Pacific Gas and
Electric Company™

Gregory M. Rueger
Senior Vice President–
Generation and
Chief Nuclear Officer

US Mail:
Mail Code B32
Pacific Gas and Electric Company
PO Box 770000
San Francisco, CA 94177-0001

Overnight Mail:
Mail Code B32
Pacific Gas and Electric Company
77 Beale Street, 32nd Floor
San Francisco, CA 94105-1814

415.973.4684
Fax: 415.973.2313

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PG&E Letter DCL-00-144

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 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 00-07
Revision of Technical Specification 3.5.1, "Accumulators," to Reflect Analysis Limits for Accumulator Pressure and Volume

Dear Commissioners and Staff:

Enclosed is an application for amendment to Facility Operating License Nos. DPR-80 and DPR-82 in accordance with 10 CFR 50.90. The enclosed license amendment request (LAR) proposes to change Technical Specification (TS) 3.5.1, "Accumulators," by revising the limits for accumulator borated water volume surveillance requirement (SR) 3.5.1.2 and nitrogen cover pressure SR 3.5.1.3 to reflect analysis limits. These TS currently reflect nominal limits. These changes are being made to make these TS values consistent with other similar TS parameters. This will reduce confusion in the future.

Since the changes proposed in this LAR are not required to address an immediate safety concern, PG&E believes that the NRC review and approval of this LAR should be of medium priority. Due to the time required for plant procedure revision and approval resulting from these changes, PG&E requests that the NRC make the TS changes effective 30 days from the issuance of the license amendment.

Sincerely,

Gregory M. Rueger

A001

cc: Edgar Bailey, DHS
Ellis W. Merschoff
David L. Proulx
Girija S. Shukla
Diablo Distribution

Enclosures

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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

AFFIDAVIT

Gregory M. Rueger, of lawful age, first being duly sworn upon oath says that he is Senior Vice President, Generation and Chief Nuclear Officer of Pacific Gas and Electric Company; that he is familiar with the content thereof; that he has executed License Amendment Request 00-07 on behalf of said company with full power and authority to do so; that the facts stated therein are true and correct to the best of his knowledge, information, and belief.

Gregory M. Rueger
Senior Vice President
Generation and Chief Nuclear Officer

Subscribed and sworn to before me this 30th day of November, 2000
County of San Luis Obispo
State of California

Sandra Eatherly
Notary Public

SANDRA EATHERLY
Commission # 1225422
Notary Public - California
San Luis Obispo County
My Comm. Expires Jul 18, 2003

Revision of Technical Specification 3.5.1, "Accumulators," to Reflect Analysis Limits for Accumulator Pressure and Volume

A. DESCRIPTION OF AMENDMENT REQUEST

This license amendment request (LAR) proposes to change Technical Specification (TS) 3.5.1, "Accumulators," by replacing the current nominal values for accumulator borated water volume and nitrogen cover pressure with analysis limits. Specifically, surveillance requirement (SR) 3.5.1.2 would be changed to the analysis limits of greater than or equal to 814 ft^3 and less than or equal to 886 ft^3 of borated water volume; and limits of greater than or equal to 579 psig and less than or equal to 664 psig for the nitrogen cover pressure. Additionally, the volume is provided in cubic feet of water versus percent level.

Changes to the TS are noted in the marked-up copy of the applicable TS (Enclosure B). The proposed TS pages are included in Enclosure C. The associated Bases would also be appropriately revised in accordance with the TS 5.5.14 following NRC approval of this LAR. A markup of the intended TS Bases revisions is also included in Enclosure B of this LAR for information only.

B. BACKGROUND

The four emergency core cooling system (ECCS) accumulators are pressure vessels containing borated water that is pressurized with nitrogen gas. They are designed to passively inject their contents into the reactor coolant system (RCS) cold legs following a loss of coolant accident (LOCA) when the RCS depressurizes below the nitrogen cover gas pressure.

The accumulators are passive components and therefore require no operator or control actions to perform their function. The accumulators are credited in both the large and small break LOCA analyses at full power. However, the large break analysis is bounding and used to define the required accumulator limits.

