



**Pacific Gas and
Electric Company**

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September 12, 2003

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PG&E Letter DCL-03-111

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 03-12
Revision to Technical Specifications 3.3.1, "RTS Instrumentation," and
3.3.2, "ESFAS Instrumentation"

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 Units 1 and 2 of the Diablo Canyon Power Plant respectively. This license amendment request (LAR) would revise Technical Specification (TS) 3.3.1, "Reactor Trip System (RTS) Instrumentation," and TS 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation," to change the current steam generator (SG) narrow range (NR) water level-low low setpoints from greater than or equal to 7.0 percent allowable value and 7.2 percent nominal value, to greater than or equal to 14.8 percent allowable value and 15.0 percent nominal value. These are the reactor trip setpoints specified in TS 3.3.1, Table 3.3.1-1, Function 14.a, and the auxiliary feedwater actuation setpoints specified in TS 3.3.2, Table 3.3.2-1, Function 6.d.1.

These changes are needed to correct nonconservative TS setpoints that were reported in Licensee Event Report 1-2002-001-00, "Technical Specification Violation Due to Nonconservative Steam Generator Narrow Range Water Level Instrumentation," submitted by PG&E Letter DCL-02-043, dated April 15, 2002. As an interim action until the TSs are revised, PG&E has implemented plant design changes to establish conservative SG NR water level-low low level setpoints at a nominal value of 15 percent.

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 TS pages, respectively. Enclosure 4 provides marked-up TS Bases pages for information. The TS Bases

AP01



changes will be implemented pursuant to TS 5.5.14, "Technical Specifications Bases Control Program."

Enclosure 5 provides a copy of WCAP-11082, Revision 6, "Westinghouse Setpoint Methodology for Protection Systems, Diablo Canyon Units 1 & 2, 24 Month Fuel Cycle Evaluation," (Proprietary). Enclosure 6 provides a copy of WCAP-13705, Revision 5, "Westinghouse Setpoint Methodology for Protection Systems, Diablo Canyon Units 1 & 2, 24-Month Fuel Cycle Evaluation," (Nonproprietary). The methodology described in WCAP-11082 and WCAP-13705 has been used to establish the revised SG NR water level-low low setpoints and remains unchanged from the NRC approved methodology described in WCAP-11802, Revision 5, dated January 1997.

WCAP-11082 contains information that is proprietary to Westinghouse. Accordingly, Enclosure 7 includes a Westinghouse authorization letter, CAW-03-1609, an accompanying affidavit, a Proprietary Information Notice, and a Copyright Notice. The affidavit is signed by Westinghouse, the owner of the information. The affidavit sets forth the basis on which the Westinghouse proprietary information contained in WCAP-11082 may be withheld from public disclosure by the Commission, and it addresses with specificity the considerations listed in paragraph (b)(4) of 10 CFR 2.790 of the Commission's regulations. PG&E requests that the Westinghouse proprietary information be withheld from public disclosure in accordance with 10 CFR 2.790.

Correspondence with respect to the copyright or proprietary aspects of the application for withholding related to the Westinghouse proprietary information or the Westinghouse affidavit provided in Enclosure 7 should reference Westinghouse Letter CAW-03-1609 and be addressed to H. A. Sepp, Manager of Regulatory and Licensing Engineering, Westinghouse Electric Company, P.O. Box 355, Pittsburgh, Pennsylvania 15230-0355.

PG&E has determined that this LAR does not involve a significant hazard 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.

Note that this LAR proposes changes to TS pages 3.3-14 and 3.3-31. Page 3.3-14 is also revised by changes proposed by PG&E Letter DCL-02-097, "License Amendment Request 02-05, Revision to Technical Specification Table 3.3.1-1, 'Reactor Trip System Instrumentation,' and Revised Reactor Coolant System Flow Measurement," dated August 27, 2002. LAR 02-05 has been approved by License Amendments 161 (Unit 1) and 162 (Unit 2) dated August 21, 2003, but has not yet been implemented. Page 3.3-31 is revised by changes proposed by PG&E Letter



DCL-02-125, "License Amendment Request 02-06, Revision to Technical Specifications 3.3.1, "Reactor Trip System (RTS) Instrumentation" and 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation." The changes proposed by this LAR and LARs 02-05 and 02-06 are independent and can be implemented in any order.

The changes proposed in this LAR are not required to address an immediate safety concern. PG&E requests approval of this LAR no later than September 2004, and requests the LAR be made effective upon NRC issuance, to be implemented within 90 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

jer/3664
Enclosures

cc: Edgar Bailey, DHS
Thomas P. Gwynn
David L. Proulx
Diablo Distribution
cc/enc: Girija S. Shukla

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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

AFFIDAVIT

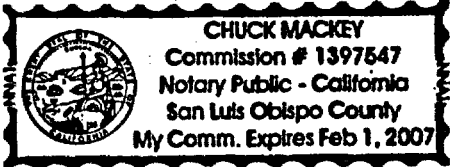
David H. Oatley, of lawful age, first being duly sworn upon oath says that he is Vice President and General Manager - Diablo Canyon of Pacific Gas and Electric Company; that he has executed license amendment request LAR 03-12 on behalf of said company with full power and authority to do so; that he is 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

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

Subscribed and sworn to before me this 12th day of September, 2003.

