



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

February 25, 2009

Mr. John T. Conway
Senior Vice President and
Chief Nuclear Officer
Pacific Gas and Electric Company
Diablo Canyon Power Plant
P.O. Box 3, Mail Code 104/6/601
Avila Beach, CA 93424

SUBJECT: DIABLO CANYON POWER PLANT, UNIT NOS. 1 AND 2 - APPROVAL OF
RELIEF REQUEST NDE-SBR FOR SNUBBER VISUAL EXAMINATION AND
FUNCTIONAL TESTING RELATED TO THE THIRD 10-YEAR INTERVAL
INSERVICE INSPECTION PROGRAM (TAC NOS. MD8646 AND MD8647)

Dear Mr. Conway:

By letter dated May 1, 2008, Pacific Gas and Electric Company (the licensee), submitted to the U.S. Nuclear Regulatory Commission (NRC) Relief Request NDE-SBR for the third 10-year interval inservice inspection (ISI) and testing program for snubbers at Diablo Canyon Power Plant (DCPP), Unit Nos. 1 and 2. The DCPP, Unit 1 third 10-year ISI interval commenced on May 8, 2006, and the DCPP, Unit 2 third 10-year ISI interval commenced on July 1, 2006.

The NRC staff has completed its review of Relief Request NDE-SBR. The licensee proposes to use DCPP's Equipment Control Guideline (ECG) 99.1, "Snubbers," and its implementing procedures, to perform visual examinations and functional testing of American Society of Mechanical Engineers (ASME) Boiler and Pressure Code Class 1, 2 and 3 snubbers (pin-to-pin inclusive) in lieu of meeting ASME Code, Section XI, requirements.

Based on the enclosed safety evaluation (SE), the NRC staff determined that the proposed alternative to use DCPP's ECG 99.1 for snubber visual inspection and functional testing provides an acceptable level of quality and safety. Therefore, pursuant to paragraph 50.55a(a)(3)(i) of Title 10 of the *Code of Federal Regulations*, the NRC staff authorizes the use of the proposed alternative for the third 10-year ISI interval for DCPP, Units 1 and 2.

All other requirements of the ASME Code, Section XI, for which relief has not been specifically requested remain applicable, including a third-party review by the Authorized Nuclear Inservice Inspector.

J. T. Conway

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If you have any questions regarding the SE, please contact Alan B. Wang at (301) 415-1445.

Sincerely,

A handwritten signature in black ink, reading "Michael T. Markley". The signature is fluid and cursive, with the first name "Michael" and last name "Markley" clearly legible.

Michael T. Markley, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-275 and 50-323

Enclosure:
Safety Evaluation

cc w/encl: Distribution via Listserv



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
THIRD 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM FOR SNUBBERS

RELIEF REQUEST NDE-SBR

PACIFIC GAS AND ELECTRIC COMPANY

DIABLO CANYON POWER PLANT, UNIT NOS. 1 and 2

DOCKET NOS. 50-275 AND 50-323

1.0 INTRODUCTION

By letter dated May 1, 2008 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML081370029), Pacific Gas and Electric Company (the licensee), submitted Relief Request NDE-SBR for its third 10-year interval inservice inspection (ISI) and testing program for snubbers at Diablo Canyon Power Plant (DCPP), Unit Nos. 1 and 2. The licensee requested relief from certain ISI and examination requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (ASME Code) Section XI, 2001 Edition with 2003 Addenda, Article IWF-5000. Article IWF-5000 references the ASME/American Nuclear Standards Institute (ANSI) Code for Operation and Maintenance of Nuclear Power Plants (OM Code), Part 4 (OM-4), 1987 Edition with OMa-1988 Addenda. The DCPP, Unit 1 third 10-year ISI interval commenced on May 8, 2006, and the DCPP, Unit 2 third 10-year ISI interval commenced on July 1, 2006.

2.0 REGULATORY EVALUATION

The ISI of ASME Code Class 1, 2, and 3 components shall be performed in accordance with Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," of the ASME Code and applicable addenda as required by Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(g), except where specific written relief has been granted by the U.S. Nuclear Regulatory Commission (NRC or the Commission), pursuant to 10 CFR 50.55a(g)(6)(i). Section 50.55a(a)(3) states that alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if: (i) the proposed alternatives would provide an acceptable level of quality and safety, or (ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code

Enclosure

incorporated by reference in 10 CFR 50.55a(b), 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein.

The applicable Code of record for DCP, Units 1 and 2, for the third 10-year ISI interval is the ASME Code, Section XI, 2001 Edition with 2003 Addenda.

3.0 TECHNICAL EVALUATION

3.1 Component for Which Relief is Requested

All DCP, Units 1 and 2 safety-related ASME Code Class 1, 2 and 3 snubbers (pin-to-pin inclusive).

3.2 Code Requirements

The ASME Code, Section XI, Article IWF-5000, provides ISI requirements for snubbers.

Paragraphs IWF-5200(a) and IWF-5300(a) require that snubber preservice and inservice examinations be performed in accordance with OM-4, using the VT-3 visual examination method described in IWA-2213.

