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

December 14, 1983

MEMORANDUM FOR: Darrell G. Eisenhut, Director
Division of Licensing

Roger J. Mattson, Director
Division of Systems Integration

Themis P. Speis, Director
Division of Safety Technology

Richard H. Vollmer, Director
Division of Engineering

Hugh L. Thompson, Director
Division of Human Factors Safety

FROM: Harold R. Denton, Director
Office of Nuclear Reactor Regulation

SUBJECT: DIABLO CANYON - ALLEGATIONS

The staff has been directed by the Commission to provide a status report on all outstanding allegations related to the Diablo Canyon plant prior to authorization of criticality and low-power testing. A management plan has been developed and is being implemented to accomplish this objective. Please provide any new information relating to this task to Darrell G. Eisenhut no later than December 16, 1983. Information of interest includes new concerns, allegations, and additional information on previous allegations. New information received after December 16 should be provided to the Division of Licensing upon receipt.

If you have questions regarding these items, please contact G. E. Edison in DL at X28933.

H R Denton

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

cc: T. Bishop
[redacted]
B. Buckley
G. Knighton

D-10

April 8, 1983 Conference Call between NRC & PG&E

Participants

NRC	PG&E
L. R	Howard Friend
O. P	Edin Hoak, Project Manager
T. N	Ed Kienel, Mechanical Engineering Group Supervisor
G. K.	
A. V.	Gary Moore, Unit 1, Project Eng.
	Bradley Lew, Project Contact
	Chuck Coffer, " "

- Letter are in the order in which events occured

- The last thing that occured that prompted this call is a conference call on April 6, 1983.

Participants

NRC	David Carlson
A. Vietti	Chuck Coffer, Project Contact
J. Wermiel	Ed Kienel, Engineering
	Chris Wired

During the conference call with PG&E we were informed that as a result of our concerns about the [illegible] paragraph in [illegible] 4/4/83, a new issue has arisen with respect to CCWS performance at D.C. [illegible] when all three CCW pumps are initiated on a safety injection signal, PG&E is not sure that the CCW heat exchangers can withstand

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full flow without unacceptable tube vibrations. Further, if the "C" loop isolation valve does not close (single failure) this additional flow through the "C" loop may also cause unacceptable tube vibrations in the "C" loop components. Apparently, this was not accounted for in the original CCWS design or in the specifications for the system heat exchangers.

PG&E is unable to give us a schedule for resolution of this concern at this time, but they are convinced a May 15, 1983 (Aux Sys Br. Target Date for putting out an SER) cannot be met. They must check with the HX manufacturer to confirm acceptable performance at the increased flowrate.

In a separate but related matter, information on the results of equipment manufacturers' evaluations [illegible] their equipment to function at the temperatures in the CCW system [illegible] as a result of [illegible] this, [illegible] [illegible] [illegible]. PG&E stated that [illegible] [illegible] the latest [illegible] one manufacturer on April 7, 1983.
I have not received this yet, but B. Lew says its in the mail. They were unable to give us a schedule for final submittal.

Also, info we are seeking on the analysis of the Reactor Coolant pump upper and lower bearing oil coolers is scheduled for completion on April 15, 1983. Ed Kreinel stated that the analysis will be completed by April 15, 1983 but if the results are not favorable they will want a new schedule for a reanalysis.

Finally, in PG&E's submittal dated April 4, 1983 they stated that they are now using a max. ocean water Temp. of 64°F verses the 70°F value referenced in the FSAR to remove heat from the CCW system during the worst case accident. They will have to justify 64°F to our Hydrology staff or use 70°F in the limiting case

Annette Vietti
2-4449

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Annette Vietti
2-4449

H Schierling

JUN 20 1983

Docket No. 50-275

MEMORANDUM FOR: Thomas M. Novak, Assistant Director for Licensing, Division of Licensing

FROM: L. S. Rubenstein, Assistant Director for Core and Plant Systems, Division of Systems Integration

SUBJECT: DIABLO CANYON - REVIEW AND SAFETY EVALUATION OF THE COMPONENT COOLING WATER SYSTEM (TAC 49935)

