub Steps.

Step	Expected Operator Actions
** 5. Increase Accumulator pressure using step 6.3 of OP B-3B:I.	5.1 Reads Note.
	5.2 Verifies HCV-943 is closed
	5.3 Checks open valve 8880.
	5.4 Reads CAUTIONS.
	** 5.5 Opens accumulator fill and vent isolation valve 8875A.
	5.6 Monitors pressure increase to approximately 625 psig

	Cue: (after pressure has increased to clear the alarm, and on evaluator discretion) Pressure is at 625 psig.

	** 5.6 Closes 8875A after pressure returns to normal.
	5.7 Verifies PK02-05 is no longer in alarm.
	5.8 Monitors accumulator 1-1 pressure.

	Cue: Pressure has remained constant for 20 minutes.

	Step was: Sat: _____ Unsat _____*

Stop Time: _____

Total Time: _____ (Enter total time on the cover page)

* Denotes an entry required on the JPM cover sheet.

** Denotes Critical Step and Sub Steps.

Initial Conditions: Unit 1 is 100% power, steady state conditions.

Initiating Cue: Annunciator PK02-05, ACCUM PRESSURE HI-LO, is in alarm, and an investigation indicates low pressure in Accumulator 1-1.

Task Standard: Accumulator pressure is restored and associated alarms are cleared.

STUDENT HANDOUT

- Initialize the simulator to the IC-510 (100%, MOL).
- Enter drill file 1077 or manually insert the following:

Command	Description
1. delm psisacc(1)	Removes point from monitor screen
2. monv psisacc(1)	Monitors Accumulator 1-1 pressure
3. set psisacc(1)=609	Lowers Accumulator 1-1 pressure to 594 psig
4. ser 1251 act,f,0,0,d,0,	Overrides PPC Alarm
5. run 10	Runs sim for 10 seconds

- Inform the examiner that the simulator setup is complete.
- Go to RUN when the examinee is given the cue sheet.

NUCLEAR POWER GENERATION
DIABLO CANYON POWER PLANT
JOB PERFORMANCE MEASURE

Number: NRCLJC051-087

Title: TRANSFER BUS G TO AUX. POWER FROM DG 12

Examinee: _____

Evaluator: _____

Print	Signature	Date
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Results: Sat _____ Unsat _____ Total Time: _____ minutes

Comments:

References: OP J-6B:V, Diesel Generator 12, Manual Operations, Rev. 25

Alternate Path: Yes _____ No X

Time Critical: Yes _____ No X

Time Allotment: 20 minutes

Critical Steps: 3, 5, 7, 9, 10, 11, 13, 14

Job Designation: RO/SRO

SF/Sys/KA: 06/62/A4.07

Rating: 3.1/3.1

AUTHOR: _____ JACK BLACKWELL _____ DATE: 12/01/2006 _____

APPROVED BY: _____ TRAINING LEADER _____ DATE: _____

APPROVED BY: _____ MANAGER OPERATIONS _____ DATE: _____

- Directions:** **No PLANT controls or equipment are to be operated during the performance of this Job Performance Measure.** All actions taken by the examinee should be clearly demonstrated and verbalized to the evaluator. The student will be given the initial conditions, initiating cue, and task standard. The examiner will then ask if any clarifications are needed. The examinee may be given the applicable procedure and step with which to begin.
- Required Materials:** None
- Initial Conditions:** Diesel Generator 12 is supplying 4kV bus G in the Isochronous Mode. Auxiliary power is now available.
- Initiating Cue:** You are directed by the Shift Foreman to parallel Diesel Generator 12 with Auxiliary power, then unload and shutdown the Diesel Generator.
- Task Standard:** Auxiliary power is supplying 4kV Bus G, Diesel Generator 12 is shutdown and in a standby configuration. All in accordance with OP J-6B:V, step 6.4.

INSTRUCTOR WORKSHEET

Start Time: _____

Step	Expected Operator Actions
1. Obtain the correct procedure.	1.1 References OP J-6B:V, Step 6.4. Step was: Sat: _____ Unsat _____*
2. Check auxiliary power available.	2.1 Reads NOTE. 2.2 Checks breaker 52-HG-13 available. 2.3 Checks white potential light ON. Step was: Sat: _____ Unsat _____*
** 3. Prepare the diesel generator for parallel to aux power.	3.1 Reads CAUTION. ** 3.2 Places Mode Selector Switch to MANUAL. ** 3.3 Adjusts Man Speed Control switch to obtain frequency of 60 Hz, as necessary. ** 3.4 Places Bus G Xfer to S/U PWR C/O switch to CUT-OUT. 3.5 Verifies that Bus G Auto Xfer indicating light (blue light) is off. 3.6 Verifies generator protective relays CUT-IN. Step was: Sat: _____ Unsat _____*
4. Verify 4kV bus G at 60 Hz.	4.1 Verifies 60 Hz indicated on Bus G frequency indication. 4.2 Adjusts Man Speed Control switch to obtain 60 Hz, as necessary. Step was: Sat: _____ Unsat _____*

* Denotes an entry required on the JPM cover sheet.

** Denotes Critical Step and Sub Steps.

INSTRUCTOR WORKSHEET

Step	Expected Operator Actions
** 5. Cut in the Aux Feeder Sync Switch.	** 5.1 Inserts Sync key into Auxiliary Feeder Breaker switch. ** 5.2 Turns key to ON position. Step was: Sat: _____ Unsat _____*
6. Verify proper operation of the Synchroscope.	6.1 Observes light off at the 12 o'clock position. 6.2 Observes lights full bright at 6 o'clock position. Step was: Sat: _____ Unsat _____*
** 7. Adjust diesel generator 12 speed.	** 7.1 Adjusts Man Speed Control switch to obtain synchroscope turning slowly in the counterclockwise (SLOW) direction. Note: This is identified as NORMAL in the procedure. Step was: Sat: _____ Unsat _____*
8. Adjust diesel generator voltage.	8.1 Adjusts Man/Auto Volt Control switch to match diesel voltage, w/i 2 volts, to the incoming auxiliary power voltage, as necessary. Step was: Sat: _____ Unsat _____*
** 9. Close Auxiliary Feeder Bkr. (52-HG-13).	9.1 When Synchroscope is slightly before 12 o'clock (counter clockwise direction), closes 52-HG-13. ** 9.2 Verifies breaker is closed (Red light on). 9.3 Observes VARS-OUT. 9.4 Turns AUX FDR SYNC SW OFF. Step was: Sat: _____ Unsat _____*

* Denotes an entry required on the JPM cover sheet.

** Denotes Critical Step and Sub Steps.

INSTRUCTOR WORKSHEET

Step	Expected Operator Actions
** 10. Unload diesel generator.	** 10.1 Adjusts Man Speed Control switch to obtain about 0.5 MW at ≤ 0.5 MW every two minutes. ***** Cue: Diesel generator 12 has been at 0.5 MW for 5 minutes. ***** Step was: Sat: _____ Unsat _____*
** 11. Separate diesel generator 12 from bus.	** 11.1 Turns D/G FDR SYNC SW to ON. ** 11.2 Reduces load to about 0.1 MW. ** 11.3 Opens Bkr. 52-HG-5. 11.4 Verifies breaker is opened. 11.5 Adjusts diesel generator 12 speed and voltage to approximately 60 Hz and 119 VAC indicated, as required. Step was: Sat: _____ Unsat _____*
12. Turn off synchroscope.	12.1 Turns D/G FDR SYNC SW to OFF. Step was: Sat: _____ Unsat _____*
** 13. Shutdown diesel generator 12.	** 13.1 Takes Man Mode Stop/Start switch to STOP. 13.2 Verifies D/G 1-2 stopped. Step was: Sat: _____ Unsat _____*

* Denotes an entry required on the JPM cover sheet.

** Denotes Critical Step and Sub Steps.

INSTRUCTOR WORKSHEET

<u>Step</u>	<u>Expected Operator Actions</u>
** 14. Return diesel generator 12 to standby configuration.	** 14.1 Places D/G DIR PWR, LOSS OF FLD & BKR OC PROT RLYS C/O SW to CUT-OUT. ** 14.2 Places Mode Selector Switch to AUTO. ** 14.3 Places Bus G Xfer to S/U PWR C/O toggle switch to CUT-IN. ***** Cue: Diesel fuel oil leak off lines have NOT been installed. ***** Step was: Sat: _____ Unsat _____*

Stop Time: _____

Total Time: _____ (Enter total time on the cover page)

* Denotes an entry required on the JPM cover sheet.

** Denotes Critical Step and Sub Steps.

EXAMINEE CUE SHEET

- Initial Conditions:** Diesel Generator 12 is supplying 4kV bus G in the Isochronous Mode. Auxiliary power is now available.
- Initiating Cue:** You are directed by the Shift Foreman to parallel Diesel Generator 12 with Auxiliary power, then unload and shutdown the Diesel Generator.
- Task Standard:** Auxiliary power is supplying 4kV Bus G, Diesel Generator 12 is shutdown and in a standby configuration. All in accordance with OP J-6B:V, step 6.4.

STUDENT HANDOUT

ATTACHMENT 1, SIMULATOR SETUP

- Initialize the simulator to IC-510 (100%, MOL).
- There is no drill for this JPM
- Go to RUN on the simulator.
- Perform the following:
 1. Place diesel generator 12 Mode Select switch in MANUAL.
 2. Start diesel generator 12.
 3. Parallel to bus G and pick up 0.5 MW Load.
 4. Open Aux Transformer Breaker for bus G.
 5. Place diesel generator 12 Mode Select switch in AUTO.
 6. CUT-IN protective relays.
- Go to FREEZE on the simulator.
- Inform the examiner that the simulator setup is complete.
- Go to RUN when the examinee is given the cue sheet.