Paragraphs IWF-5200(b) and IWF-5300(b) require that snubber preservice and inservice tests be performed in accordance with OM-4.

Paragraphs IWF-5200(c) and IWF-5300(c) require that integral and nonintegral attachments for snubbers, including lugs, bolting, pins, and clamps be examined in accordance with the requirements of Subsection IWF.

ASME Code, Section XI, IWA-2110, requires Authorized Nuclear Inservice Inspector (ANII) involvement for snubber examination and testing.

ASME Code Section XI, IWA-6200, requires the preparation of an ISI summary report after each refueling outage.

3.3 Licensee's Proposed Alternative

The licensee proposes to use DCP's Equipment Control Guideline (ECG) 99.1, "Snubbers," and its implementing procedures, to perform visual examinations and functional testing of ASME Code Class 1, 2 and 3 snubbers (pin-to-pin inclusive) in lieu of meeting ASME Code, Section XI, requirements.

3.4 Licensee's Basis for Requesting Relief (as stated)

In lieu of implementing the Section XI requirements for snubber examination and testing, it is proposed that the preservice/in-service inspection (ISI) and testing be performed under DCP ECG 99.1, and implementing procedures. In addition to similar change in the inspection frequency in the Relief Request for the second

10-year interval which has been approved by the NRC, the following proposed changes are made to the snubber inspection program:

- Visual examinations of snubbers will not be part of the ISI VT-3 program. All snubber examinations will be in accordance with DCPD snubber inspection implementing procedures. This examination will use the VT-3 method as described in IWA-2213.
- Qualification of the inspectors who examine snubbers will be the responsibility of DCPD. They will be qualified to the DCPD program training procedures. Inspectors who examine snubbers will not be required to be VT-3 qualified.
- Two additional criteria are included to identify unacceptable snubber indications, specifically, the snubber is not bound against obstructions which will restrict the action of [the] snubber, and that snubbers shall not be positioned so that they are less than 1/2 inch (approximately) from the end of the stroke in tension or compression.
- The use of visual aids will be allowed to perform snubber inspections from a distance when snubbers are remotely located as long as the snubber examination elements can be verified.
- Snubber "drag" definition in ECG 99.1 is clarified to be more consistent with the OM Code definition and the industry practice

The proposed alternative and basis for use is discussed in Sections (a) through (d) below:

For clarification, this 10 CFR 50.55a request includes only the snubber and its pin-to-pin connections and does not include the remaining portion of the Section III NF support containing a snubber. As required by IWF-5200(c) and IWF-5300(c), the examination of the remaining portion of the support, including integral and nonintegral attachments, for supports containing snubbers will be performed in accordance with Section XI, Subsection IWF as part of the Inservice Inspection Program Plan. Specifically, as part of the examinations required by the ISI Program Plan, DCPD will visually examine (VT-3) the ASME Section XI IWF portion of supports in accordance with Subsection IWF. The snubber and its pin-to-pin connections will be examined and tested in accordance with the DCPD ECG Snubber Program. Visual inspections for snubbers will be performed using the VT-3 examination method as described in IWA-2213. All personnel who performed snubber examinations and tests will be qualified in accordance with DCPD procedures.

(a) Visual Snubber Examinations

The DCPD ECG Snubber Program visual inspection requirements for snubbers are comparable with OM Part 4 examinations, and are performed using the VT-3 visual examination method described in IWA-2213. IWA-2213 reads as follows:

"VT-3 examinations are conducted to determine the general mechanical and structural condition of components and their supports, by verifying parameters such as clearances, settings, physical displacements, and to detect discontinuities and imperfections, such as loss of integrity at bolted or welded connections, loose or missing parts, debris, corrosion, wear, or erosion.

VT-3 includes examinations for conditions that could affect operability or functional adequacy of snubbers and constant load and spring type supports."

The DCPD ECG states that:

"Visual inspections shall verify (1) that there are no visible indications of impaired functional ability due to physical damage, leakage, corrosion, or degradation, (2) attachments to the foundation or support structure are functional, and (3) fasteners for attachment of the snubber to the component and to the snubber anchorage are functional."

The DCPD procedure that implements the ECG snubber inspections includes, or will include the requirements to inspect for the following unacceptable indications:

- Snubbers shall have no visible indication of damage or impaired operability.
- Attachments (including welds) to the foundation or supporting structure shall be functional.
- Fasteners for attachment of the snubber to the component and to the snubber anchorage shall be functional.
- Snubber is not bound against obstructions which will restrict the action of the snubber.
- Snubbers shall be positioned so that they are no less than ½ inch (approximately) from the end of stroke in tension or compression.
- Hydraulic fluid system and supply shall be functional.

NOTE: Visual examination may be conducted with the use of aids such as flashlights, binoculars, or digital cameras where the snubber is remotely located as long as the above elements can be verified.

