February 9, 2000

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Mr. Gregory M. Rueger
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Pacific Gas and Electric Company
Diablo Canyon Nuclear Power Plant
P. O. Box 3
Avila Beach, CA 94177

SUBJECT: DIABLO CANYON NUCLEAR POWER PLANT, UNIT NOS. 1 AND 2 - ISSUANCE OF AMENDMENTS RE: CONTAINMENT SPRAY DURING THE RECIRCULATION PHASE OF A LOCA (TAC NOS. MA1408 AND MA1409)

Dear Mr. Rueger:

The Commission has issued the enclosed Amendment No. 139 to Facility Operating License No. DPR-80 and Amendment No. 139 to Facility Operating License No. DPR-82 for the Diablo Canyon Nuclear Power Plant, Unit Nos. 1 and 2, respectively. The amendments consist of changes to the Technical Specifications (TS) in response to your application dated March 18, 1998.

The amendments revise Bases 3/4.6.2.1, "Containment Spray System," of the current Technical Specifications (TSs) and Bases 3.6.6, "Containment Spray and Cooling Systems," of the improved TSs, to clarify that containment spray (CS) is not required to be actuated during recirculation, but may be actuated at the discretion of the Technical Support Center (TSC). Additionally, the Bases are clarified to state that the ability to spray containment using the residual heat removal (RHR) system is demonstrated by opening the RHR Spray Ring Cross Connect Valve 9003A or B. The Bases are clarified to state that flow to the spray headers can be established with only one operable RHR pump by closing the cold leg discharge valve 8809A or B.

A copy of the related Safety Evaluation is enclosed. The Notice of Issuance will be included in the Commission's next regular biweekly Federal Register notice.

Sincerely,
/RA/
Steven D. Bloom, Project Manager, Section 2
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-275
and 50-323

Enclosures: 1. Amendment No.139 to DPR-80
2. Amendment No.139 to DPR-82
3. Safety Evaluation

cc w/encls: See next page

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

PACIFIC GAS AND ELECTRIC COMPANY

DOCKET NO. 50-275

DIABLO CANYON NUCLEAR POWER PLANT, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 139
License No. DPR-80

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Pacific Gas and Electric Company (the licensee) dated March 18, 1998, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-80 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 139 , are hereby incorporated in the license. Pacific Gas and Electric Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan, except where otherwise stated in specific license conditions.

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Stephen Dembek, Chief, Section 2
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Bases

Date of Issuance: February 9, 2000

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

PACIFIC GAS AND ELECTRIC COMPANY

DOCKET NO. 50-323

DIABLO CANYON NUCLEAR POWER PLANT, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 139
License No. DPR-82

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Pacific Gas and Electric Company (the licensee) dated March 18, 1998, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-82 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 139 , are hereby incorporated in the license. Pacific Gas and Electric Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan, except where otherwise stated in specific license conditions.

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Stephen Dembek, Chief, Section 2
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Bases

Date of Issuance: February 9, 2000

ATTACHMENT TO LICENSE AMENDMENT NO. 139

TO FACILITY OPERATING LICENSE NO. DPR-80

AND AMENDMENT NO. 139 TO FACILITY OPERATING LICENSE NO. DPR-82

DOCKET NOS. 50-275 AND 50-323

Replace the following pages of the Bases with the attached revised pages. The revised pages are to both the current Technical Specifications (CTS) and to the improved Technical Specifications (ITS). The revised pages are identified by the above amendment numbers and contain marginal lines indicating the areas of change. The corresponding overleaf pages are also provided to maintain document completeness for the CTS.

REMOVE	INSERT
B 3/4 6-3	B 3/4 6-3 (CTS)
B 3.6-34	B 3.6-34 (ITS)
B 3.6-35	B 3.6-35 (ITS)
B 3.6-36	B 3.6-36 (ITS)
B 3.6-37	B 3.6-37 (ITS)
B 3.6-38	B 3.6-38 (ITS)
B 3.6-39	B 3.6-39 (ITS)
B 3.6-40	B 3.6-40 (ITS)
B 3.6-41	B 3.6-41 (ITS)

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

3/4.6.2.1 CONTAINMENT SPRAY SYSTEM

The OPERABILITY of the Containment Spray System ensures that containment depressurization and cooling capability will be available in the event of a LOCA. The pressure reduction and resultant lower containment leakage rate are consistent with the assumptions used in the safety analyses. Containment Spray is not required to be actuated during the recirculation phase of a LOCA, but may be actuated at the discretion of the Technical Support Center. During the recirculation phase of a LOCA, the Containment Spray System must be capable of transferring the spray function to an RHR System taking suction from the containment sump. OPERABILITY of valves 9003A and B, and the capability to close valves 8809A and B to divert water from the RCS to the spray headers, will ensure that this capability exists.