NUCLEAR POWER GENERATION
DIABLO CANYON POWER PLANT

Job Performance Measure

Number: NRCLJC051-302

Title: PLACE CFCU DRAIN COLLECTION SYSTEM IN SERVICE

Examinee: _____

Evaluator: _____

Print	Signature	Date
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Results: Sat _____ Unsat _____ Total Time: _____ minutes

Comments:

References: AR PK11-09, RM11 AND RM12 LOW FLOW, Rev. 6B
OP H-2:I, Containment Fan Cooler Units – Make Available, Rev. 25
TS 3.4.15, RCS LEAK DETECTION INSTRUMENTATION

Alternate Path: Yes No _____

Time Critical: Yes _____ No

Time Allotment: 10 minutes

Critical Steps: 5

Job Designation: RO/SRO

KA Number: 05/022/A4.01

Rating: 3.6/3.6

AUTHOR: _____ JACK BLACKWELL _____ DATE: _____ 11/13/2006 _____

APPROVED BY: _____ N/A _____ DATE: _____
JPM COORDINATOR

APPROVED BY: _____ N/A _____ DATE: _____
TRAINING LEADER

REV. 0

- Directions:** **No plant controls or equipment are to be operated during the performance of this Job Performance Measure.** All actions taken by the examinee should be clearly demonstrated and verbalized to the evaluator. The student will be given the initial conditions, initiating cue, and task standard. The examiner will then ask if any clarifications are needed. After identifying the appropriate procedure for the task, the examinee may be given the procedure and told the step with which to begin.
- Required Materials:** None
- Initial Conditions:** Unit 1 is operating at 100% power with all systems aligned for normal full power operation.
- Initiating Cue:** PK11-09, input 851, RE-11 AND RE-12 LOW FLOW alarm is received.
- Task Standard:** The appropriate actions are taken based on procedure guidance.

Start Time: _____

<u>Step</u>	<u>Expected Operator Actions</u>
1. Obtain correct procedure	1.1 References AR PK11-09 Step SAT:_____ UNSAT:_____*
2. Check annunciator typewriter print out	2.1 Checks printout for RM-11/12 low flow IF alarm printer is not working, then: ***** CUE: Low flow alarm is in. ***** Step SAT:_____ UNSAT:_____*
3. Check for blown fuses and pump operations	3.1 Checks RMS panel for RM-11/12 pump operation 3.2 Finds pump failure for RM-11/12 3.3 Dispatches Operator to investigate ***** CUE: Aux Building NO verifies pump inoperability. The breaker has tripped. ***** Step SAT:_____ UNSAT:_____*
4. Check TS 3.4.15 and OP H-2:I section 6.5 for guidance	4.1 Checks TS 3.4.15 and determines CFCU monitoring system must be in service per 3.4.15.c and SR 3.4.13.1 4.2 References OP H-2:I for CFCU operation. Step SAT:_____ UNSAT:_____*

*Denotes an entry required on the JPM cover sheet.
**Denotes a Critical Step.

Step	Expected Operator Actions
5. ** Shift selected CFCU to SLOW Speed	5.1 Selects a CFCU for operation.
	5.2 Shifts selected running CFCU to slow speed
	5.3 Verify proper CFCU operation
	5.4 Close associated CFCU drain valve

	CUE: SFM will direct other operators to complete the procedure

	Step SAT: _____ UNSAT: _____*

Stop Time: _____

Total Time: _____

*Denotes an entry required on the JPM cover sheet.

**Denotes a Critical Step.

- Initial Conditions:** Unit 1 is operating at 100% power with all systems aligned for normal full power operation.
- Initiating Cue:** PK11-09, input 851, RE-11 AND RE-12 LOW FLOW alarm is received.
- Task Standard:** The appropriate actions are taken based on procedure guidance.

STUDENT HANDOUT

- Initialize the simulator to IC 510.
- VERIFY Alarm Printer On
- Insert Drill File 6210 or manually insert the following:

Command	Description
1. SER 0851 ACT,1,0,0,d,0	PK11-09 input 0851 RE-11 and RE-12 Low Flow
2. OVR xrmoh05o ACT,1,0,0,d,0	RI-11 Low Flow Indicator Lamp Red ON
3. OVR xrmoh12m ACT,0,0,0,d,0	RI-11 Pump Indicator Lamp Amb OFF

- Go to RUN for 10 seconds.
- Inform the examiner that the simulator setup is complete.
- Go to RUN when the examinee is given the cue sheet.

NUCLEAR POWER GENERATION
DIABLO CANYON POWER PLANT
JOB PERFORMANCE MEASURE

Number: NRCLJC051-504

Title: Foldout Page for Phase B and RCP Trip Criteria

Examinee: _____

Evaluator: _____

	Print	Signature	Date
Results:	Sat _____	Unsat _____	Total Time: _____ minutes

Comments:

References: EOP E-0, Reactor Trip or Safety Injection, Rev. 30A

Alternate Path: Yes _____ X _____ No _____

Time Critical: Yes _____ No _____ X _____

Time Allotment: 10 minutes

Critical Steps: 2,3,4,6

Job Designation: RO/SRO

Task Number: 04p/015/AA2.10

Rating: 3.7/3.7

AUTHOR: _____ JACK BLACKWELL _____ DATE: _____ 01/04/2007 _____

APPROVED BY: _____ TRAINING LEADER _____ DATE: _____

APPROVED BY: _____ LINE MANAGER _____ DATE: _____

-
- Directions:** **No plant controls or equipment are to be operated during the performance of this Job Performance Measure.** All actions taken by the examinee should be clearly demonstrated and verbalized to the evaluator. The student will be given the initial conditions, initiating cue, and task standard. The examiner will then ask if any clarifications are needed. After identifying the appropriate procedure for the task, the examinee may be given the procedure and told the step with which to begin.
- Required Materials:** E-0 Foldout Page
- Initial Conditions:** Unit 1 has experienced a loss of coolant accident. The Shift Foreman is performing E-0, Reactor Trip or Safety Injection.
- Initiating Cue:** The Shift Foreman has assigned you Foldout Page items 2.0, Phase B Actuation, and 5.0, RCP Trip Criteria, for monitoring and implementation as necessary.
- Task Standard:** The assigned foldout page items have been reviewed with plant status, and required actions taken.

Start Time: _____

Step	Expected Operator Actions
1. Verify Phase B Isolation Actuated or Required.	NOTE: Sequence of performance may vary and is not critical to JPM performance. 1.1 Checks Phase B Isolation Red lights on. 1.2 Checks Containment pressure over 22 psig. 1.3 Checks Containment Spray has NOT actuated. Step was: Sat: _____ Unsat _____*
** 2. Verify Containment Spray Actuated	2.1 Attempts to manually initiate Containment Spray using the actuation switch on VB-1. ** 2.2 Starts CSP 1-1 and 1-2 ** 2.3 Opens: <ul style="list-style-type: none">• 9001 A/B• 8994 A/B Step was: Sat: _____ Unsat _____*
** 3. Stop Recip Chg Pump	3.1 Starts CCP ** 3.2 Secures PDP Step was: Sat: _____ Unsat _____*

* Denotes an entry required on the JPM cover sheet.

** Denotes a Critical Step.

** 4. Manually align Phase B isolation valves

** 4.2 Closes the following valves:

- FCV-355
- FCV-356
- FCV-357
- FCV-363
- FCV-749
- FCV-750

Step was: Sat: _____ Unsat _____*

5. Verify Seal Injection between 8-13 gpm.

5.1 Adjusts seal injection between 8-13 gpm.

Step was: Sat: _____ Unsat _____*

** 6. Stop All RCPs

** 6.1 Secures all four RCPs.

Step was: Sat: _____ Unsat _____*

Stop Time: _____

Total Time: _____ (Enter total time on the cover page)

* Denotes an entry required on the JPM cover sheet.

** Denotes a Critical Step.

EXAMINEE CUE SHEET

Initial Conditions: Unit 1 has experienced a loss of coolant accident. The Shift Foreman is performing E-0, Reactor Trip or Safety Injection.

Initiating Cue: The Shift Foreman has assigned you Foldout Page items 2.0, Phase B Actuation, and 5.0, RCP Trip Criteria, for monitoring and implementation as necessary.

Task Standard: The assigned foldout page items have been reviewed with plant status, and required actions taken.

STUDENT HANDOUT

- Initialize the simulator to IC-510 (100%, MOL).
- Enter drill file 6701 or manually insert the following:

Command	Description
mal PPL4A act,0,0,d,2	Inadvertant reactor trip, Train A.
mal PPL4B act,0,0,d,2	Inadvertant reactor trip, Train B.
Vlv css4 2,0,0,0,d,xv1i202o vlv css5 2,0,0,0,d,xv1i205o	9001A/B CSP isolation closed until taken open
Vlv css2 2,0,0,0,d,xv1i203o Vlv css3 2,0,0,0,d,xv1i204o	8994A/B Spray outlet valve closed until taken open
Vlv ccw3 1,0,0,0,d,xv1i161c Vlv ccw2 1,0,0,0,d,xv1i162c Vlv ccw8 1,0,0,0,d,xv1i198c Vlv ccw1 1,0,0,0,d,xv1i181c Vlv ccw6 1,0,0,0,d,xv1i180c Vlv ccw7 1,0,0,0,d,xv1i199c	FCV-355 / 356 / 357 / 363 / 749 / 750 CCW Isolation Valves opened until taken closed
Pmp css1 1,0,0,0,d,0 Pmp css2 1,0,0,0,d,0	CSP Pumps fail to auto start
Pmp cvc1 4,0,0,0,c,jmlrcs1, Pmp cvc2 1,0,0,0,d,0	Trip CCP 1-1 Block auto-start of CCP 1-2
Pmp sis1 4,0,0,0,c,jmlrcs1, Pmp sis2 3,0,0,0,c,jmlrcs1,	Trip SIPs
Mal rcs1 act 2,1,0,d,0	
Run 120 sec	

- Inform the examiner that the simulator setup is complete.
- Go to RUN when the examinee is given the cue sheet.

NUCLEAR POWER GENERATION
DIABLO CANYON POWER PLANT
JOB PERFORMANCE MEASURE

Number: NRCLJP051-096

Title: CLOSE STEAM GENERATOR BLOWDOWN ISOLATION VALVES
OUTSIDE CONTAINMENT

Examinee: _____

Evaluator: _____
Print Signature Date

Results: Sat _____ Unsat _____ Total Time: _____ minutes

Comments:

References: OP AP-8A, Control Room Inaccessibility - Establishing Hot Standby,
Rev. 20A

Alternate Path: Yes X No _____

Time Critical: Yes _____ No X

Time Allotment: 10 minutes

Critical Steps: 2, 3

Job Designation: RO/SRO

Task Number: 08/068/AA1.03

Rating: 4.1/4.3

AUTHOR: _____ JACK BLACKWELL _____ DATE: 01/31/2007 _____

REVIEWED BY: _____ TRAINING LEADER _____ DATE: _____

APPROVED BY: _____ LINE MANAGER _____ DATE: _____

- Directions:** **No PLANT controls or equipment are to be operated during the performance of this Job Performance Measure.** All actions taken by the examinee should be clearly demonstrated and verbalized to the evaluator. The student will be given the initial conditions, initiating cue, and task standard. The examiner will then ask if any clarifications are needed. The examinee may be given the applicable procedure and step with which to begin.
- Required Materials:** Copy of OP AP-8A, Step 27.
- Initial Conditions:** Units 1 and 2 are in MODE 3, being controlled from the Hot Shutdown Panel following a Control Room Evacuation.
- Initiating Cue:** You are directed by the Unit 1 Shift Foreman to verify closed the Unit 1 steam generator blowdown isolation valves outside containment, in accordance with OP AP-8A, Step 27.
- Task Standard:** The steam generator blowdown isolation and sample isolation valves outside containment have been verified closed in accordance with OP AP-8A.