The intent and scope of the ASME/ANSI OM, Part 4, and the DCPP snubber program are essentially equal, the implementing procedure for the ECG snubber inspections ensures snubbers have no visible indications of damage or impaired operability. In addition, the ECG snubber inspections ensure the snubber attachment to the foundation or supporting structure, up to and including the fasteners for connecting the snubbers to the pipe attachment, are secure and the component attachments are intact. Also, the ECG snubber inspections are performed by personnel that are specifically trained and qualified to perform examinations of snubbers.

The DCPP ECG also incorporates the reduced visual inspection frequency table as provided in NRC Generic Letter 90-09, "Alternative Requirements for Snubber Visual Inspection Intervals and Corrective Actions," which is similar to the provisions of Table 4252-1 of OM Code Subsection ISTD. Utilization of this examination frequency results in a significant reduction in unnecessary radiological exposure to plant personnel, a savings in company resources, and compliance with visual inspection requirements while maintaining the same confidence level in snubber operability as that provided by following Section XI requirements.

(b) Snubber Testing

The DCPP ECG snubber testing requirements for snubbers are comparable with ASME/ANSI OM, Part 4. ASME/ANSI OM, Part 4, requires, in part, that:

"Snubber operational readiness test shall verify the following:

- (a) Activation is within the specified range of velocity or acceleration in tension and in compression;*
- (b) Release rate, when applicable, is within the specified range in tension and in compression. For units specifically required not to displace under continuous load, ability of the snubber to withstand load without displacement shall be demonstrated;*
- (c) For mechanical snubbers, drag force is within specified limits, in tension and in compression."*

The DCPP ECG states that:

"The snubber functional test shall verify:

- (1) Activation (restraining action) is achieved within the specified range in both tension and compression;*
- (2) Snubber bleed, or release rate where required, is present in both tension and compression, within the specified range;*

- (3) *For mechanical snubbers, the force required to maintain motion of the snubber is within the specified range in both directions of travel; and*
- (4) *For snubbers specifically required not to displace under continuous load, the ability of the snubber to withstand load without displacement.*

Testing methods may be used to measure parameters indirectly or parameters other than those specified if those results can be correlated to the specified parameters through established methods."

The DCPD ECG snubber testing program provides for comprehensive and conservative requirements that are effective in maintaining a reliable snubber population. This results in increased confidence in plant safety. The use of the DCPD ECG addresses the intent and scope of the requirements in Section XI, Article IWF-5000 in a single governing document that can be consistently applied.

(c) Authorized Inspection Agency

Services of an AIA [Authorized Inspection Agency] and Authorized Nuclear Inservice Inspectors (ANIs) are not included in the OM Code and are not explicitly defined in ASME Section XI for snubber inspections and tests. Similarly, DCPD's snubber inspection and testing in accordance with ECG 99.1 has not included involvement of AIA or ANIs in the third 10-year inspection interval. ANI qualification in accordance with ASME QAI-1 does not include knowledge of OM Code examinations and tests for snubber operability nor of DCPD's ECG requirements for snubber inspections and tests. Therefore, exclusion of services of an AIA and ANIs do not result in a reduction of quality and safety.

(d) Reports

Section XI, IWA-6000, "Records and Reports," requires owners to prepare the Owner's Report for Inservice Inspection, Form NIS-1, for preservice and inservice examination of Class 1 and 2 pressure retaining components and their supports and submit the report to the NRC. However, IWA-6000 is not specific concerning what records and reports are required for snubbers. IWA-6340 clearly does not address records for snubber testing and is not specific regarding snubber examination records. OM Part 4 does clearly require records of snubber examinations and tests to be prepared and maintained by the owner, but does not require submittal of any reports to the NRC.

The DCPD Quality Assurance Program maintains records of snubber inspections and tests performed in accordance with the ECG and its implementing procedures in lieu of the requirements of Section XI and OM Part 4. These records are available for review to demonstrate the acceptability of snubbers at DCPD.

Based on the above, the licensee concluded that an equivalent level of quality and safety can be achieved by the continued implementation of the ECG 99.1 snubber program.

3.5 NRC Staff Evaluation of Relief Request NDE-SBR

The licensee requested authorization of an alternative to the requirements of the ASME Code, Section XI, paragraphs IWF-5200(a), and (b), and IWF-5300(a), and (b). The licensee proposed that the visual examinations and functional testing of ASME Code Class 1, 2 and 3 snubbers be performed in accordance with the requirements of DCPD ECG 99.1 and its procedures in lieu of meeting the requirements in the ASME Code, Section XI, paragraphs IWF-5200(a) and (b), and IWF-5300(a) and (b).

The Code of record for DCPD, Units 1 and 2, third 10-year ISI interval is the ASME Code, Section XI, 2001 Edition with 2003 Addenda. The ASME Code, Section XI, paragraphs IWF-5200(a) and (b), and IWF-5300(a) and (b), references OM-4, 1987 Edition with OMa-1988 Addenda.