The Containment Spray System and the Containment Cooling System are redundant to each other in providing post accident cooling of the containment atmosphere. However, the Containment Spray System also provides a mechanism for removing iodine from the containment atmosphere and therefore the time requirements for restoring an inoperable Spray System to OPERABLE status have been maintained consistent with that assigned other inoperable ESF equipment.

3/4.6.2.2 SPRAY ADDITIVE SYSTEM

The OPERABILITY of the Spray Additive System ensures that sufficient NaOH is added to the containment spray in the event of a LOCA. The limits on NaOH minimum volume and concentration ensure a pH value of between 8.0 and 9.5 for the solution recirculated within containment after a LOCA. This pH band minimizes the evolution of iodine and minimizes the effect of chloride and caustic stress corrosion on mechanical systems and components. The contained water volume limit includes an allowance for water not usable because of tank discharge line location or other physical characteristics. These assumptions are consistent with the iodine removal efficiency assumed in the safety analyses.

3/4.6.2.3 CONTAINMENT COOLING SYSTEM

BACKGROUND

The OPERABILITY of the Containment Fan Cooler Units (CFCUs) ensures that: (1) the containment air temperature will be maintained within limits during normal operation, and (2) adequate heat removal capacity is available when operated in conjunction with the Containment Spray System during the injection phase of a LOCA.

The five CFCUs are provided with power from the three vital busses as follows:

CFCU 1 - Bus F
CFCU 2 - Bus F
CFCU 3 - Bus G
CFCU 4 - Bus H
CFCU 5 - Bus G

Any two CFCUs, in conjunction with one train of containment spray are capable of providing adequate containment heat removal to assure that the

3/4.6.2.3 CONTAINMENT COOLING SYSTEM (Continued)

maximum containment design pressure is not exceeded following a LOCA. Each CFCU is supplied with cooling water from one of the two vital component cooling water headers. Air is drawn into the coolers by the fan across cooling coils supplied with component cooling water. The air is discharged to the steam generator compartments, pressurizer compartment, instrument tunnel, and outside the secondary shield in the lower areas of containment.

During normal operation, three CFCUs are operating. The fans are normally operated at high speed with component cooling water supplied to the cooling coils. The CFCUs are designed to limit the ambient containment air temperature during normal unit operation to less than the limit specified in Technical Specification (TS) 3.6.1.5, "Air Temperature." This temperature limitation ensures that the containment temperature does not exceed the initial temperature conditions assumed for design basis accidents (DBAs).

In post accident operation, following an actuation signal, the CFCUs are designed to start automatically in slow speed if not already running. If running in high speed, the fans automatically shift to slow speed. The fans are operated at the lower speed during accident conditions to prevent motor overload from the higher density atmosphere caused by the steam introduced by the DBA. The temperature of the component cooling water flow to the CFCU cooling coils is an important factor in the heat removal capability of the CFCUs.

APPLICABLE SAFETY ANALYSES

The CFCUs, in conjunction with the containment spray system, limit the temperature and pressure that could be experienced following a DBA. The limiting DBAs considered are the LOCA and the main steam line break (MSLB). The LOCA and MSLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. No DBAs are assumed to occur simultaneously or consecutively.

The postulated LOCA is analyzed with regard to containment ESF systems, assuming the single failure of vital Bus G, which is the worst case single active failure and results in only two CFCUs and one containment spray train available to mitigate the containment pressure and temperature transient, assuming only the minimum equipment allowed by the LCO is available. Although nonmechanistic, the ECCS pumps supplied by vital Bus G are assumed to operate.

The postulated MSLB assumes the single failure of a main feedwater regulating valve and main steam isolation valve.