Start Time: _____

Step	Expected Operator Actions
1. Verify steam generator blowdown isolation (O.C.) are closed. (Penetration area GE, 100' elev.)	1.1 Checks the position of steam generator blowdown sample isolation valves FCV-244, 246, 248 and 250. ***** Cue: Valves are open. ***** 1.2 Checks position of steam generator blowdown isolation valves FCV-151, 154, 157 and 160. ***** Cue: Valves are open. ***** Step was: Sat: _____ Unsat _____*
** 2. Close the air supply valves to the steam generator blowdown isolation valves.	2.1 Locates air supply valves in PM-123. ** 2.2 Closes air supply valves: <ul style="list-style-type: none"> • Closes AIR-I-1-1295. • Closes AIR-I-1-1301. Step was: Sat: _____ Unsat _____*

* Denotes an entry required on the JPM cover sheet.

** Denotes Critical Step and Sub Steps.

Step	Expected Operator Actions
** 3. Vent the air supply header to the steam generator blowdown isolation valves.	** 3.1 Removes vent caps from AIR-I-1-1300 and AIR-I-1-1306. ***** Cue: Provide Cue that a crescent wrench has been obtained after Operator has verbalized where they would obtain one. (Aux Board, HSDP, etc.) ***** ** 3.2 Opens air supply header vent valves: <ul style="list-style-type: none">• Opens AIR-I-1-1300.• Opens AIR-I-1-1306. ***** Cue: The air has been vented off. *****
4. Check steam generator blowdown isolation valves closed.	***** Step was: Sat: _____ Unsat _____* 4.1 Checks closed FCV-244, 246, 248 and 250. ***** Cue: Valves are closed. ***** 4.2 Checks closed FCV-151, 154, 157 and 160. ***** Cue: Valves are closed. ***** Step was: Sat: _____ Unsat _____*

Stop Time: _____

Total Time: _____ (Enter total time on the cover page)

* Denotes an entry required on the JPM cover sheet.

** Denotes Critical Step and Sub Steps.

EXAMINEE CUE SHEET

Initial Conditions: Units 1 and 2 are in MODE 3, being controlled from the Hot Shutdown Panel following a Control Room Evacuation.

Initiating Cue: You are directed by the Unit 1 Shift Foreman to verify closed the Unit 1 steam generator blowdown isolation valves outside containment, in accordance with OP AP-8A, Step 27.

Task Standard: The steam generator blowdown isolation and sample isolation valves outside containment have been verified closed in accordance with OP AP-8A.

STUDENT HANDOUT

NUCLEAR POWER GENERATION
DIABLO CANYON POWER PLANT
JOB PERFORMANCE MEASURE

Number: NRCLJP051-062

Title: ISOLATE DILUTION FLOW PATHS

Examinee: _____

Evaluator: _____
Print Signature Date

Results: Sat _____ Unsat _____ Total Time: _____ minutes

Comments: This is a Unit 2 JPM

References: EOP FR-S.1, Response to Nuclear Power Generation/ATWS, Rev. 11

Alternate Path: Yes X No _____

Time Critical: Yes _____ No X

Time Allotment: 15 minutes

Critical Steps: 1, 2, 3, 4, 5, 6, 7, 8

Job Designation: RO/SRO

SF/Sys/KA: 01/004/A2.06

Rating: 4.2/4.3

AUTHOR: _____ JACK BLACKWELL _____ DATE: 12/01/2006 _____

REVIEWED BY: _____ TRAINING LEADER _____ DATE: _____

APPROVED BY: _____ LINE MANAGER _____ DATE: _____

Directions: **No PLANT controls or equipment are to be operated during the performance of this Job Performance Measure.** All actions taken by the examinee should be clearly demonstrated and verbalized to the evaluator. The student will be given the initial conditions, initiating cue, and task standard. The examiner will then ask if any clarifications are needed. The examinee may be given the applicable procedure and step with which to begin.

Required Materials: Copy of EOP FR-S.1, Appendix D.

Initial Conditions: Unit 2 is experiencing an inadvertent dilution.

Initiating Cue: The Shift Foreman directs you to check and isolate any dilution flowpaths to the RCS in accordance with EOP FR-S.1 Appendix D, step 2.

Task Standard: Dilution flow paths to the RCS have been checked and isolated in accordance with EOP FR-S.1.

Start Time:

<u>Step</u>	<u>Expected Operator Actions</u>
** 1. Verify closed valve CVCS-2-8539, primary water to mixed bed demineralizer 21.	1.1 Locates valve CVCS-2-8539 at the demineralizer manifold on the 100' elevation (Mixed Bed 2-1 outside wall) of the auxiliary building. ** 1.2 Verifies CVCS-2-8539 is closed. Step was: Sat: _____ Unsat _____*
** 2. Verify closed valve CVCS-2-8538, primary water to mixed bed demineralizer 22.	2.1 Locates valve CVCS-2-8538 at the demineralizer manifold on the 100' elevation (Mixed Bed 2-1 outside wall) of the auxiliary building. ** 2.2 Verifies CVCS-2-8538 is closed. Step was: Sat: _____ Unsat _____*
** 3. Verify closed valve CVCS-2-8519, primary water to cation demineralizer 21.	3.1 Locates valve CVCS-2-8519 at the demineralizer manifold on the 100' elevation (Outside wall of cation demin) of the auxiliary building. ** 3.2 Verifies CVCS-1-8519 is closed. Step was: Sat: _____ Unsat _____*
** 4. Verify closed valve CVCS-2-8500A & 8500B, primary water to deborating demineralizer 21 and 22 inlet.	4.1 Locates valve CVCS-2-8500A at the demineralizer manifold on the 100' (Outside wall of Deborating Demins). ** 4.2 Verifies CVCS-2-8500A is closed. 4.3 Locates valve CVCS-2-8500B ** 4.4 Verifies CVCS-2-8500B is closed. Step was: Sat: _____ Unsat _____*

* Denotes an entry required on the JPM cover sheet.

** Denotes Critical Step and Sub Steps.

Step	Expected Operator Actions
** 5. Verify closed valve CVCS-2-8506A & 8506B.	5.1 Locates valve CVCS-2-8506A at the demineralizer manifold on the 100' elevation (Outside wall of Deborating Demins). ** 5.2 Verifies CVCS-2-8506A is closed. 5.3 Locates valve CVCS-2-8506B ** 5.4 Verifies CVCS-2-8506B is closed. Step was: Sat: _____ Unsat _____*
** 6. Verify closed valve CVCS-2-8464A & 8464B, primary water to boric acid pumps 21 & 22.	Note: If area is a surface contamination area, allow the operator to point to the valves from outside the SCA 6.1 Locates valve CVCS-2-8464A at the boric acid pump skid on the 100' elevation of the auxiliary building. ** 6.2 Verifies CVCS-2-8464A is closed. 6.3 Locates valve CVCS-2-8464B ** 6.4 Verifies CVCS-2-8464B is closed. Step was: Sat: _____ Unsat _____*

* Denotes an entry required on the JPM cover sheet.

** Denotes Critical Step and Sub Steps.

Step	Expected Operator Actions
** 7. Verify chemical mixing tank is isolated.	7.1 Locates valve CVCS-2-8435 outside the blender room on the 100' elevation of the auxiliary building. ** 7.2 Verifies CVCS-2-8435 is closed. 7.3 Locates valve CVCS-2-8454 outside the blender room on the 100' elevation of the auxiliary building. ** 7.4 Verifies CVCS-2-8454 is closed. Step was: Sat: _____ Unsat _____*
** 8. Check flow on FIT-111.	8.1 Locates flow indicating transmitter FIT-111 outside the blender room on the 100' elevation of the auxiliary building. ***** Cue: FIT-111 indicates flow. ***** 8.2 Locates valve CVCS-2-8469 outside the blender room on the 100' elevation of the auxiliary building. ** 8.3 Closes CVCS-2-8469. ***** Cue: FIT-111 indicates NO flow. ***** Step was: Sat: _____ Unsat _____*

Stop Time: _____

Total Time: _____ (Enter total time on the cover page)

* Denotes an entry required on the JPM cover sheet.

** Denotes Critical Step and Sub Steps.

- Initial Conditions:** Unit 2 is experiencing an inadvertent dilution.
- Initiating Cue:** The Shift Foreman directs you to check and isolate any dilution flowpaths to the RCS in accordance with EOP FR-S.1 Appendix D, step 2.
- Task Standard:** Dilution flow paths to the RCS have been checked and isolated in accordance with EOP FR-S.1.

STUDENT HANDOUT

Directions: **No plant controls or equipment are to be operated during the performance of this Job Performance Measure.** All actions taken by the examinee should be clearly demonstrated and verbalized to the evaluator. The student will be given the initial conditions, initiating cue, and task standard. The examiner will then ask if any clarifications are needed. After identifying the appropriate procedure for the task, the examinee may be given the procedure and told the step with which to begin.

Note: This JPM begins at the Unit 1 Hot Shut Down Panel.

Required Materials: OP AP-8A Attachment 6.3 and 6.4, Sync key

Initial Conditions: The control room was evacuated and OP AP-8A was implemented from the Hot Shutdown Panel. Diesel Generator -13 has been started, but has not been synched to the bus.

Initiating Cue: The Shift Foreman directs you to perform the actions of OP AP-8A Attachment 6.4 steps 1-3, and Attachment 6.3 step 2.i, to energize Unit 1 4kV bus F. You are handed the sync key and instructed to only perform the actions necessary to energize Bus F.