ASME Code, Section XI, paragraphs IWF-5200(a) and IWF-5300(a) require that snubber preservice and inservice examinations be performed in accordance with OM-4, using the VT-3 visual examination method described in IWA-2213. Paragraphs IWF-5200(b) and IWF-5300(b) require that snubber preservice and inservice tests be performed in accordance with OM-4.

OM-4 specifies the requirements for visual examination (paragraph 2.3), and functional testing (paragraph 3.2) of snubbers. The licensee proposes to use the DCPD ECG 99.1 surveillance requirements for visual inspection and functional testing of all safety-related snubbers. A visual inspection is the observation of the condition of installed snubbers to identify those that are damaged, degraded, or inoperable as caused by physical means, leakage, corrosion, or environmental exposure. To verify that a snubber can operate within specific performance limits, the licensee performs functional testing that typically involves removing the snubber and testing it on a specially designed stand or bench. The performance of visual examinations is a separate process that complements the functional testing program and provides additional confidence in snubber operability.

DCPD ECG 99.1 incorporates Generic Letter (GL) 90-09, "Alternative Requirements for Snubber Visual Inspection Intervals and Corrective Actions." GL 90-09 acknowledges that the visual inspection schedule (as contained in OM-4) is excessively restrictive and that licensees with large snubber populations have spent a significant amount of resources and have subjected plant personnel to unnecessary radiological exposure to comply with the visual examination requirements. GL 90-09 states that its alternative schedule for visual inspection provides the same confidence level as that provided by OM-4.

The licensee states that integral and nonintegral attachments for snubbers, including lugs, bolting, pins, and clamps, as required by IWF-5200(c) and IWF-5300(c) will be examined in accordance with the requirements of Subsection IWF.

ECG 99.1 defines inservice examination requirements as:

- (1) visual examination;
- (2) visual examination interval frequency;
- (3) method of visual examination;
- (4) subsequent examination intervals; and
- (5) inservice examination failure evaluation.

Inservice operability testing requirements are also defined as:

- (1) inservice operability or functional test;
- (2) initial snubber sample size;
- (3) additional sampling;
- (4) failure evaluation;
- (5) test failure mode groups; and
- (6) corrective actions for the 10% sample, "37" sample, and "55" sample plans that are similar to those provided by OM-4.

OM-4 requirements and ECG 99.1 criteria are compared and summarized in the following table and followed by a detailed review:

Criteria	ASME/ANSI OM Part 4 -1988	DCPP, Units 1 and 2, ECG 99.1 Requirements
Inservice Examinations		
1. Visual Examination	Paragraph 2.3.1.1, Visual Examination, states that snubber visual examinations shall identify impaired functional ability due to physical damage, leakage, corrosion, or degradation.	ECG Surveillance Requirement (SR) 99.1.1 requires that visual inspections verify: (1) that there are no visible indications of impaired functional ability due to physical damage, leakage, corrosion, or degradation; (2) attachments to the foundation or supporting structure are functional; and (3) fasteners for attachment of the snubber to the component and to the snubber anchorage are functional.
2. Visual Examination Interval Frequency	Paragraph 2.3.2 provides Examination Interval frequency requirements.	ECG Table 99.1-1 provides snubber visual inspection interval frequency.
3. Method of Visual Examination	IWF-5200(a) and IWF-5300(a) require use of the VT-3 visual examination method described in IWA-2213.	ECG SR 99.1.1.b states that all ASME Section XI, Code Class 1, 2, or 3 snubbers are to be inspected using the VT-3 examination method as described in IWA-2213.

Criteria	ASME/ANSI OM Part 4 -1988	DCPP, Units 1 and 2, ECG 99.1 Requirements
4. Subsequent Examination Intervals Frequency	Paragraph 2.3.2 provides guidance for inservice examination intervals based on the number of unacceptable snubbers discovered.	ECG Table 99.1-1 provides a snubber visual inspection interval based on the number of unacceptable snubbers discovered. These requirements are similar to those contained in NRC GL 90-09.
5. Inservice Examination Failure Evaluation	Paragraph 2.3.4 states that snubbers not meeting examination and acceptance criteria shall be evaluated to determine the cause of unacceptability.	ECG SR 99.1.1 states that snubbers which appear inoperable as a result of visual inspections shall be classified unacceptable and may be reclassified acceptable for the purpose of establishing the next visual inspection interval, provided that: (1) the cause of the rejection is clearly established and remedied for that particular snubber and for other snubbers irrespective of type that may be generically susceptible; and (2) the affected snubber is functionally tested in the as-found condition and determined operable per ECG SR 99.1.4.
Inservice Operability Test		
1. Inservice Operability Test Requirements	Paragraph 3.2.1.1 states that snubber operational readiness tests shall verify activation, release rate, and breakaway force or drag force by either an in-place or bench test.	ECG SR 99.1.3.a states that snubbers shall be functionally tested either in-place or in a bench test. ECG SR 99.1.4 states that the snubber functional test is to verify: (1) activation is achieved within specified range in both tension and compression; (2) snubber bleed, or release rate is within the specified range; (3) for mechanical snubbers, the force required to maintain motion of the snubber is within the specified range in both directions of travel; and (4) for snubbers specifically required not to displace under continuous load, the ability of the snubber to withstand load without displacement.