The analysis and evaluation show that under the worst case scenario, the highest peak containment pressure is less than 47 psig (experienced during LOCA). The analysis shows that the peak containment temperature is 345°F (experienced during an MSLB). Both results satisfy the design basis.

BASES

BACKGROUND

Containment Spray System (continued)

Containment Spray is not required to be actuated during the recirculation phase of a LOCA, but may be actuated at the discretion of the Technical Support Center. During the recirculation phase of a LOCA, the Containment Spray System must be capable of transferring the spray function to an RHR System taking suction from the containment sump. OPERABILITY of valves 9003A and B, and the capability to close valves 8809A and B to divert water from the RCS to the spray headers, will ensure that this capability exists.

Containment Cooling System

Two trains of containment fan cooling, each consisting of two CFCUs with one shared CFCU for a total of five, are provided. The five CFCUs are powered from three separate vital buses, with two CFCUs on each of two vital buses and the remaining CFCU from the third vital bus. Each CFCU is supplied with cooling water from one of two separate loops of component cooling water (CCW). Air is drawn into the coolers through the fan and discharged to the annulus ring which supplies the steam generator compartments, pressurizer compartment, reactor coolant pumps, and outside the secondary shield in the lower areas of containment.

During normal operation, three CFCUs are operating. The fans are normally operated at high speed with CCW supplied to the cooling coils. The CFCUs are designed to limit the ambient containment air temperature during normal unit operation to less than the limit specified in LCO 3.6.5, "Containment Air Temperature." This temperature limitation ensures that the containment temperature does not exceed the initial temperature conditions assumed for the DBAs.

In post accident operation following an actuation signal, the CFCUs are designed to start automatically in slow speed if not already running. If running in high (normal) speed, the fans automatically shift to slow speed. The fans are operated at the lower speed during accident conditions to prevent motor overload from the higher mass atmosphere. The temperature of the CCW is an important factor in the heat removal capability of the fan units.

APPLICABLE SAFETY ANALYSES

The Containment Spray System and Containment Cooling System limits the temperature and pressure that could be experienced following a DBA. The limiting DBAs considered are the loss of coolant accident (LOCA) and the main steam line break (MSLB). The LOCA and MSLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. No DBAs are assumed to occur simultaneously or consecutively. The postulated DBAs are analyzed with regard to containment ESF systems,

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

assuming the worst case single failure. For the LOCA case, the worst single failure is the failure of one SSPS train, which results in only one CSP and two CFCUs available. For SLB case, the worst single failure is the failure of one MSIV to close with two CSP and three CFCUs operating.

The analysis and evaluation show that under the worst case scenario, the highest peak containment pressure is 42.25 psig (experienced during an MSLB at 30% power) compared to an allowable 47 psig. The analysis shows that the peak containment temperature is 326°F (experienced during an MSLB at 70% power) and is compared to the environmental qualifications of plant equipment. Both results meet the intent of the design basis. (See the Bases for LCO 3.6.4, "Containment Pressure," and LCO 3.6.5 for a detailed discussion.) The analyses and evaluations assume a unit specific power level of 102% for the LOCA with one containment spray train and two CFCUs operating. The limiting case MSLB analyses and evaluations are based upon a unit specific power level of 30% or 70% with two containment spray trains and three CFCUs operating and failure of one MSIV to close. Initial (pre-accident) containment conditions of 120°F and 1.3 psig are assumed. The analyses also assume a response time delayed initiation to provide conservative peak calculated containment pressure and temperature responses.

For certain aspects of transient accident analyses, maximizing the calculated containment pressure is not conservative. In particular, the effectiveness of the Emergency Core Cooling System during the core reflood phase of a LOCA analysis increases with increasing containment backpressure. For these calculations, the containment backpressure is calculated in a manner designed to conservatively minimize, rather than maximize, the calculated transient containment pressures in accordance with 10 CFR 50, Appendix K (Ref. 2).

Analyses and evaluation show that containment spray is not required during the recirculation phase of a LOCA (Ref. 7). If only one RHR pump is available during the recirculation phase of a LOCA, it may not be possible to obtain significant containment spray without closing valves 8809A or B. If recirculation spray is used with only one train of RHR in operation, ECCS flow to the reactor will be reduced, but analysis has shown that the flow to the reactor in this situation is still in excess of that needed to supply the required core cooling.