Chuck Mackey
Notary Public
County of San Luis Obispo
State of California



EVALUATION

1.0 DESCRIPTION

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

The proposed changes would revise Technical Specification (TS) 3.3.1, "Reactor Trip System (RTS) Instrumentation," and TS 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation," to change the current steam generator (SG) narrow range (NR) water level-low low setpoints from greater than or equal to 7.0 percent allowable value and 7.2 percent nominal value, to greater than or equal to 14.8 percent allowable value and 15.0 percent nominal value. These are the reactor trip setpoints specified in TS 3.3.1, Table 3.3.1-1, Function 14.a, and the auxiliary feedwater (AFW) actuation setpoints specified in TS 3.3.2, Table 3.3.2-1, Function 6.d.1.

2.0 PROPOSED CHANGE

TS 3.3.1, Table 3.3.1-1, Function 14.a specifies a reactor trip setpoint for SG NR water level-low low of greater than or equal to 7.0 percent allowable value and 7.2 percent nominal value. These setpoints will be changed to greater than or equal to 14.8 percent allowable value and 15.0 percent nominal value.

TS 3.3.2, Table 3.3.2-1, Function 6.d.1 specifies AFW actuation for SG NR water level-low low of ≥ 7.0 percent allowable value and 7.2 nominal value. These setpoints will be changed to ≥ 14.8 percent allowable value and 15.0 percent nominal value.

These changes are needed to correct nonconservative SG NR water level-low low TS setpoints reported in Licensee Event Report 1-2002-001-00, "Technical Specification Violation Due to Nonconservative Steam Generator Narrow Range Water Level Instrumentation," submitted by PG&E Letter DCL-02-043, dated April 15, 2002.

This enclosure (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 TS pages, respectively. Enclosure 4 provides marked-up TS Bases pages for information. The TS Bases changes will be implemented pursuant to TS 5.5.14, "Technical Specifications Bases Control Program."

3.0 BACKGROUND

3.1 SG NR Water Level-Low Low Setpoints

TS 3.3.1, Table 3.3.1-1 Function 14.a, "Steam Generator (SG) Water Level-Low Low," requires three NR level channels per SG with a nominal trip setpoint (NTS) of 7.2 percent. This function provides a reactor trip to protect the reactor against a loss of heat sink in the event of a loss of feedwater flow to one or more SGs. The SGs are the heat sink for the reactor. In order to act as a heat sink, the SGs must contain a minimum amount of water.

TS 3.3.2, Table 3.3.2-1 Function 6.d.1, "SG Water Level-Low Low," requires three NR level channels per SG with a NTS of 7.2 percent. This function provides an automatic start signal for the AFW pumps to protect the reactor against a loss of heat sink. The AFW system is designed to provide a secondary side heat sink for the reactor in the event that the main feedwater system is not available.

3.2 Nuclear Safety Advisory Letters

In early 2002, Westinghouse issued three Nuclear Safety Advisory Letters (NSALs) concerning SG water level setpoint analyses:

NSAL-02-4, "Maximum Reliable Indicated Steam Generator Water Level," dated February 19, 2002, reported that typical SG water level instrument uncertainty calculations performed by Westinghouse do not reflect the void content of the two-phase mixture above the mid-deck plate. The NSAL recommended that the effect of void fraction above the mid-deck plate be accounted for in the SG NR water level-high high level NTS.

NSAL-02-3, Revision 1, "Steam Generator Mid-deck Plate Pressure Loss Issue," dated April 8, 2002, reported that Westinghouse-designed SGs incorporate a mid-deck plate at the top of the primary separator assembly. The mid-deck plate is located between the upper and lower taps used for SG water level measurements (see Figure 1). When some of the steam in the SG flows through the separator downcomer instead of the separator orifice, this steam with some entrained moisture flows upwards through the flow area in the mid-deck plate. This steam flow through the mid-deck plate results in a measurable pressure drop at higher steam flows. This pressure drop adversely affects SG level uncertainty calculations as a bias that was not previously

included as a process measurement accuracy (PMA) term for RTS or ESFAS setpoints.

The effect of the mid-deck plate has not been accounted for previously and has the potential to adversely affect SG level low-low uncertainty calculations as a bias in the indicated high direction.

