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PG&E Letter DCL-03-134

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

Docket No. 50-275, OL-DPR-80
Docket No. 50-323, OL-DPR-82
Diablo Canyon Units 1 and 2
License Amendment Request 03-14
Revision to Technical Specification 3.6.3, "Containment Systems/Containment Isolation Valves"

Dear Commissioners and Staff:

In accordance with 10 CFR 50.90, enclosed is an application for amendment to Facility Operating License Nos. DPR-80 and DPR-82 for Diablo Canyon Power Plant Units 1 and 2, respectively. The enclosed license amendment request (LAR) would revise Technical Specification (TS) 3.6.3, "Containment Isolation Valves," Surveillance Requirement 3.6.3.7, by extending the leakage rate testing frequency of the containment purge supply and exhaust and vacuum/pressure relief valves, all with resilient seals, from 184 days to 24 months. The LAR would also delete the requirement to leakage rate test the containment vacuum/pressure relief valves within 92 days after opening. The current TS requirement to leakage rate test the containment purge supply and exhaust valves within 92 days after opening will remain in effect.

Enclosure 1 contains a description of the proposed changes, the supporting technical analyses, and the no significant hazards consideration determination. Enclosures 2 and 3 contain marked-up and retyped (clean) TS pages, respectively. Enclosure 4 provides marked-up TS Bases pages. The TS Bases changes are provided for information only and will be implemented pursuant to TS 5.5.14, "Technical Specifications Bases Control Program."

PG&E is part of an industry consortium of six plants as a result of a mutual agreement known as Strategic Teaming and Resource Sharing (STARS). The STARS group consists of the six plants operated by TXU Generation Company LP, Ameren Union Electric Company, Wolf Creek Nuclear Operating Corporation, Pacific Gas and Electric Company, STP Nuclear Operating Company, and Arizona Public Service Company.

A001

PG&E is submitting this LAR in conjunction with TXU Energy's Comanche Peak Plant, the lead STARS plant for this LAR. This LAR is being submitted in parallel with the Comanche Peak Plant's submittal with the intent to reduce the amount of NRC resources required to evaluate and approve both requests. A similar request has been approved for STP Nuclear Operating Company's South Texas Project Plant. These changes are not applicable to the other STARS plants.

PG&E has determined that this LAR does not involve a significant hazards consideration as determined per 10 CFR 50.92. Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment needs to be prepared in connection with the issuance of this amendment.

The changes in this LAR are not required to address an immediate safety concern. PG&E requests approval of this LAR no later than October 2004. PG&E also requests that the license amendments be made effective upon issuance, to be implemented within 60 days from the date of issuance.

If you have any questions or require additional information, please contact Stan Ketelsen at 805 545-4720.

Sincerely,

David H. Oatley
Vice President and General Manager - Diablo Canyon

why/4279
Enclosures
cc: Edgar Bailey, DHS
Bruce S. Mallett
David L. Proulx
Diablo Distribution
cc/enc: Girija S. Shukla

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of PACIFIC GAS AND ELECTRIC COMPANY	)	Docket No. 50-275 Facility Operating License No. DPR-80
Diablo Canyon Power Plant Units 1 and 2	)	Docket No. 50-323 Facility Operating License No. DPR-82

AFFIDAVIT

David H. Oatley, of lawful age, first being duly sworn upon oath says that he is Vice President and General Manager - Diablo Canyon of Pacific Gas and Electric Company; that he has executed License Amendment Request 03-14 on behalf of said company with full power and authority to do so; that he is familiar with the content thereof; and that the facts stated therein are true and correct to the best of his knowledge, information, and belief.

David H. Oatley
Vice President and General Manager - Diablo Canyon

Subscribed and sworn to before me this 22nd day of October, 2003.

Karen T. Mason
Notary Public
County of San Luis Obispo
State of California

KAREN T. MASON
Commission # 1428454
Notary Public - California
San Luis Obispo County
My Comm. Expires Jul 31, 2007

EVALUATION

1.0 DESCRIPTION

This letter is a request to amend Operating Licenses DPR-80 and DPR-82 for Diablo Canyon Power Plant (DCPP) Units 1 and 2, respectively.

The proposed changes would revise Technical Specification (TS) 3.6.3, "Containment Isolation Valves," Surveillance Requirement (SR) 3.6.3.7, by extending the leakage rate testing frequency of the containment purge supply and exhaust and vacuum/pressure relief valves with resilient seals from 184 days to 24 months. The leakage rate testing of the vacuum/pressure relief valves within 92 days after opening is to be deleted. The current TS requirement to leakage rate test the containment purge supply and exhaust valves within 92 days after opening remains in effect.

No changes to the DCPP Final Safety Analysis Report Update (FSARU) are required as a result of this license amendment request.