As requested in Darrell Eisenhut's February 18, 1983 memorandum, Enclosure 1 is the Auxiliary Systems Branch's (ASB) safety evaluation report (SER) concerning the reevaluation of the Diablo Canyon component cooling water system (CCWS). This SER is based on ASB's rereview of the Diablo Canyon FSAR, a site walkdown conducted on January 12, 1983, information obtained during meetings with the applicant on January 28, 1983 and April 19, 1983, and letters from the applicant dated March 15, 1983, March 18, 1983, March 25, 1983, April 4, 1983, April 7, 1983, April 15, 1983, May 3, 1983, and May 18, 1983. ASB has addressed in the SER the following four points identified in the February 18, 1983 memorandum:

1. CCWS design compliance with FSAR commitments.
2. CCWS design compliance with applicable NRC regulations.
3. CCWS design compliance with criteria in the current SRP (Section 9.2.2).
4. Generic implications of the above determinations regarding adequacy of the Diablo Canyon design approach and philosophy.

In summary, we conclude that the applicant has satisfied the original FSAR commitments and applicable regulations with the CCWS design. However, confirmation of commitments made regarding the following items as discussed in detail in the SER is required:

1. Incorporation of a technical specification governing CCWS operation when ocean water intake temperatures exceed 64°F.
2. Verification of the validity of the currently approved accident analyses for a 64°F intake temperature.
3. Assurance of an accurate and continuous ocean water temperature monitoring program.
4. Verification of acceptable CCWS operation with two CCW heat exchangers on line under the newly assumed conditions.

Contact:
J. Wermiel
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Additionally, we have reviewed the design against the current SRP. There are three areas as follows wherein the Diablo Canyon CCWS does not meet the current criteria of SRP Section 9.2.2 as identified in the SER:

1. Moderate energy pipe crack leak rate (BTP ASB 3-1).
2. Tornado missile protection for the CCW surge tank.
3. Protection of reactor coolant pumps from multiple locked rotor accident due to loss of CCW.

We have also addressed in the SER the generic implications of the above determinations regarding the adequacy of the design approach and philosophy for the CCWS. A summary of the above findings is contained in the Conclusion section of the SER. In addition, we have addressed those allegations by Mr. Smith regarding the adequacy of the Diablo Canyon CCWS. These allegations concern the seismic design capability of the CCWS, CCWS heat removal capability following a LOCA and concurrent single failure, surge tank level instrumentation design, and the nonseismic Category I post-accident sample cooler added to the CCWS vital loop A. We believe our SER has satisfactorily resolved these concerns.

Details of the allegations which do not involve the CCWS follows:

1. Regarding Mr. Smith's concern with design classification of instrumentation at the plant. ICSB has reviewed information made available during the meeting of January 28, 1983, and has found it acceptable. Their evaluation and comments are presented in Enclosure 2.

2. Regarding Mr. Smith's concerns with the seismic qualification of the diesel generator air intake and exhaust piping, silencers and filters, the applicant indicated during the January 28, 1983 meeting that an evaluation of these components against seismic Category I criteria was underway, and corrective action would be taken as necessary to assure their seismic integrity. Acceptability of this will be confirmed in the IDVP Phase I review.

3. During the January 28, 1983 meeting, the applicant also informed us that they have verified the seismic Category I capability of the lube oil filters and piping on the safety injection pump. We consider this matter to be resolved.

4. Based on the discussion contained in the transcript of the meeting with Mr. Smith on January 6, 1983, we believe that arguments were presented that satisfactorily resolved the concern with the non-Class 1E design for the reactor protection system trip circuitry.

5. Based on the discussion contained in the transcript of the meeting with Mr. Smith held on January 6, 1983, we believe his concern regarding proper documentation and understanding of the acceptance criteria used during the seismic interaction program (SIP) review at Diablo Canyon was resolved in his own mind by the conservative results applied in the plant design from the SIP evaluation.

The above discussion is our understanding of the status of the evaluation and resolution of the individuals' concerns with the Diablo Canyon design to date. Our review of the Diablo Canyon CCWS is complete.

L S Rubenstein

L. S. Rubenstein, Assistant Director
for Core and Plant Systems
Division of Systems Integration

Enclosures:
As stated

cc w/enclosures:

H. Denton
E. Case
R. Vollmer
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ENCLOSURE 1

SAFETY EVALUATION OF THE DIABLO CANYON COMPONENT COOLING WATER SYSTEM AUXILIARY SYSTEMS BRANCH

9.2.2 Reactor Auxiliary Cooling Water System (Component Cooling Water System)

BACKGROUND

Current Acceptance Criteria

The current acceptance criteria for the component cooling water system (CCWS) are General Design Criteria (GDC) 2, 5, 44, 45 and 46 as discussed in the Standard Review Plan (SRP), NUREG-0800, Revision 2, dated July 1981, Section 9.2.2. GDC 5 does not apply to Diablo Canyon since each unit has its own CCWS. Although not identified in SRP Section 9.2.2, all safety related systems are also required to meet GDC 4. This review is normally covered in other SRP sections for all safety related systems and would include the CCWS.