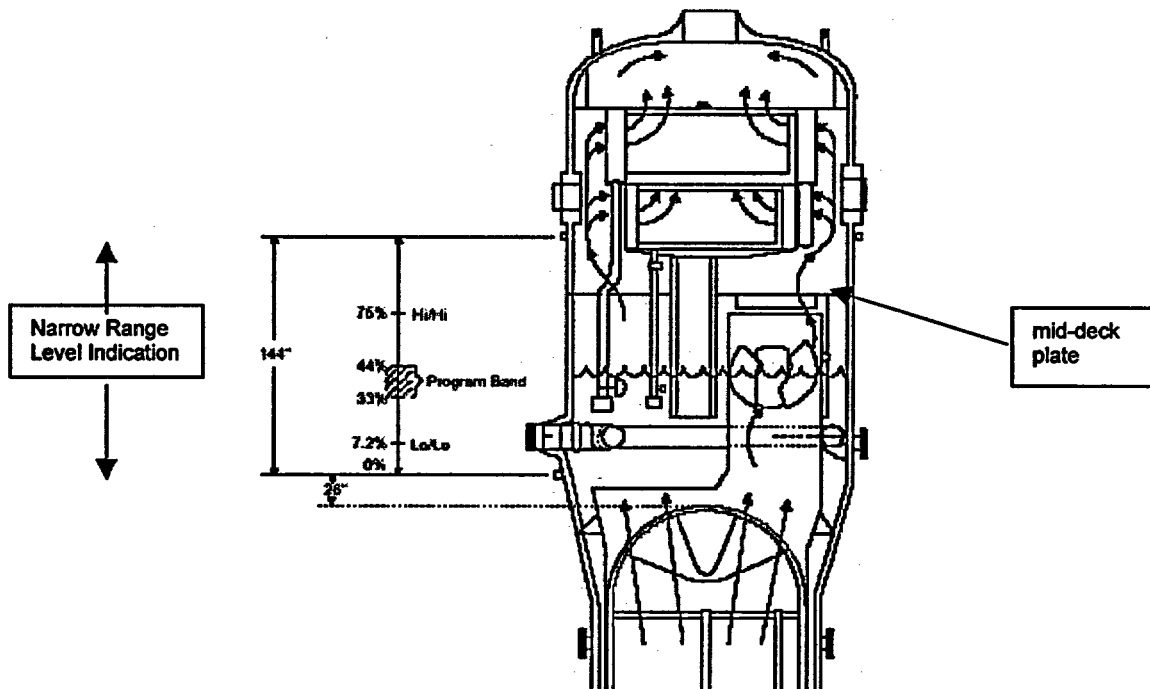


Figure 1
Steam Generator Narrow Range Level Indication

NSAL-02-3 recommended that the SG low-low level NTS and if applicable, the low-low level anticipated transient without scram (ATWS) mitigation system actuation circuitry (AMSAC) actuation setpoint, account for the presence of the mid-deck plate.

NSAL-02-5, Revision 1, "Steam Generator Water Level Control System Uncertainty Issue," dated April 22, 2002, reported that typical SG water level control uncertainties utilized as initial condition assumptions for SG water level related safety analyses may not be bounding. The NSAL recommended that plants determine whether or not SG water level uncertainties currently being used for initial condition assumptions in their safety

analyses bound the calculated uncertainties for their plant and, if necessary, to re-perform the safety analyses with the new uncertainties.

3.3 Effect of Mid-Deck Plate on DCPG SG Instrumentation

The mid-deck plate differential pressure (dP) is the dominant factor of six new PMA terms identified by Westinghouse in the SG NR water level-low low and SG NR water level-high high calculations (Enclosures 5 and 6, Tables 3-11 and 3-18).

Three SG NR level channels are installed per SG as part of the reactor protection system. Two out of three SG channels are required to trip the reactor and start the AFW pumps in the event of a steam or feed line break at power. The mid-deck plate dP adversely affects the SG NR instrumentation by biasing the output high at high steam flow conditions, effectively delaying the point in time at which the low-low level measurement is reduced below the actuation setpoint. The SG NR water level-high high level trip setpoint is made more conservative by this mid-deck plate bias and does not create a significant possibility of inadvertent actuation during previously evaluated operational transients.

The effect of the mid-deck plate on SG water level indication and setpoint methodology was discovered by PG&E on February 14, 2002, as reported in Licensee Event Report (LER) 1-2002-001-00, "Technical Specification Violation Due to Nonconservative Steam Generator Narrow Range Water Level Instrumentation," submitted by PG&E Letter DCL-02-043, dated April 15, 2002 (Reference 5). As an interim action until the TSs are revised, PG&E has implemented plant design changes to establish conservative SG NR water level-low low setpoints at a nominal value of 15 percent.