The volume and pressure limits provided in the TS are established to provide assurance that safety analysis assumptions and limitations are not challenged. The presentation of these limits in the TS often depends on the type of controlling instruments and their inherent uncertainty. Some of the values provided in the TS are "nominal," which means that instrument inaccuracies have been considered on both sides of these values. However, most values provided in the TS, other than section 3.3, are design basis analysis limits that must be adjusted for instrument uncertainty when implemented. The values currently specified in SR 3.5.1.2 and SR 3.5.1.3 are considered "nominal" nitrogen cover pressure values and accumulator level percentages. This was confirmed by Westinghouse

correspondence which stated that these were nominal values and were based on the current LOCA analyses. This determination was also discussed in a meeting with the NRC on September 11, 1997. In that meeting, it was agreed that although these values are considered "nominal," typically, "analysis limits" are specified in the TS rather than nominal values. As a result, to maintain consistency within the TS and reduce the potential for confusion, PG&E agreed to replace these values with "analysis limits." This LAR is requesting that the limits for SR 3.5.1.2 and SR 3.5.1.3 be revised to reflect ECCS analysis limits rather than nominal values.

In Amendment No. 135 for both Units 1 and 2, PG&E replaced the nominal SR 3.5.1.2 accumulator water volume values with equivalent percentages of tank level. This was performed in an effort to standardize the information in the TS and to directly support local and control room indications, which are in percent level. Although this was a reasonable approach to reduce potential confusion, it did not consider the potential for relocation of the instrument taps on the accumulators at some later date. Relocation of the instrument taps could affect the consistency of the instrument readings between instrument arrays on each of the accumulators and could require an LAR to be processed prior to implementation. This LAR will convert these percentage values back to actual volumes in cubic feet. Equivalent volume to level percentages, which are indicated by the instruments, will be controlled in normal plant procedures.

C. JUSTIFICATION

The proposed revision to SR 3.5.1.2 and SR 3.5.1.3 would modify the format of these surveillance requirements to make them consistent with many of the other TS limits by specifying analysis limits rather than nominal values. This change will provide clarity and reduce potential confusion caused by an inconsistency in the application of limits within the TS.

The change to tank volume in cubic feet verses percent level is being requested to address concerns with the potential for required instrument tap relocation on each of the accumulators over time. These relocations could have an affect on the percent level readings of each of the instrument taps on an accumulator. However, the actual required volume would remain constant. Revision of the required level from the present level to volume provides flexibility and eliminates the need for an LAR if the accumulators are required to be retapped.

D. SAFETY EVALUATION

The accumulators are required to be operable for mitigation of both the large and small break LOCA at full power. These are the design basis accidents that establish the acceptance limits for the accumulators. Although the accumulators are required to mitigate both the large break LOCA and small break LOCA, the

large break LOCA is bounding and is used to define the required accumulator limits. The large break LOCA analysis is documented in the WCAP 14775, "Best Estimate Analysis of the Large Break Loss of Coolant Accident for Diablo Canyon Power Plants Unit 1 and 2: Limiting Plant Determination and Reference Analysis."

Based on WCAP 14775, Final Safety Analysis Report Table 15.4-7A summarizes the operating ranges for Units 1 and 2. If plant operation is maintained within the plant operating ranges presented in Table 15.4-7A, the LOCA analyses presented in that section are considered to be bounding. The operating range shown in the table reflects the analyses limits for accumulator gas pressure of greater than or equal to 579 psig and less than or equal to 664 psig and for accumulator volume of greater than or equal to 814 ft^3 and less than or equal to 886 ft^3.

The current TS values for accumulator pressure are nominal and require the pressure indications to be between greater than or equal to 595.5 psig and less than or equal to 647.5 psig. The current TS values for accumulator level are also nominal and require the level indications to be between greater than or equal to 60.8 percent and less than or equal to 72.6 percent. These percent levels are intended to represent volumes equivalent to 836 ft^3 and 864 ft^3, respectively. The proposed revision would provided accumulator cover gas pressure limits of greater than or equal to 579 psig and less than or equal to 664 psig; and accumulator volume limits of greater than or equal to 814 ft^3 and less than or equal to 886 ft^3. The current nominal TS values were developed considering instrument uncertainty to protect the analysis limits. The proposed TS values are the analysis limits.