Acceptance Criteria at the Time of the Original Review

While no SRP existed, the above acceptance criteria were applicable to Diablo Canyon at the time of its initial operating license review (1974) and apply as well as to current licensing reviews. In meeting the above regulations, various specific design criteria are compared

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against the CCWS design. These criteria have changed since the initial Diablo Canyon review was completed. This is discussed in more detail in this SER. The following is a comparison of the Diablo Canyon CCWS to the current acceptance criteria as described in the review procedures of SRP Section 9.2.2 and as interpreted when the plant was reviewed in 1974.

System Description

The CCWS at Diablo Canyon is designed to provide cooling water to essential and nonessential components and to operate in all plant operating modes, including normal power operation, plant cooldown and emergencies including LOCA. The CCWS consists of a baffled surge tank, three pumps, two heat exchangers and three cooling loops, (vital loops A and B and nonvital loop C). The CCWS is provided with redundant radiation monitors to detect inleakage of radioactive fluid from potentially radioactive components cooled by CCWS. Makeup to the CCWS surge tank is normally provided by the nonseismic Category I (non Hosgri) demineralized water makeup system. A seismic Category I (Hosgri) source of makeup water is available at a rate of 250 gpm from the condensate storage tank via seismic Category I piping and the makeup water transfer pumps which are powered from the vitial emergency power supplies. Additional nonseismic Category I makeup sources are also provided. Two normally isolated chemical addition tanks are provided, one on each pump discharge header. The CCWS pumps are powered from the vital emergency power supplies. Cooling water to the CCW heat exhcangers is provided from redundant trains of the safety-related auxiliary salt water system which transfers the heat to the ultimate heat sink (the Pacific Ocean), thereby assuring heat removal in all modes of operation. One the CCW heat exchangers is normally valved out by closing a motor operated valve at the CCW heat exchanger outlet. The three CCWS pumps are normally headered together at the suction and discharge of the pumps with separation capability available via local-manually operated valves. Each pump is provided with a discharge line to two headers, one supplying the A vital loop and one to the B vital loop. Thus, all three pumps are normally connected to both vital loops. One CCW heat exchanger is located on each of the above headers. One or two CCW pumps are normally operating with two pump operation preferred.

Flow through the A header from the pumps passes through the A CCW heat exchanger with a local manually operated isolation valve at the inlet and a motor operated valve at the outlet. Header B is lined up in the same manner. Downstream of the motor operated isolation valves (one is normally closed), headers A and B are crossconnected via two normally open local-manual isolation valves. Downstream of the header piping cross-connect, vital loops A and B each supply their respective safety related loads. Between the two manually operated valves in the cross-coneect piping, nonvital loop C is supplied via a normally open motor operated valve.

Each vital loop (A and B) supplies cooling water to the following redundant safety-related components: a charging pump lube oil and seal cooler, a safety injection pump lube oil and seal cooler, an RHR heat exchanger, an RHR pump seal cooler and containment air coolers. Vital loops A and B are identical except that loop A supplies two containment air coolers while loop B supplies three, and, loop A normally provides cooling water to two CCW pump lube oil coolers and stuffing boxes while loop B provides cooling to one. One train of the above components (including three containment air coolers) is required for safe shutdown under emergency (LOCA) operating conditions.

Nonvital loop C supplies cooling water to the following nonsafety related components: spent fuel pool heat exchanger, letdown and excess letdown heat exchangers, steam generator blowdown heat exchangers, reactor coolant pump bearing oil coolers, seal coolers and seal water heat exchanger, sample heat exchanger, waste concentrator coolers, boric acid evaporator coolers, auxiliary steam drain receiver vent condenser, reactor vessel support coolers, reciprocating charging pump coolers, and waste gas compressor coolers. The above components are not required for safe shutdown under emergency operating conditions.