Criteria	ASME/ANSI OM Part 4 -1988	DCPP, Units 1 and 2, ECG 99.1 Requirements
2. Snubber Sample size	Paragraph 3.2.3 states that each defined test plan group shall use either a 10% sampling plan; a "37" testing sample plan; or a "55" testing sample plan during each refueling outage.	ECG SR 99.1.3, states that snubber shall be functionally tested using the following sample plans: (1) 10% sample plan; or (2) "37" sample plan; or (3) "55" sample plan. The licensee's 10% testing sample, "37" testing sample, and "55" testing sample plans meet the requirements as specified in OM-4.
3. Additional Sampling	(a) 10% Testing Sample Plan: Paragraph 3.2.3.1(b) states that for any snubber(s) determined to be unacceptable as a result of testing, an additional sample of at least one-half the size of the initial sample lot shall be tested.	(a) 10% Testing Sample Plan: ECG SR 99.1.3.a states that for each snubber type that does not meet the functional test acceptance criteria of SR 99.1.4, an additional sample equal to 1/2 the original sample or 5%, whichever is greater, of that type of snubber shall be functionally tested until no more failures are found or until all snubbers of that type have been functionally tested.
	(b) 37 or 55 Testing Sample Plans: Paragraph 3.2.3.2(b) states that for any snubber(s) determined to be unacceptable as a result of testing, an additional random sample of at least one-half the size of the initial sample lot shall be tested until the total number tested is equal to the initial sample size multiplied by the factor $(1+C/2)$, where C is total number of snubbers found to be unacceptable. If the 37 plan is selected, initial and any additional testing shall be in accordance with Figure 1 of the OM-4 Code.	(b) 37 Testing Sample Plan: The licensee states that SR 99.1.3.b requirements are the same as of the OM-4 Code. (c) 55 Testing Sample Plan: The licensee states that SR 99.1.3.c requirements are the same as the OM-4 Code. (Detailed evaluation is provided later in Item 3, Additional Sampling, Inservice Operability Test)
4. Inservice Operability Failure Evaluation	Paragraph 3.2.4.1 states that snubbers not meeting the operability testing acceptance criteria in paragraph 3.2.1 shall be evaluated to determine the cause of the failure.	ECG SR 99.1.5 states that if a snubber being tested either fails to lock-up or fails to move, i.e., frozen-in-place, the cause of failure will be evaluated. If the failure is caused by the manufacturer or design deficiency, all snubbers of the same type subject to the same defect shall be functionally tested.

Criteria	ASME/ANSI OM Part 4 -1988	DCPP, Units 1 and 2, ECG 99.1 Requirements
5. Test Failure Mode Groups	Paragraph 3.2.4.2 states that unacceptable snubber(s) shall be categorized into failure mode group(s). A test failure mode group(s) shall include all unacceptable snubbers that have a given failure mode, and all other snubbers subject to the same failure mode.	ECG SR 99.1.5 states that if a snubber being tested either fails to lock-up or fails to move, i.e., frozen-in-place, the cause of failure will be evaluated. If the failure is caused by the manufacturer or design deficiency, all snubbers of the same type, subject to the same defect shall be functionally tested. (Detailed evaluation is provided later in Item 5, Test Failure Mode Groups).
6. Corrective Actions for 10% Testing Sample Plan or 37 Testing Sample Plan or 55 Testing Plan	Paragraph 3.2.5.1 states that unacceptable snubbers shall be repaired, modified, or replaced.	ECG SR 99.1.6 states that snubbers that fail the visual inspection or the functional test acceptance criteria shall be repaired or replaced.

Inservice Examination Requirements

(1) Visual Examination

ECG SR 99.1.1 states that visual inspections shall verify that there are (1) no visible indications of damage or impaired operability; (2) attachments to the foundation or supporting structure are functional; and (3) fasteners for attachment of the snubber to the component and to the snubber anchorage are functional. OM-4, paragraph 2.3.1.1, requires snubber visual examinations to identify impaired functional ability due to physical damage, leakage, corrosion, or degradation. Therefore, the NRC staff concludes that the ECG SR 99.1.1 snubber visual examination requirements are equivalent to the snubber visual examination requirements of OM-4, paragraph 2.3.1.1 and are acceptable.

(2) Visual Examination Interval Frequency

ECG Table 99.1-1 provides snubber visual inspection interval frequency requirements which are different than the OM-4, paragraph 2.3.2 requirements. ECG Table 99.1.1 incorporates the visual inspection interval frequency as specified in GL 90-09. GL 90-09 acknowledges that the visual inspection interval frequency (as contained in OM-4) is excessively restrictive and that licensees with large snubber populations have spent a significant amount of resources and have subjected plant personnel to unnecessary radiological exposure to comply with the visual examination requirements. GL 90-09 states that its alternative schedule (interval frequency) for visual inspection provides the same confidence level as that provided by OM-4. Therefore, the NRC staff concludes that ECG 99.1 frequency requirements provides an acceptable level of quality and safety and are acceptable.

