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. 89
License No. DPR-80

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

   A. The application for amendment by Pacific Gas & Electric Company (the licensee) dated January 10, 1994, as supplemented February 3, 1994, 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. 89 , are hereby incorporated in the license. Pacific Gas & 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 the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Theodore R. Quay

Theodore R. Quay, Director
Project Directorate V
Division of Reactor Projects III/IV/V
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: March 2, 1994

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. 88
License No. DPR-82

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

   A. The application for amendment by Pacific Gas & Electric Company (the licensee) dated January 10, 1994, as supplemented February 3, 1994, 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. 88 , are hereby incorporated in the license. Pacific Gas & 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 the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Theodore R Quay

Theodore R. Quay, Director
Project Directorate V
Division of Reactor Projects III/IV/V
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: March 2, 1994

ATTACHMENT TO LICENSE AMENDMENTS

AMENDMENT NO. 89 TO FACILITY OPERATING LICENSE NO. DPR-80

AND AMENDMENT NO. 88 TO FACILITY OPERATING LICENSE NO. DPR-82

DOCKET NOS. 50-275 AND 50-323

Revise Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change. Overleaf pages are also included, as appropriate.

REMOVE	INSERT
3/4 3-16	3/4 3-16
3/4 3-17	3/4 3-17
3/4 3-32	3/4 3-32
3/4 3-33	3/4 3-33
3/4 6-13	3/3 6-13
3/4 6-14	3/4 6-14
B 3/4 6-3	B 3/4 6-3
-------	B 3/4 6-3a
-------	B 3/4 6-3b
-------	B 3/4 6-3c
-------	B 3/4 6-3d
-------	B 3/4 6-3e

TABLE 3.3-3

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1. Safety Injection (Reactor Trip, Feedwater Isolation, Start Diesel Generators, Containment Fan Cooler Units, and Component Cooling Water)					
a. Manual Initiation	2	1	2	1, 2, 3, 4	19
b. Automatic Actuation Logic and Actuation Relays	2	1	2	1, 2, 3, 4	14
c. Containment Pressure-High	3	2	2	1, 2, 3, 4	20
d. Pressurizer Pressure-Low	4	2	3	1, 2, 3#	20
e. DELETED					
f. Steam Line Pressure-Low	3/steam line	2/steam line in any steam line	2/steam line	1, 2, 3#	20

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
2. Containment Spray					
a. Manual	2	2 with 2 coincident switches	2	1, 2, 3, 4	19
b. Automatic Actuation Logic and Actuation Relays	2	1	2	1, 2, 3, 4	14
c. Containment Pressure-High-High	4	2	3	1, 2, 3, 4	17
3. Containment Isolation					
a. Phase "A" Isolation					
1) Manual	2	1	2	1, 2, 3, 4	19
2) Automatic Actuation Logic and Actuation Relays	2	1	2	1, 2, 3, 4	14
3) Safety Injection	See Item 1. above for all Safety Injection initiating functions and requirements.				
b. Phase "B" Isolation					
1) Manual	2	2 with 2 coincident switches	2	1, 2, 3, 4	19

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
3. Containment Isolation (Continued)					
2) Automatic Actuation Logic and Actuation Relays	2	1	2	1, 2, 3, 4	14
3) Containment Pressure-High-High	4	2	3	1, 2, 3, 4	17
c. Containment Ventilation Isolation					
1) Automatic Actuation Logic and Actuation Relays	2	1	2	1, 2, 3, 4	18
2) Plant Vent Noble Gas Activity-High (RM-14A and 14B)[a]	2	1	2	1, 2, 3, 4	18
3) Safety Injection	See Item 1. above for all Safety Injection initiating functions and requirements.				
4) Containment Ventilation Exhaust Radiation-High (RM-44A and 44B)[b]	2	1	2	1, 2, 3, 4	18
4. Steam Line Isolation					
a. Manual	1 manual switch/steam line	1 manual switch/steam line	1 manual switch/ operating steam line	1, 2, 3, 4	24

(a) The requirements for Plant Vent Noble Gas Activity-High (RM-14A and 14B) are not applicable following installation of RM-44A and 44B.

(b) The requirements for Containment Ventilation Exhaust Radiation-High (RM-44A and 44B) are applicable following installation of RM-44A and 44B.