Task Standard: Bus F is energized from any available power source.

* Denotes an entry required on the JPM cover sheet.

** Denotes a Critical Step.

Start Time: _____

Step	Expected Operator Actions
** 1. Aligns Vital 4kV buses per Attachment 6.4.	1.1 Reads CAUTION and Notes prior to step 1.
	** 1.2 Positions the following switches: <ul style="list-style-type: none">• D/G 13 Device 43HF7 to Local• ASW11 Device 43HF8 to HSDP• AFW13 Device 43HF9 to HSDP• 480V 1F Device 43HF10 to Local• CCP 11 Device 43HF11 to HSDP• CCW 11 Device 43HF12 to HSDP• S/U Fdr Device 29HF14 to Local
	Step was: Sat: _____ Unsat _____*

* Denotes an entry required on the JPM cover sheet.

** Denotes a Critical Step.

Step	Expected Operator Actions
** 2. Prepares to Energize 4kV Vital Bus F.	2.1 Checks 52-HF-12 white potential light lit. ***** CUE: The potential light is NOT lit. ***** 2.2 Checks 52-HF-14 white potential light lit. ***** CUE: The potential light is NOT lit. *****
	** 2.3 Verifies the following load breakers open:
	<ul style="list-style-type: none">• ASW Pp 1 52HF8• AFW Pp 3 52HF9• CC Pp 1 52HF11• CCW Pp 1 52HF12• Aux Trans Fdr 2 52HF13• S/U Trans Fdr 2 52HF14• SI Pp 1 52HF15
	***** CUE: Green lights ON/Red lights OFF for all bus breakers. *****
	Step was: Sat: _____ Unsat _____*

* Denotes an entry required on the JPM cover sheet.

** Denotes a Critical Step.

Step	Expected Operator Actions
** 3. Close DG13 breaker 52HF7 per Attachment 6.3 step 2.i.	<p>3.1 Reads CAUTION prior to step 2.i.</p> <hr/> <p>3.2 Checks for differential and overcurrent relays on the following breakers.</p> <ul style="list-style-type: none">• 52HF13 Aux Feeder• 52HF14 S/U Feeder <p>*****</p> <p>CUE: There are NO differential or overcurrent relays indicated.</p> <p>*****</p> <p>3.3 Verifies OPEN:</p> <ul style="list-style-type: none">• 52HF13 Aux Feeder• 52HF14 S/U Feeder <p>*****</p> <p>CUE: Breakers are OPEN</p> <p>*****</p> <p>** 3.4 Turns sync scope ON.</p> <p>** 3.5 Closes 52HF7.</p> <p>*****</p> <p>CUE: Bus F is energized. Note: If sync scope is not turned on, give Cue that breaker will not close.</p> <p>*****</p> <p>3.6 Turns Sync Scope OFF.</p> <p>Step was: Sat: _____ Unsat _____*</p>

Stop Time: _____
Total Time: _____ (Enter total time on the cover page)

* Denotes an entry required on the JPM cover sheet.

** Denotes a Critical Step.

- Initial Conditions:** The control room was evacuated and OP AP-8A was implemented from the Hot Shutdown Panel. Diesel Generator -13 has been started, but has not been synched to the bus.
- Initiating Cue:** The Shift Foreman directs you to perform the actions of OP AP-8A Attachment 6.4 steps 1-3, and Attachment 6.3 step 2.i, to energize Unit 1 4kV bus F. You are handed the sync key and instructed to only perform the actions necessary to energize Bus F.
- Task Standard:** Bus F is energized from any available power source.

STUDENT HANDOUT

Facility: DCPP Scenario No.: 03 Op-Test No.: L051-1

Examiners: _____ Operators: _____

Initial Conditions: 100% Power, BOL, 1000 ppm CB

Turnover: PRA Status: GREEN. Protected Equipment: Train A& B, Buses F, H & G, Prot. Sets II,III,IV. Homeland Security: YELLOW. Boron concentration is 1000 ppm from a sample taken 4 hours ago. Borating the RCS 2 gal/2hrs. The last boration was completed 30 minutes ago. ΔI is stable. No one is in Containment, no entries are expected. U-2 is operating at 100% power.

Event No.	Malf. No.	Event Type*	Event Description
1		N	Swap from PDP to CCP 1-2
2	xmt cvc19	I	VCT Level Transmitter LT-112 Fails Low
3	mal eps4c	C	Differential on 4kV Bus F
4	pmp cnd1	C	Condensate Pump 1-1 Trip
	mal sei1		Seismic event
5	asisrwst	C	RWST Leak
6		R	Ramp unit offline
7	mal rcs3c	M	LOCA
8	pmp sis2 pmp cvc2	C	SIP 1-2 fail to auto start, CCP 1-2 trips
9		M	Loss of Cold Leg Recirc. Capability

*(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Op-Test No.: L051-1 Scenario No.: 03 Event No.: 1 Page 1 of 7

Event Description: Swap from PDP to CCP 1-2

Time	Position	Applicant's Actions or Behavior
	SRO	Tailboard swap from PDP to CCP 1-2 per OP B-1A: V, CVCS-Transfer Charging Pumps
	RO	Take manual control of HC-128
	BOP	Starts CCP 1-2
	RO	Takes manual control of PDP and lowers output while increasing CCP flow
	BOP	Secures PDP
	RO	Maintains seal injection flow in band

Op-Test No.: L051-1 Scenario No.: 03 Event No.: 2 Page 2 of 7

Event Description: VCT Level Transmitter LT-112 Fail Low

Time	Position	Applicant's Actions or Behavior
	RO	Diagnose Auto Makeup as instrument failure
	SRO	Enter OP AP-19, Malf of RMU Control System
	SRO	Direct RO to place Reactor makeup system in manual and makeup as necessary
	RO	Places 1/MU to stop and monitors VCT level
	SRO	Notifies TM to repair

Op-Test No.: L051-1 Scenario No.: 01 Event No.: 3 Page 3 of 7

Event Description: Differential on 4kV Bus F

Time	Position	Applicant's Actions or Behavior
	RO	Acknowledges AR PK18-16, 4kV Bus F Differential Lockout
	BOP	Verifies Bus F deenergized with diff lockout
	SRO	Transitions from PK18-16 to AP-27, Loss of 4kV / 480V Bus
	ALL	Recognizes loss of DRPI
	SRO	Directs rods to manual
	RO	Places rods to manual
	SRO	Directs placing DRPI on backup power and transfer Battery 1-1 to Chg 121.
	BOP	Manually starts CCW pump 1-3.
	SRO	Implements Appendix 3.1, Loss of 480V Bus F Control Room Actions.
	BOP	Takes PCV-474 control switch to CLOSE.
	SRO	Directs M.S. to investigate Bus F.
	BOP	Starts CFCU 1-5.
	SRO	Refers to associated Tech Specs.
	RO	Restores control rods to AUTO after DRPI power supply swapped.

Op-Test No.: L051-1 Scenario No.: 03 Event No.: 5 & 6 Page 5 of 7

Event Description: Seismic leading to RWST Leak and Ramp off-line

Time	Position	Applicant's Actions or Behavior
	ALL	Diagnoses Seismic event
	SRO	Refers to PK15-24.
	BOP	Reports earthquake magnitude to SM.
	SRO	Requests SM to implement CP M-4.
	SRO	Classifies earthquake as LARGE.
	SRO	Directs plant monitoring for damage.
	BOP	Recognizes depletion of RWST.
	SRO	Tailboards plant shutdown.
	RO	Commence boration and monitor plant parameters on shutdown
	BOP	Load and start ramp and monitor plant parameters on shutdown

Op-Test No.: L051-1 Scenario No.: 03 Event No.: 7 & 8 Page 6 of 7

Event Description: LOCA and CCP / SIP pump trips

Time	Position	Applicant's Actions or Behavior
	RO	Reports rapid decrease in RCS pressure and PZR level
	BOP	Identifies RCS leak is to containment
	RO	Determines leak rate is >50 gpm
	SRO	Directs a manual Safety Injection
	ALL	Performs E-0 immediate actions
	BOP	Implements Appendix E
	RO/BOP	Starts SIP1-2
	ALL	Determines RCP trip criteria met
	RO/BOP	Trips RCPs **
	SRO	Transitions to E-1
	RO	Reports RWST <33% per PK03-01
	SRO	Directs transition to E-1.3

Op-Test No.: L051-1 Scenario No.: 03 Event No.: 9 Page 7 of 7

Event Description: Loss of Cold Leg Recirculation Capability

Time	Position	Applicant's Actions or Behavior
	ALL	Performs initial actions of E-1.3
	RO/BOP	Reports adverse Containment conditions
	RO/BOP	Reports low containment recirc sump level
	SRO	Directs transition to ECA-1.1
	SRO	Conducts tailboard or updates crew on procedure transition as appropriate
	SRO	Implements Appendix W
	RO/BOP	Commences 100°F/hr cooldown
	RO/BOP	Determines RWST is <4%
	RO/BOP	Secures SI pump 1-2 (may be performed in E-1.3) **
	RO/BOP	Depressurizes all intact S/Gs at maximum rate to inject accumulators **
		<ul style="list-style-type: none"> • Dumps steam at max rate to 680 psig • Dumps steam as necessary to maintain ~ 60% WR RVLIS level
		Note: Injection of the accumulators due to the depressurization of the steam generators by the Operators satisfies this task. RVLIS WR level does not have to reach 60%.
		Terminate After SG Depressurization Starts

MAJOR EVENT SUMMARY AND SCENARIO OBJECTIVES (modified ECA1112D)

- A. Crew starts CCP 1-2 and secures the PDP for a clearance.
- B. VCT Level channel LT-112 fails low. This is indicated on the control board, but not on the PPC. Makeup must be placed in manual control because of continuous makeup from the transmitter failure.
- C. A differential trip occurs on 4kV Bus F requiring the crew to start redundant loads, place DRPI on B/U and swap the Battery Charger supplying Battery 1-1.
- D. Condensate Pump 1-1 trips, requiring a manual start of Condensate Pump 1-3. If the pump is not started in a timely manner, low suction of the MFW Pumps occurs and Steam Generator levels decrease to the Lo-Lo level trip setpoint.
- E. A 0.27g seismic event occurs, resulting in a rupture of the RWST. The large seismic event results in the requirement to commence a normal plant shutdown. The rate of RWST draining may result in a crew decision to perform a fast ramp.
- F. A four (4) square inch (8000 gpm) SBLOCA occurs resulting in the need for a safety injection.
- G. CCP 1-2 trips on auto start and SI Pp 1-2 does not automatically start. Due to the loss of 4kV Bus F, a loss of both high-head and intermediate-head injection pumps occur, which requires starting SI Pump 1-2 manually. Once started and RCP trip criteria is met, the RCPs should be shutdown.
- H. Because of the RWST rupture, the procedural transition is from E-0 to E-1.3 (crew may transition to E-1), then to ECA-1.1 due to low recirc sump level. When the RWST level reaches 4%, the crew should shut down SI pump 1-2. In addition, all S/Gs should be depressurized at a maximum rate to 680 psig, then as necessary to fully inject the accumulators to attempt to maintain RVLIS level.
- I. The scenario is terminated when SG depressurization commences.