The effect of an inadvertent containment spray actuation has been analyzed. An inadvertent spray actuation results in a -1.80 psid containment pressure decrease and is based on a sudden cooling effect of 70°F in the interior of the leak tight containment. Additional discussion is provided in the Bases for LCO 3.6.4.

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

The modeled Containment Spray System actuation from the containment analysis is based on a response time associated with exceeding the containment High-High pressure setpoint to achieving full flow through the containment spray nozzles. The Containment Spray System total response time includes diesel generator (DG) startup (for loss of offsite power), sequenced loading of equipment, containment spray pump startup, and spray line filling (Ref. 4).

The CFCUs performance for post accident conditions is given in Reference 4. The result of the analysis is that each train (two CFCUs) combined with one train of containment spray can provide 100% of the required peak cooling capacity during the post accident condition.

The modeled Containment Cooling System actuation from the containment analysis is based upon a response time associated with exceeding the containment High-High pressure setpoint to achieving full Containment Cooling System air and safety grade cooling water flow. The Containment Cooling System total response time includes signal delay, DG startup (for loss of offsite power), and component cooling water pump startup times.

The Containment Spray System and the Containment Cooling System satisfies Criterion 3 of 10CFR50.36(c)(2)(ii).

LCO

During a DBA LOCA, a minimum of two CFCUs and one containment spray train are required to maintain the containment peak pressure and temperature below the design limits (Refs. 4). Additionally, one containment spray train is also required to remove iodine from the containment atmosphere and maintain concentrations below those assumed in the safety analysis. To ensure that these requirements are met, two containment spray trains and the CFCU system consisting of four CFCUs or three CFCUs each supplied by a different vital bus must be OPERABLE. Therefore, in the event of an accident, at least one train of containment spray and two CFCUs operate, assuming the worst case single active failure occurs. Each Containment Spray train typically includes a spray pump, spray headers, nozzles, valves, piping, instruments, and controls to ensure an OPERABLE flow path capable of taking suction from the RWST upon an ESF actuation signal. Upon actuation of the RWST Low alarm, the suction flowpath must be capable of being manually transferred to containment sump. Containment spray could then be supplied as required by an RHR pump taking suction from the containment sump.

Each CFCU includes cooling coils, dampers, fans, instruments, and controls to ensure an OPERABLE flow path.

(continued)

BASES (continued)

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment and an increase in containment pressure and temperature requiring the operation of the containment spray trains and CFCUs.

In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Thus, the Containment Spray System and the Containment Cooling System are not required to be OPERABLE in MODES 5 and 6.

ACTIONS

A.1

With one containment spray train inoperable, the inoperable containment spray train must be restored to OPERABLE status within 72 hours. In this Condition, the remaining OPERABLE spray and cooling trains are adequate to perform the iodine removal and containment cooling functions. The 72 hour Completion Time takes into account the redundant heat removal capability afforded by the Containment Spray System, reasonable time for repairs, and low probability of a DBA occurring during this period.

The 10 day portion of the Completion Time for Required Action A.1 is based upon engineering judgment. It takes into account the low probability of coincident entry into two Conditions in this Specification coupled with the low probability of an accident occurring during this time. Refer to Section 1.3, "Completion Times," for a more detailed discussion of the purpose of the "from discovery of failure to meet the LCO" portion of the Completion Time.

B.1 and B.2

If the inoperable containment spray train cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 84 hours. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems. The extended interval to reach MODE 5 allows additional time for attempting restoration of the containment spray train and is reasonable when considering the driving force for a release of radioactive material from the Reactor Coolant System is reduced in MODE 3.

(continued)

BASES

ACTIONS (continued)

C.1

With one CFCU system inoperable such that a minimum of two CFCUs remain operable, restore the required CFCUs to OPERABLE status within 7 days. The components in this degraded condition are capable of providing at least 100% of the heat removal needs. The 7 day Completion Time was developed taking into account the redundant heat removal capabilities afforded by combinations of the Containment Spray System and Containment Cooling System and the low probability of DBA occurring during this period.

The 10 day portion of the Completion Time for Required Action C.1 is based upon engineering judgment. It takes into account the low probability of coincident entry into two Conditions in this Specification coupled with the low probability of an accident occurring during this time. Refer to Section 1.3 for a more detailed discussion of the purpose of the "from discovery of failure to meet the LCO" portion of the Completion Time.