3.4 Previous Change in SG NR Water Level-Low Low Setpoints

TS 3.3.1 and 3.3.2 SG NR water level-low low setpoints were originally set at 15 percent NTS. License Amendments No. 34 (Unit 1) and No. 33 (Unit 2) dated April 11, 1989, reduced the setpoints to 7.2 percent NTS. The setpoints were reduced to decrease the number of unnecessary reactor trips. The setpoint reduction was justified on the basis of replacement of Barton 764 SG level transmitters with more accurate Rosemount 1154 transmitters and on the use of an improved setpoint calculation methodology using WCAP-11784, "Calculation of Steam Generator Level Low and Low-Low Trip Setpoint With Use of a

Rosemount 1154 Transmitter," dated March 1988. The effect of the mid-deck plate dP was not factored into the setpoint at this time.

Subsequently, a digital feedwater control system (DFWCS) was installed in both units in 1990 which significantly improved SG water level control capability, particularly at low power levels. Also, the replacement of the Westinghouse 7100 process protection system with Eagle 21 digital process protection equipment (Reference License Amendments Nos. 84 (Unit 1) and 83 (Unit 2), dated October 7, 1993) included a trip time delay functional upgrade to reduce unneeded SG water level-low low reactor trips below 50 percent power. The improved SG water level control provided by the DFWCS, the trip time delay provided by Eagle 21 and operational improvements, such as deferring paralleling the main generator during startups until about 12 percent power in conjunction with use of the steam dumps, essentially eliminated reactor trips due to SG low level transients. With these improvements, raising the SG NR water level-low low setpoints back to 15 percent is not expected to result in an increase in reactor trips due to SG low level transients.

3.5 Anticipated Transient Without Scram (ATWS)

One SG NR level instrument per SG provides input to AMSAC. If an ATWS event occurs, the AMSAC system trips the main turbine, starts AFW, and isolates SG blowdown on coincidence of low-low SG water level in three out of four SGs. AMSAC utilizes one SG NR water level signal from each loop with a setpoint of 5 percent. The AMSAC system is not safety-related and not controlled by TS, but is controlled by an equipment control guideline (ECG). Actuation of the AMSAC system prior to the event reported in LER 1-2002-001-00 would have been delayed by the nonconservative effect of the mid-deck plate dP. As an interim action until confirmatory analysis was completed, the AMSAC setpoint was conservatively raised to 11 percent of narrow range span, and the affected ECG was revised accordingly. This setpoint has subsequently been determined to be acceptable.

4.0 TECHNICAL ANALYSIS

Following the trip event reported in LER 1-2002-001-00, and the issuance of NSALs 02-3, 02-4, and 02-5 by Westinghouse, PG&E contracted with Westinghouse to evaluate the DCPG SG water level setpoints and uncertainties addressed in the NSALs.

The conclusion of the Westinghouse evaluation, with which PG&E concurs, is that the only TS changes required to address the NSALS are to increase the SG NR water level-low low setpoints for reactor trip specified in TS 3.3.1, Table

3.3.1-1, Function 14.a, and for AFW actuation specified in TS 3.3.2, Table 3.3.2-1, Function 6.d.1.

The methodology for calculating these new setpoints remains the same as previously approved and as described in WCAP-11082, Revision 5 dated January 1997 (Reference 6).

WCAP-11082, Revision 5, was submitted in PG&E Letter DCL-96-214, "Transmittal of WCAPs to Support NRC Review of License Amendment Request 96-10, Revision of Technical Specifications to support Extended Fuel Cycles to 24 Months," dated January 31, 1997 in support of LAR 96-10 submitted in PG&E letter DCL-96-213, "License Amendment Request 96-10 Revision of Technical Specifications to Support Extended Fuel Cycles to 24 Months," dated December 9, 1996, and approved by the NRC for DCP by Amendment No. 122 to Facility Operating License No. DPR-80 and Amendment No. 120 to Facility Operating License No. DPR-82 in letter "Issuance of Amendments for Diablo Canyon Nuclear Power Plant, Unit No. 1 (TAC No. M97472) and Unit No. 2 (TAC No. M97473)," dated February 17, 1998.

In WCAP-11082, Revision 6, additional PMA terms have been added to account for the uncertainty effects, including the mid-deck plate dP, reported in NSALs 02-3, 02-4, and 02-5. WCAP-11082, Revisions 5 and Revision 6 define PMA as:

Process Measurement Accuracy (PMA)

Allowance for noninstrument related effects which have a direct bearing on the accuracy of an instrument channel's reading, e.g., temperature stratification in a large diameter pipe, fluid density in a pipe or vessel.

To account for the effects reported in NSALs 02-3, 02-4, and 02-5, WCAP-11082, Revision 6 contains five new PMA terms that have been added to the SG NR water level-low low calculation (Enclosures 5 and 6, Table 3-11) and six new PMA terms that have been added to the SG NR water level-high high calculation (Enclosures 5 and 6, Table 3-18).

Using the revised setpoint calculations of WCAP-11082, Revision 6 and WCAP-13705, Revision 5, the SG NR water level-low low setpoints for reactor trip for TS 3.3.1, Table 3.3.1-1, Function 14.a, and for AFW actuation in TS 3.3.2, Table 3.3.2-1, Function 6.d.1 should be revised from greater than or equal to 7.0 percent allowable and 7.2 percent nominal, to greater than or equal to 14.8 percent allowable and 15.0 percent nominal.

