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SUBJECT: Forwards application for amend to License DPR-82,consisting of LAR 95-02,requesting for emergency review of rev of TS 3/4.5.2 re relaxation safety injection pump 2-2 differential pressure & enforcement discretion. See Reports

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March 23, 1995

PG&E Letter DCL-95-065

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Docket No. 50-323, OL-DPR-82
Diablo Canyon Unit 2
License Amendment Request 95-02
Request for Emergency Review of Revision of Technical Specification 3/4.5.2 - Relaxation of Safety Injection Pump 2-2 Differential Pressure and Enforcement Discretion Regarding Compliance with TS 3/4.5.2

Gentlemen:

PG&E has identified a potential problem with safety injection (SI) pump 2-2. The potential problem is reduced pump performance indicated by lower pump differential pressures (dP) at various points on the pump curve. The initial indications of this condition were observed during full-flow performance tests on the pump during the Unit 2 sixth refueling outage (2R6). A Westinghouse evaluation of the impact of the pump's performance on the safety analyses was then completed during 2R6 and PG&E decided to return the pump to service and continue to monitor its performance through quarterly, single-point pump performance tests. The three most recent single-point pump tests performed after 2R6, while indicating acceptable results, have not had results comparable with previous similar tests. If further degradation occurs, PG&E would not be able to assure that the minimum required pump dP would be met for SI pump 2-2. This letter and its attachments: (1) describe PG&E's evaluation of SI pump 2-2 performance; (2) describe PG&E's plans to address the performance of the pump and the safety impact of these actions; and (3) inform the NRC of potential actions which may be taken if further degradation occurs in upcoming pump surveillance tests.

Outage Test Results and Action Taken

During 2R6, in September and October 1994, full-flow performance tests were performed on SI pump 2-2 in accordance with Surveillance Test Procedure (STP) P-SIP-A22, "Performance Test of Safety Injection Pump 2-2." The purpose of these tests was to verify the performance of SI pump 2-2 and its discharge orifice. Previous pump performance tests had not included the effects of the orifice on the performance curves. The need to include the effects of the orifice was identified in response to a Quality Assurance audit regarding pump performance.

The full-flow performance tests conducted during 2R6 indicated a deviation of the SI pump 2-2 curve from the minimum assumed emergency core cooling system

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(ECCS) analysis curve in several locations. PG&E initiated a non-conformance report (NCR) during the outage to determine the root cause and safety impacts of the pump performance. An evaluation of the pump performance was completed during the outage and concluded that the reduced pump curve was adequate to meet ECCS flow requirements (see Attachment J). In addition, the pump vibration data were consistent with past pump performance. The pump was returned to service and monitored by performance of quarterly single-point pump tests.

Quarterly Pump Test Results

Following completion of 2R6, STP P-1B, "Routine Surveillance Test of Safety Injection Pumps," was performed on December 21, 1994, December 22, 1994, and January 6, 1995. A single-point verification that the pump curve has not degraded is based on the results from STP P-1B. The verification point is the dP of the pump while on mini-flow recirculation. The tests indicated a decrease in pump dP that could be indicative of actual pump degradation or test data scatter, since test data scatter has occurred during the operating history of the pump. The test results were approximately 1 psid above the Technical Specification (TS) limit of 1455 psid. The data scatter from recent tests has not been significant. PG&E believes that this is due, in part, to the use of high accuracy digital gauges during recent tests. Because recent test results did not support data scatter as a cause of the decreasing pump dP, PG&E initiated a detailed evaluation of potential degradation causes.

Pump Performance Evaluation

Additional investigation has been performed to identify potential causes of degradation. The investigation includes: (1) a review of the operating and maintenance history of SI pump 2-2; (2) a review of nuclear industry operating and maintenance experience with SI pumps; (3) consultation with the pump vendor and Westinghouse; and (4) development of a failure modes and effects analysis (see Attachment D). Based on the lowest observed dP reading, the total indicated decrease in pump dP is approximately 1.6% of the original reference ASME baseline dP of 1480.5 psid. The preliminary results of the investigation concluded that the most likely cause of pump degradation is either wear ring degradation in excess of normal, or o-ring failure. Wear ring degradation could result from pump starts and stops and cumulative run-time, while o-ring failures occur as the result of cumulative run-time. Neither potential degradation cause would result in a performance reduction that would prevent the SI pump from performing its required safety function, prior to the end of cycle 7.

Currently, SI pump 2-2 performance exceeds the TS required mini-flow recirculation dP by approximately 1 psid. In accordance with PG&E's integrated 12 week maintenance and testing schedule, the next SI pump 2-2 surveillance test is scheduled to begin on the night of March 27, 1995. The results of the test will be available on the morning of March 28, 1995. The TS surveillance interval, including the allowed TS 4.0.2 extension, ends on May 1, 1995.