ATTACHMENT 1 - SIMULATOR SET-UP

CONSOLE ENTRY	DESCRIPTION
INIT 501	Initialize the simulator at 100%, BOL
Drill 81	Reset engineering values

CONTROL BOARD SETUP

- Copies of commonly used forms and procedures are available.
- Any tags are placed/removed as necessary.
- Primary integrator = 0 gal, Boron = 2 gal.
- Record PPC MAX (**BOL = 99.8**, MOL = 100.0, EOL = 100.2) on CC2 Iamicoid
- The plant Abnormal Status Board is updated with boron concentration of 1004 for Charging pump concerns.
- Circuit breaker flags are correct.
- Equipment status Iamicoids are correct:

B.A. XFER PP SUPPLYING BLENDER	- BA Pp 1-2
SUPPLYING IN-SERVICE SCW HX	- CWP 1-1
AUTO RECLOSE FEATURE CUTIN ON THIS CWP	- CWP 1-1
SELECTED TO BUS 2F	- Cont. Rm. Vent Train 1 Bus F
SELECTED TO BUS 1H	- Cont. Rm. Vent Train 1 Bus H

- The proper Delta-I curve and Reactivity Handbook for the simulator **INIT** are in place
- The Rod Step Counters indicate correctly.
- PPC Setup:
 - o QP TAVG, ALM/MODE-1, QP CHARGING, BIG U1169
 - o RBU is updated.
 - o PEN running.
 - o R2B blowdown flows at 90 gpm.
 - o Reactor trip status correct ¹(Pg 2 of Group display Mode-1).
 - o Operational mode correct for current conditions.²
 - o Delta-I target slope matches Delta-I curve (Delta-I menu → Option 5, constants K0500-0503=100% power target Delta-I / 100)
- SPDS (screens and time updating), A screen "RM", B screen "SPDS".
- The chart recorders are operating properly, and advanced.
- All typewriters are on, with adequate paper/ribbon/etc., and are in the "ON LINE" status.
- The Annunciator Horn is on (**BELL ON**).
- Sound Effects are on (**SOUND ON**).
- The video and audio systems are set up and recording
- Communications systems are turned on and functional

¹ If not correct, place PPC display in ovr mode, and press add/omit key. Type point Y0006D and select F2 to restore processing. This should update the trip breaker status.

² Allow about ten minutes for the PPC to automatically update the plant mode. If still not correct, place PPC display in ovr mode, and type APMC. Follow menu to manually override to correct mode.

TIMELINE AND INSTRUCTOR ACTIONS FOR SIMULATION

X = manual entry required
INITIATES:

	TIME LINE	CONSOLE ENTRY	SYMPTOMS/CUES/DESCRIPTION
X	0 min	DRILL 6100	After SFM reports the crew has taken the watch, load session MALS, OVRs, etc. by DRILL FILE or MANUALLY (below)
	0 min	pmp cnd3 1,0,0,0,d,0	Condensate Pump 1-3 Fail to Auto Start
	0 min	pmp sis2 1,0,0,0,d,0	Fails SI pump 1-2 auto start
x	3 min	DRILL FILE 6101	AFTER CCP Swap to simulate clearance
	+2 min	xmt cvc19 3,0,120,120,c,xv2i266o,0	VCT LT-112 Fail Low
	+5 min	mal eps4c,act 2,0,180,d,0	4 kV Bus F differential
X	When requested	loa eps1 act,1,0,0,d,0	DRPI on backup
X	When requested	Drill 46	Swap battery 1-1 to charger 121
	+5 min	pmp cnd1 4,0,0,300,c,jmleps4,0	Condensate Pump 1-1 Trip (Verify Goes Active After 4KV Bus Trip)
	12 min	mal sei1 act 0.27,15,720,d,0	0.27g seismic
	12 min	ramp asisrwst=0.33e6,1800,720	Drains RWST to 4% on seismic
X	If RWST level decrease not discovered in 5 minutes after seismic	Call as Security Guard	Report large quantities of water in the Aux Building 100 ft. area
X	If ramp has not started within 10 minutes of discovery	Call as Shift Manager	Report Operational Decision Making meeting was held on RWST and are directing unit offline within next 3 hours at > 10 MW/min.
	≈ 15 min after seismic	mal rcs3c act 4,180,0,c,asisrwst.lt.2.2e6,0	4 square-inch (8000 gpm) SBLOCA when RWST level gets under ≈50%
	On Rx. trip	mal afw1 act 0,0,0,c,fnispr.lt.5,0	Fails TDAFW pump
	On Rx. trip	pmp cvc2 6,15,1,45,c,fnispr.lt.5,0	Trips CCP 1-2 on O/C at SI
	When requested	Report RWST has a crack at the bottom of the tank and is spilling water	
X	When Requested (long evolution may want to wait 15 minutes.)	loa,cvc63,1 loa,cvc64,1 (already modeled closed) loa,sfp6,1	<u>Valve alignment to makeup to RWST</u> 8466 Open (From Blender) 8467 Open 8258 Closed 8973 Open (From SFP)
X	When requested	dsc sis14 act,1,0,0,d,0 dsc rhr4 act,1,0,0,d,0	Close breaker to valve 8976 Close breaker to valve 8980

X	When requested	vlv rhr5 2,0,0,0,d,0 vlv mfw1 2,0,0,0,d,0 vlv mfw4 2,0,0,0,d,0	RHR 8980 manual close MFW-FCV-438 manual close MFW-FCV-441 manual close
X	When requested	Drill 4	Racks in Accumulator breakers
X	If requested / after commencing S/G depressurization	CLEAR mal afw1 loa afw1 act,0,0,0,d,0 loa afw2 act,1,0,0,d,0	Restarts TDAFP. (Speeds up RCS depressurization)
	If requested	Drill 20, 21, 22, or 23 run in Manual	Opens DC knife switches to selected 4kV pumps

DIABLO CANYON POWER PLANT OPERATIONS SHIFT LOG UNIT 1

OPERATING MODE: 1
POWER LEVEL: 100 %
GROSS GENERATION: 1198 MWe
NET GENERATION: 1154 MWe
DAYS AT POWER: 36

Shift Manager Turnover

PRA RISK STATUS NEXT SHIFT: GREEN
PROTECTED EQUIPMENT: Train A & B, Buses F, G & H
HOMELAND SECURITY THREAT LEVEL: YELLOW
GRID STATUS NEXT SHIFT: Normal
AVERAGE RCS CALCULATED LEAKRATE: 0.05 gpm

URGENT WORK:

* None

ACTIVE SHUTDOWN TECH SPECS / ECGS:

* None

TURNOVER ITEMS:

* The Positive Displacement Pump needs to be secured for clearance. Swap from PDP to CCP 1-2. It is expected to be out of service for 36 hours for an oil change. All compensatory measures for ECG 8.1 have been taken.

OPERABILITY ITEMS:

None

TROUBLESHOOTING TEAMS / LEADS:

None

PRIORITY ITEMS FOR NEXT SHIFT:

* Positive Displacement Pump

ANNUNCIATORS IN ALARM

None

SHIFT FOREMAN TURNOVER

COMMENTS:

1. Reactivity management:
 - a. Time in core life: BOL
 - b. Power History: 36 days at 100%
 - c. Boron concentration is 1000 ppm from a sample taken 4 hours ago.
 - d. Borating the RCS approximately 2 gallons every two hrs.
 - e. The last boration was completed 30 minutes ago.
 - f. ΔI is stable
2. No one is in Containment, no entries are expected
3. U-2 is operating at 100% power

COMPENSATORY MEASURES:

None

CONTROL ROOM ABNORMAL STATUS

See Abnormal Status Board.

Facility: DCPP Scenario No.: 01 Op-Test No.: L051-1

Examiners: _____ Operators: _____

Initial Conditions: 100% Power, EOL, 40 ppm CB

Turnover: PRA Status: ORANGE - CCP 1-1 MOW. Protected Equipment: Train B, Buses H & G, Prot. Sets II,III,IV;. Homeland Security: YELLOW. CCP 1-1 was cleared 10 hours ago to repair a pump seal. It is expected to be returned to service in 8 hours; Boron concentration is 40 ppm from a sample taken 4 hours ago. Have been placing the deborating demineralizer in service for 15 minutes approximately every two hours. It was last removed from service 30 minutes ago. ΔI is stable. No one is in Containment, no entries are expected. U-2 is operating at 100% power.