No change in setpoint is required for the SG NR water level-high high trip. These are specified in TS 3.3.2, Table 3.3.2-1, Function 5.b as 75 percent nominal and 75.2 percent allowable, and have been verified as acceptable. Also, while not necessary to support this LAR, Westinghouse has reviewed the effect of the SG

water level control uncertainties reported in NSAL-02-5. The results of this review indicate that the SG water level control uncertainties assumed in the SG water level related safety analyses described in the Final Safety Analysis Report Update (FSARU), i.e., loss of feedwater, loss of offsite power, main feedwater line break, loss-of-coolant accidents (for containment integrity), and steam line break mass and energy releases inside and outside containment, remain bounding and require no change to the FSARU.

CONCLUSION

To account for the dominant effects of the SG mid-deck plate and other uncertainties reported in NSALs 02-3, 02-4 and 02-5, the SG NR water level-low low trip setpoints should be raised from greater than or equal to 7.0 percent allowable value and 7.2 percent nominal value, to greater than or equal to 14.8 percent allowable value and 15.0 percent nominal value. These setpoints will provide sufficient margin to protect the reactor against a loss of heat sink in the event of a loss of feedwater flow to one or more SGs as assumed in the FSARU.

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.

The protection system performance will remain within the bounds of the previously performed accident analyses since there are no hardware changes and the actuation logic changes are conservative. The design of the steam generator (SG) water level sensing equipment and the coincidence logic will be unaffected. The only physical change to the reactor trip system (RTS) and the engineered safety feature actuation system (ESFAS) instrumentation is the increased actuation setpoints. These changes have already been implemented in the plant through the design change process. These changes are in the conservative direction, i.e., a trip actuation signal will be generated sooner for an event that challenges the ability of the SGs to provide a heat sink for the reactor. In all other regards, the design of the RTS and ESFAS instrumentation will

be unaffected. These protection systems will continue to function in a manner consistent with the plant design basis.

The probability and consequences of accidents previously evaluated in the Final Safety Analysis Report Update (FSARU) are not adversely affected because changes to the RPS and ESFAS trip setpoints assure a conservative response of the affected trip functions, consistent with the safety analyses and licensing basis.

The proposed changes will not affect the probability of any accident initiators. There will be no degradation in the performance of, or an increase in the number of challenges imposed on, safety-related equipment assumed to function during an accident. There will be no change to normal plant operating parameters or accident mitigation performance.

The proposed changes will not alter any assumptions or change any mitigation actions in the radiological consequence evaluations in the FSARU.

Therefore the proposed changes do not involve a 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 change any hardware or the design functions of any structures, systems or components involved, other than to revise the SG narrow range (NR) water level-low low setpoints; changes that have already been implemented. The proposed changes will not affect the normal method of plant operation or change any operating parameters. No new accidents, accident initiators, or failure mechanisms are created by the proposed changes.

Therefore, the proposed changes do 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.

The SG NR water level-low low setpoints specified in the Technical Specifications have already been increased in the conservative direction.

The safety analysis limits assumed in the transient and accident analyses remain unchanged. None of the acceptance criteria for any accident analysis are changed.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above evaluation, PG&E concludes that the proposed changes present 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

General Design Criterion (GDC) 13 requires that instrumentation shall be provided to monitor variables and systems over their anticipated ranges for normal operation, for anticipated operational occurrences, and for accident conditions as appropriate to assure adequate safety, including those variables and systems that can affect the fission process, the integrity of the reactor core, the reactor coolant pressure boundary, and the containment and its associated systems.

GDC-20 requires that the protection system(s) shall be designed (1) to initiate automatically the operation of appropriate systems including the reactivity control systems, to assure that specified acceptable fuel design limits are not exceeded as a result of anticipated operational occurrences and (2) to sense accident conditions and to initiate the operation of systems and components important to safety.

GDC-21 requires that the protection system(s) shall be designed for high functional reliability and testability.

GDC-22 through GDC-25 and GDC-29 require various design attributes for the protection system(s), including independence, safe failure modes, separation from control systems, requirements for reactivity control malfunctions, and protection against anticipated operational occurrences.

10 CFR 50.55a(h) requires that the protection systems meet IEEE 279-1971. IEEE 279-1971 requires that protection circuits must be able to withstand both an input failure to the control system, which may then require the protection function actuation, and a single failure in the other channels providing the protection function actuation, and that a single failure will neither cause nor prevent the protection function actuation.

The changes proposed by this LAR will result in no changes to the RTS or ESFAS instrumentation design such that compliance with any of the regulatory requirements discussed above will be affected. The proposed amendment will revise the SG NR water level-low low protection setpoints to assure continued compliance with the above regulations.