2.0 PROPOSED CHANGE

Currently SR 3.6.3.7 requires leakage rate testing of the containment purge supply and exhaust and vacuum/pressure relief valves with resilient seals every 184 days and within 92 days after opening the valves. This surveillance verifies that the measured leakage rates through the containment purge supply and exhaust and vacuum/pressure relief penetrations are within their administrative limits thereby contributing to a total leakage rate through all containment penetrations and air locks of less than $0.6L_a$. L_a is defined in 10 CFR 50, Appendix J, as the maximum allowable total leakage rate which is 0.10 percent of the containment air weight per day at pressure P_a. P_a is the calculated peak containment internal pressure resulting during the design basis accident.

The proposed changes extend the containment purge supply and exhaust valves leakage rate testing interval from 184 days to 24 months. However, the current requirement to leakage rate test these valves within 92 days after opening will remain in effect. The proposed changes also extend the containment vacuum/pressure relief valves leakage rate testing interval to 24 months and delete the requirement to leakage rate test these valves within 92 days after opening.

The proposed TS changes are noted on the mark-up TS page provided in Enclosure 2. The proposed retyped TS page is provided in Enclosure 3. The revised TS Bases are provided in Enclosure 4 for information only.

3.0 BACKGROUND

The containment purge system and the containment vacuum/pressure relief system are described in FSARU Section 9.4.5 and in FSARU Figures 9.4-3 and 9.4-3A.

3.1 Containment Purge System (48-inch purge valves)

The containment purge system operates to supply outside air into the containment for ventilation and cooling or heating needed for prolonged containment access following a shutdown and during refueling. The system may also be used to reduce the concentration of noble gases within containment prior to and during personnel access. The supply and exhaust lines each contain two isolation valves, one inside containment and the other outside containment. These valves are safety-related because they serve to isolate the containment in a design basis accident (DBA) condition. The valves and penetration line between them are seismic category I, meaning that they are designed to remain functional during a design basis earthquake. These valves are air-operated valves and are designed to require air pressure to stay open, and fail closed on loss of air or loss of power to the solenoid valves on their air supply lines. Each is a butterfly valve with resilient seals.

Interlocks are provided to automatically close these valves within two seconds upon receiving an automatic containment phase "A" isolation signal during normal plant operation or a containment ventilation isolation signal during refueling on a containment high radiation condition. These valves are normally maintained closed in Modes 1, 2, 3, and 4. The plant relies on the containment vacuum/pressure relief system to maintain containment pressure in these Modes.

The exhaust from containment purge goes through a debris screen, a flexible connection, the inside and outside containment exhaust valves, and through the purge exhaust fan to the plant vent.

3.2 Containment Vacuum/Pressure Relief System (12-inch isolation valves)

The containment vacuum/pressure relief system is operated as necessary to reduce the concentration of noble gases within containment prior to and during personnel access, and maintain containment internal pressure to within the TS limits of -1.0 and +1.2 psig when in Modes 1, 2, 3, and 4.

The containment vacuum/pressure relief system consists of a single containment penetration line which branches into a vacuum relief line and a pressure relief line outside containment. There are three containment isolation valves in this system, one on each line. These valves are

air-operated butterfly valves that require air pressure to stay open, and fail closed on loss of air or on loss of power to the solenoid valves on their air supply lines. Interlocks are provided to automatically close the valves within five seconds upon receiving an automatic containment phase "A" isolation signal during normal plant operations or a containment ventilation isolation signal during refueling on a containment high radiation condition.

High efficiency particulate air (HEPA) and charcoal filters are provided to filter the air coming from the reactor containment building through the containment pressure relief line prior to being exhausted through the plant vent. The HEPA filters have a minimum filter efficiency of 99.97 percent on 0.3 micron particles when operated at filter rated capacity. This is above the 99 percent efficiency assumed in the accident analysis. Exhaust prefilters are provided upstream of the high efficiency exhaust filters to protect them from coarse particles and are designed for 55 percent or greater efficiency.

3.3 History of Containment Purge Valves

In the late 1980s, 10 CFR 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors," required containment isolation valves, including containment purge and vent valves, to be subjected to local leakage rate tests at every refueling outage, but not to exceed two-year intervals. Compliance with Appendix J provides assurance that the leakage rate of the containment, including those systems and components that penetrate the containment, does not exceed the allowable leakage rate specified in the TS and TS Bases. The allowable leakage rate is determined so that the leakage rate assumed in the safety analyses is not exceeded.

However, in the 1970s, the NRC staff had determined that containment purge and vent valves were, as a class, a special problem in terms of leakage rate. Experience had shown that containment purge and vent valves with resilient seals were more susceptible than other containment isolation valves to degradation caused by environmental factors (such as temperature extremes, and changes in humidity and barometric pressure) and mechanical factors (such as wear and tear, and hardening of resilient seats due to aging and exposure to radiation). This degradation not only could cause high and rapidly increasing leakage rates, but the radiological consequences of such leaks were more significant than for other valves because of the containment purge and vent valves' typically large diameters and the direct connection they provided between the containment atmosphere and the outside environment.