Event No.	Malf. No.	Event Type*	Event Description
1		R	Ramp to 770 MW
2	Mal cvc8	C	Seal Injection Filter Hi DP
3	Xmt tur2	I	Turbine 1 st Stage Pressure Instrument Fails As Is at 100%
	Mal sei1		Seismic Event
4	Mal syd1	C	Loss of Offsite Power due to seismic resulting in Load Rejection
5	Mal rod6	I	Uncontrolled Rod Motion
6	Mal ppl5	M	ATWS with Supply Breaker 13D/E Available
7	Mal eps	C	4kV Bus H feeder breaker trips on differential current
8	Pmp afw2	C	AFWP 1-3 fails to auto start, requiring manual start
9	Mal rcs3	M	LOCA
10	Pmp sis1 Pmp cvc2	C	SIP 1-2 and CCP 1-2 trip, and SIP 1-1 failure to auto start, resulting in Loss of High and Intermediate Head Injection until SIP 1-1 is started

*(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Op-Test No.: L051-1 Scenario No.: 01 Event No.: 2

Page 2 of 5

Event Description: Seal Injection Filter High DP

Time	Position	Applicant's Actions or Behavior
	SRO	Responds to PK04-22
	RO	Attempts to increase seal injection
	SRO	Diagnoses filter problem
	SRO	Directs swap of filter
	RO	Reestablishes seal injection flow within limits

Op-Test No.: L051-1 Scenario No.: 01 Event No.: 3

Page 3 of 5

Event Description: PT-505 Failed As Is

Time	Position	Applicant's Actions or Behavior
	RO	Identifies Tavg higher than normal and diagnoses PT-505 failed as is
	SRO	Directs rods to manual and for RO to reduce Tavg to match current conditions
	RO	Takes rod control to manual and controls Tavg to match current conditions
	SRO	Enters AP-5 for guidance
	BOP	Contacts I&C to determine problem
	ALL	Discuss effects of restoration
	SRO	Directs restoration by opening the root valves
	SRO	Directs RO to restore Tavg-Tref and place rods in auto
	RO	Restores Tavg-Tref and places rods in auto

Op-Test No.: L051-1 Scenario No.: 01 Event No.: 4, 5, 6, 7 & 8 Page 4 of 5

Event Description: Seismic, Load Rejection, Rod Movement, ATWS, Loss of 4kV Bus H, AFWP start

Time	Position	Applicant's Actions or Behavior
	ALL	Acknowledge seismic event
	ALL	Diagnose Load Rejection
	SRO	Enters AP-2 and directs crew response
	RO/BOP	Monitors plant parameters
	RO	Stabilizes reactor at 30%
	RO	Identifies unwarranted rod motion
	SRO	Directs reactor trip
	RO	Attempts to trip reactor
	SRO	Directs RNO for reactor trip
	RO/BOP	Opens 13D/E **
	RO/BOP	Trips turbine **
	ALL	Perform remaining immediate actions of E-0
	BOP	Identifies loss of 4kV Bus H
	RO/BOP	Starts AFWP 1-3
	SRO	Directs transition from E-0 to E-0.1
	SRO	Implements ECA-0.3 as time permits

MAJOR EVENT SUMMARY AND SCENARIO OBJECTIVES

- A. EPOS phones to request a reduction to 770 MW, to be completed in 30 minutes, and to stay at that level for 24 hours. The crew should determine and start a boration, and commence the ramp per AP-25.
- B. A clogged RCP seal injection filter requires the operators to diagnose the problem and to monitor the RCP bearings for increased temperatures. They will respond per AR PK04-22, resolving the problem by swapping filters.
- C. PT-505 has failed as is, and as the ramp progresses, T_{REF} should hang up, causing an unusually high T_{AVG} and little rod motion. Manual rods will have to be used to bring T_{AVG} to within the normal range. I&C will discover a root valve out of position, and opening the root valve restores PT-505 to use. Rod control is available for automatic control when needed. Response should be guided by AP-5.
- D. A seismic event results in a loss of offsite power. This in turn results in a load rejection. The crew must stabilize the plant at 30% per AP-2.
- E. When the RO attempts to stabilize power at 30% using rods, a continuous rod motion will require a reactor trip. An ATWS occurs, requiring the opening of bus feeder 13D 13E to trip the reactor.
- F. A loss of 4kV bus H occurs after the trip. The crew must respond to the trip w/o the associated equipment, and pursue restoration of the bus.
- G. The only available AFW pump, 1-3 will fail to auto start, requiring a manual start of the pump.
- H. A small break LOCA occurs approximately five minutes after the trip, as well as an overcurrent trip of SIP 1-2 and CCP 1-2. SIP 1-1 fails to auto start. This results in a loss of high and intermediate head injection, until SIP 1-1 is manually started.
- I. The crew will transition from E-0 to E-1, and to E-1.2 to initiate an RCS cooldown.
- J. The scenario is terminated after transition to E-1.2 occurs.

ATTACHMENT 1 - SIMULATOR SET-UP

TIME LINE	CONSOLE ENTRY	SYMPTOMS/CUES/DESCRIPTION
Setup Simulator per Checklist	Init 515	100% power, EOL, $C_B = 40$ <ul style="list-style-type: none"> • Integrators: BA - 0 and PW – 0 • Tags: CT - CCP 1-1, FCV-110A CT closed
Setup	Drill 81	Reset normal engineering values
Setup	Drill 6401, or manually enter: <ul style="list-style-type: none"> • ser 0146 act,0,0,0,d,0 • loa cvc65 act,f,0,0,d,0 	Clears CCP 1-1, overrides DC undervoltage PK

CONTROL BOARD SETUP

- Copies of commonly used forms and procedures are available.
- Any tags are placed/removed as necessary.
- Primary integrator = 0 gal, Boron = 0 gal.
- Record PPC MAX (BOL = 99.8, MOL = 100.0, **EOL = 100.2**) on CC2 lamicoid
- The plant Abnormal Status Board is updated with last CCP C_B near 40 and current date.
- Circuit breaker flags are correct.
- Equipment status lamicoids are correct:

B.A. XFER PP SUPPLYING BLENDER	- BA Pp 1-2
SUPPLYING IN-SERVICE SCW HX	- CWP 1-1
AUTO RECLOSE FEATURE CUTIN ON THIS CWP	- CWP 1-1
SELECTED TO BUS 2F	- Cont. Rm. Vent Train 1 Bus F
SELECTED TO BUS 1H	- Cont. Rm. Vent Train 1 Bus H

- The proper Delta-I curve and Reactivity Handbook for the simulator **INIT** are in place
- The Rod Step Counters indicate correctly.
- PPC Setup:
 - o QP TAVG, ALM/MODE-1, QP CHARGING, BIG U1169
 - o RBU is updated.
 - o PEN running.
 - o R2B blowdown flows at 90 gpm.
 - o Reactor trip status correct ¹(Pg 2 of Group display Mode-1).
 - o Operational mode correct for current conditions.²
 - o Delta-I target slope matches Delta-I curve (Deltal menu → Option 5, constants K0500-0503=100% power target Deltal / 100)
- SPDS (screens and time updating), A screen "RM", B screen "SPDS".
- The chart recorders are operating properly, and advanced.
- All typewriters are on, with adequate paper/ribbon/etc., and are in the "ON LINE" status.
- The Annunciator Horn is on (**BELL ON**).
- Sound Effects are on (**SOUND ON**).
- The video and audio systems are set up and recording

Communications systems are turned on and functional

¹ If not correct, place PPC display in ovr mode, and press add/omit key. Type point Y0006D and select F2 to restore processing. This should update the trip breaker status.

² Allow about ten minutes for the PPC to automatically update the plant mode. If still not correct, place PPC display in ovr mode, and type APMC. Follow menu to manually override to correct mode.

TIMELINE AND INSTRUCTOR ACTIONS FOR SIMULATION

X = manual entry required

X	0 min	DRILL 6400	After SFM reports the crew has taken the watch, load session MALS, OVRs, etc. by DRILL FILE or MANUALLY (below)
	0 min	mal pp15a act,3,0,0,d,0 mal pp15b act,3,0,0,d,0	ATWS (13D & E Available)
	0 min	pmp sis1 1,0,0,0,d,0 pmp cvc2 4,0,0,0,c,fnispr(1).lt.5, pmp sis2 4,0,0,0,d,0	SIP 1-1 fails to auto start CCP 1-2 trips on OC when started SIP 1-2 trips on OC when started
	0 min	Pmp afw2 1,0,0,0,d,0	Blocked Auto Start AFWP 1-3
X	3 min	CALL AS EPOS	Require Ramp to 650 Mw Net. Start ramp within 5 minutes, be at load in 30 minutes
	< 98%	mal cvc8 act 100,240,0,c,fnispr(1).lt.98,	Clogged seal injection filter.
X	When requested	Clear mal cvc8 and report seal injection filter swap completed	
	During ramp	xmt tur2 1,0,0,0,d,0 #pxmst1(1)	Turb 1 st Stage Press PT-505 Fail As Is
X	When requested	Report PT-505 root valve closed, and ready to reopen. Clear malf to simulate opening	
	< 65% power	mal seil act,0.25,5,0,c,fnispr.lt.65,0	0.25g earthquake
	On reactor trip	mal rcs3a act 5,300, 300,c,fnispr(1).lt.5,0	5" (8000 gpm) small break LOCA
	On Seismic	mal syd1 act 1,0,15,c,jmlseil,0	Loss of start-up power
		mal rod6a act 10,0,0,c,fnispr(1).lt.25 mal rod6b act 0,0,0,c,fnispr(1).lt.35	Uncontrolled rod motion in manual and auto
	On reactor trip	mal eps4e act 2,0,30,c,fnispr(1).lt.5,0	4kV bus H differential on reactor trip
	On reactor trip	mal afw1 act 0,0,60,c,fnispr(1).lt.5,0	TDAFP trips on overspeed on seismic
X	When requested	mal pp15a clr mal pp15b clr	Locally opens Train A & B RTBs
X	When requested	Initially report operator unsuccessful resetting TDAFP	
	RCS pressure < 900#	tc prcmstar.lt.900,mal rcs3a act,2,1,0,d,0	Reduce LOCA size to delay accumulator injection
X	If desired after entering EOP-E-1	mal syd2 clr loa syd2 t,0,d loa syd1 t,0,d	<u>Restores 230kV power.</u> Report to crew that S/U power is available
X	When Requested	Drill 4	Rack in SI Accum breakers
X	When Requested	loa afw 11 act,1,0,0,d,0	Opens AFW pump cross-tie valve

DIABLO CANYON POWER PLANT OPERATIONS SHIFT LOG UNIT 1

OPERATING MODE: 1
POWER LEVEL: 100 %
GROSS GENERATION: 1198 MWe
NET GENERATION: 1155 MWe
DAYS AT POWER: 120

Shift Manager Turnover

PRA RISK STATUS NEXT SHIFT: ORANGE - CCP 1-1 MOW
PROTECTED EQUIPMENT: Train B, Buses H & G, Prot. Sets II,III,IV
HOMELAND SECURITY THREAT LEVEL: YELLOW
GRID STATUS NEXT SHIFT: Normal
AVERAGE RCS CALCULATED LEAKRATE: 0.05 gpm

URGENT WORK:

* None

ACTIVE SHUTDOWN TECH SPECS / ECGS:

* CCP 1-1 -pump seal repair. T.S 3.5.2.A - 72 hours. Due in 62 hours.

TURNOVER ITEMS:

* CCP 1-1 was cleared 10 hours ago to repair a pump seal. It is expected to be returned to service in 8 hours.