The March 27, 1995, surveillance test has been revised, as follows, to obtain additional information regarding pump performance, and potential degradation.

1. --Electrical motor starting and running current data will be recorded.

2. Pump suction pressure data will be obtained using high accuracy digital gauges. Pump dP will be obtained using a high accuracy digital dP gauge.

3. The test duration will be extended from the typical 30 minutes to approximately 4 hours. The test duration extension may provide additional information on the potential degradation mechanisms.

4. System valves will be manipulated to assure no previously undetected leaks outside of the pump boundary flow path exist that could cause the observed pump degradation.

Alternative Actions Under Consideration

PG&E plans to take the following actions based on the results of the March 27, 1995, SI pump 2-2 test:

1. If the test results demonstrate that margin exists above the current TS dP requirement, PG&E will place the pump on an increased monthly testing frequency until adequate pump performance is confirmed. Appropriate maintenance will be performed during the next refueling outage to restore the pump to its nominal design capacity. Following completion of the next refueling outage, this license amendment request (LAR) would be withdrawn.

2. If the test results are slightly below the TS limit of 1455 psid, but consistent with wear ring degradation or o-ring failures, PG&E would request the NRC to review and approve this LAR on an emergency basis to lower the TS dP limit to 1430 psid. Analyses have been performed which demonstrate that this lower limit is adequate to meet ECCS flow requirements. PG&E would then place the pump on an increased testing frequency to more closely monitor the trend in pump performance. If pump testing during the remainder of cycle 7 identifies significant degradation, the pump will be replaced at the time the degradation is identified. Since this LAR is only applicable for the remainder of cycle 7, maintenance will be performed during the next refueling outage to restore the pump to its nominal capacity.

3. If the test results indicate a degradation of the pump's performance inconsistent with the postulated degradation mechanisms, PG&E will replace the pump. The replacement pump curve closely matches the pump curve for SI pump 2-1, therefore, a flow orifice is not required for the replacement pump. It is anticipated that SI pump 2-2 can be replaced and

tested within 72 hours with Unit 2 in Mode 1 (Power Operation). The pump replacement would be done in accordance with 10 CFR 50.59. If unforeseen circumstances occur during pump installation or testing that may require an allowed outage time extension, enforcement discretion would be requested to extend the allowed outage time.

Pursuant to 10 CFR 50.90 and 50.91(a)(6), enclosed is an application for amendment to Facility Operating License No. DPR-82, under emergency circumstances (Attachments A, B, and C). The enclosed LAR proposes a change to TS 3/4.5.2, "ECCS Subsystems - Tavg Greater than or Equal to 350°F," to reduce the dP required to be produced by SI pump 2-2 on recirculation flow from 1455 psid to 1430 psid. This change would be effective for Unit 2, SI pump 2-2 for the remainder of cycle 7 only. Cycle 7 is scheduled to end in the spring of 1996.

Additionally, pursuant to 10 CFR 2, Appendix C, enclosed is a request for the NRC to exercise enforcement discretion regarding compliance with TS 3/4.5.2 (Attachment G). The request is made to allow the continued operation of Unit 2 with one train of the SI system inoperable for 72 hours longer than the 72 hours allowed by TS 3/4.5.2 to allow the replacement of SI pump 2-2.

PG&E will notify the NRC following the SI pump 2-2 test if it will be requesting that the NRC grant a license amendment on an emergency basis to reduce the TS required dP or enforcement discretion from the allowed outage time requirement of TS 3/4.5.2.

Sincerely,

Gregory M. Rueger

Enclosure

cc: Edgar Bailey, DHS
L. J. Callan
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Diablo Distribution

ATTACHMENT A

REQUEST FOR EMERGENCY REVIEW OF REVISION OF TECHNICAL SPECIFICATION 3/4.5.2 - RELAXATION OF SAFETY INJECTION PUMP DIFFERENTIAL PRESSURE

A. DESCRIPTION OF AMENDMENT REQUEST

This license amendment request (LAR) proposes to revise Technical Specification (TS) 3/4.5.2, "ECCS Subsystems - Tavg Greater than or Equal to 350°F." TS 4.5.2f.2) would be revised to change the required safety injection (SI) pump 2-2 differential pressure (dP) on recirculation flow from greater than or equal to 1455 psid (pounds per square inch, dP) to greater than or equal to 1430 psid. This change would be effective for Unit 2, SI pump 2-2, cycle 7 only. Cycle 7 is currently scheduled to end in the spring of 1996.