D.1 and D.2

With one train of containment spray inoperable and the CFCUs system inoperable such that a minimum of two CFCUs remain OPERABLE, restore one required train of containment spray or CFCU system to OPERABLE status within 72 hours. The components remaining in OPERABLE status in this degraded condition provide iodine removal capabilities and are capable of providing at least 100% of the heat removal needs after an accident. The 72 hour Completion Time was developed taking into account the redundant heat removal capabilities afforded by combinations of the Containment Spray System and Containment Cooling System, the iodine removal function of the Containment Spray System, and the low probability of DBA occurring during this period.

E.1 and E.2

If the Required Action and associated Completion Time of Condition C or D of this LCO are not met, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

(continued)

BASES

ACTIONS (continued)

F.1

With two containment spray trains or one containment spray train inoperable and two CFCU systems inoperable such that one or less CFCUs remain OPERABLE or one or less CFCUs are OPERABLE, the unit is in a condition outside the accident analysis. Therefore, LCO 3.0.3 must be entered immediately.

SURVEILLANCE REQUIREMENTS

SR 3.6.6.1

Verifying the correct alignment for manual, power operated, and automatic valves in the containment spray flow path provides assurance that the proper flow paths will exist for Containment Spray System operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since these were verified to be in the correct position prior to locking, sealing, or securing. This SR does not require any testing or valve manipulation. Rather, it involves verification, through a system walkdown, which may include the use of local or remove indicators, that those valves outside containment (only check valves are inside containment) and capable of potentially being mispositioned are in the correct position.

SR 3.6.6.2

Operating each required CFCU for ≥ 15 minutes ensures that all trains are OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. The 31 day Frequency was developed considering the known reliability of the fan units and controls, the two train redundancy available, and the low probability of significant degradation of the CFCUs occurring between surveillances. It has also been shown to be acceptable through operating experience.

SR 3.6.6.3

Verifying that each required CFCU is receiving the required component cooling water flow of ≥ 1650 gpm provides assurance that the design flow rate assumed in the safety analyses will be achieved (Ref. 4). The component cooling water (CCW) system is hydraulically balanced during normal operation to ensure that at least 1650 gpm is delivered to each CFCU during a design bases event (DBA). The hydraulic system balance considers normal system alignments and the potential for any single active failure.

Operation of the CFCUs is permitted with lower CCW flow to the CFCUs during ASME Section XI testing or decay heat removal in MODE 4 with the residual heat removal heat exchangers in service. To

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.6.3 (continued)

support this conclusion, a calculation was performed to evaluate containment heat removal with one train of containment spray OPERABLE and reduced CCW flow to three CFCUs. The calculation concluded that this configuration would provide adequate heat removal to ensure that the maximum design pressure of containment was not exceeded during a DBA in MODE 1. This analysis also determined that a single failure could not be tolerated during this condition and still assure that the maximum design pressure of containment would not be exceeded. (Ref. 6)

The Frequency was developed considering the known reliability of the Cooling Water System, the two train redundancy available, and the low probability of a significant degradation of flow occurring between surveillances.

SR 3.6.6.4

Verifying each containment spray pump's developed head at the flow test point is greater than or equal to the required developed head (205 psid) ensures that spray pump performance has not degraded during the cycle. Flow and differential pressure are normal tests of centrifugal pump performance required by Part 6 of the ASME O&M Code (Ref. 5). Since the containment spray pumps cannot be tested with flow through the spray headers, they are tested on recirculation flow. This test confirms one point on the pump design curve and is indicative of overall performance. Such inservice tests confirm component OPERABILITY, trend performance, and detect incipient failures by abnormal performance. The Frequency of the SR is in accordance with the Inservice Testing Program.

SR 3.6.6.5 and SR 3.6.6.6

These SRs require verification that each automatic containment spray valve actuates to its correct position and that each containment spray pump starts upon receipt of an actual or simulated actuation of a containment high-high pressure signal with a coincident "S" signal. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. Operating experience has shown that these components usually pass the Surveillances when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.6.7

This SR requires verification that each CFCU actuates upon receipt of an actual or simulated safety injection signal. The 24 month Frequency is based on engineering judgment and has been shown to be acceptable through operating experience. See SR 3.6.6.5 and SR 3.6.6.6, above, for further discussion of the basis for the 24 month Frequency.