As part of the resolution of Generic Issue B-20 (later renamed Multi-Plant Action MPA-B020), "Containment Leakage Due to Seal Deterioration," the

NRC staff decided to increase the frequency of local leakage rate testing of containment purge and vent valves, beyond the frequency required by Appendix J. This would limit the time in which the valves might be inoperable due to excessive leakage, and made it more likely that a licensee would detect and correct advancing degradation before it became extreme. Although there was some variation, a typical testing arrangement was to have "passive" valves (those not opened during plant operation) tested every 6 months and "active" valves (those opened during plant operation) tested within 3 months of being operated. This is the current surveillance testing arrangement at DCPP, Units 1 and 2, where the containment purge supply and exhaust valves are kept closed during plant operation and the containment vacuum/pressure relief valves are periodically opened during plant operation to maintain proper containment pressure.

The increased test frequencies were not imposed through regulation, but through plant TS. Appendix J does not contain any special requirements (i.e., 3- and 6-month tests) for containment purge and vent valves, although the same tests are usually used to fulfill Appendix J requirements when they come due.

In 1995, the NRC revised Appendix J to add a new, performance-based option for testing, called Option B. The NRC also published Regulatory Guide (RG) 1.163, "Performance-Based Containment Leak-Test Program," dated September 1995, which was developed as a method acceptable to the NRC staff for implementing Option B. This RG states that the Nuclear Energy Institute (NEI) guidance document NEI 94-01, Rev. 0, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," dated July 26, 1995, provides methods acceptable to the NRC staff for complying with Option B. RG 1.163 allows an extension in Type A (integrated leakage rate) test frequency to at least one test in 10 years based upon two consecutive successful tests. Type B tests (local leakage rate tests of containment penetrations such as electrical penetrations) may be extended up to a maximum interval of 10 years based upon completion of two consecutive successful tests. Type C tests (local leakage rate tests of containment isolation valves) may be extended up to 5 years based on two consecutive successful tests.

However, despite the fact that most other containment isolation valves may have test intervals of up to 5 years, RG 1.163 does not allow the containment purge and vent valves to be tested on an extended interval. This is in consideration of their past poor operating experience and the safety significance of their large diameter and direct connection between the containment atmosphere and the outside environment. Earlier leakage rate test failures of the containment purge and vent valves using seals made of resilient materials were found to have been due to (a) wear

induced by operating the valves and/or (b) environmental conditions. This led the NRC staff to adopt the position that those "active" containment purge/vent valves (i.e., those valves which may be operated when the plant is operating in Modes 1 through 4) should be leakage rate tested on a quarterly frequency as a means to improve early detection of unacceptable leakage due to wear induced by operating these valves. This quarterly frequency was selected based on the assumption that excessive seal wear leading to gross leakage requires several months to occur. For the passive containment purge/vent valves (i.e., those which may not be operated with the plant operating in Modes 1 through 4), the leakage rate test should be performed on a 6-month frequency with the intent to improve the probability of detecting unacceptable valve leakage due to seasonal weather variations. This eventually led to the (3- and 6-month) leakage rate test requirement contained in the current plant TSs, which, as stated, exceed the requirements of Appendix J.

Subsequent to the problems observed in the 1970s, the industry has made considerable progress in correcting the deficiencies of containment purge and vent valves with resilient seals. Improved seal materials, quality control, and modifications of equipment and environmental conditions have adequately corrected valve deficiencies in many plants. Several plants have requested, and the NRC staff has granted, TS changes to eliminate the more frequent testing requirements, allowing testing at what is essentially a refueling outage interval. The NRC staff has granted these relief requests on the basis of good valve performance demonstrated by plant-specific historical leakage rate testing results. Each plant must show that their containment purge and vent valves have had consistently good performance and are thus unlikely to experience significant degradation between tests when the test interval is lengthened.

4.0 TECHNICAL ANALYSIS

4.1 Containment Purge System and Vacuum/Pressure System Design

The containment purge system provides a means of purging the containment atmosphere during shutdown to maintain condition suitable for human occupation during the shutdown. The containment vacuum/pressure relief system provides a means of equalizing pressure between the containment inside atmosphere and the outside atmosphere during plant operations. These two ventilation functions are nonsafety-related. However, the portion of these systems which includes the inside and outside containment isolation valves and the penetration in between are also part of the containment isolation system. This containment isolation system ensures that the release of radioactivity from the containment in a DBA will be limited to those leak paths and associated leak rates assumed in the safety analyses, and limits the site boundary

radiation exposures to within the dose guidelines of 10 CFR 100. Therefore, the containment isolation valves, the penetrations in between, their isolation functions associated with the purge system, and the vacuum/pressure relief system are safety-related.