In September and October 1994, during the Unit 2 sixth refueling outage (2R6), full-flow performance tests were performed on SI pump 2-2. The purpose of these tests is to verify that the pump curve has not changed. The full-flow performance tests indicated a degradation in the pump curve for SI pump 2-2 in several locations on the pump curve. Following completion of 2R6, Surveillance Test Procedure (STP) P-1B, "Routine Surveillance Test of Safety Injection Pumps," was performed on December 21, 1994, December 22, 1994, and January 6, 1995. STP P-1B performs a point verification that the pump curve has not degraded. The point used for verification is the mini-flow recirculation point. The results of the STP P-1B tests indicated a potential degradation of the developed dP of SI pump 2-2.

The results of the STP P-1B tests, when considered in conjunction with the reduced pump curve identified during the full-flow performance tests from September and October 1994, may indicate actual pump degradation or may represent test data scatter (see Attachment H). Test data scatter has occurred over the operating history of the pump. The total indicated decrease in pump dP is approximately 1.6% of the ASME Section XI baseline dP of 1480.5 psid.

A failure modes and effects analysis (see Attachment D) was performed to identify potential causes of degradation. The results of the investigation indicate that the most likely cause of the degradation is wear ring degradation in excess of normal or o-ring failures. Wear ring degradation could result from pump starts and stops. O-ring failures could occur as the result of pump operation. The proposed SI pump 2-2 TS dP limit of 1430 psid will provide adequate margin to allow continued operation until the next Unit 2 refueling outage.

The STP P-SIP-22 (formerly STP P-1B) test scheduled for March 27, 1994, has been revised to obtain additional information regarding pump performance and the rate and

cause of the degradation. Assuming the results of this STP P-SIP-22 test indicate that pump degradation is leveling off, PG&E will request that this emergency LAR be approved. If the results of subsequent performance of STP P-SIP-22 indicate that unanticipated, significant degradation is occurring, the pump will be replaced.

Changes to the TS are noted in the marked-up copy of the applicable TS in Attachment B. The new proposed TS are included in Attachment C.

B. BACKGROUND

The ECCS is designed to provide borated water to the reactor coolant system (RCS) upon initiation of an SI signal. The ECCS includes the centrifugal charging, SI, and residual heat removal (RHR) pumps, the SI accumulators, and associated piping and valves. The three types of pumps have different shutoff head and flow characteristics so that sufficient borated water can be injected into the RCS during an accident.

The SI pumps are ten stage centrifugal pumps used for intermediate head safety injection (IHSI) (see attachment E). The maximum allowable flow is 675 gpm. A pump mini-flow recirculation line is provided on each pump discharge to recirculate flow to the refueling water storage tank (RWST) in the event the SI pumps are started with RCS pressure above the SI pumps' shutoff head (see Attachment F). The mini-flow recirculation path also permits pump testing during normal operation between 29 and 30 gpm.

SI pump testing requirements are included in TS 3/4.5.2. The surveillance requirements of TS 4.5.2 include:

1. Verifying that the SI pumps are capable of producing a minimum dP of 1455 psid in the pump mini-flow recirculation alignment when tested in accordance with ASME Section XI requirements.

2. Performing a flow balance test during shutdown, following the completion of modifications to an ECCS subsystem (including the SI system) that alters the subsystem flow characteristics.

3. Verifying that with a single SI pump running:

   a. The sum of the injection line flow rates, excluding the highest flow rate, is greater than or equal to 427 gpm, and

   b. The total flow through all four injection lines is less than or equal to 650 gpm, and

   c. The difference between the maximum and minimum injection line flow rates is less than or equal to 20.0 gpm, and

d. The total pump flow rate is less than or equal to 675 gpm.

C. JUSTIFICATION

If the developed dP produced by SI pump 2-2 decreases below the TS-required minimum dP of 1455 psid prior to the Unit 2 seventh refueling outage, the pump would require replacement with Unit 2 at power. It is anticipated that SI pump 2-2 can be replaced and tested within 72 hours. However, if unforeseen circumstances occur during pump installation or testing, enforcement discretion would be required to extend the allowed outage time of the pump. Decreasing the minimum required dP for SI pump 2-2 will avoid the risks associated with the removal of safety equipment from service or an unnecessary plant shutdown.

D. SAFETY EVALUATION

A safety evaluation was performed to assess the impact of reducing the minimum required dP for SI pump 2-2 from 1455 to 1430 psid. The reduction in the dP could impact those safety analyses limited by minimum ECCS flow and could also potentially impact SI pump-to-pump interaction.