The proposed revision to SR 3.5.1.2 and SR 3.5.1.3 would modify these TS surveillance requirements to make them consistent with many of the other TS limits by specifying analysis limits rather than nominal values. This change will provide clarity and reduce potential confusion caused by an inconsistency in the application of limits within the TS, or changes in the instrument uncertainties or in the location of instrument taps on the accumulators.

Currently the accumulator volume is indicated by instruments in percent level. The minimum and maximum volume limits in the TS have been provided as nominal percent level values. These nominal values, with the instrument uncertainty and current instrument tap locations, are intended to protect the analysis limits. Using nominal values is usually not a problem and providing them in a form that directly supports the instrument readings may be considered a good practice. However, the accumulators are subject to instrument tap relocation and this relocation may change the percent level readings of a specific instrument. Since the percent level indications are a function of measured span between taps, when the span is changed as a result of retapping, the percent level indication changes for the same given point. As a result, there may be inconsistency between various instruments

on the same accumulator and the nominal limits may require adjustment by LAR prior to implementation.

As stated above, the nominal values for percent level and cover gas pressure are conservatively adjusted values, which protect the analysis limits. The analysis limits are the required tank volumes and pressures to support the accident analysis. As such, the nominal values and the analysis limits are essentially equivalent and using either would be acceptable. However, use of the analysis limits in the TS will provide more consistency and changes in instrument uncertainty or location of taps can not affect these limits. Their use in the TS will eliminate the potential for the issuance of a LAR to revise them in the future.

Based on these considerations, PG&E believes that there is reasonable assurance that the health and safety of the public will not be adversely affected by the proposed TS change.

E. NO SIGNIFICANT HAZARDS EVALUATION

PG&E has evaluated the no significant hazards considerations involved with the proposed amendment, focusing on the three standards set forth in 10 CFR 50.92(c) as set forth below:

"The commission may make a final determination, pursuant to the procedures in paragraph 50.91, that a proposed amendment to an operating license for a facility licensed under paragraph 50.21(b) or paragraph 50.22 or for a testing facility involves no significant hazards considerations, if operation of the facility in accordance with the proposed amendment would not:

(1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or

(2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or

(3) Involve a significant reduction in a margin of safety."

The following evaluation is provided for the no significant hazards considerations.

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

   The accumulators only function following an accident. They cannot initiate an accident. The proposed changes have no impact to plant operation and are administrative in nature. Changing the technical specification (TS) limits for accumulator volume and pressure from nominal to analysis values will provide greater consistency within the TS. Changing the volume limits to cubic feet verses percent level will eliminate any potential for future revision of these limits because of instrument tap relocation.

   Plant parameters will continue to be administratively controlled within the allowed analysis parameters. The proposed limits for tank volume and nitrogen cover pressure are consistent with analysis values documented in the Final Safety Analysis Report and assume that the accident consequences remain unchanged.

   There are no hardware changes or changes in the method by which any safety-related plant system performs its safety function.

   Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

   The accumulators only function following an accident. They cannot initiate an accident. The proposed changes are administrative in nature.

   There are no hardware changes nor are there any changes in the method by which any safety-related plant system performs its safety function. The changes are administrative in nature so there are no new accident scenarios, transient precursors, failure mechanisms, or limiting single failures are introduced.

   Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

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

   The proposed changes are administrative in nature.

The proposed changes do not affect the acceptance criteria for any analyzed event. There will be no effect on the manner in which safety limits or limiting safety system settings are determined nor will there be any effect on those plant systems necessary to assure the accomplishment of protection functions.

Therefore, the proposed changes do not involve a significant reduction in the margin of safety.

F. NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

Based on the above evaluation, PG&E concludes that the changes proposed by this license amendment request satisfy the no significant hazards consideration standards of 10 CFR 50.92(c) and, accordingly, a no significant hazards consideration finding is justified.