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
4. Steam Line Isolation (Continued)					
b. Automatic Actuation Logic and Actuation Relays	2	1	2	1, 2, 3	22
c. Containment Pressure-High-High	4	2	3	1, 2, 3	17
d. Steam Line Pressure-Low	3/steam line	2/steam line in any steam line	2/steam line	1, 2, 3#	20
e. Negative Steam Line Pressure Rate-High	3/steam line	2/steam line in any steam line	2/steam line	3##	20
5. Turbine Trip & Feedwater Isolation					
a. Automatic Actuation Logic and Actuation Relays	2	1	2	1, 2	25
b. Steam Generator Water Level-High-High	3/stm. gen.	2/stm. gen. in any operating stm. gen.	2/stm. gen. in each operating stm. gen.	1, 2	20

TABLE 3.3-5 (Continued)

TABLE NOTATIONS

(1) Diesel generator starting delay not included because offsite power available.

(2) Notation deleted.

(3) Diesel generator starting and loading delays included.

(4) Diesel generator starting delay not included because offsite power is available. Response time limit includes opening of valves to establish SI path and attainment of discharge pressure for centrifugal charging pumps (where applicable). Sequential transfer of charging pump suction from the VCT to the RWST (RWST valves open, then VCT valves close) is included.

(5) Diesel generator starting and sequence loading delays included. Offsite power is not available. Response time limit includes opening of valves to establish SI path and attainment of discharge pressure for centrifugal charging pumps. Sequential transfer of charging pump suction from the VCT to the RWST (RWST valves open, then VCT valves close) is included.

(6) The maximum response time of 48.5 seconds is the time from when the containment pressure exceeds the High-High Setpoint until the spray pump is started and the discharge valve travels to the fully open position assuming off-site power is not available. The time of 48.5 seconds includes the 28-second maximum delay related to ESF loading sequence. Spray riser piping fill time is not included. The 80-second maximum spray delay time does not include the time from LOCA start to "P" signal.

(7) Diesel generator starting and sequence loading delays included. Sequential transfer of charging pump suction from the VCT to the RWST (RWST valves open, then VCT valves close) is not included. Response time limit includes opening of valves to establish SI flow path and attainment of discharge pressure for centrifugal charging pumps, SI, and RHR pumps (where applicable).

(8) Does not include Trip Time Delays. Response times include the transmitters, Eagle-21 Process Protection cabinets, Solid State Protection System cabinets and actuation devices only. This reflects the response times necessary for THERMAL POWER in excess of 50% RTP.

TABLE 4.3-2

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALI-BRATION	ANALOG OPERA-TIONAL TEST	TRIP ACTUATING OPERA-TIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
1. Safety Injection, (Reactor Trip Feedwater Isolation, Start Diesel Generators, Containment Fan Cooler Units, and Component Cooling Water)								
a. Manual Initiation	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3, 4
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3, 4
c. Containment Pressure-High	S	R	Q	N.A.	N.A	N.A.	N.A.	1, 2, 3, 4
d. Pressurizer Pressure-Low	S	R	Q	N.A	N.A.	N.A.	N.A.	1, 2, 3
e. Differential Pressure Between Steam Lines-High	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
f. Steam flow in Two Steam Lines-High Coincident With Either	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
1) T_{avg}-Low-Low, or	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
2) Steam Line Pressure-Low	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
2. Containment Spray								
a. Manual Initiation	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3, 4
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3, 4
c. Containment Pressure-High-High	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3, 4

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG OPERATIONAL TEST	TRIP ACTUATING OPERATIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
3. Containment Isolation								
a. Phase "A" Isolation								
1) Manual	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3, 4
2) Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3, 4
3) Safety Injection	See Item 1. above for all Safety Injection Surveillance Requirements.							
b. Phase "B" Isolation								
1) Manual	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3, 4
2) Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3, 4
3) Containment Pressure-High-High	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3, 4
c. Containment Ventilation Isolation								
1) Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3, 4
2) Plant Vent Noble Gas Activity-High (RM-14A and 14B)[a]	S	R	M(2)	N.A.	N.A.	N.A.	N.A.	1, 2, 3, 4
3) Safety Injection	See Item 1. above for all Safety Injection Surveillance Requirements.							
4) Containment Ventilation Exhaust Radiation-High (RM-44A and 44B)[b]	S	R	M(2)	N.A.	N.A.	N.A.	N.A.	1, 2, 3, 4

(a) The requirements for Plant Vent Noble Gas Activity-High (RM-14A and 14B) are not applicable following installation of RM-44A and 44B.

(b) The requirements for Containment Ventilation Exhaust Radiation-High (RM-44A and 44B) are applicable following installation of RM-44A and 44B.