(3) Method of Visual Examination

IWF-5200(a) and IWF-5300(a) require that preservice and inservice examinations be performed in accordance with OM-4, using the VT-3 visual examination method described in IWA-2213. IWA-2213 states that VT-3 examinations are conducted to determine the general mechanical and structural condition of components and their supports by verifying parameters such as clearance, settings, and physical displacements; and to detect discontinuities and imperfections, such as loss of integrity at bolts and welded connections, loose or missing parts, debris, corrosion, wear, or erosion.

ECG SR 99.1.1.b states that all ASME Section XI, Code Class 1, 2, and 3 snubbers are to be inspected using the VT-3 examination method as described in IWA-2213. The licensee states that the ECG snubber inspections are performed by personnel that are specifically trained and qualified to perform visual examinations of snubbers. The DCPD procedure that implements the ECG snubber inspections includes requirements to inspect for the following conditions:

- Snubbers shall have no visible indication of damage or impaired operability.
- Attachments (including welds) to the foundation or supporting structure shall be functional.
- Fasteners for attachment of the snubber to the component and to the snubber anchorage shall be functional.
- Hydraulic fluid system and supply shall be functional.

The DCPD ECG snubber program examination requirements are equivalent to the OM-4, VT-3 visual inspection requirements. Therefore, the NRC staff concludes that the licensee's method of snubber visual inspection provides an acceptable level of quality and safety and is acceptable.

(4) Subsequent Examination Intervals

ECG Table 99.1.1 establishes subsequent snubber visual inspection intervals based on the number of unacceptable snubbers discovered, in lieu of OM-4, paragraph 2.3.2 requirements. These requirements are equivalent to the guidance provided in GL 90-09, which has been approved for use by the NRC. Therefore, the NRC staff concludes that the subsequent examination intervals contained in ECG Table 99.1.1 provide an acceptable level of quality and safety and is acceptable.

(5) Inservice Examination Failure Evaluation

OM-4, paragraph 2.3.4.1 requires that snubbers not meeting examination criteria be evaluated to determine the cause of the unacceptability. OM-4, paragraph 2.3.4.2 states that snubbers found unacceptable, may be tested in accordance with the requirements of paragraph 3.2. ECG SR 99.1.1 states that snubbers which appear inoperable as a result of visual inspections shall be classified as unacceptable and may be reclassified acceptable for the purpose of establishing the next visual inspection interval, providing that (1) the cause of the rejection is

clearly established and remedied for that particular snubber and for other snubbers irrespective of type that may be generically susceptible; and (2) the affected snubber is functionally tested in the as-found condition and determined operable per ECG SR 99.1.4, as applicable. Also, all snubbers connected to an inoperable common hydraulic fluid reservoir shall be counted as inoperable snubbers. Therefore, the NRC staff concludes that the ECG's inservice examination failure evaluation requirements provide an acceptable level of quality and safety and are acceptable.

Inservice Operability Testing Requirements

(1) Inservice Operability Test

ECG SR 99.1.3.a states that snubbers shall be functionally tested either in-place or in a bench test. ECG SR 99.1.4 states that the snubber functional test is to verify (1) activation is achieved within specified range in both tension and compression; (2) snubber bleed, or release rate is within the specified range; (3) for mechanical snubbers, the force required to initiate or maintain motion of the snubber is within the specified range in both directions of travel; and (4) for snubbers specifically required not to displace under continuous load, the ability of the snubber to withstand load without displacement. OM-4, paragraph 3.2.1.1, "Operability Test," states that snubber operational readiness tests verify activation, release rate, and breakaway force or drag force by either an in-place or bench test. The NRC staff concludes that the ECG requirements are equivalent to the snubber operability test requirements of OM-4, paragraph 3.2.1. Therefore, the ECG operability test requirements provide an acceptable level of quality and safety and are acceptable.

(2) Snubber Sample Size

The licensee states that DCPD uses the 10% sample plan for snubber functional testing. ECG SR 99.1.3 states that at least 10% of the total of each type of snubber shall be functionally tested either in place or in a bench test. OM-4, Section 3.2.3 requires either a 10% testing sampling plan, a "37" testing sample plan, or a "55" testing sample plan. The DCPD is using a 10% sample criteria, which is equivalent to the 10% sample testing requirements of OM-4. As a result, the number of snubbers tested during outages are equivalent to the OM-4 requirements. Therefore, the ECG snubber sample size provides an acceptable level of quality and safety and is acceptable.

(3) Additional Sampling

(a) For 10% testing sample plan

ECG SR 99.1.3.a states that for each snubber type that does not meet the functional test acceptance criteria of SR 99.1.4, an additional sample equal to 1/2 the original sample or 5%, whichever is greater, of that type of snubber shall be functionally tested until no more failures are found or until all snubbers of that type have been functionally tested. OM-4, paragraph 3.2.3.1(b) states that the additional sample size must be at least one-half the size of the initial sample size of the "defined test plan group" of snubbers. That is, for a 10% sample program, an additional 5% of the same type of snubber in the overall population would need to be tested. Therefore, the ECG SR 99.1.3 requirement to sample an additional 5% is acceptable.