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

7.1 References

1. Westinghouse Safety Advisory Letter NSAL-02-3, "SG Mid-deck Plate Pressure Loss Issue," Revision 1, April 8, 2002.
2. Westinghouse Safety Advisory Letter NSAL-02-4, "Maximum Reliable Indicated SG Water Level," February 19, 2002.
3. Westinghouse Safety Advisory Letter NSAL-02-5, "SG Water Level Control System Uncertainty Issue," Revision 1, April 22, 2002.
4. Diablo Canyon Power Plant License Amendment No. 34 (Unit 1) and No. 33 (Unit 2) dated April 11, 1989.
5. LER 1-2002-001-00, "Technical Specification Violation Due to Nonconservative Steam Generator Narrow Range Water Level Instrumentation," PG&E Letter DCL-02-043, dated April 15, 2002.

6. **WCAP-11082, Revision 5, "Westinghouse Setpoint Methodology for Protection Systems, Diablo Canyon Units 1 & 2, 24 Month Fuel Cycle Evaluation," (Proprietary) dated January 1997.**
7. **WCAP-11082, Revision 6, "Westinghouse Setpoint Methodology for Protection Systems, Diablo Canyon Units 1 & 2, 24 Month Fuel Cycle Evaluation," (Proprietary) dated February 2003.**
8. **WCAP-13705, Revision 5, "Westinghouse Setpoint Methodology for Protection Systems, Diablo Canyon Units 1 & 2, 24 Month Fuel Cycle Evaluation," (Non-Proprietary) dated February 2003.**

Proposed Technical Specification Changes (Mark-up)

Remove Page

**3.3-14
3.3-31**

Insert Page

**3.3-14
3.3-31**

Table 3.3.1-1 (page 3 of 7)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL ^(a) TRIP SETPOINT
10. Reactor Coolant Flow—Low	1 ^(g)	3 per loop	M	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ 89.8% ^(l) of MMF/ loop	90% ^(l) of MMF/loop
11. Reactor Coolant Pump (RCP) Breaker Position	1 ^(g)	1 per RCP	M	SR 3.3.1.14	NA	NA
12. Undervoltage RCPs	1 ^(g)	2 per bus	M	SR 3.3.1.9 SR 3.3.1.10 SR 3.3.1.16	≥ 7877 V each bus	8050 V each bus
13. Underfrequency RCPs	1 ^(g)	3 per bus	M	SR 3.3.1.9 SR 3.3.1.10 SR 3.3.1.16	≥ 53.9 Hz each bus	54.0 Hz each bus
14. a. Steam Generator (SG) Water Level—Low Low	1,2	3 per SG	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ 7.0% ↑ 14.8	7.2% ↑ 15.0
b. SG Water Level - Low Low Trip Time Delay (TTD)	1,2	4	X	SR 3.3.1.7 SR 3.3.1.10	TTD ≤ 1.01 TD (Note 3) for RCS loop ΔT variable input ≤ 50.7% RTP and TTD=0 for RCS loop ΔT variable input > 50.7 % RTP	TTD ≤ TD (Note 3) for RCS loop ΔT variable input 50% RTP TTD=0 for RCS loop ΔT variable input 50% RTP
15. Not used						

(continued)

- (a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.
- (g) Above the P-7 (Low Power Reactor Trips Block) interlock.
- (l) Minimum measured flow (MMF) is 89,800 gpm per loop for Unit 1 and 90,625 gpm per loop for Unit 2.

Table 3.3.2-1 (page 5 of 7)
Engineered Safety feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL ^(a) TRIP SETPOINT
5. Turbine Trip and Feedwater Isolation (continued)						
b. SG Water Level-High High (P-14)	1,2 ^(b)	3 per SG	J	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ 75.2%	75%
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
6. Auxiliary Feedwater						
a. Manual	1,2,3	1 sw/pp	N	SR 3.3.2.13	NA	NA
b. Automatic Actuation Logic and Actuation Relays (Solid State Protection System)	1,2,3	2 trains	G	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA
c. Not used					14.8 ↓	15.0 ↓
d.1 SG Water Level-Low Low	1,2,3	3 per SG	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ 7.0%	7.2%

(continued)

- (a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.
- (j) Except when all MFIVs, MFRVs, and associated bypass valves are closed and de-activated or isolated by a closed manual valve.