EVALUATION

Seismic Classification

FSAR Section 3 indicates that all CCWS piping and components are designed to seismic Category I requirements. Further, the piping and essential components on vital loops A and B are Quality Group C. The P&IDs show no design classification change at any CCWS components, including heat exchangers supplied by nonvital loop C. However, the following statement in FSAR Section 9.2.2 tends to contradict the above, "Except for nonvital components in loop C and the chemical additional tanks, the CCW system is a Design Class 1 (seismic Category I) system." Our original interpretation of this statement assumed that "components" referred to the nonvital load itself, not the CCWS pressure retaining portion of the component. Therefore, it was assumed in our original review that the entire system including the pressure retaining portion of the Design Class II loop C components was designed to seismic Category I criteria for pressure boundary purposes. Thus, a safe shutdown earthquake (SSE) would not cause a failure in the system which would result in loss of water, and isolation of loop C in an SSE was therefore, not considered necessary. The CCWS is located in seismic Category I structures except for a portion located in the turbine building. The applicant indicated in the FSAR that this portion of the turbine building is designed not to fail in an SSE. This is being verified in Phase I of the Diablo Canyon IDVP. Refer to the IDVP SER for details of this issue. We concluded in our original review that the requirements of GDC 44 regarding the CCWS cooling capability following an SSE were met.

We learned in a meeting with the applicant on January 28, 1983, that our above original conclusion may not have been correct and that the pressure retaining portion of certain nonvital loop C components may not meet seismic Category I criteria as we originally assumed and as was confirmed by the applicant as the design basis for the CCWS. In response to this concern, by letter dated May 18, 1983, the applicant verified that the pressure boundaries of all nonvital loop C components have been reanalyzed to assure their integrity under postulated SSE conditions. Thus, a postulated single failure (to close) in the C loop supply remote manual motor operated valve will not result in an unacceptable condition as isolation of the C loop following an SSE is not essential for assuring CCWS safety function. Local manual action can be taken to close the valve as necessary.

Following an SSE, the operator would take local manual action to transfer makeup to the CCW surge tank from the normal nonseismic Category I demineralized water makeup system to the seismic Category I condensate storage and transfer system. Since no increase in leakage following an SSE occurs, no critical time constraint was placedon this manual action. It should be further noted that Phase II of the Diablo Canyon IDVP is also considering the above concern. In addition, we were informed during the January 28, 1983 meeting that the post accident sample cooler recently added to the A vital loop will be qualified to seismic Category I criteria. As indicated above, confirmation of our original acceptance of the CCW design in this area has been provided. Therefore, we conclude that the requirements of GDC 2 and 44 and the guidelines of Positions C.1 and C.2 of Regulatory Guide 1.29 regarding seismic classification are met.

Leakage Design

Because of our original conclusion regarding the full seismic Category I qualification of the pressure boundary of the CCWS, acceptance of system leakage was originally based on a postulated nonmechanistic moderate energy pipe crack which was the 200 gpm leak rate assumed by the applicant in the FSAR. It was shown by the applicant that the operator had 20 minutes under the above assumed leakage condition to act and isolate nonvital loop C or separate the two vital loops in order to assure proper CCWS operation. To isolate loop C at the supply, the motor operated isolation valve must be closed either remote or local manually or the local manual cross-connect valves must be closed. To isolate loop C at the return header, since there are no check valves, the two local manual cross-connect valves at the CCW pump suction must be closed. Closing these valves renders one of the CCW pumps (pump 1-2) inoperable since it can only take suction from the loop C return header. Similar manual actions are required if the crack is assumed in either vital loop A or B. No concurrent single failure is assumed with a moderate energy pipe crack in a moderate energy dual purpose system such as the Diablo Canyon CCWS as identified in the criteria of Branch Technical Position (BTP) ASB 3-1.

However, because of the size of the CCW loop headers, 20" for the A, B and C loops, and 30" for the A and B headers, a crack postulated in accordance with BTP ASB 3-1 would result in a higher flow rate than the assumed 200 gpm. The applicant provided no bases or detailed evaluation for a maximum leak rate of 200 gpm. Local manual valves must be closed at both the supply and return headers, or sufficient makeup provided to keep up with the loss of water. To demonstrate compliance with current SRP criteria, the applicant should provide a more complete analysis that adequate time exists for operator action to prevent damage to all the CCW pumps on loss of suction and that a temporary complete loss of CCW system flow while the operator realigns the system is acceptable assuming the greater leak rates. We have noted in a field walkdown that the A, B and C loop supply valves are located in one area and are readily accessible for local manual operation as required.