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALI-BRATION	CHANNEL OPERA-TIONAL TEST	TRIP ACTUATING DEVICE OPERA-TIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
4. Steam Line Isolation								
a. Manual	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3
c. Containment Pressure-High-High	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
d. Steam Line Pressure-Low	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
e. Negative Steam Line Pressure Rate-High	S	R	Q	N.A.	N.A.	N.A.	N.A.	3(3)
5. Turbine Trip and Feedwater Isolation								
a. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2
b. Steam Generator Water Level-High-High	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2
6. Auxiliary Feedwater								
a. Manual	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3
c. Steam Generator Water Level-Low-Low								
1) Steam Generator Water Level-Low-Low	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
2) RCS Loop ΔT	N.A.	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3

CONTAINMENT COOLING SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.2.3 The Containment Cooling System shall be OPERABLE with either:

a. At least four containment fan cooler units (CFCUs), or

b. At least three CFCUs, each of the three supplied from a different vital bus.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

a. With the requirements of the above specification not satisfied, but at least two CFCUs OPERABLE and both Containment Spray Systems OPERABLE, restore the Containment Cooling System to OPERABLE status within 7 days, otherwise be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With the requirements of the above specification not satisfied and one Containment Spray System inoperable, but at least two CFCUs OPERABLE, restore the inoperable Containment Spray System to OPERABLE status within 72 hours otherwise be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore the Containment Cooling System to OPERABLE status within 7 days of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.2.3 Each containment fan cooler unit shall be demonstrated OPERABLE:

a. At least once per 31 days by:

1) Starting each containment fan cooler unit and verifying that each containment fan cooler unit operates for at least 15 minutes,

SURVEILLANCE REQUIREMENTS (Continued)

2) Verifying a cooling water flow rate of greater than or equal to 1650* gpm to each cooler, and

3) Verifying that each containment fan cooler unit starts on low speed.

b. At least once per 18 months by verifying that each containment fan cooler unit starts automatically on a Safety Injection test signal.

*The CFCU cooling water flow rate requirement of TS 4.6.2.3a.2) may not be met during Section XI testing and in Mode 4 during residual heat removal heat exchanger operation.

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.

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 post loss of coolant accident (LOCA) conditions.

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.

3/4.6.2.3 CONTAINMENT COOLING SYSTEM (Continued)

The most limiting analysis assumes a power level of 102%, one containment spray train and 2 CFCUs operating, and initial (pre-accident) containment conditions of 120°F and 1.2 psig. The analysis also assumes a response time delayed initiation to provide conservative peak calculated containment pressure and temperature responses.

LIMITING CONDITION FOR OPERATION

During a DBA, at least two CFCUs are required to operate. LCO a. requires that four CFCUs be OPERABLE. This provides assurance that given any bus failure, at least two CFCUs will operate during a DBA. LCO b. allows only three CFCUs to be OPERABLE provided that each of three CFCUs is supplied from a different vital bus. With one CFCU supplied by each vital bus, the failure of any vital bus will only disable one of the three CFCUs, and ensure that two CFCUs will operate during the DBA.

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 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

Action Statement a.

Action statement a. requires at least two CFCUs and both containment spray trains to be OPERABLE. When in this action statement, as many as three CFCUs can be inoperable. This configuration provides more than the minimum equipment required to assure that adequate containment heat removal is maintained, although a single failure cannot be assumed. However, since the condition is permitted only when in an action statement, a single failure is not required to be considered. Requiring both containment spray trains to be OPERABLE provides containment heat removal margin.

The 7 day allowed outage time was developed taking into account the redundancy available in the containment spray system when in the action statement, and the low probability of DBA occurring during this period.

3/4.6.2.3 CONTAINMENT COOLING SYSTEM (Continued)

Action Statement b.

Action statement b. permits operation with one train of containment spray and two CFCUs OPERABLE for up to 72 hours. The action statement requires that the inoperable containment spray system be restored to OPERABLE status within 72 hours. From the time that the containment cooling system initially became inoperable, up to 7 days are available to restore the containment cooling system to OPERABLE status.

In the configuration allowed by this action statement, adequate containment iodine removal is still available through the one OPERABLE train of containment spray, and adequate heat removal from containment to prevent the maximum containment design pressure from being exceeded is available through the two CFCUs and one containment spray train.

SURVEILLANCE REQUIREMENTS

Surveillance Requirement 4.6.2.3a.1)

TS Surveillance 4.6.2.3a.1) requires that each CFCU be started and operated at least once every 31 days for greater than or equal to 15 minutes. Operating each 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 is based on the known reliability of the fan units and controls, redundancy available, and the low probability of significant degradation of the CFCUs occurring between surveillances.

Surveillance Requirement 4.6.2.3a.2)

TS Surveillance 4.6.2.3a.2) requires verification every 31 days of cooling water flow of greater than or equal to 1650 gpm to demonstrate the CFCU is operable. The 1650 gpm includes 1600 gpm required flow to the CFCU cooling coils and 50 gpm cooling flow for the CFCU motor cooler. The cooling water flow is supplied by the CCW system. CFCU OPERABILITY assures that adequate containment heat removal capacity is available when operated in conjunction with the containment sprays during post-LOCA conditions.

