



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION IV  
1600 EAST LAMAR BOULEVARD  
ARLINGTON, TEXAS 76011-4511

March 20, 2018

Mr. James M. Welsch  
Vice President, Nuclear Generation  
and Chief Nuclear Officer  
Pacific Gas and Electric Company  
P.O. Box 56  
Mail Code 104/6  
Avila Beach, CA 93424

**SUBJECT: DIABLO CANYON POWER PLANT, UNITS 1 AND 2 - NRC EXAMINATION  
REPORT 05000275/2018301; 05000323/2018301**

Dear Mr. Welsch:

On February 9, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an initial operator license examination at Diablo Canyon Power Plant, Units 1 and 2. The enclosed report documents the examination results and licensing decisions. The preliminary examination results were discussed on January 25, 2018, with Ms. P. Gerfen, Station Director, and other members of your staff. A telephonic exit meeting was conducted on March 8, 2018, with Mr. R. Fortier, NRC Examination Lead, who was provided with the NRC licensing decisions.

The examination included the evaluation of six applicants for a reactor operator license and six applicants for an instant senior reactor operator license. The license examiners determined that all the applicants satisfied the requirements of 10 CFR Part 55 and the appropriate licenses have been issued. There was one post examination comment submitted by your staff. Enclosure 1 contains details of this report and Enclosure 2 summarizes the post examination comment resolution.

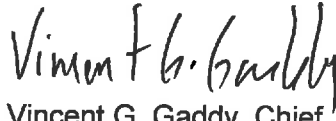
In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice and Procedure," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's

J. Welsch

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Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,



Vincent G. Gaddy, Chief  
Operations Branch  
Division of Reactor Safety

Docket Nos. 50-275 and 50-323  
License Nos. DPR-80 and DPR-82

Enclosures:

1. Examination Report 05000275/2018301 and 05000323/2018301, w/Attachment: Supplemental Information
2. Post Examination Comment Resolution

cc w/encl: Electronic Distribution

**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION IV**

Docket: 05000275, 05000323

License: DPR-80, DPR-82

Report: 05000275/2018301; 05000323/2018301

Licensee: Pacific Gas and Electric Company

Facility: Diablo Canyon Power Plant, Units 1 and 2

Location: 7 ½ miles NW of Avila Beach  
Avila Beach, CA

Dates: January 22 through March 08, 2018

Examiners: C. Osterholtz, Senior Operations Engineer  
M. Bloodgood, Emergency Response Specialist  
M. Hayes, Operations Engineer  
S. Hedger, Emergency Preparedness Inspector  
T. Farina, Senior Operations Engineer

Approved By: Vincent G. Gaddy  
Chief, Operations Branch  
Division of Reactor Safety

## SUMMARY

ER 05000275/2018301; 05000323/2018301; 01/22/2018 – 03/08/2018; Diablo Canyon Power Plant, Units 1 and 2; Initial Operator Licensing Examination Report.

NRC examiners evaluated the competency of six applicants for reactor operator licenses and six applicants for instant senior reactor operator licenses at Diablo Canyon Power Plant, Units 1 and 2.

The licensee developed the examinations using NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 11. The written examination was administered by the licensee on February 9, 2018. NRC examiners administered the operating tests on January 22 – January 26, 2018.

The examiners determined that all the applicants satisfied the requirements of 10 CFR Part 55 and the appropriate licenses have been issued.

A. NRC-Identified and Self-Revealing Findings

None.

B. Licensee-Identified Violations

None.

## REPORT DETAILS

### 4. OTHER ACTIVITIES (OA)

#### 4OA5 Other Activities (Initial Operator License Examination)

##### .1 License Applications

###### a. Scope

NRC examiners reviewed all license applications submitted to ensure each applicant satisfied relevant license eligibility requirements. Examiners also audited two of the license applications in detail to confirm that they accurately reflected the subject applicant's qualifications. This audit focused on the applicant's experience and on-the-job training, including control manipulations that provided significant reactivity changes.

###### b. Findings

No findings were identified.