(b) For "37" testing sample plan

OM-4, paragraph 3.2.3.2(b) states that for any snubber(s) determined to be unacceptable as a result of testing, an additional random sample of at least one-half the size of the initial sample lot shall be tested until the total number tested (N) is equal to the initial sample size multiplied by the factor $1 + C/2$, where C is total number of snubbers found to be unacceptable. The testing of additional samples is also required for snubbers determined to be unacceptable in any additional test. For the 37 sample plan, initial and any additional testing shall be in accordance with Figure C1 of Appendix C to OM-4. The "37" sample plan, has an "accept" and a "reject" line (Figure C1). The "accept" line is governed by an equation, $N = 37(1 + C/2)$, and the "reject" line is governed by $N = 37(-1 + C/2)$. Points are plotted only at the end of a lot's testing. If the point plotted ever falls above the "reject" line, all snubbers of that group must be tested. The acceptance and rejection criteria of ECG SR 99.1.3.b, SR 99.1.4, and Figure 99.1-1, "For Snubber Functional Test - 37 Sample Plan" are the same as of Figure C1 of Appendix C to OM-4. Therefore, ECG requirements for additional sampling when using the "37" testing sample plan are acceptable.

(c) For "55" testing sample plan

OM-4, paragraph 3.2.3.2(b) states that for any snubber(s) determined to be unacceptable as a result of testing, an additional random sample of at least one-half the size of the initial sample lot shall be tested until the total number tested (N) is equal to the initial sample size multiplied by the factor $1 + C/2$, where C is total number of snubbers found to be unacceptable. The testing of additional samples is also required for snubbers determined to be unacceptable in any additional test. The "55" sample plan only has an "accept" line, which is governed by an equation, $N = 55(1 + C/2)$. Results for each snubber in the lot shall be plotted as soon as it is tested. If the point plotted falls on or below the "accept" line, testing of that group may be discontinued. If the point falls above the "accept" line, all snubbers of that group must be tested. The "55" testing sample plan criteria of ECG SR 99.1.3.c are similar to the requirements of OM-4. Therefore, ECG requirements for additional sampling when using the "55" testing sample plan are acceptable.

(4) Inservice Operability Failure Evaluation

OM-4, paragraph 3.2.4.1 requires that snubbers not meeting operability testing acceptance criteria in paragraph 3.2.1 be evaluated to determine the cause of the failure. The cause of failure evaluation requires review of other unacceptable snubbers and a determination whether other snubbers of similar design would require further examination. ECG SR 99.1.5 states that if a snubber being tested either fails to lock-up or fails to move, i.e., frozen-in-place, the cause of failure will be evaluated. If the failure is caused by the manufacturer or design deficiency, all snubbers of the same type subject to the same defect shall be functionally tested. This testing requirement shall be independent of the requirements as specified in ECG SR 99.1.3. Therefore, the NRC staff concludes that the SR 99.1.5 requirements related to inservice operability failure evaluation are equivalent to the OM-4 requirements and are acceptable.

(5) Test Failure Mode Groups

OM-4, paragraph 3.2.4.2 requires that unacceptable snubbers be categorized into failure mode group(s). A test failure mode group shall include all unacceptable snubbers that have a given failure mode, and all other snubbers subject to the same failure mode. ECG SR 99.1.5 states that if a snubber being tested either fails to lock-up or fails to move, i.e., frozen-in-place, the cause of failure will be evaluated. If the failure is caused by the manufacturer or design deficiency, all snubbers of the same type, subject to the same defect shall be functionally tested. This testing requirement shall be independent of the requirements as specified in ECG SR 99.1.3. Unacceptable snubbers shall be categorized into test failure mode groups. A test failure mode group(s) shall include all unacceptable snubbers that have a given failure mode, and all other snubbers subject to the same failure mode. The failure mode used shall be those such as design/manufacturing, application induced, maintenance/repair/installation, isolation, and unexplained. Therefore, the ECG requirements related to "Failure Mode Grouping" are equivalent to the OM-4 requirements, and are acceptable.

(6) Inservice Operability Testing Corrective Actions for 10% sample or "37" sample plan or "55" sample plan

OM-4, paragraph 3.2.5.1 requires that unacceptable snubbers be adjusted, repaired, modified, or replaced. ECG SR 99.1.6 states that snubbers that fail the visual inspection or the functional test acceptance criteria shall be repaired or replaced. All snubber maintenance/repair activities are to be performed per DCPM Mechanical Maintenance Procedures MP M-55.1, MP M-55.2, MP M-55.3, and MP M-55.4 and, when appropriate, per the applicable vendor procedure. Therefore, the NRC staff concludes that the ECG corrective actions associated with unacceptable snubbers at DCPM are equivalent to the OM-4 requirements and are acceptable.