OPERABILITY ITEMS:

* None

PRIORITY ITEMS FOR NEXT SHIFT:

* CCP 1-1 pump seal repairs.

ANNUNCIATORS IN ALARM

* None

SHIFT FOREMAN TURNOVER

COMMENTS:

1. Reactivity management:
 - a. Time in core life: EOL
 - b. Power History: 100%
 - c. Boron concentration is 40 ppm from a sample taken 4 hours ago.
 - d. Have been placing the deborating demineralizer in service for 15 minutes approximately every two hours. It was last removed from service 30 minutes ago.
 - e. ΔI is stable
2. No one is in Containment, no entries are expected
3. U-2 is operating at 100% power

COMPENSATORY MEASURES:

None

CONTROL ROOM ABNORMAL STATUS

See Abnormal Status Board.

Facility: DCPPScenario No.: 02Op-Test No.: L051-1

Examiners: _____

Operators: _____

Initial Conditions: 100% Power, BOL, 1000 ppm CB

Turnover: PRA Status: GREEN. Protected Equipment: Train A& B, Buses F, H & G, Prot. Sets II,III,IV. Homeland Security: YELLOW. Boron concentration is 1000 ppm from a sample taken 4 hours ago. Borating the RCS ~ 1 gal/hr. The last boration was completed 30 minutes ago. ΔI is stable. No one is in Containment, no entries are expected. U-2 is operating at 100% power. PT-403 is Out of service, affecting Subcooling Margin and RVLIS indications for the affected train.

Event No.	Malf. No.	Event Type*	Event Description
1	pmp asw1	C	Loss of ASW pump 11
2	Vlv cvc16	C	Failure of 8152
3	xmt rcs16	I	Loop 1 T _{COLD} failure
4	Mal cws2a	C	Condenser tube leak
5		R	Ramp
6	Loa cnd1	C	Condenser vacuum leak
7		M	Reactor Trip
8	Pmp ccw2	C	CCW pump trip
9	Pmp afw2	C	Loss of AFW
10		M	Establish Condensate Flow

*(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Op-Test No.: L051-1 Scenario No.: 02 Event No.: 1 Page 1 of 6

Event Description: Loss of ASW Pump 1-1

Time	Position	Applicant's Actions or Behavior
	SRO	Responds per PK01-03 for Loss of ASW
	BOP	Starts standby pump
	SRO	Directs maintenance to investigate
	SRO	Reviews Tech Specs associated with ASW Pump

Op-Test No.: _L051-1_ Scenario No.: 02 Event No.: _9 & 10_ Page _6_ of _6_

Event Description: ___Loss of Aux Feed Water and Establish Condensate Flow___

Time	Position	Applicant's Actions or Behavior
	SRO	Transitions from E-0 to E-0.1
	RO/BOP	Takes manual control of LCVs and attempts to establish AFW flow
	RO/BOP	Diagnoses AFWP trip leaving unit with no AFW available
	SRO	Determines RED path on heat sink and transitions to FR-H.1
	SRO	Directs tripping RCPs
	RO/BOP	Trips RCPs
	RO/BOP	Depressurizes RCS **
	RO/BOP	Depressurizes two SGs **
	ALL	Establish AFW flow to SGs
		TERMINATE @ ESTABLISHMENT OF CONDENSATE FLOW

MAJOR EVENT SUMMARY AND SCENARIO OBJECTIVES (modified FRH1D)

- A. A Loss of ASW pump 1-1 requires the operator to manually start ASW pump 1-2.
- B. 8152 fails closed, which isolates letdown. Excess letdown will need to be placed in service.
- C. Loop 1 T_C RTD fails high. The crew should diagnose the failure, stabilize the plant, restore plant parameters, and address appropriate Tech Specs in accordance with AP-5.
- D. A condenser tube leak occurs, reaching limits of OP AP-20 requiring a fast ramp per AP-25.
- E. Near the end of the ramp, a vacuum leak will force a unit trip.
- F. MDAFW Pump 1-3 trips on overcurrent following the reactor trip; and the LCVs for MDAFW Pump 1-2 fail close, requiring opening the LCVs to establish AFW flow.
- G. After the LCVs are opened by the operators, MDAFW Pump 1-2 trips on overcurrent requiring the entry into FR-H.1 and establishing feed flow from the Condensate System.
- H. CCW pump 1-2 trips on the reactor trip also, and CCW pump 1-3 will require a manual start.
- I. The crew will respond to an FR-H.1 and depressurize the RCS and SGs. The TDAFWP will be restored, allowing procedure transition.
- J. Scenario is terminated when condensate flow is established.

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ATTACHMENT 1 - SIMULATOR SET-UP

CONSOLE ENTRY	DESCRIPTION
INIT 501	Initialize the simulator at 100% power, BOL
DRILL 81	Normalize Engineering Values
DRILL 41	Fails PT 403 and SCMM on VB-2

CONTROL BOARD SETUP

- Copies of commonly used forms and procedures are available.
- Any tags are placed/removed as necessary. (OOS-SCMM/PI-403/PAM4)
- Primary integrator = 0 gal, Boron = 2 gal.
- Record PPC MAX (**BOL = 99.8**, MOL = 100.0, EOL = 100.2) on CC2 lamicoid
- The Plant Abnormal Status Board is updated.
- Circuit breaker flags are correct.
- Equipment status lamicoids are correct:

B.A. XFER PP SUPPLYING BLENDER	- BA Pp 1-2
SUPPLYING IN-SERVICE SCW HX	- CWP 1-1
AUTO RECLOSE FEATURE CUTIN ON THIS CWP	- CWP 1-1
SELECTED TO BUS 2F	- Cont. Rm. Vent Train 1 Bus F
SELECTED TO BUS 1H	- Cont. Rm. Vent Train 1 Bus H

- The proper Delta-I curve and Reactivity Handbook for the simulator **INIT** are in place.
- The Rod Step Counters indicate correctly.
- PPC Setup:
 - QP TAVG, ALM/MODE-1, QP CHARGING, BIG U1169
 - RBU is updated.
 - PEN running.
 - R2B blowdown flows at 90 gpm.
 - Reactor trip status correct ¹(Pg 2 of Group display Mode-1).
 - Operational mode correct for current conditions.²
 - Delta-I target slope matches Delta-I curve (DeltaI menu →Option 5, constants K0500-0503=100% power target DeltaI / 100)
- SPDS (screens and time updating), A screen “RM”, B screen “SPDS”.
- The chart recorders are operating properly, and advanced.
- All typewriters are on, with adequate paper/ribbon/etc., and are in the “**ON LINE**” status.
- The Annunciator Horn is on (**BELL ON**).
- Sound Effects are on (**SOUND ON**).
- The video and audio systems are set up and recording.
- Communications systems are turned on and functional.

¹ If not correct, place PPC display in ovr mode, and press add/omit key. Type point Y0006D and select F2 to restore processing. This should update the trip breaker status.

² Allow about ten minutes for the PPC to automatically update the plant mode. If still not correct, place PPC display in ovr mode, and type APMC. Follow menu to manually override to correct mode.



TIMELINE AND INSTRUCTOR ACTIONS FOR SIMULATION

X = manual entry required

INITIATES:

	TIME LINE	CONSOLE ENTRY	SYMPTOMS/CUES/DESCRIPTION
X	0 min	DRILL 6300	After SFM reports the crew has taken the watch, load session MALS, OVRs, etc. by DRILL FILE or MANUALLY (below).
	0 min	pmp ccw2 1,0,0,0,d,0 pmp ccw3 4,0,0,120,c,fnispr(1).lt.5,0	CCW 13 fail to auto start on trip of CCW 12
	5 min	Pmp asw1 4,0,0,300,d,0 Pmp asw2 1,0,0,d,0	ASW 11 trip, ASW 12 fail to auto start
	+ 2 min	ser 1192 act,1,0,120,c,xv1i243c,5 vlv cvc16 2,0,60,120,c,xv1i243c,0	125V DC SYS GRD BUS 12 BATT 8152 Fails Closed (conditional on ASW12 start)
	+ 3 min	xmt rcs16 3,679,120,180,c,xv2i224o,0	Loop1 TCold Fail High (cond 8166 open)
X	When Requested	When asked about which LEDs are lit for Tcold failure	Red LEDs on Protection Set 1, Rack 2 only
	+ 5 min	Mal cws2a act 5,120,300,c,xc1i085f,0	Condenser tube leak (cond rods to manual)
X	When Requested	Dsl cnd3 act,0,0,0,d,0	Open breaker for FCV-230
	18 min	loa CND1 act,0.01,180,0,c,fnispr(1).lt.70,0	Loss of condenser vacuum
	On start signal	pmp afw2 4,0,0,0,c,jafp13,0	AFP pump 1-3 trips on start signal
	On reactor trip	ovr xv3i284c act,1,0,0,c,jpplp4,0	Cuts in AFW pump 1-2 interlock on reactor trip so that LCVs must be opened to get >435 gpm
	On reactor trip	cnh afw1 6,0,0,0,c,jpplp4,xv3i149m cnh afw2 6,0,0,0,c,jpplp4,xv3i150m	Closes LCVs on trip, clears when controller in manual
	When AFW flow > 435	tc wafw1110.gt.19 tc wafw1111.gt.19 pmp afw1 4,0,0,9,c,wafwpd2.gt.61	AFP pump 1-2 O/C trip when AFW flow > 435
	On Rx trip	mal afw1 act 0,0,60,c,fnispr(2).lt.5,0	Trips TDAFP on reactor trip
X	When Requested	Report that attempts to reset TDAFP are so far unsuccessful and will continue to try to get it started. DO NOT RESTORE UNTIL SG DEPRESSURIZATION HAS STARTED AND ON EXAMINER QUE.	
X		To restore TDAFWP	loa afw1 – reset loa afw2 – ramp to open

DIABLO CANYON POWER PLANT OPERATIONS SHIFT LOG UNIT 1

OPERATING MODE: 1
POWER LEVEL: 100 %
GROSS GENERATION: 1198 MWe
NET GENERATION: 1154 MWe
DAYS AT POWER: 36

Shift Manager Turnover

PRA RISK STATUS NEXT SHIFT: GREEN
PROTECTED EQUIPMENT: Train A & B, Busses F, G & H, Prot Sets I,II,III & IV
HOMELAND SECURITY THREAT LEVEL: YELLOW
GRID STATUS NEXT SHIFT: Normal
AVERAGE RCS CALCULATED LEAKRATE: 0.05 gpm

URGENT WORK:

* PT-403

ACTIVE SHUTDOWN TECH SPECS / ECGS:

* PT-403 repairs. T.S 3.3.3.A - 30 days. Due in 29 days, 12 hours.