##### .2 Examination Development

###### a. Scope

NRC examiners reviewed integrated examination outlines and draft examinations submitted by the licensee against the requirements of NUREG-1021. The NRC examination team conducted an on-site validation of the operating tests.

###### b. Findings

No findings were identified.

NRC examiners provided outline, draft examination, and post-validation comments to the licensee. The licensee satisfactorily completed comment resolution prior to examination administration.

NRC examiners determined the written examinations and operating tests initially submitted by the licensee were within the range of acceptability expected for a proposed examination.

The examiners noted the following observation that was placed in the licensee's corrective action program for evaluation and resolution:

- Procedure OP AP-6, "Emergency Boration," has some procedural steps that are "dead end" paths for certain plant conditions, which could unnecessarily delay the initiation of emergency boration under certain circumstances. The licensee generated Notification 50960090 to evaluate OP AP-6 for enhancement.

### .3 Operator Knowledge and Performance

#### a. Scope

On February 9, 2018, the licensee proctored the administration of the written examinations to all twelve applicants. The licensee staff graded the written examinations, analyzed the results, and presented their analysis to the NRC on February 15, 2018.

The NRC examination team administered the various portions of the operating tests to all applicants on January 22 – January 26, 2018.

#### b. Findings

No findings were identified.

All applicants passed the written examination and all parts of the operating tests. The final written examinations and post examination analysis may be accessed in the ADAMS system under the accession numbers noted in the attachment. There was one post examination comment submitted by the licensee.

The examiners noted the following generic weakness that was placed in the licensee's corrective action program for evaluation and resolution:

- During the performance of the dynamic simulator scenario evaluation, the examiners noted that three crews examined initially attempted to read the indication of radiation monitor (RM) 23, steam generator blowdown radiation monitor, behind the control room panels, when in reality there is no indication for RM-23 available in the control room (only locally). Each crew corrected the error after it was discovered. The licensee generated Notification 50960093 to address remediating this knowledge deficiency.

### .4 Simulation Facility Performance

#### a. Scope

The NRC examiners observed simulator performance with regard to plant fidelity during examination validation and administration.

#### b. Findings

No findings were identified.

.5 Examination Security

a. Scope

The NRC examiners reviewed examination security for examination development during both the on-site preparation week and examination administration week for compliance with 10 CFR 55.49 and NUREG-1021. Plans for simulator security and applicant control were reviewed and discussed with licensee personnel.

b. Findings

No findings were identified.

**4OA6 Meetings, Including Exit**

Exit Meeting

The Chief Examiner presented the preliminary examination results to Ms. P. Gerfen, Station Director, and other members of the staff on January 25, 2018. A telephonic exit was conducted on March 8, 2018, between Mr. C. Osterholtz, Chief Examiner, and Mr. R. Fortier, NRC Examination Lead.

The licensee did not identify any information or materials used during the examination as proprietary.

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### **Licensee Personnel**

P. Gerfen, Station Director  
J. Becerra, Supervisor, Simulator and Examination Support  
J. Cox, Supervisor, Learning Services  
R. Fortier, Lead, NRC Examination Development  
B. Galvan, Manager, Operations  
G. Goelzer, Shift Manager, Operations Training  
S. Guess, Manager, Training  
K. Johnston, Director, Operations  
A. Kadir, Supervisor, Initial Licensing Training  
M. McCoy, Regulatory Services  
C. Mehigan, Representative, NRC Examination Operations  
J. Morris, Supervisor, Regulatory Services - Compliance  
B. Simpson, Manager, Operations Training  
A. Sorenson, Regulatory Services Engineer  
L. Toribio, Developer, NRC Examination  
S. Westcott, Director, OPaLS

#### **NRC Personnel**

C. Newport, Senior Resident Inspector  
J. Reynoso, Resident Inspector

### **ADAMS DOCUMENTS REFERENCED**

Accession No. ML18064A355 - FINAL WRITTEN EXAM (Do not release for two years)  
Accession No. ML18064A353 - FINAL OPERATING TEST (Do not release for two years)  
Accession No. ML18064A356 - POST EXAM ANALYSIS (Do not release for two years)



## NRC Resolution to the Diablo Canyon Post Examination Comment

A complete text of the licensee's post examination analysis and comments can be found in ADAMS under Accession Number ML18064A356.