Proposed Technical Specification Changes (Retyped)

Table 3.3.1-1 (page 3 of 7)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL ^(e) TRIP SETPOINT
10. Reactor Coolant Flow—Low	1 ^(g)	3 per loop	M	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ 89.8% ⁽ⁱ⁾ of MMF/ loop	80% ⁽ⁱ⁾ of MMF/loop
11. Reactor Coolant Pump (RCP) Breaker Position	1 ^(g)	1 per RCP	M	SR 3.3.1.14	NA	NA
12. Undervoltage RCPs	1 ^(g)	2 per bus	M	SR 3.3.1.9 SR 3.3.1.10 SR 3.3.1.16	≥ 7877 V each bus	8050 V each bus
13. Underfrequency RCPs	1 ^(g)	3 per bus	M	SR 3.3.1.9 SR 3.3.1.10 SR 3.3.1.16	≥ 53.9 Hz each bus	54.0 Hz each bus
14. a. Steam Generator (SG) Water Level—Low Low	1,2	3 per SG	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ 14.8%	15.0%
b. SG Water Level - Low Low Trip Time Delay (TTD)	1,2	4	X	SR 3.3.1.7 SR 3.3.1.10	TTD ≤ 1.01 TD (Note 3) for RCS loop ΔT variable input ≤ 50.7% RTP and TTD=0 for RCS loop ΔT variable input > 50.7 % RTP	TTD ≤ TD (Note 3) for RCS loop ΔT variable input 50% RTP TTD=0 for RCS loop ΔT variable input 50% RTP
15. Not used						

(continued)

(a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.

(g) Above the P-7 (Low Power Reactor Trips Block) interlock.

(i) Minimum measured flow (MMF) is 89,800 gpm per loop for Unit 1 and 90,625 gpm per loop for Unit 2.

Table 3.3.2-1 (page 5 of 7)
Engineered Safety feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL ^(a) TRIP SETPOINT
5. Turbine Trip and Feedwater Isolation (continued)						
b. SG Water Level-High High (P-14)	1,2 ^(j)	3 per SG	J	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ 75.2%	75%
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
6. Auxiliary Feedwater						
a. Manual	1,2,3	1 sw/pp	N	SR 3.3.2.13	NA	NA
b. Automatic Actuation Logic and Actuation Relays (Solid State Protection System)	1,2,3	2 trains	G	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA
c. Not used						
d.1 SG Water Level-Low Low	1,2,3	3 per SG	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ 14.8%	15.0%

(continued)

- (a) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.
- (j) Except when all MFIVs, MFRVs, and associated bypass valves are closed and de-activated or isolated by a closed manual valve.

Changes to Technical Specification Bases Pages

BASES

BACKGROUND
(continued)

Trip Setpoints and Allowable Values

The Trip Setpoints are the nominal values at which the bistables are set. Any bistable is considered to be properly adjusted when the "as left" value is within the two sided tolerance band for CHANNEL CALIBRATION tolerance. The calibration tolerance, after conversion, should correspond to the rack comparator setting accuracy defined in the latest setpoint study.

The Trip Setpoints used in the bistables are based on the analytical limits stated in Reference 1. The selection of these Trip Setpoints is such that adequate protection is provided when all sensor and processing time delays are taken into account. To allow for calibration tolerances, instrumentation uncertainties, instrument drift, and severe environment errors for those RTS channels that must function in harsh environments as defined by 10 CFR 50.49 (Ref. 5), the Trip Setpoints and Allowable Values specified in Table 3.3.1-1 in the accompanying LCO are conservatively adjusted with respect to the analytical limits. A detailed description of the methodology used to calculate the Trip Setpoints, including their explicit uncertainties, is provided in the WCAP-11082, Rev. 6, "Westinghouse Setpoint Methodology for Protection Systems Diablo Canyon Units 1 & 2, 24 Month Fuel Cycle Evaluation," ~~January 1997~~ (Ref. 17) and calculation NSP-1-20-13F Rev 1 (Ref. 18) and NSP-2-20-13F Rev 1 (Ref. 19). Interlock setpoints are Nominal Values provided in the PLS (Westinghouse Precautions Limitations and Setpoints) and their allowable values are calculated in Calculation J-110 Rev 5 (Ref. 20). The actual nominal Trip Setpoint entered into the bistable is more conservative than that specified by the Allowable Value to account for Rack Drift and Rack Measuring and Test Equipment uncertainties. One example of such a change in measurement error is drift during the surveillance interval. If the measured setpoint does not exceed the Allowable Value, the bistable is considered OPERABLE.

Rack drift in excess of the Allowable Value exhibits the behavior that the rack has not met its allowance. Since there is a small statistical chance that this will happen, an infrequent excessive drift is expected. Rack or sensor drift in excess of the allowance that is more than occasional may be indicative of more serious problems and warrants further investigation. In the event a channel's setpoint is found nonconservative with respect to the specified Trip Setpoint, but more conservative than the Allowable Value, the setpoint must be adjusted consistent with the Trip Setpoint value. When a channel's Trip Setpoint is nonconservative with respect to the Allowable Value, declare the channel inoperable and apply the applicable ACTION statement until the channel is returned to OPERABLE status with its Setpoint adjusted consistent with the Trip Setpoint value.