Based on the above, we cannot conclude that the CCWS meets the current criteria of BTP ASB 3-1 concerning moderate energy pipe break protection and therefore, does not meet our current interpretation of the requirements of GDC 4. However, we approved the applicant's assumed leak rate as an exception to the moderate energy pipe break criteria in our original review on the basis that a 200 gpm leak rate was large enough to demonstrate a satisfactory design capability. Indication of leak rates much less than 200 gpm would be detected and action taken before a leak rate of this amount would develop. We believe the above determination is still true and that GDC 4 and 44 with respect to leak detection and isolation capabilities are met.

Instrumentation Design

The instrument and control systems for the CCWS that perform safety functions are seismically and environmentally qualified. The safety functions include those actions required for design basis accidents. In addition, the diagnostic instrumentation which provide indication of temperature and pressure to confirm that the CCWS is performing its safety function is also qualified for seismic and environmental conditions. Instrumentation which does not perform a safety function and is [illegible]

As indicated previously, the applicant has verified that the CCWS pressure boundary integrity is maintained following an SSE, and thus no additional leakage was assumed following an SSE. The applicant's original analysis indicates that operators have sufficient time to isolate the nonvital components and thereby insure the continued operability of the essential portions of the CCWS under the assumed nonmechanistic leak rate. Low level alarms are provided on the CCW surge tanks which would identify that a failure of the CCWS pressure boundary had occurred. The level switches and alarms were originally designed and installed to Class 1E standards, including seismic qualification to assure their operability following a seismic event. Because no additional leakage is assumed to result from the SSE, immediate operator action is unnecessary, and thus the level instrumentation is not viewed as performing a safety function. The operator can realign CCW surge tank makeup to the seismically qualified source some time subsequent to the earthquake. Therefore, the CCW surge tank level indicator is classified as Class 1C under the Diablo Canyon instrument classification system, which only requires that it maintain its pressure boundary following an SSE. The staff finds the design and classification of the CCW surge tank level instrumentation acceptable because the integrity of the CCWS loop C pressure boundary is maintained following an SSE and immediate operator action is therefore unnecessary.

Missile Protection

With the exception of the surge tank, the entire CCWS is located within tornado missile and flood protected structures. The system is located away from high energy piping systems. The CCWS pumps are located in separate cubicles thus providing protection from internally generated missiles. The CCW surge tank is located on the auxiliary building roof, 105 feet above ground, and is not fully protected against tornado missiles. The applicant assumes (FSAR Section 3.3) that only one tornado missile acts at a time. This does not meet current criteria identified in SRP Section 3.5.2. The missile spectrum identified by the applicant meets SRP criteria and is acceptable, but the "safewind" (maximum mph for a given component) for the surge tank is below that identified in Regulatory Guide 1.76 for tornado Region II. The applicant provided the results of analyses for the surge tank and its appurtenances. Based on the above, we concluded that although the tornado missile protection for the CCW surge tank does not meet criteria in SRP Sections 3.5.1.4, 3.5.2 and 9.2.2, in our judgement, the probability of tornado missile damage which would result in CCWS failure was sufficiently low to permit acceptance of the design. We continue to support this judgement. We therefore conclude that GDC 4 with respect to missile protection is met.

Heat Removal Capability

The applicant indicates in the FSAR that one CCW pump and heat exchanger is sufficient to provide decay heat removal and essential component cooling in the event of the most limiting accident, the design basis LOCA with concurrent loss of offsite power and a single active failure. Under such an event, all three CCW pumps are automatically started, the motor operated valve to the nonvital C loop automatically closes (on receipt of a high containment pressure signal), and the operator remote manually opens the normally closed motor operated valve to one CCW heat exchanger in order to puc both in service. Twenty minutes for operator action to perform this function is assumed. In the long term post-accident (LOCA) recirculation phase, the operator also locally manually closes the loop A and B cross connection valves to separate the CCWS into fully redundant trains. Because of the normally open cross connection, flow to all five containment coolers is provided, even though two are on the A loop and three on the B loop as previously stated. The FSAR CCWS heat removal analysis is based on a single failure of one emergency diesel generator (loss of one vital bus). This is the most limiting failure from the standpoint of containment integrity following a LOCA as its results in a simultaneous loss of power to two containment air coolers and core containment spray pump. The FSAR indicates that following a LOCA under the above assumption, CCW exit water temperature from the containment air coolers is 216°F. This is at a flow rate of 2000 gpm through each cooler and assumes that the nonvital loop is isolated. The applicant states in the FSAR that the CCW pressure is sufficient to prevent boiling in the CCWS at this temperature. Return flow from the inoperative containment air coolers mixes with the 216°F water and results in reducing the bulk CCW return temperature to a valve below the CCW pump suction design of 171°F. We accepted the above CCWS heat removal capability analysis in our original SER and concluded that GDC 44 was met.