SR 3.6.6.8

With the containment spray inlet valves closed and the spray header drained of any solution, low pressure air or smoke can be blown through test connections. This SR ensures that each spray nozzle is unobstructed and provides assurance that spray coverage of the containment during an accident is not degraded. Due to the passive design of the nozzle, a test at 10 year intervals is considered adequate to detect obstruction of the nozzles.

SR 3.6.6.9

The CFCUs are designed to start or restart in low speed upon receipt of an SI signal. This SR ensures that this feature is functioning properly. The 31 day frequency is selected based upon the normal operation of the CFCUs in high speed during power operation.

REFERENCES

1. FSAR, Appendix 3.1A
2. 10 CFR 50, Appendix K.
3. FSAR, Section 6.2.1.
4. FSAR, Section 6.2.2.
5. ASME, Operations and Maintenance Code, 1987 with OMa-1988 addenda, Part 6.
6. License Amendment 89 to DPR-80 and License Amendment 88 to DPR-82, 3/2/94.
7. Calculation STA-075, "Minimum ECCS Flow and Minimum Recirculation Spray Flow During the Sump Recirculation Phases."

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 139 TO FACILITY OPERATING LICENSE NO. DPR-80

AND AMENDMENT NO. 139 TO FACILITY OPERATING LICENSE NO. DPR-82

PACIFIC GAS AND ELECTRIC COMPANY

DIABLO CANYON NUCLEAR POWER PLANT, UNITS 1 AND 2

DOCKET NOS. 50-275 AND 50-323

1.0 INTRODUCTION

By application dated March 18, 1998, Pacific Gas and Electric Company (or the licensee) requested changes to Bases 3/4.6.2.1, "Containment Spray System," of the current Technical Specifications (TSs) and Bases 3.6.6, "Containment Spray and Cooling Systems," of the improved TSs, to clarify that containment spray (CS) is not required to be actuated during recirculation, but may be actuated at the discretion of the Technical Support Center (TSC). To ensure the existence of this capability, the Bases will be clarified to state that during the recirculation phase of a loss-of-coolant accident (LOCA), the CS system must be capable of transferring the spray function to a residual heat removal (RHR) system taking suction from the containment sump by opening the RHR spray ring cross connect valve 9003A or B, and closing the cold leg discharge valve 8809A or B to divert water from the reactor coolant system (RCS) injection to one of the CS headers.

2.0 BACKGROUND

In 1991, the licensee revised its Emergency Operating Procedure (EOP) E-1.3, "Transfer to Cold Leg Recirculation," to specify placing only one residual heat removal pump (RHRP) in operation, rather than two, if necessary to reduce the heat input to the component cooling water (CCW) system and maintain acceptable CCW temperature during the recirculation phase of an LOCA and terminating CS when in this condition. These procedure revisions were made by the licensee under the 10 CFR 50.59 process based on evaluations that demonstrated CS was not necessary during the recirculation phase of the worst case LOCA.

TS 3/4.6.2.1 states "Two containment spray systems shall be OPERABLE with each spray system capable of taking suction from the refueling water storage tank (RWST) and transferring spray function to an RHR system taking suction from the containment sump." TS Bases 3/4.6.2.1 states "Operability of the containment spray system ensures that containment depressurization and cooling capability will be available in the event of an LOCA." The licensee has interpreted these statements to mean that there must be a capability of aligning the CS system to the RHR system if needed, but not that CS must be aligned to the RHR system during the recirculation phase of an LOCA.

During an NRC architect/engineer (AE) inspection in August and September 1997, the inspection team indicated in NRC Inspection Report Nos. 50-275/97-202 and 50-323/97-202, dated November 13, 1997, that the EOP change to eliminate CS during the recirculation phase of an LOCA was not consistent with the requirements of the TS and, therefore, constituted a potential unreviewed safety question (USQ).

The licensee believes that the revision of EOP E-1.3 under the 10 CFR 50.59 process was appropriate and that a USQ was not involved. In order to resolve this disagreement regarding the USQ, the licensee submitted this license amendment for NRC review so that EOP E-1.3 is not in conflict with any TS.