A Region IV examination review panel was assigned on February 20, 2018, to resolve one post examination comment submitted by Diablo Canyon. The examination review panel was independent of the examination team. The following recommendations were submitted for branch chief review, and accepted by the branch chief on February 26, 2018:

### **Original Question**

#### **Question 76**

The crew has initiated Safety Injection based on the following:

- RCS leak estimated at 150 gpm
- RM-11, Containment Air Particulate and RM-12, Containment Rad Gas, are in high alarm
- PK11-21, High Radiation, in alarm

While performing E-0, Reactor Trip or Safety Injection, the operator reports the following:

- RM-74, Steamline Radiation Monitor, has just pegged high, and PK11-18, Main Steam Line Hi Rad, has alarmed
- RM-15 and RM-15R, Steam Jet Air Ejector Radiation Monitors, have both lowered from their normal, pre-trip levels
- RM-19/23, Steam Generator Blowdown Radiation Monitors, have remained at pre-trip levels
- All steam generator narrow range levels are approximately 40% and rising slowly

Which of the following procedure flowpaths from E-0, should be taken by the Shift Foreman to mitigate the event?

- A. Go to E-1, Loss of Reactor or Secondary Coolant, and remain in E-1.
- B. Go to E-1, Loss of Reactor or Secondary Coolant, then transition to E-1.2, Post LOCA Cooldown and Depressurization.
- C. Go to E-3, Steam Generator Tube Rupture, then transition to E-3.1, Post SGTR Cooldown Using Backfill.
- D. Go to E-3, Steam Generator Tube Rupture, then transition to ECA-3.1, SGTR With Loss of Reactor Coolant-Subcooled Recovery Desired.