TURNOVER ITEMS:

* PT-403 failed low 12 hours ago. Expected to be returned to service in 6 hours.

OPERABILITY ITEMS:

*None

PRIORITY ITEMS FOR NEXT SHIFT:

*PT-403 repair

ANNUNCIATORS IN ALARM

- PK05-07, Subcooling Margin Lo/Lo-Lo
- PK05-09, RVLIS Lo Lvl RVLIS/SCMM Trouble

SHIFT FOREMAN TURNOVER

COMMENTS:

1. Reactivity management:
 - a. Time in core life: BOL
 - b. Power history: - 36 days at 100%.
 - c. Boron concentration is 1000 ppm from a sample taken 4 hours ago.
 - d. Borating the RCS approximately 2 gallons every two hrs.
 - e. The last boration was completed 30 minutes ago.
 - f. ΔI is stable
2. No one is in Containment, no entries are expected
3. U-2 is operating at 100% power

COMPENSATORY MEASURES:

None

CONTROL ROOM ABNORMAL STATUS

See Abnormal Status Board.

Facility: DCPP Scenario No.: BU Op-Test No.: L051-1

Examiners: _____ Operators: _____

Initial Conditions: 2% Power, MOL, 1192 ppm CB, 78 Steps D, 2251 psig, 549 T_{AVG}, Turbine latched, buses transferred to S/U transformer.

Turnover: PRA Status: GREEN. Protected Equipment: Train A & B, Buses F, G, H, Sets I, II, III, IV. Homeland Security: YELLOW. Boron concentration is 1192 ppm from a sample taken 4 hours ago. Borating 40 ppm/2 hrs expected during ramp. No one is in Containment, no entries are expected. U-2 is operating at 100% power. Continue with OP L-3, step 6.12.3, placing MFP in service.

Event No.	Malf. No.	Event Type*	Event Description
1		N/R	MFW Startup
2	pmp cvc3	C	PDP trip
3	vlv afw7	I	TDAFWP Supply Valve FCV-95 fails open
4	xmt mss1	I	Steam Dump Controller fails requiring manual control
	mal sei1		Seismic event
5	mal eps4	C	4kV Bus F feeder breaker trip
6	mal mss3	M	SG 12 Steam line break outside Containment
7	vlv mss	C	MSIV 11-14 fail to close in auto
8	mal ppl3	I	Failure of Auto SI

*(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Op-Test No.: L051-1 Scenario No.: 05 Event No.: 3 Page 3 of 6

Event Description: Inadvertent TDAFW Pump start

Time	Position	Applicant's Actions or Behavior
	RO/BOP	Identify Tavg decrease and SG level increasing
	BOP	Diagnose problem as TDAFW pump start
	BOP	Shut FCV-37 / 38 or LCVs to isolate TDAFW Pump
	BOP	Reestablish AFW feed control
	RO	Control Tavg with rods
	SRO	Direct crew actions

MAJOR EVENT SUMMARY

- A. Continue startup from 2% power with placing main feedwater in service per OP L-3, step 6.12.3.
- B. Charging Pump 1-3 trips, requiring a start of CCP 1-1 or 1-2 and restoring letdown.
- C. PZR level controlling channel fails high. This requires entry into OP AP-5 and selecting out the failed channel.
- D. The TDAFW supply valve from SG 1-2 fails open, causing a cooldown and requiring manual shutting of the isolation valve.
- E. A seismic event causes the 4KV Vital Bus F to trip, causing a loss of DRPI. The SRO should enter AP-27 and PK03-21, directing rods to be placed in manual, and Tavg controlled per the PK.
- F. A Main Steam Line Break occurs upstream the MSIV but outside containment. This requires entry into E-0 and isolation per E-2. This will isolate the TDAFW pump completely with the other valve closed and deenergized from Bus F.
- G. All four MSIVs fail to automatically close and require manual actuation.
- H. A failure of Auto SI requires manual initiation.
- I. The scenario is terminated when normal charging is established.

ATTACHMENT 1 - SIMULATOR SET-UP

	TIME LINE	CONSOLE ENTRY	SYMPTOMS/CUES/DESCRIPTION
X	Setup Simulator per Checklist	Expert Screen "Init j3bc007"	2% power, MOL, C _B = 1192 <ul style="list-style-type: none"> • Integrators: BA – 40 and PW – 40
X	Setup		OP L-3, step 6.12.3 ready to be performed

CONTROL BOARD SETUP

- Copies of commonly used forms and procedures are available.
- Any tags are placed/removed as necessary.
- Primary integrator = 40 gal, Boron = 40 gal.
- Record PPC MAX (**BOL = 99.8**, MOL = 100.0, EOL = 100.2) on CC2 lamicoid
- The plant Abnormal Status Board is updated with boron concentration of 1004 for Charging pump concerns.
- Circuit breaker flags are correct.
- Equipment status lamicoids are correct:

B.A. XFER PP SUPPLYING BLENDER	- BA Pp 1-2
SUPPLYING IN-SERVICE SCW HX	- CWP 1-1
AUTO RECLOSE FEATURE CUTIN ON THIS CWP	- CWP 1-1
SELECTED TO BUS 2F	- Cont. Rm. Vent Train 1 Bus F
SELECTED TO BUS 1H	- Cont. Rm. Vent Train 1 Bus H

- The proper Delta-I curve and Reactivity Handbook for the simulator **INIT** are in place
- The Rod Step Counters indicate correctly.
- PPC Setup:
 - o QP TAVG, ALM/MODE-1, QP CHARGING, BIG U1169
 - o RBU is updated.
 - o PEN running.
 - o R2B blowdown flows at 90 gpm.
 - o Reactor trip status correct ¹(Pg 2 of Group display Mode-1).
 - o Operational mode correct for current conditions.²
 - o Delta-I target slope matches Delta-I curve (Deltal menu →Option 5, constants K0500-0503=100% power target Deltal / 100)
- SPDS (screens and time updating), A screen "RM", B screen "SPDS".
- The chart recorders are operating properly, and advanced.
- All typewriters are on, with adequate paper/ribbon/etc., and are in the "**ON LINE**" status.
- The Annunciator Horn is on (**BELL ON**).
- Sound Effects are on (**SOUND ON**).
- The video and audio systems are set up and recording
- Communications systems are turned on and functional

¹ If not correct, place PPC display in ovr mode, and press add/omit key. Type point Y0006D and select F2 to restore processing. This should update the trip breaker status.

² Allow about ten minutes for the PPC to automatically update the plant mode. If still not correct, place PPC display in ovr mode, and type APMC. Follow menu to manually override to correct mode.

ATTACHMENT 1 - SIMULATOR SET-UP

TIMELINE AND INSTRUCTOR ACTIONS FOR SIMULATION

X = manual entry required

X	0 min	DRILL 6500	After SFM reports the crew has taken the watch, load session MALS, OVRs, etc. by DRILL FILE or MANUALLY (below)
	0 min	Vlv mss7 1,0,0,0,d,xv3i183c Vlv mss8 1,0,0,0,d,xv3i184c Vlv mss9 1,0,0,0,d,xv3i185c Vlv mss10 1,0,0,0,d,xv3i186c	MSIV Fail to Close in Auto
	0 min	Mal ppl3a act 1,0,0,d,0 Mal ppl3b act 1,0,0,d,0	Failure of Auto SI
	5 min	Pmp cvc3 4,0,0,600,d,0	PDP trip
	+5 min	Vlv afw7 2,1,60,300,c,xv2i214o	FCV-95 fail open for TDAFW
	+3	Xmt mss1 7,100,120,180,c,xv3i219c	HCV-507 fail in auto
	10 min	mal seil act,0.29,10,0,c,fnispr.lt.6,0	0.29g earthquake
	On Seismic	mal eps4c act 2,0,30,c,jmlsei1,0	4kV bus F differential on seismic
	Seismic +5	Mal mss3b act 3.06e+06,120,300,c,jmlsei1	Steamline break outside containment upstream MSIVs on SG 2
	MSS +5	Mal rcs4a act 1000,120,300,c,jmlmss3(2)	SGTR on SG11
X	<u>When requested</u>	Vlv mss2 2,1,60,d,0	To open FCV-38, SG 13 steam supply to TDAFW pump

DIABLO CANYON POWER PLANT OPERATIONS SHIFT LOG UNIT 1

OPERATING MODE:	2	
POWER LEVEL:	2	%
GROSS GENERATION:	0	MWe
NET GENERATION	0	MWe
DAYS AT POWER:	0	

Shift Manager Turnover

<u>PRA RISK STATUS NEXT SHIFT:</u>	GREEN
<u>PROTECTED EQUIPMENT:</u>	Train A & B, Buses F, H & G, Prot. Sets I,II,III,IV
<u>HOMELAND SECURITY THREAT LEVEL:</u>	YELLOW
<u>GRID STATUS NEXT SHIFT:</u>	Normal
<u>AVERAGE RCS CALCULATED LEAKRATE:</u>	0.05 gpm

URGENT WORK:

* None

ACTIVE SHUTDOWN TECH SPECS / ECGS:

* None.

TURNOVER ITEMS:

* Continue Startup. OP L-3, all steps and prerequisites have been completed up to and in preparation for Step 6.12.3, placing a MFW pump in service.

OPERABILITY ITEMS:

* None

PRIORITY ITEMS FOR NEXT SHIFT:

* Continue Startup and achieve 35% power

ANNUNCIATORS IN ALARM

* None

SHIFT FOREMAN TURNOVER

COMMENTS:

1. Reactivity management:
 - a. Time in core life: MOL
 - b. Power History: 2%
 - c. Boron concentration is 1192 ppm from a sample taken 4 hours ago.
 - d. Use rods as necessary to control power and temperature during initial ramp.
 - e. Reactor Engineering will have ramp plan before 20% is achieved.
 - f. ΔI is N/A at this time

2. No one is in Containment, no entries are expected

3. U-2 is operating at 100% power

COMPENSATORY MEASURES:

None

CONTROL ROOM ABNORMAL STATUS

See Abnormal Status Board.