G. ENVIRONMENTAL EVALUATION

PG&E has evaluated the proposed changes and determined that the changes do 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 changes meet the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), an environmental assessment of the proposed changes is not required.

MARKED-UP TECHNICAL SPECIFICATIONS

(Bases pages are also included for Information Only)

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.1 Accumulators

LCO 3.5.1 Four ECCS accumulators shall be OPERABLE.

APPLICABILITY: MODES 1 and 2,
MODE 3 with RCS pressure > 1000 psig.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One accumulator inoperable due to boron concentration not within limits.	A.1 Restore boron concentration to within limits.	72 hours
B. One accumulator inoperable for reasons other than Condition A.	B.1 Restore accumulator to OPERABLE status.	1 hour
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Be in MODE 3. AND C.2 Reduce RCS pressure to ≤ 1000 psig.	6 hours 12 hours
D. Two or more accumulators inoperable.	D.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.1.1	Verify each accumulator isolation valve is fully open.	12 hours
SR 3.5.1.2	Verify borated water volume in each accumulator is ≥ ~~60.8%~~ and ≤ ~~72.6%~~. ← 886 ft³	12 hours
SR 3.5.1.3	Verify nitrogen cover pressure in each accumulator is ≥ ~~595.5~~ psig and ≤ ~~647.5~~ psig.	12 hours

814 ft³ 579 664

(continued)

B 3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

B 3.5.1 Accumulators

BASES

BACKGROUND

The functions of the ECCS accumulators are to supply borated water to replace inventory in the reactor vessel during the latter phase of blowdown to the beginning phase of reflood of a loss of coolant accident (LOCA). The ECCS injection mode following a large break LOCA consists of three phases: 1) blowdown, 2) refill, and 3) reflood.

The blowdown phase of a large break LOCA is the initial period of the transient during which the RCS departs from equilibrium conditions, and heat from fission product decay, hot internals, and the vessel continues to be transferred to the reactor coolant. The blowdown phase of the transient ends when the RCS pressure falls to a value approaching that of the containment atmosphere.

In the refill phase of a LOCA, which immediately follows the blowdown phase, reactor coolant inventory has vacated the core through steam flashing and spill out through the break. The core is essentially in adiabatic heatup. The balance of accumulator inventory is then available to help fill voids in the lower plenum and reactor vessel downcomer so as to establish a recovery level at the bottom of the core and ongoing reflood of the core with the addition of ECCS water.

The refill phase is complete when the injection of ECCS water has filled the reactor vessel downcomer and the lower plenum of the reactor vessel, which is bounded by the bottom of the fuel rods.

The reflood phase follows the refill phase and continues until the reactor vessel has been filled to the extent that core temperature rise has been terminated.

The accumulators function in the later stage of blowdown to the beginning of reflood to fill the downcomer and lower plenum. The injection of the ECCS pumps aid during refill. Reflood and the following long term heat removal is accomplished by water pumped into the core by the ECCS pumps.

The accumulators are pressure vessels partially filled with borated water and pressurized with nitrogen gas. The accumulators are passive components, since no operator or control actions are required in order for them to perform their function. Internal accumulator tank pressure is sufficient to discharge the accumulator contents to the RCS, if RCS pressure decreases below the accumulator pressure.

Each accumulator is piped into an RCS cold leg via an accumulator line and is isolated from the RCS by an open motor operated isolation valve

(continued)