Final Safety Analysis Report (FSAR) Update Section 6.2B.3 specifies the basis for the surveillance requirement. FSAR Update Section 6.2B.3 specifies that for the design basis containment analysis, a LOCA occurs simultaneously with a failure of Bus G, and the minimum allowable CFCUs are OPERABLE. In the analysis, all emergency core cooling system (ECCS) pumps are conservatively assumed to operate to maximize the mass and energy addition rates to containment. Additionally, the nonvital CCW header isolates since it is powered from vital Bus H. As a result of the failure of Bus G, two CFCUs and one containment spray system are available to mitigate the pressure effects of the LOCA.

3/4.6.2.3 CONTAINMENT COOLING SYSTEM (Continued)

In order for the two CFCUs to remove sufficient heat to perform their intended function, 2000 gpm CCW flow must be supplied to the CFCU cooling coils. Analysis has determined that if 1600 gpm flow is supplied to the CFCU cooling coils during normal operation with the nonvital CCW header in service, at least 2000 gpm will be supplied to the CFCU cooling coils during LOCA coincident with a failure of vital Bus G.

The CCW system configuration during normal operation is different from the configuration during emergency core cooling system actuation. Nonvital header C is automatically isolated in most accident scenarios. This results in increased flow to the remaining components supplied by the two vital headers. Cooling water flow to the CFCU of 1650 gpm established in the normal plant configuration with non vital header C in service and the RHR heat exchangers isolated will result in CCW flow greater than or equal to 2000 gpm during accident conditions coincident with a Bus G failure.

One postulated single failure, the failure of vital Bus H, will prevent automatic isolation of nonvital header C because the power supply for the isolation valve is provided from Bus H. Nonvital header C being open is a different condition from that for the license basis containment pressure analysis described in supplemental safety evaluation report (SSER) 16 and FSAR, Section 6.2B.3, page 6.2B-5. For this accident scenario, the CCW flow to the CFCU coils following the accident will not change significantly from the observed flow during normal operation.

The effects of this case on containment integrity have been analyzed. The H Bus failure consequences, using mechanistic assumptions (ie., the components on other powered buses are assumed to operate and the components on Bus H have no power and are assumed to not operate) and a single failure, show that a CFCU cooling flow rate of 1650 gpm is adequate to perform the CFCU heat removal function for this scenario. The consequences of this scenario remain bounded by the license basis analysis.

If a single failure of Bus F is assumed, nonvital CCW header C will isolate and at least 2000 gpm CCW flow will be supplied to the CFCUs.

A footnote to the surveillance requirement specifies that operation of the CFCUs is permitted with low component cooling water (CCW) flow to the CFCUs due to ASME Section XI testing required by TS 4.0.5 or decay heat removal in Mode 4 with the residual heat removal heat exchangers in service. To support this conclusion, a calculation was performed. This calculation evaluated 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

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exceeded. Since a single failure cannot be tolerated, the footnote limits the acceptability of low CCW flow to the CFCU cooling coils to Mode 4 with the RHR system in service and ASME Section XI testing in Modes 1 through 4.

In order to support the analysis that permits operation with low CCW flow to the CFCUs, both containment spray trains must be OPERABLE and at least three CFCU must be verified OPERABLE prior to opening an RHR heat exchanger outlet valve for Section XI testing.

Surveillance Requirement 4.6.2.3a.3)

TS 4.6.2.3a.3) requires that each CFCU be started in low speed every 31 days. The purpose of this requirement is to assure that the CFCU and the associated control equipment is capable of operating in the configuration required for the DBA. The surveillance frequency of 31 days is based on the known reliability of the fan units and controls, redundancy available, and the low probability of significant degradation of the CFCUs occurring between surveillances.

Surveillance Requirement 4.6.2.3b.

TS 4.6.2.3b. requires that each CFCU be started on a safety injection signal once very 18 months. This surveillance provides assurance that the circuitry required to start the CFCU during a DBA is OPERABLE. The 18 month frequency is based on the need to perform these surveillances under the conditions that apply during a plant outage and the potential for an unplanned transient if the surveillances were performed with the reactor at power. Operating experience has shown that these components usually pass the surveillances when performed at the 18 month frequency. Therefore, the frequency was concluded to be acceptable from a reliability standpoint.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 38, GDC 40, GDC 41, GDC 42, and GDC 43.

2. 10 CFR 50, Appendix K.

3. FSAR Section 6.2B.3

4. FSAR Section 6.2.1.3.6

5. FSAR Table 6.2-5

6. FSAR Section 6.2.2.2.2.2

7. FSAR Section 9.2.2

8. FSAR Section 15.4