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(continued)

BASES

REFERENCES
(Continued)

8. WCAP 13632 - PA-1, Rev. 2 "Elimination of Pressure Sensor Response Time Testing Requirements."
 9. FSAR, Chapter 9.2.7 & 9.2.2.
 10. FSAR, Chapter 10.3 & 10.4
 11. FSAR, Chapter 8.3.
 12. DCM S-38A, "Plant Protection System"
 13. WCAP-13878, "Reliability of Potter & Brumfield MDR Relays", June 1994.
 14. WCAP-13900, "Extension of Slave Relay Surveillance Test intervals", April 1994.
 15. WCAP-14117, "Reliability Assessment of Potter and Brumfield MDR Series Relays." 6
 16. WCAP-9226, "Reactor Core Response to Excessive Secondary Steam Releases," Revision 1, January 1978.
 17. WCAP-11082, Rev. ~~6~~, "Westinghouse Setpoint Methodology for Protection Systems, Diablo Canyon Units 1 and 2 24 Month Fuel Cycle Evaluation," ~~January 1997~~ February 2003
 18. NSP-1-20-13F Unit 1 "Turbine Auto Stop Low Oil Pressure."
 19. NSP-2-20-13F Unit 2 "Turbine Auto Stop Low Oil Pressure."
 20. J-110 "24 Month Fuel Cycle Allowable Value Determination / Documentation and ITDP Uncertainty Sensitivity."
 21. IEEE Std. 338-1977.
 22. License Amendment 61/60, May 23, 1991.
 23. Westinghouse Technical Bulletin ESBU-TB-92-14-R1, "Decalibration Effects of Calorimetric Power Measurements on the NIS High Power Reactor Trip at Power Levels less than 70% RTP," dated February 6, 1996.
 24. DCPD NSSS Calculation N-212, Revision 1.
 25. License Amendments 157/157, June 2, 2003.
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BASES

BACKGROUND

Signal Processing Equipment (continued)

If a channel has been bypassed for any purpose, the bypass is continuously indicated in the control room as required by applicable codes and standards. As an alternate to testing in the bypass mode, testing in the trip mode is also possible and permitted.

Trip Setpoints and Allowable Values

The Trip Setpoints are the nominal values at which the bistables are set. Any bistable is considered to be properly adjusted when the "as left" value is within the two-sided tolerance band for calibration accuracy.

The Trip Setpoints used in the bistables are based on the analytical limits stated in Reference 2. The selection of these Trip Setpoints is such that adequate protection is provided when all sensor and processing time delays are taken into account. To allow for calibration tolerances, instrumentation uncertainties, instrument drift, and severe environment errors for those ESFAS channels that must function in harsh environments as defined by 10 CFR 50.49 (Ref. 5), the Trip Setpoints and Allowable Values specified in Table 3.3.2-1 in the accompanying LCO are conservatively adjusted with respect to the analytical limits. A detailed description of the methodology used to calculate the Trip Setpoints, including their explicit uncertainties, is provided in WCAP-11082, Rev. 5, "Westinghouse Setpoint Methodology for Protection Systems Diablo Canyon Units 1 & 2, 24 Month Fuel Cycle Evaluation," January 1997 (Ref. 12), calculation J-54 Rev 15 (Ref. 13) and calculation J-110 Rev 5 (Ref. 14). Interlock setpoints are nominal values provided in the PLS (Westinghouse Precautions Limitations and Setpoints) and their allowable values are calculated in Calculation J-110 Rev. 5 (Ref. 14). The actual nominal Trip Setpoint entered into the bistable is more conservative than that specified by the Allowable Value to account for Rack Drift and Rack Measuring and Test Equipment uncertainties. The calibration tolerance, after conversion, should correspond to the rack comparator setting accuracy defined in the latest setpoint study. One example of such a change in measurement error is drift during the surveillance interval. If the measured setpoint does not exceed the Allowable Value, the bistable is considered OPERABLE. Rack drift in excess of the Allowable Value exhibits the behavior that the rack has not met its allowance. Since there is a small statistical chance that this will happen, an infrequent excessive drift is expected. Rack or sensor drift in excess of the allowance that is more than occasional may be indicative of more serious problems and warrants further investigation.

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(continued)

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REFERENCES
(Continued)

9. WCAP-13878, "Reliability of Potter & Brumfield MDR Relays", June 1994.
 10. WCAP-14117, "Reliability Assessment of Potter and Brumfield MDR Series Relays."
 11. WCAP-13632-P-A, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements," January 1996.
 12. WCAP-11082, Revision 6, "Westinghouse Setpoint Methodology for Protection Systems, Diablo Canyon Units 1 and 2, 24 Month Fuel Cycle Evaluation," ~~January 1997.~~ February 2003.
 13. Calculation J-54, "Nominal Setpoint Calculation for Selected PLS Setpoints."
 14. J-110, "24 Month Fuel Cycle Allowable Value Determination / Documentation and ITDP Uncertainty Sensitivity."
 15. License Amendment 61/60, May 23, 1991.
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