BASES

BACKGROUND (continued)	(8808A, B, C, and D) and by two check valves in series. The accumulator size, water volume, and nitrogen cover pressure are selected so that three of the four accumulators are sufficient to partially cover the core before significant clad melting or zirconium water reaction can occur following a LOCA. The need to ensure that three accumulators are adequate for this function is consistent with the LOCA assumption that the entire contents of one accumulator will be lost via the RCS pipe break during the blowdown phase of the LOCA.
APPLICABLE SAFETY ANALYSES	The accumulators are assumed OPERABLE in both the large and small break LOCA analyses at full power (Ref. 1 and 3). These are the Design Basis Accidents (DBAs) that establish the acceptance limits for the accumulators. Reference to the analyses for these DBAs is used to assess changes in the accumulators as they relate to the acceptance limits. In performing the LOCA calculations, conservative assumptions are made concerning the availability of ECCS flow with no credit taken for ECCS pump flow until an effective delay has elapsed. In the early stages of a LOCA, with or without a loss of offsite power, the accumulators provide the sole source of makeup water to the RCS. The assumption of loss of offsite power is required by regulations and conservatively imposes a delay wherein the ECCS pumps cannot deliver flow until the emergency diesel generators start, come to rated speed, and go through their timed loading sequence. The delay time is conservatively set with an additional 2 seconds to account for SI signal generation. In cold leg break scenarios, the entire contents of one accumulator are assumed to be lost through the break. No operator action is assumed during the blowdown stage of a large break LOCA. The limiting large break LOCA is a double ended guillotine break in the RCS piping. During this event, the accumulators discharge to the RCS as soon as RCS pressure decreases to below accumulator pressure. The worst case small break LOCA analyses also assume a time delay before pumped flow reaches the core. For the larger range of small breaks, the SI pumps begin RCS injection, however, the increase in fuel clad temperature is terminated primarily by the accumulators, with pumped flow then providing continued cooling. As break size decreases, the accumulators and the ECCS centrifugal charging and SI pumps play a part in terminating the rise in clad temperature. As break size continues to decrease, the role of the accumulators continues to decrease.

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

The accumulators do not discharge above the pressure of their nitrogen cover gas (~~505.5~~ 579 to ~~647.5~~ 664 psig.) At higher pressures the ECCS centrifugal charging pumps and SI pumps injection becomes solely responsible for terminating the temperature increase.

This LCO helps to ensure that the following acceptance criteria established for the ECCS by 10 CFR 50.46 (Ref. 2) that are applicable for the accumulators will be met following a LOCA:

a. Maximum fuel element cladding temperature is ≤ 2200°F;

b. Maximum cladding oxidation is ≤ 0.17 times the total cladding thickness before oxidation;

c. Maximum hydrogen generation from a zirconium-water reaction is ≤ 0.01 times the hypothetical amount that would be generated if all of the metal in the cladding cylinders surrounding the fuel, excluding cladding surrounding the plenum volume, were to react; and

d. Core is maintained in a coolable geometry.

Since the accumulators discharge during the blowdown and reflood phase of a LOCA, they do not contribute to the long term cooling requirements of 10 CFR 50.46, though their water volume is credited as part of the long term cooling inventory.

For both the large and small break LOCA analyses, ~~a nominal~~ contained accumulator water volume (814 FT^3 To 886 FT^3) is used. The contained water volume is the same as the deliverable volume for the accumulators, since the accumulators are emptied, once discharged. For small breaks, an increase in water volume is a peak clad temperature penalty. Depending on the NRC-approved methodology used to analyze large breaks, an increase in water volume may result in either a peak clad temperature penalty or benefit, depending on downcomer filling and subsequent spill through the break during the core reflooding portion of the transient. The analysis makes a conservative assumption with respect to ignoring or taking credit for line water volume from the accumulator to the check valve. The safety analysis assumes values of ~~≥60.8%~~ ~~(836~~ 814 cubic feet) and ~~≤72.6%~~ ~~(864~~ 886 cubic feet) ~~as read on narrow range level instruments~~. ~~These are nominal limits to assure the safety analysis is satisfied~~.

The minimum boron concentration setpoint is used in the post LOCA boron concentration calculation. The calculation is performed to assure reactor subcriticality in a post LOCA environment. Of particular interest is the large break LOCA, since no credit is taken for control rod assembly insertion.

The implementation of these values is performed accounting for instrument uncertainty.

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

A reduction below the accumulator LCO minimum boron concentration would produce a subsequent reduction in the available containment recirculation sump boron concentration for post LOCA shutdown and an increase in the sump pH. The maximum boron concentration is used in determining the cold leg to hot leg recirculation injection switchover time and minimum sump pH.