Original Correct Answer: B

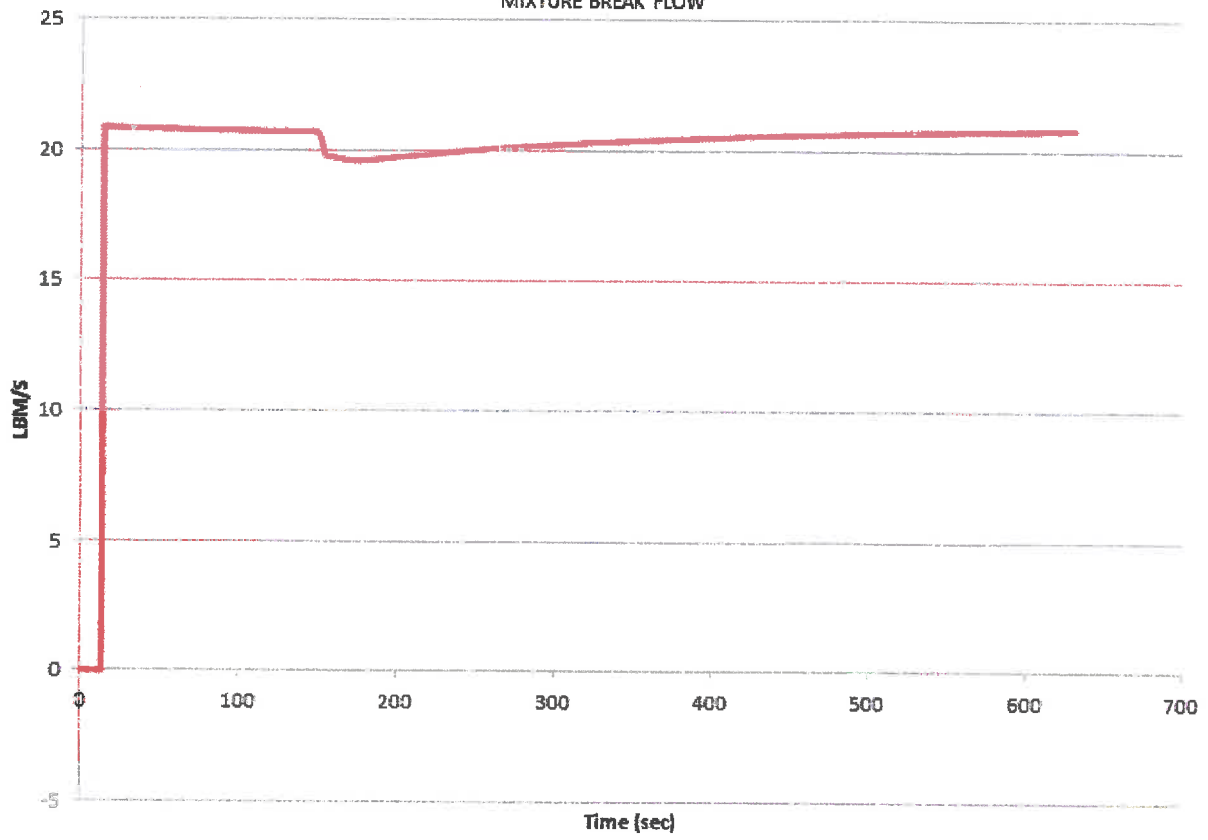
The stem of the question states there is a 150 gpm RCS leak and the crew initiates a Safety Injection. The crew would then enter E-0, *Reactor Trip or Safety Injection*, and transition to E-1, *Loss of Reactor or Secondary Coolant*. To show the plant response, a 150 gpm RCS leak was initiated after 10 seconds and a Safety Injection initiated after 150 seconds, the simulator was allowed to run for 10 minutes. Based on the attached graphs of the event, Reactor Coolant System pressure initially lowers and then starts to rise. The combination of lowering RCS temperature and rising pressure causes subcooling to rise to greater than 100°F. AFW flow to all steam generators ensures a secondary heat sink is available. Therefore, at step 8 of E-1, SI termination criteria would be satisfied and the crew would transition to E-1.1, *SI Termination*.