4.2 Operability Testing

Method

Containment leak rate testing is performed to confirm the ability of the containment to keep post-accident leakage of radioactivity below the values assumed in the accident analyses. Option B of 10 CFR 50, Appendix J serves as the licensing basis for the DCPP leakage rate testing program. Appendix J defines three types of containment leak rate test, Type A, Type B, and Type C. The Type A test is the integrated leak rate test of the entire containment. Type B tests are those that measure leakage across containment penetration boundaries such as doors and hatches and Type C tests are those that measure leakage across containment penetration boundaries that are sealed by valves. The containment purge supply and exhaust valves and vacuum/pressure relief isolation valves are tested as Type C valves against the criteria of 10 CFR 50, Appendix J. These valves are locally leakage rate tested by local pressurization to at least the maximum calculated accident containment pressure. Each valve to be tested is closed by normal operation without any preliminary exercising or adjustments (e.g., no tightening of the valve after closure by the valve actuator).

The administrative limit for measured leakage through the containment purge supply and exhaust valves is 15,610 standard cubic centimeter per minute (sccm) (Unit 1) and 14,200 sccm (Unit 2) per penetration when pressurized to at least the peak accident containment pressure (P_a = 47.0 psig).

The administrative limit for measured leakage through the containment vacuum/pressure relief valves is 7780 sccm (Unit 1 and Unit 2) per penetration when pressurized to at least the peak accident containment pressure (P_a = 47.0 psig).

Test Results

A review of the results of tests performed since the startup of the plant in 1985 identified 4 instances of an unacceptable leakage rate on Unit 1 and 5 instances of an unacceptable leakage rate on Unit 2. These instances are listed in Tables 1 and 2 for reference. A preventive maintenance program was initiated in late 1987 and implemented during the Unit 1 second refueling outage (1R2) and the Unit 2 second refueling outage

(2R2) in 1988. Since then, there were only two instances of the valves failing the leak rate test.

On October 26, 1989, the Unit 1 containment purge supply line penetration was unable to be pressurized for the leak rate test. The reason was leakage at the inside containment purge valve's T-ring. The T-ring was repaired and there has been no recurrence since the repair.

On February 21, 2003, the Unit 1 containment vacuum/pressure relief line penetration leak rate test result exceeded its administrative limit. The penetration was still able to maintain test pressure. Troubleshooting revealed that the outside containment isolation valves were leak-tight but the inside containment isolation valve disc was not in full engagement with the valve seat, allowing air to leak through. This was determined to have been due to the travel stop on the valve actuator being at the outer bound of its adjustment limit though it was still within the tolerance specification. The travel stop was adjusted and the post repair leakage rate test, performed on February 23, 2003, was within its administrative limit. This failure was due to slight misalignment of the valve actuator travel stop, and not due to degradation of the valve seat. This failure was determined to have been an isolated case for the containment purge and vacuum/pressure relief valves. No similar failure was identified when reviewing the maintenance history of the valve. In addition to the post repair leakage rate test performed on February 23, 2003, another leakage rate test was performed on May 16, 2003, after the penetration was used to regulate containment pressure. The leakage rate test result was again acceptable. The success of these two leakage rate tests adds confidence to the effectiveness of the repair. This recent instance of a failed Unit 1 leakage rate test does not affect the conclusion that DCPP has experienced a very low incidence of failure on these containment isolation valves.

For Unit 2, there have been no unacceptable leakage rate test results on the purge supply and exhaust, and vacuum/pressure relief penetrations since the preventive maintenance program was implemented in the 2R2 refueling outage in 1988.

4.3 Radiological Consequences

The consequence of an unisolated reactor containment building at the time of a fuel-handling accident or loss-of-coolant accident (LOCA) is the release of radionuclides to the environment. Offsite exposures due to containment leakage during a LOCA and fuel-handling accident have been evaluated in FSARU sections 15.5.17.3 and 15.5.22.2.

Fuel Handling Accident

For the fuel-handling accident inside containment, the DCPP analyses do not credit the containment purge supply and exhaust and vacuum/pressure relief valves to provide the containment isolation function. The analysis assumes that activity released from the containment refueling pool is transported to the environment over a short period of time through the open equipment hatch. Calculated radiological exposures from the fuel-handling accident inside containment are listed in FSARU Chapter 15, Table 15.5-50. They are also within the 10 CFR 100 limits.

Design Basis LOCA

For a LOCA, the DCPP analysis assumes containment leakage of 0.10 percent of the containment volume per day for the first 24 hours and 0.05 percent per day for the rest of the duration of the accident. Calculated radiological exposures from the LOCA are listed in FSARU Chapter 15, Table 15.5-75 and are within the 10 CFR 100 limits.