The large and small break LOCA analyses are performed at the minimum nitrogen cover pressure (~~595.5~~ 579 psig), since sensitivity analyses have demonstrated that higher nitrogen cover pressure results in a computed peak clad temperature benefit. The maximum nitrogen cover pressure limit (~~647.5~~ 664 psig) provides margin to assure inadvertent relief valve actuation does not occur.

These analysis-assumed pressures are specified in the SRs. Volumes are shown on the control board indicators as % readings on accumulator narrow range level instruments. Adjustments to the analysis parameters for instrument inaccuracies or other reasons are applied to determine the acceptance criteria used in the plant surveillance procedures. These adjustments assure the assumed analyses parameters are maintained.

The effects on containment mass and energy releases from the accumulators are accounted for in the appropriate analyses (Refs. 1 and 3).

The accumulators satisfy Criterion 2 and Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The LCO establishes the minimum conditions required to ensure that the accumulators are available to accomplish their core cooling safety function following a LOCA. Four accumulators are required to ensure that 100% of the contents of three of the accumulators will reach the core during a LOCA. This is consistent with the assumption that the contents of one accumulator spill through the break. If less than three accumulators are injected during the blowdown phase of a LOCA, the ECCS acceptance criteria of 10 CFR 50.46 (Ref. 2) could be violated.

For an accumulator to be considered OPERABLE, the isolation valve must be fully open, power removed above a nominal pressure of 1000 psig, and the limits established in the SRs for contained volume, boron concentration, and nitrogen cover pressure must be met.

(continued)

BASES (continued)

APPLICABILITY

In MODES 1 and 2, and in MODE 3 with RCS pressure > 1000 psig, the accumulator OPERABILITY requirements are based on full power operation. Although cooling requirements decrease as power decreases, the accumulators are still required to provide core cooling as long as elevated RCS pressures and temperatures exist.

This LCO is only applicable at RCS pressures > 1000 psig. At pressures ≤ 1000 psig, the rate of RCS blowdown is such that the ECCS pumps can provide adequate injection to ensure that peak clad temperature remains below the 10 CFR 50.46 (Ref. 2) limit of 2200°F.

In MODE 3, with RCS pressure ≤ 1000 psig, and in MODES 4, 5, and 6, the accumulator motor operated isolation valves are normally closed to isolate the accumulators from the RCS. This allows RCS cooldown and depressurization without discharging the accumulators into the RCS or requiring depressurization of the accumulators.

Accumulator may be unisolated when accumulator pressure is less than the maximum RCS pressure for the existing RCS cold leg temperature allowed by the P/T limit curves provided in the PTLR. This condition is in agreement with the TS 3.4.12 LCO requirement.

ACTIONS

A.1

If the boron concentration of one accumulator is not within limits, it must be returned to within the limits within 72 hours. In this Condition, the ability to maintain subcriticality or minimum boron precipitation time may be reduced. The boron in the accumulators contributes to the assumption that the combined ECCS water in the partially recovered core during the early reflooding phase of a large break LOCA is sufficient to keep that portion of the core subcritical. One accumulator below the minimum boron concentration limit, however, will have no effect on available ECCS water and an insignificant effect on core subcriticality during reflood. Boiling of ECCS water in the core during reflood concentrates boron in the saturated liquid that remains in the core. In addition, current analyses demonstrate that the accumulators will discharge following a large main steam line break. The impact of their discharge is minor and not a design limiting event. Thus, 72 hours is allowed to return the boron concentration to within limits.

B.1

If one accumulator is inoperable for a reason other than boron concentration, the accumulator must be returned to OPERABLE status within 1 hour. In this Condition, the required contents of three accumulators cannot be assumed to reach the core during a LOCA. Due to the severity of the consequences should a LOCA occur in these conditions, the 1 hour Completion Time to open the valve, remove

(continued)

BASES

ACTIONS

B.1 (continued)

power to the valve, or restore the proper water volume or nitrogen cover pressure ensures that prompt action will be taken to return the inoperable accumulator to OPERABLE status. The Completion Time minimizes the potential for exposure of the plant to a LOCA under these conditions.