However, concerns have recently been identified that the above described CCW heat removal analysis may not be the most limiting from the stand point of CCW cooling performance and flow capacity and their affect on assuring plant safety. This is particularly true in the event the operator fails to open the valve to the normally isolated CCW heat exchanger since one heat exchanger will now experience full CCW pump flow and heat load for some time. Further, tbe assumed vital bus single failure may not be limiting with respect to assuring a maximum CCW temperature within design limits for equipment cooled by the system.

In response to these concerns, by letters dated March 18, 1983, April 4, 1983 and May 18, 1983, the applicant provided the results of a reanalysis of the heat removal capability of the CCWS assuming worst design basis heat load (LOCA) and the most limiting single failure. From the standpoint of assuring proper CCWS cooling performance for assuring acceptable equipment operation, it was determined that single failure of an auxiliary salt water pump results in a higher CCW temperature (with one CCW heat exchanger in operation) than was determined in the original FSAR heat removal analysis and is thus more limiting. In order to maintain CCW supply temperature at the maximum acceptable value of 132°F for equipment operation, a maximum ocean water (auxiliary salt water system) temperature of 64°F must be assumed. The FSAR analysis assumed an ocean water temperature of 70°F. Consequently, the applicant has committed to the following in order to assure proper CCWS safety function:

1. Incorporation of a technical specification on the 64° F ocean water intake temperature with appropriate surveillance, limiting conditions for operation, action statements and basis. The applicant has proposed actions such as valving in the second CCW heat exchanger or reducing plant power level when the intake temperature exceeds 64°F.

2. Confirming that the accident analysis previously performed at an assumed 70°F ocean water temperature are not affected by a 64°F value.
3. Assuring accurate and continuous monitoring of the intake water temperature.
4. Verification of acceptable CCWS performance with two heat exchangers in operation under the new assumed conditions.

We will confirm compliance with the above commitment and find them to be acceptable for resolving the concerns.

The applicant has also provided further information which indicates that the design of the CCWS is such that only a small increase in flowrate through one CCW heat exchanger occurs between two and three CCW pump operation. Further, CCWS preoperational testing and flushing at excess flowrates has verified proper CCW and other safety related heat exchanger performance under normal and accident conditions. In addition, maximum CCW flow under design basis conditions is below the value identified in the CCW heat exchanger specification which was guaranteed by the equipment vendor.

Pending formal documentation of the above identified commitments, we conclude that the applicant has provided adequate assurance of CCW heat removal safety function and therefore meets the requirements of GDC 44.

Reactor Coolant Pump Cooling

The design of the CCW to the reactor coolant pumps (RCPs) does not meet our current SRP criteria regarding protection against multiple locked rotor as a single CCW supply and return line (header) and associated containment isolation valve are provided to serve all four RCPs. A pipe crack or single failure in the valve could cause loss of all CCW flow to the bearing oil coolers and lead to a potential pump seizure. The applicant normally would be required to provide the results of RCP tests indicating that sufficient time is available to detect loss of all CCW and trip the pumps manually before an unacceptable condition occurs. Safety grade indication of loss of CCW flow to the pumps would also be required. If the above can not be demonstrated, an automatic trip of the RCPs on loss of CCW or redundancy in the CCW supply and return to the RCPs should be provided. This criteria was not established at the time of the original Diablo Canyon review. However, multiple locked rotor was viewed as a sufficiently low probability occurrence to not require backfit of the criteria to older plants including Diablo Canyon. We believe this judgement is still valid, and therefore the above described design is acceptable.

A review of the Diablo Canyon against the criteria of Items II.K.2.16 and II.K.3.25 of NUREG-0737 concerning RCP seal cooling with loss of power has been previously done and Diablo Canyon found acceptable.