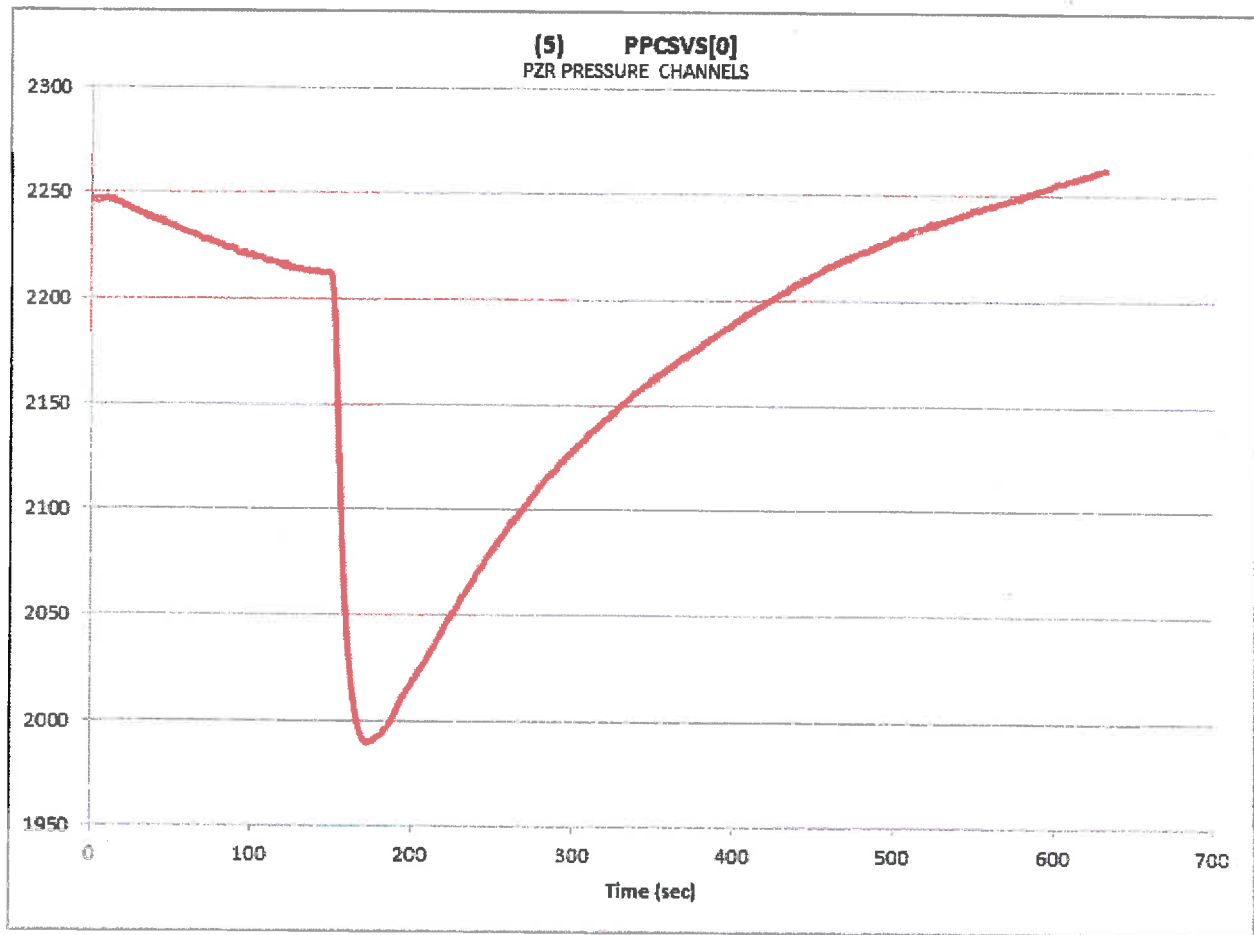
Procedurally the crew would enter E-0, *Reactor Trip or Safety Injection*, at Step 1 and progress to Step 11.c. Step 11.c would direct the crew to go to E-1, *Loss of Reactor or Secondary Coolant*. The crew would enter E-1 at Step 1 and progress to Step 8. Based on the values obtained on the simulator, the crew would meet ALL of the conditions needed to reduce Emergency Core Cooling System flow and be directed to E-1.1, *SI Termination*. (Steps 11.c of E-0 and Step 8 of E-1 are attached after the graphs.