4.4 Risk Assessment

The containment ventilation system is comprised of one 48-inch purge supply line, one 48-inch purge exhaust line and one 12-inch containment vacuum/pressure relief line. They are modeled in the Probabilistic Risk Assessment studies. However, the 48-inch purge supply and exhaust lines are not normally used by the plant in Modes 1, 2, 3, and 4.

The 12-inch vacuum/pressure relief line is used to control containment pressure during normal plant operations. The major contributors to large early release frequencies (LERF) at DCPP are interfacing system LOCA, seismically-induced station blackout, and steam generator tube rupture. The containment vacuum/pressure relief line could only contribute to LERF if it were open at the time of the accident and failed to close. A review of the stroke testing history of these valves shows that they have operated reliably. Therefore, the scenario that these valves would fail to close when called upon is unlikely. If the line leaks excessively during a leakage rate test due to extending the surveillance interval, it will only contribute to a small release and not a large release. Therefore, extending the intervals between the leakage rate tests on the containment vacuum/pressure relief line will not significantly increase the LERF.

4.5 Reliability

Previous leak rate test results confirm that the containment purge supply and exhaust, and containment vacuum/pressure relief isolation valves

experience a very low incidence of leakage exceeding allowable administrative limits. From the most recent leakage rate test data, the total Unit 1 Type B and C leakages were 67.561 lb_{ms}/day or $0.092L_a$. The total Unit 2 Type B and C leakages were 65.745 lb_{ms}/day or $0.089L_a$. L_a is defined in 10 CFR 50, Appendix J, as the maximum allowable total leakage rate which is 0.10 percent of containment air weight per day at pressure P_a. For Diablo Canyon, P_a = 47 psig. These total Type B and C leakage results are well below the acceptable TS limit of $0.6L_a$. With such a large margin, the requirement to evaluate the need to reduce the total leakage limit of $0.6L_a$ for Type B and C leakages to accommodate an increase in the leakage test interval, as suggested in NRC Generic Letter 91-04, "Changes in Technical Specification Surveillance Intervals To Accommodate a 24 Month Fuel Cycle," is unnecessary. A preventive maintenance (PM) program on these containment isolation valves was implemented in the 1R2 and the 2R2 in 1988. This refueling-frequency maintenance helps to ensure that these containment isolation valves will perform their intended containment isolation function when needed. Since its inception, the PM program has been very effective in preventing recurrence of previously identified problems, with no known degradation trend for these valves. However, it is believed that for the containment purge supply and exhaust valves, the existing requirement in the TS to leakage rate test these valves within 92 days after opening should be maintained. This is a conservative decision because these valves are normally kept closed during normal plant operations and do not have a leakage rate test data base as large as that of the containment vacuum/pressure relief valves. The smaller diameter containment vacuum/pressure relief valves have been used to control containment pressure and have been opened more frequently than the purge supply and exhaust valves. The leakage rate tests on these vacuum/pressure relief valves, which are required by the current TS to be performed after valve opening, provided a much larger data base than that of the purge supply and exhaust valves to verify their reliability. As a result, the requirement to leakage rate test the containment vacuum/pressure relief valves within 92 days after valve opening will be deleted.

4.6 Summary

A thyroid dose limit of 300 rem at the exclusion area boundary and the low population zone outer boundary is specified in 10 CFR 100.11(a)(1) and (2). Calculated radiological exposures from the postulated LOCA containment leakage, listed in FSARU Chapter 15, Table 15.5-75, are within the 10 CFR 100 limits. The good performance history of these containment isolation valves, along with the very low total containment leakage rate, are reasonable bases to conclude that extending the leakage test interval will not increase the leakage beyond the $0.6L_a$ limit

such that the 10 CFR 100 exclusion area boundary and low population zone dose limits will not be exceeded. Therefore, extending the interval between operability tests of these containment isolation valves to 24 months with the provision that only the containment purge supply and exhaust valves are to be leakage rate tested within 92 days after opening is justified.

5.0 REGULATORY ANALYSIS

5.1 No Significant Hazards Consideration

PG&E has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No.