Testing and Inspection

The CCWS operated continuously in all plant operating modes. The pumps are rotated in service on a scheduled basis to obtain even wear and are periodically tested and inspected in accordance with plant Technical Specifications. The system components are located in accessible areas to permit inservice inspection as required. Thus, the requirements of GDC 45 and 46 regarding inservice inspection and testing are met.

Conclusion

Based on the above, we conclude that the Diablo Canyon CCWS satisfies the originally FSAR commitments and conclude that the requirements of GDC 2, 44, 45 and 46 regarding protection against natural phenomena, cooling water capability, inservice inspection and testing, and the guidelines of Regulatory Guide 1.29 regarding seismic classification are met. We also conclude that the requirements of GDC 4 regarding protection from environmental and missile affects are met. The extent of compliance of the CCW with current applicable criteria of SRP Section 9.2.2 is discussed in the evaluation above. Noncompliances are summarized below.

1. GDC 4 and BTP ASB 3-1 regarding leakage rate from moderate energy pipe cracks.

2. GDC 4, Regulatory Guide 1.76, and SRP criteria regarding tornado missile protection (unprotected CCW surge tank).
3. SRP criteria regarding protection of the RCPs from multiple locked rotor accident due to loss of CCW.

We conclude that these deviations are acceptable as discussed in the evaluation above.

It should also be noted that the CCWS is the only safety related closed loop cooling water system we have identified at Diablo Canyon which also serves nonessential components. Thus, the above identified concerns which required subsequent reevaluation should apply only to the CCWS, and thus no generic implication is involved. Further, the work underway in the Diablo Canyon IDVP should provide additional insight into the adequacy of the applicant's design approach and philosophy for safety related systems with respect to applicable NRC criteria.

ENCLOSURE 2

COMMENTS CONCERNING DIABLO CANYON INSTRUMENTATION DESIGN WITH REGARD TO THE TRANSCRIPT OF THE MEETING WITH JOHN SMITH AND NRC STAFF HELD JANUARY 6, 1983

A concern was noted that some aspects of the instrumentation and controls for the component cooling water system were designed from a seismic standpoint which only assured that they would not fail in a manner to break the pressure boundary of the CCW system. As a portion of the CCW system supplies cooling water to nonvital components, i.e., potentially nonseismically qualified components which do not perform a safety function, the concern appears to center on how plant safety is maintained following a seismic event. In particular, Mr. Smith was told by someone within PG&E or Bechtel that the level switches on the CCW surge tanks were only classified as seismic from a pressure boundary standpoint; i.e., their operability to provide alarms following a seismic event is not assured.

At the meeting held between PG&G and the staff on January 28, 1983, the licensee stated that level switches and alarms were originally qualified to Class 1E requirements, including seismic considerations. However, within the PG&G system of classification for instrumentation, these instruments are Class IC, i.e., they only required seismic qualification from a pressure boundary standpoint. Further, it was noted that these instruments were not included in subsequent reviews of the seismic design adequacy (Hosgri) such that these instruments could be reclassified as IB in the Diablo Canyon classification system. Class IB includes seismic qualification to insure operability in addition to pressure boundary considerations.

At the January 28, 1983 meeting with PG&E, the licensee stated that the designers concluded that the nonessential components in nonvital loop C would not fail in a design basis seismic event. Further, additional analysis and evaluations have been made to confirm that this judgement is valid. Based on this, it would appear that one may now conclude that a design basis seismic event will not result in a loss of the pressure boundary of the CCW system and this need not be considered a design basis event for functional availability of the CCW surge tank level instrumentation. Therefore, the PG&G classification of level switches and alarms as 1C, (pressure boundary integrity only) is appropriate.

If the original design of the CCW system had included all components as seismic Class 1, its pressure boundary integrity would not have been questioned for a seismic event. Therefore, PG&E's approach was to conduct additional analysis and evaluations to provide assurance that the CCW pressure boundary will not fail in a seismic event.

The licensee has stated and the Diablo Canyon SER notes that instrumentation and control components required to perform a safety function are designed to meet seismic Category I requirements. The problem as can be seen from the above is those judgements which go into the assessment of what constitutes a required safety function. Although further effort has been made to confirm such judgements in the case of the CCW system, it is assumed that based on the review of the Diablo Canyon FSAR and subsequent independent design reviews, that appropriate judgements were made for the balance of instrument and control system seismic classifications at Diablo Canyon.