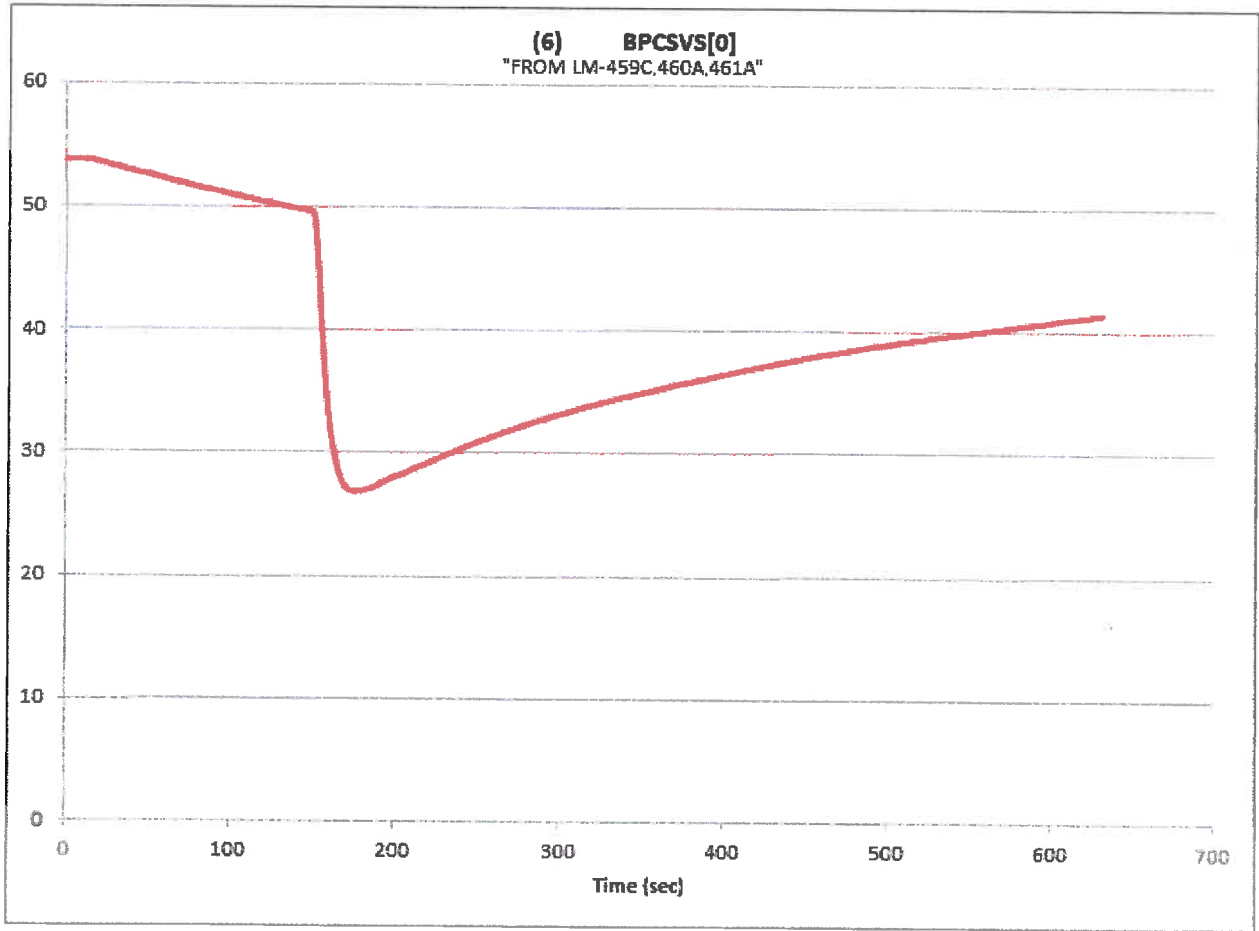
**Recommendation:**

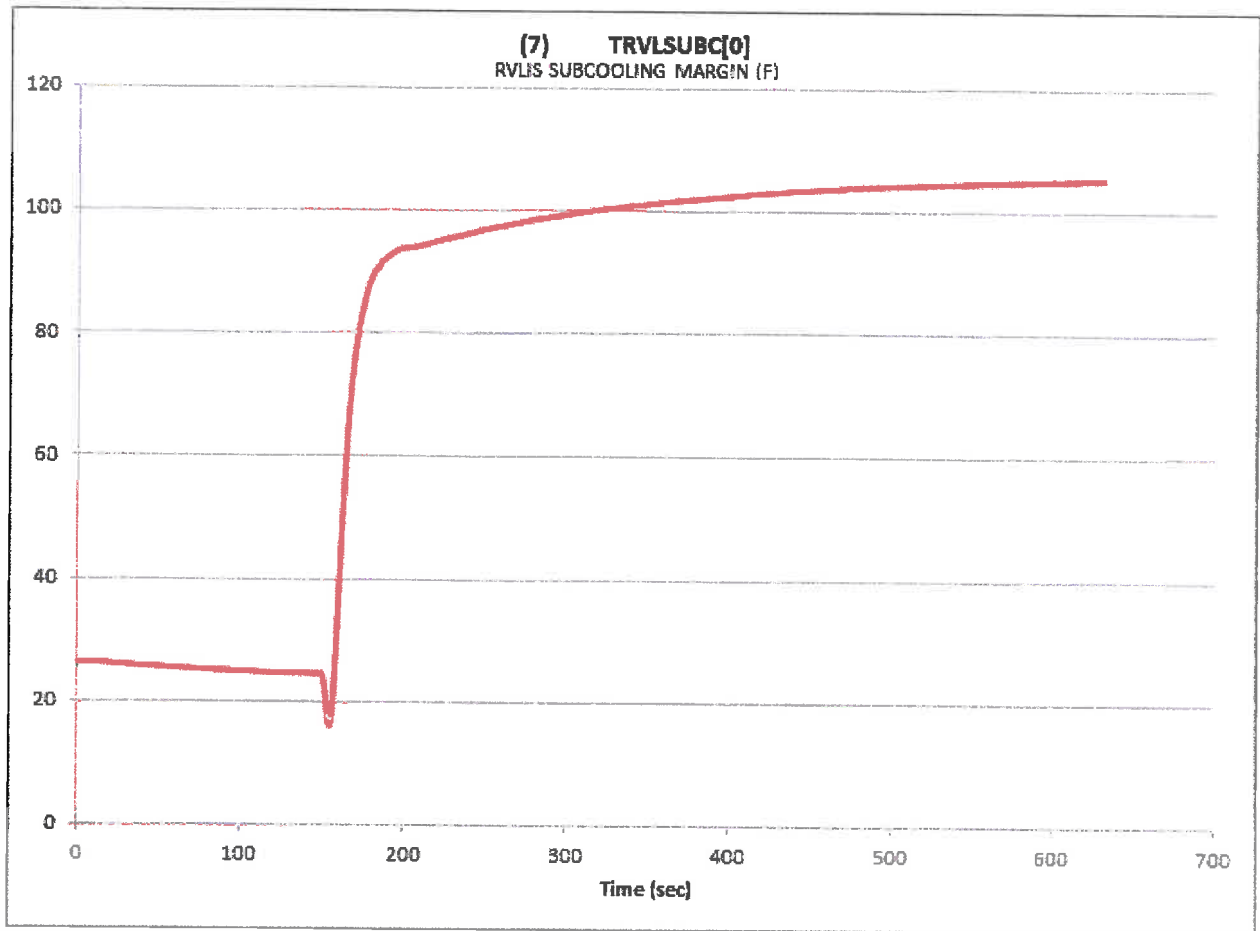
Diablo Canyon recommends removing the question from the exam as the plant response and the proper procedurally driven option was not available to select and therefore the question contains no right answer.