Authorized Inspection Agency

ASME Code, Section XI, IWA-2110 specifies various inspector duties related to examination and testing activities. IWA-9000 states that an Authorized Nuclear Inservice Inspector (ANII) is a person who is employed and has been qualified by an Authorized Inspection Agency (AIA) to verify examination, tests and repair/replacement activities. The DCPM ECG snubber program does not require the use of an ANII for examination and test requirements. DCPM's snubber inspection and testing in accordance with the ECG 99.1 has not included involvement of an AIA or ANIIs in the third 10-year ISI interval. In addition to this, the NRC has endorsed the use of ASME OM Code, Subsection ISTD for snubber inservice examination and testing. ISTD states that the Owner's responsibility includes qualification of personnel who perform and evaluate examinations and tests in accordance with the Owner's quality assurance program. These requirements are similar to the ECG requirements. The NRC staff concludes that the proposed alternative to use ECG for snubber visual examination and functional testing without involving the ANII in these activities provides an acceptable level of quality and safety and is acceptable.

Record of Snubber Examinations and Testing

ASME Code, Section XI, IWA-6200, provides the requirements for snubber examination and test summary report preparation for snubber inservice examination and test documentation. IWA-6230 requires owners to prepare an Owner's Report for Inservice Inspection, Form NIS-1,

for preservice and inservice examination of Class 1 and 2 pressure retaining components and their supports and submit the report to the NRC. The DCPD Quality Assurance Program maintains record of snubber inspections and tests performed in accordance with the ECG and its implementing procedures. These records are available for review to demonstrate the acceptability of snubbers at DCPD. In addition to this, the NRC has endorsed the use of ASME OM Code, Subsection ISTD for snubber inservice examination and testing. ISTD requirements for snubber examination and test summary report preparation are similar to the ECG requirements. Therefore, the licensee's proposed method of preparing and maintaining records of snubber examinations and tests provides an acceptable level of quality and safety and is acceptable.

Based on the above discussions, the NRC staff finds that snubber visual examinations and functional testing, conducted in accordance with DCPD ECG 99.1, provides reasonable assurance of snubber operability and provides a level of quality and safety equivalent to that of the ASME Code, Section XI, subarticles IWF-5200(a) and (b), and IWF-5300(a) and (b). Therefore, the NRC staff concludes the licensee's proposed alternative provides an acceptable level of quality and safety with respect to snubber visual inspection and functional testing.

4.0 CONCLUSION

The NRC staff has completed its review of Relief Request NDE-SBR. The licensee proposes to use DCPD's Equipment Control Guideline (ECG) 99.1, "Snubbers," and its implementing procedures, to perform visual examinations and functional testing of ASME Code Class 1, 2, and 3 snubbers (pin-to-pin inclusive) in lieu of meeting ASME Code, Section XI, requirements. Based on the above, the NRC staff determined that the proposed alternative to use DCPD ECG 99.1, "Snubbers," for snubber visual inspection and functional testing provides an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i), the NRC staff authorizes the use of the proposed alternative for the third 10-year ISI interval for DCPD, Units 1 and 2. All other requirements of the ASME Code, Section XI, for which relief has not been specifically requested remain applicable, including a third-party review by the Authorized Nuclear Inservice Inspector.

5.0 REFERENCES

1. U.S. Code of Federal Regulations, Domestic Licensing of Production and Utilization Facilities, Part 50, Chapter I, Title 10, "Energy," Section 50.55a, Codes and standards.
2. Generic Letter (GL) 90-09, "Alternative Requirements for Snubber Visual Inspection Intervals and Corrective Actions," dated December 11, 1990.
3. American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI, Rules for Inservice Inspection of Nuclear Power Plant Components.
4. American Society of Mechanical Engineers Operation and Maintenance Code, Operation and Maintenance of Nuclear Power Plant, Part 4 (OM-4) 1987 Edition with 1988 Addenda.

5. American Society of Mechanical Engineers Operation and Maintenance Code, Code for Operation and Maintenance of Nuclear Power Plant (OM Code).
6. Equipment Control Guideline 99.1, "Snubbers," for DCPD Units 1 and 2.
7. James R. Becker, Pacific Gas and Electric Company, letter to U.S. Nuclear Regulatory Commission, "ASME Section XI Inservice Inspection Program Relief Request NDE-SBR for the Third 10-Year Interval Inspection to Allow Use of Alternative Requirements for Snubber Inspection Frequency" for Diablo Canyon Power Plants Units 1 and 2, Docket 50-275, 50-323, dated May 1, 2008 (ADAMS Accession No. ML081370029).

Principal Contributor: G. Bedi

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J. T. Conway

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If you have any questions regarding the SE, please contact Alan B. Wang at (301) 415-1445.

Sincerely,

/RA/

Michael T. Markley, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50 275 and 50 323

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NAME	NDiFrancesco	AWang	JBurkhardt	JMcHale*	AJones	MMarkley
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