   Operability and leakage control effectiveness of the containment purge supply and exhaust and containment vacuum/pressure relief isolation valves have no effect on whether an accident occurs. Consequently, increasing the interval between surveillances of isolation valve leak rate does not involve any significant increase in the probability of an accident previously evaluated. The consequences of a unisolated reactor containment building at the time of a fuel-handling accident or loss of coolant accident (LOCA) are the release of radionuclides to the environment. Offsite exposures due to containment leakage during a LOCA and fuel-handling accident have been evaluated in Final Safety Analysis Report Update (FSARU) sections 15.5.17.3 and 15.5.22, respectively. For a LOCA, the Diablo Canyon Power Plant (DCPP) analyses assume containment leakage of 0.1 percent of the containment volume per day for the first 24 hours and 0.05 percent per day for the rest of the duration of the accident. Calculated radiological exposures from the LOCA are listed in FSARU Chapter 15, Table 15.5-75 and are within the 10 CFR 100 limits. The good performance history of these valves, along with the very low total containment leakage rate, are reasonable bases that there should not be any significant increase in the consequences of accident previously evaluated. For the fuel-handling accident inside containment, DCPP analyses do not credit these valves to provide a containment isolation function. It was assumed that activity released from the containment refueling pool is transported to the environment over a short time period through the open equipment hatch. Calculated radiological exposures from the fuel-handling accident inside containment are listed in FSARU Chapter 15, Table 15.5-50 and are also within the 10 CFR 100 limits. In summary, increasing the interval between leakage rate surveillances of these isolation valves will not involve any significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different accident from any accident previously evaluated?

   Response: No.

   The proposed changes do not involve a modification to the physical configuration of the plant (i.e., no new equipment will be installed) or change in the methods governing normal plant operation. The proposed change will not impose any new or different requirements or introduce a new accident initiator, accident precursor, or malfunction mechanism. The functions of the containment purge and containment vacuum/pressure relief systems are not altered by this change. Therefore, the proposed change does not create the possibility of a new or different accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

   Response: No.

   This proposed change only increases the interval between surveillance tests of the containment purge supply and exhaust, and containment vacuum/pressure relief valves. These valves have a good performance history and should be able to perform their intended containment isolation function reliably when called upon. In FSARU Chapter 15, two offsite exposure scenarios are applicable to the containment isolation function. These scenarios are LOCA containment leakage and fuel-handling accident inside containment. For LOCA containment leakage, the DCPP analyses assume containment leakage of 0.1 percent of the containment volume per day for the first 24 hours and 0.05 percent per day for the remainder of the accident. Calculated radiological exposures from a LOCA are listed in FSARU Chapter 15, Table 15.5-75 and meet the 10 CFR 100 limits. For the fuel-handling accident inside containment, the DCPP analyses do not credit these valves to provide a containment isolation function. The analyses assume that activity released from the containment refueling pool is transported to the environment over a short time period through the open equipment hatch. Calculated radiological exposures from the fuel-handling accident inside containment are listed in FSARU Chapter 15, Table 15.5-50 and also meet the 10 CFR 100 limits. If in the unlikely event that these valves exceed their leakage rate limits due to the extension of the surveillance interval, the consequences will be consistent with the containment leakage assumed in the accident analyses. Therefore, the extension of leakage rate test interval will have an insignificant radiological

consequence, and the proposed change will not involve any significant reduction in the margin of safety.

Based on the above evaluation, PG&E concludes that the proposed change presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and accordingly, a finding of "no significant hazards consideration" is justified.

5.2 Applicable Regulatory Requirements/Criteria

PG&E has implemented the performance-based Option B of 10 CFR 50, Appendix J for containment leakage rate testing. However, the current test intervals, six months for containment purge supply, purge exhaust, and containment vacuum/pressure relief valves with resilient seals and within 92 days after opening the valves, are not based on 10 CFR 50, Appendix J considerations. Generic Issue B-20, "Containment Leakage Due to Seal Deterioration," provides the basis for the determination that valves with resilient seals should be tested more frequently than required by Appendix J. Excessive leakage past the resilient seats of isolation valves in purge vent lines is typically caused by severe environmental conditions and/or wear due to frequent use. This led to the conclusion that the leakage test frequency for these valves should be keyed to the occurrence of severe environmental conditions and the use of the valves, rather than the current requirements of 10 CFR 50, Appendix J. The background for this conclusion is discussed in the NRC Inspection and Enforcement Circular 77-11, "Leakage of Containment Isolation Valves With Resilient Seats," issued on September 6, 1977. However, the industry has made considerable strides in correcting the deficiencies of containment purge and vent valves with resilient seals. Improved seal materials, quality control, and modifications of equipment and environmental conditions have adequately corrected valve deficiencies. For PG&E, the historical testing record for these valves has demonstrated a very low failure rate for the required leakage rate testing.

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

6.0 ENVIRONMENTAL CONSIDERATION

PG&E has evaluated the proposed amendment and has determined that the proposed amendment does not involve (i) a significant hazards consideration,

(ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

7.0 REFERENCES

The NRC has approved similar changes for a number of plants: Amendment Nos. 169 and 173 for Point Beach Nuclear Plant, Units 1 and 2, dated October 9, 1996; Amendment No. 49 for Seabrook Station, Unit 1, dated February 24, 1997; Amendment Nos. 207 and 188 for McGuire Nuclear Station, Units I and 2, dated September 4, 2002; and Amendment Nos. 147 and 135 for South Texas Project, Units 1 and 2, dated January 7, 2003. The NRC approval was granted on the basis of good valve performance demonstrated by plant-specific historical leakage rate testing results. Each plant showed that their containment purge and vent valves have had consistently good performance and are unlikely to experience significant degradation between tests when the test interval is lengthened.