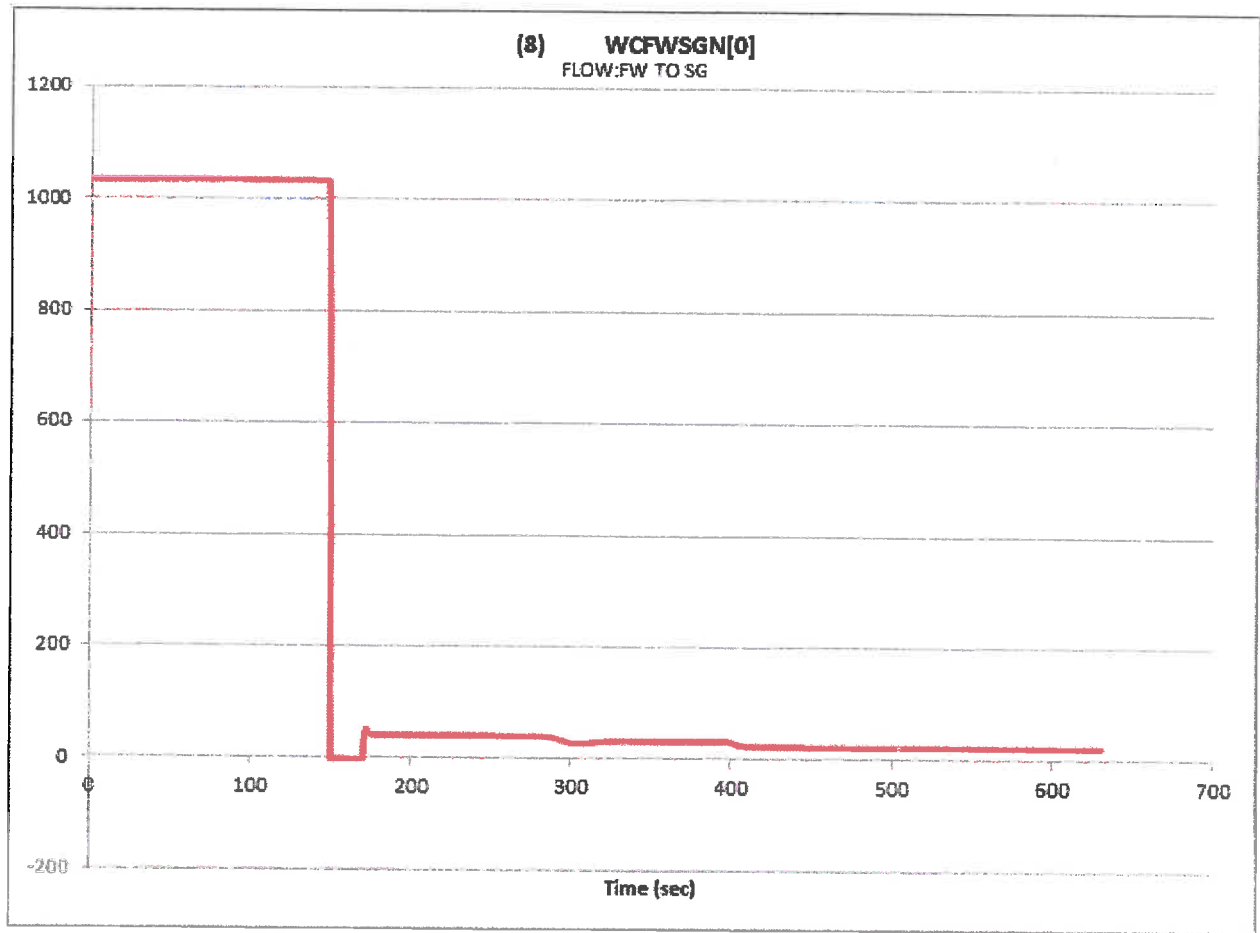
(2) RC01MALF\_RCS3AWMXB  
MIXTURE BREAK FLOW











## **NRC RESPONSE**

The licensee contends that there is no correct answer to question 76. Their claim is that initial entry is into E-1, and then would transition into E-1.1, which is not a given distractor.

The question is of a 2x2 variety, with the first part on whether to transition to E-1 or E-3. Based on the reference material provided by the licensee on the draft exam submittal, the steamline radiation monitor alarm is erroneous, and the only possible transition would be to E-1. The challenge to question 76 accepts that the correct transition is initially to E-1.

According to the as-given question, the second part of question 76 is whether to remain in E-1, or transition to E-1.2. Based on the reference material provided by the licensee on the draft exam submittal, the licensee stated that E-1.2 would be the transition, coming at step 13 in E-1, because RCS pressure is greater than 300 psig. The challenge to the question is that at step 8 of E-1, all of the conditions are met to direct transition to E-1.1. Thus, the contention is since the correct transition is to E-1.1, there is no correct answer, and question 76 should be deleted.

The examination review panel agrees with the licensee's contention, but not for the reasons the licensee provides. The licensee provided graphs of various parameters from a simulator scenario that was allowed to run for 10 minutes with the parameters described in the question stem. This is somewhat flawed because the licensee in no way describes at what point in the 10 minutes that an applicant should evaluate the parameters in step 8 that show that all conditions are met for a definitive procedural transition.

The examination review panel concluded that there is not enough information in the stem to draw the conclusion that the conditions in step 8 are or are not satisfied. Therefore, question 76 has been deleted from the examination.



DIABLO CANYON POWER PLANT, UNITS 1 AND 2 - NRC EXAMINATION  
 REPORT 05000275/2018301; 05000323/2018301 – March 20, 2018

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ADAMS ACCESSION NUMBER: ML18080A058

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