C.1 and C.2

If the accumulator cannot be returned to OPERABLE status within the associated 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 MODE 3 within 6 hours and RCS pressure reduced to ≤ 1000 psig within 12 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.

D.1

If more than one accumulator is inoperable, the plant is in a condition outside the accident analyses; therefore, LCO 3.0.3 must be entered immediately.

SURVEILLANCE REQUIREMENTS

SR 3.5.1.1

Each accumulator motor operated isolation valve (8808A, B, C, and D) should be verified to be fully open every 12 hours. This verification ensures that the accumulators are available for injection and ensures timely discovery if a valve should be less than fully open. If an isolation valve is not fully open, the rate of injection to the RCS would be reduced. Although a motor operated valve position should not change with power removed, a closed valve could result in not meeting accident analyses assumptions. This Frequency is considered reasonable in view of other administrative controls that ensure a mispositioned isolation valve is unlikely.

SR 3.5.1.2 and SR 3.5.1.3

Every 12 hours, borated water volume and nitrogen cover pressure are verified for each accumulator. This Frequency is sufficient to ensure adequate injection during a LOCA. Because of the static design of the accumulator, a 12 hour Frequency usually allows the operator to identify changes before limits are reached. Operating experience has shown this Frequency to be appropriate for early detection and correction of off normal trends.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.5.1.4

The boron concentration should be verified to be within required limits for each accumulator every 31 days since the static design of the accumulators limits the ways in which the concentration can be changed. The 31 day Frequency is adequate to identify changes that could occur from mechanisms such as in-leakage. Sampling the affected accumulator within 6 hours after a solution volume increase of 5.6% (101 gallon) narrow range indicated level will identify whether in-leakage has caused a reduction in boron concentration to below the required limit. It is not necessary to verify boron concentration if the added water inventory is from the refueling water storage tank (RWST), and the RWST has not been diluted since verifying that its boron concentration satisfies SR 3.5.4.3, because the water contained in the RWST is nominally within the accumulator boron concentration requirements as verified by SR 3.5.4.3. This is consistent with the recommendation of GL 93-05 (Ref. 4).

SR 3.5.1.5

Verification every 31 days that power is removed from each accumulator isolation valve operator (8808A, B, C, and D) when the RCS pressure is greater than 1000 psig ensures that an active failure could not result in the undetected closure of an accumulator motor operated isolation valve. If this were to occur, only two accumulators would be available for injection given a single failure coincident with a LOCA. Since power is removed under administrative control, the 31 day Frequency will provide adequate assurance that power is removed.

This SR allows power to be supplied to the motor operated isolation valves when RCS pressure is less than or equal to 1000 psig, thus allowing the valves to be closed to enable plant shutdown without discharging the accumulators into the RCS.

REFERENCES

1. FSAR, Chapter 6.
2. 10CFR 50.46.
3. FSAR, Chapter 15.
4. GL 93-05, Item 7.1.
5. DCM S-38A.

PROPOSED TECHNICAL SPECIFICATION PAGE

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3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.1 Accumulators

LCO 3.5.1 Four ECCS accumulators shall be OPERABLE.

APPLICABILITY: MODES 1 and 2,
MODE 3 with RCS pressure > 1000 psig.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One accumulator inoperable due to boron concentration not within limits.	A.1 Restore boron concentration to within limits.	72 hours
B. One accumulator inoperable for reasons other than Condition A.	B.1 Restore accumulator to OPERABLE status.	1 hour
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Be in MODE 3. AND C.2 Reduce RCS pressure to ≤ 1000 psig.	6 hours 12 hours
D. Two or more accumulators inoperable.	D.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.1.1	Verify each accumulator isolation valve is fully open.	12 hours
SR 3.5.1.2	Verify borated water volume in each accumulator is ≥ 814 ft^3 and ≤ 886 ft^3.	12 hours
SR 3.5.1.3	Verify nitrogen cover pressure in each accumulator is ≥ 579 psig and ≤ 664 psig.	12 hours

(continued)