Table 1

Unit 1 Containment Purge Valve Test Failure Assessment

Valve	Valve Application	Date of Test Failure	Failure	Cause	Corrective Action	Effectiveness
FCV-660	Normal Purge Supply	12/8/1986 10/26/1989	Would not pressurize during leak test Would not pressurize during leak test	Dirt on valve seats Leakage at T-ring	Cleaned valve seats Implemented Preventive Maintenance (PM) in 1988 Removed, reinstalled T-ring	No recurrence as a result of dirt on valve seats No recurrence due to T-ring problem
FCV-661	Normal Purge Supply	12/8/1986	Would not pressurize during leak test	Dirt on valve seats	Cleaned valve seats Implemented PM in 1988	No recurrence
RCV-11	Normal Purge Exhaust	No history of problems	N/A	N/A	Implemented PM in 1988	N/A
RCV-12	Normal Purge Exhaust	No history of problems	N/A	N/A	Implemented PM in 1988	N/A
FCV-662	Vacuum / Pressure Relief	2/21/2003	leakage exceeded admin limit during leak test	Closing travel stop did not allow proper seating	Adjusted closing travel stop Implemented PM in 1988	No recurrence
FCV-663	Vacuum Relief	No history of problems	N/A	N/A	Implemented PM in 1988	N/A
FCV-664	Pressure Relief	No history of problems	N/A	N/A	Implemented PM in 1988	N/A

Table 2

Unit 2 Containment Purge Valve Test Failure Assessment

Valve	Valve Application	Date of Test Failure	Failure	Cause	Corrective Action	Effectiveness
FCV-660	Normal Purge Supply	12/11/1987 8/16/1988	Would not pressurize during leak test Leakage exceeded admin limit during leak test	Dirt on valve seats Unknown	Cleaned valve seats Stroked valves and retested Implemented PM in 1988	No recurrence as a result of dirt No recurrence
FCV-661	Normal Purge Supply	No history of problems	N/A	N/A	Implemented PM in 1988	N/A
RCV-11	Normal Purge Exhaust	No history of problems	N/A	N/A	Implemented PM in 1988	N/A
RCV-12	Normal Purge Exhaust	7/20/1985	Failed to fully close during leak test	Dirt on valve seats	Cleaned valve seats Implemented PM in 1988	No recurrence
FCV-662	Vacuum / Pressure Relief	11/7/1988 11/14/1988	Leakage exceeded admin limit during leak test Leakage exceeded admin limit during leak test	Liner degradation Inlet flange leak	Replaced valve liner Replaced flange gasket Implemented PM in 1988	No recurrence No recurrence
FCV-663	Vacuum Relief	No history of problems	N/A	N/A	Implemented PM in 1988	N/A
FCV-664	Pressure Relief	No history of problems	N/A	N/A	Implemented PM in 1988	N/A

Proposed Technical Specification Changes (mark-up)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.3.7	----------NOTE---------- This surveillance is not required when the penetration flow path is isolated by a leak tested blank flange. ---------- Perform leakage rate testing for containment purge supply and exhaust and vacuum/pressure relief valves with resilient seals.	~~184 days~~ 24 months AND For containment purge supply and exhaust valves only, within 92 days after opening the valve
SR 3.6.3.8	Verify each automatic containment isolation valve that is not locked, sealed or otherwise secured in position, actuates to the isolation position on an actual or simulated actuation signal.	24 months
SR 3.6.3.9	Not used	
SR 3.6.3.10	Verify each 12 inch containment vacuum/pressure relief valve is blocked to restrict the valve from opening > 50°.	24 months
SR 3.6.3.11	Not used	

Proposed Technical Specification Changes (retyped)

SURVEILLANCE REQUIREMENTS (continued)

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Changes to Technical Specification Bases Pages
(For information only)

ACTIONS (continued)

D.1, D.2, and D.3

In the event one or more Containment Purge supply and exhaust, or Containment Pressure/Vacuum Relief isolation valves in one or more penetration flow paths are not within leakage limits, leakage must be reduced to within limits, or the affected penetration flow path must be isolated. For this Action, the leakage limit is as specified under the Leakage Rate Testing Program and exceeding this limit would require evaluation per Note 4 under LCO 3.6.3. The method of isolation must be by the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, closed manual valve (this includes power operated valves with power removed), or blind flange. A Containment Purge supply and exhaust, or Containment Pressure/Vacuum Relief isolation valve with resilient seals utilized to satisfy Required Action D.1 must have been demonstrated to meet the leakage requirements of SR 3.6.3.7. The specified Completion Time is reasonable, considering that one valve remains closed so that a gross breach of containment does not exist.