3.0 EVALUATION

In 1991, due to concerns over high CCW temperatures post-LOCA, the licensee decided to change the EOP to limit RHR heat transfer to CCW in the recirculation mode. The change was to intentionally stop one RHRP when either one of the two auxiliary salt water pumps or some other system failures limited CCW heat removal capability. The question of recirculation spray flow with one RHRP was examined by the licensee at that time. The licensee requested Westinghouse to develop a safety evaluation checklist (SECL), SECL-91-458, which is a Westinghouse safety evaluation that demonstrated that recirculation spray was not required for accident mitigation. The above conclusion was based on the evaluation of the effects on the containment pressure and temperature, environmental qualification (EQ) of the safety-related equipment, dose consequences, and hydrogen mixing, resulting from the operation without containment spray during the recirculation mode of an accident.

CS is required to mitigate high energy line break events inside containment by condensing steam and scrubbing iodine from the containment atmosphere. Recirculation is not a concern for a feedwater line break or a main steam line break (MSLB) because the reactor coolant system (RCS) remains intact. With the RCS intact, RWST drains down slowly such that the CS will be available as long as required to control containment pressure with water supplied from RWST. Therefore, the recirculation mode of emergency core cooling is only used following an LOCA.

The current licensing basis accident analyses require that the peak containment pressure not exceed 47 psig and that it be reduced to less than half the peak value within 24 hours. The peak post-LOCA containment pressure occurs prior to the recirculation phase and, therefore, is not affected by operation of CS during the recirculation mode. The licensee also confirmed that, even without recirculation spray, the containment pressure can be reduced to less than half the peak value within 24 hours. However, the long-term pressure and temperature are slightly increased if recirculation spray is not used. This could potentially affect the offsite dose due to increased containment leakage or result in environmental conditions exceeding those for which the equipment is qualified.

The licensee performed an evaluation to confirm that safety-related equipment inside containment having operating requirements for accident mitigation in the recirculation mode still meets equipment qualification (EQ) requirements for the long-term containment temperature profiles that result if recirculation spray is not used. Furthermore, the licensee stated that in the absence of CS in the recirculation mode, the leak rates and iodine decontamination factor in containment assumed in the post-LOCA dose consequence analyses remain unchanged. Therefore, the presence or absence of recirculation spray has no effect on the results of the offsite and control room dose analyses since it does not change any of the assumptions made in those analyses.

The DCPP design bases and accident analyses do not assume any contribution to post-accident containment hydrogen mixing from recirculation spray. Furthermore, the licensee stated that the change of need for recirculation spray did not create the possibility of a malfunction of equipment important to safety of a different type than previously evaluated in the Safety Analysis Report Update.

If only one train of RHR is operating, operators are directed not to initiate recirculation spray. However, if two trains of RHR are operating or, if determined to be warranted by the TSC, CS can be initiated during the recirculation phase of a LOCA by directing one train of RHR flow to the core legs shut off by closing valve 8809A or B and opening the RHR spray ring cross connect valve 9003A or B. This will provide sufficient pressure to drive at least 580 gpm to the spray headers. Even with RHR flow to the RCS cold legs shut off by closing valve 8809A or B, it has been demonstrated that under the worst conditions, the injection flow via the centrifugal charging pumps (CCPs) and safety injection pumps (SIPs) is significantly greater than the minimum required to maintain adequate core cooling. Figure 1 of the submittal, Low Head Injection System, shows the above-mentioned valves in a flow diagram.

The staff has reviewed the licensee's analyses and, based on that review, we find that the licensee's position that CS is not required for the recirculation phase is acceptable. Furthermore, the valve realignment in the recirculation phase as described above provides the capability to actuate the CS. Actuation of CS by the TSC during the recirculation phase is consistent with NUREG-1431, Revision 1, "Standard Technical Specifications - Westinghouse Plants," which states that operation of the CS system in the recirculation mode is controlled by the operator in accordance with the EOPs. Therefore, we find the proposed TS Bases changes, which clarify the licensee's interpretation of TS 3/4 6.2.1 such that EOP E-1.3 will not be in conflict with the TS, to be acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the California State official was notified of the proposed issuance of the amendments. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

These amendments change a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration and there has been no public comment on such finding (63 FR 45527). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

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