In accordance with Required Action D.2, this penetration flow path must be verified to be isolated on a periodic basis. The periodic verification is necessary to ensure that containment penetrations required to be isolated following an accident, which are no longer capable of being automatically isolated, will be in the isolation position should an event occur. This Required Action does not require any testing or valve manipulation. Rather, it involves verification, through a system walkdown, which may include the use of local or remote indicators, that those isolation devices outside containment capable of being mispositioned are in the correct position. For the isolation devices inside containment, the time period specified as "prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days" is based on engineering judgment and is considered reasonable in view of the inaccessibility of the isolation devices and other administrative controls that will ensure that isolation device misalignment is an unlikely possibility.

For the Containment Purge supply and exhaust, or Containment Pressure/Vacuum Relief isolation valve with resilient seal that is isolated in accordance with Required Action D.1, SR 3.6.3.7 must be performed at least once every 92 days. This assures that degradation of the resilient seal is detected and confirms that the leakage rate of the containment purge valve does not increase beyond the limits during the time the penetration is isolated. The normal Frequency for SR 3.6.3.7 ~~184 days~~ is 24 months per the Containment Leakage Rate Testing Program. ~~based on an NRC initiative, Generic Issue B-20 (Ref. 4)~~. Since more reliance is placed on a single valve while in this

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.6.3.4 (continued)

administrative controls and the probability of their misalignment is low. The SR specifies that containment isolation valves that are open under administrative controls are not required to meet the SR during the time they are open. This SR does not apply to valves that are locked, sealed, or otherwise secured in a closed position, since these were verified to be in the correct position upon locking, sealing, or securing.

This Note allows valves and blind flanges located in high radiation areas to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted during MODES 1, 2, 3, and 4, for ALARA reasons. Therefore, the probability of misalignment of these containment isolation valves, once they have been verified to be in their proper position, is small.

SR 3.6.3.5

Verifying that the isolation time of each automatic power operated containment isolation valve is within limits is required to demonstrate OPERABILITY. The isolation time test ensures the valve will isolate in a time period less than or equal to that assumed in the safety analyses. The isolation time and Frequency of this SR are in accordance with the Inservice Testing Program.

SR 3.6.3.6

Not Used

SR 3.6.3.7

~~For~~ The Containment Purge supply and exhaust and Containment Pressure/Vacuum Relief valves with resilient seals ~~additional~~ are leakage rate ~~testing~~ tested beyond the test requirements of 10 CFR 50, Appendix J, Option B ~~is required~~ to ensure OPERABILITY. Industry operating experience has demonstrated that this type of seal has the potential to degrade in a shorter time period than do other seal types. Based on this observation and the importance of maintaining these penetrations leak tight (due to the direct path between containment and the environment), a Frequency of 184 days was established as part of the NRC resolution of Generic Issue B-20, "Containment Leakage Due to Seal Deterioration" (Ref. 4). Since then, the reliability of these valves has improved with very low incidence of leakage exceeding the allowable administrative limits. This allows extending the leakage test frequency to 24 months.

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SURVEILLANCE REQUIREMENTS

SR 3.6.3.7 (continued)

Additionally, this SR must be performed within 92 days after opening the containment purge supply and exhaust valves. The 92 day Frequency was chosen recognizing that cycling ~~the~~ these valves could introduce additional seal degradation (beyond that occurring to a valve that has not been opened). Thus, decreasing the interval (from ~~184 days~~ 24 months) is a prudent measure after a valve has been opened. Because of proven reliability of the containment vacuum/pressure relief valves, no leakage testing is required after they are opened.

A Note is added to clarify that Leakage Rate testing is not required for containment purge valves with resilient seals when their penetration flow path is isolated by a leak tested blank flange.

SR 3.6.3.8

Automatic containment isolation valves close on a containment isolation (Phase A, Phase B, or CVI) signal to prevent leakage of radioactive material from containment following a DBA. This SR ensures that each automatic valve will actuate to its isolation position on a containment isolation signal. This surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass this Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.6.3.9

Not Used

SR 3.6.3.10

Verifying that each 12 inch containment pressure/vacuum relief valve is blocked to restrict opening to ≤ 50° is required to ensure that the valves can close under DBA conditions within the times assumed in the analyses of References 1 and 2. If a LOCA occurs, the containment pressure/vacuum relief valves must close to maintain containment leakage within the values assumed in the accident analysis. The 24 month Frequency is appropriate because the blocking devices are not typically removed except during maintenance.

SR 3.6.3.11

Not Used