ECCS Analysis

TS 4.5.2f.2) requires that the SI pump dP be greater than 1455 psid when tested in accordance with ASME Section XI. The purpose of the Section XI testing is to verify that the pump is not degrading to the point where it can no longer perform its required function. Section XI requires that the pump dP test be performed quarterly.

The ECCS injection profile is modeled using a range of total system resistances and the resistance in each individual injection line. These resistances, in conjunction with a range of pump performances, are used to determine the most limiting minimum and maximum ECCS injection flow profiles.

The injection flow profiles are a composite of the most limiting system performances over the entire RCS pressures range. These injection flow profiles are used as inputs to the safety analyses for the Final Safety Analysis Report (FSAR) Update Chapter 15 accident analyses. Therefore, the TS flow limits, in conjunction with the assumed pump maximum and minimum performance curves, specify the plant operating band assumed in the ECCS analyses.

Determination of the injection flow profiles requires making assumptions with respect to minimum and maximum total system resistances and minimum and maximum injection line resistances. These resistances are determined by the flow limits defined in

TS 4.5.2h. in conjunction with the ranges of potential pump performance curves. The actual expected SI pump performance curves are enveloped by the assumed maximum and minimum pump performance curves.

The proposed change of the TS required dP to 1430 psid represents a lower SI pump 2-2 minimum assumed pump performance curve than used in the current ECCS analysis. The proposed minimum curve lies entirely below the existing minimum curve, and was derived by decreasing the last performance curve for SI pump 2-2 by 2% across its entire span. At the mini-flow point, this curve generates a dP of 1430 psid.

Using this new curve, a revised Unit 2 ECCS injection flow profile was calculated. The revised profile was based on the current cycle 7 actual system resistances and the lowered SI pump 2-2 minimum performance curve associated with a mini-flow dP of 1430 psid. The system resistances were obtained from the as-left flow measurement from the last Unit 2 refueling outage (October 1994). The resulting injection flow profile was evaluated with respect to the current TS flow balance requirements, and was found to meet all four TS flow requirements (line-to-line imbalance, minimum flow to three lines, maximum flow to four lines, and total pump flow).

Westinghouse identified the following accidents as being potentially affected by the revised injection profile. The accidents evaluated include:

1. Large-break Loss of Coolant Accident (LOCA),
2. Small-break LOCA
3. Steam Generator Tube Rupture (SGTR)
4. Non-LOCA analyses such as the rupture of a main steam or feedwater line and an inadvertent SI.

LOCAs

Following a LOCA, the ECCS provides make up water to the RCS to keep the core covered or to recover the core if the core uncovers. For larger breaks, most of the ECCS flow is delivered by the accumulators and high-flow, low-head, RHR pumps. For smaller breaks, the RHR pumps and accumulators cannot inject against RCS pressure. Consequently, the SI and charging pumps play a more significant role.

Large-break LOCA

The current FSAR Update large-break LOCA analysis for Diablo Canyon Power Plant (DCPP) Unit 2 was performed using the NRC-approved 1981 ECCS Evaluation Model with BASH. In the DCPP large-break LOCA analysis, the system depressurizes very rapidly. As such, the portions of the ECCS flow profile affected by the reduced SI pump 2-2 curve will not have an effect on the large-break LOCA results. It is concluded that the large break LOCA analysis is not impacted by the reduced SI pump flow.

Small-break LOCA

The current small-break LOCA analysis for DCPP Unit 2 was performed using the NRC-approved Small-Break LOCA ECCS Evaluation Model with NOTRUMP. Penalties and benefits for ECCS evaluation model changes and other safety evaluations resulted in the current small break LOCA PCT of 1246°F for Unit 2.

A small-break LOCA evaluation was performed using the reduced injection profile. The evaluation resulted in a PCT assessment of 35°F against the small-break LOCA analyses results, or a total PCT of 1281°F for Unit 2. The maximum allowable PCT is 2200°F.

LOCA Blowdown Reactor Vessel and Loop Forces

The maximum blowdown hydraulic loads resulting from a LOCA are generated within the first few seconds after break initiation, well before any SI occurs. For this reason, the SI flow rates are not considered in the LOCA hydraulic forces modeling and thus the revised injection profile does not affect the results of the LOCA hydraulic forces calculations.

Post-LOCA Long Term Core Cooling Requirements

During recovery from a LOCA, the ECCS is also required for recirculation. Once the RWST inventory is at 33%, suction for the RHR pumps is manually switched to the containment sump and water is recirculated from the sump back into the core. During recirculation, the flow into the RCS is switched from the cold legs to the hot legs to prevent boron from coming out of solution and plating out on the fuel rods.

The effects of the revised ECCS flow requirements on post-LOCA long-term core cooling are discussed below.

Subcriticality Requirement

The purpose of this requirement is to ensure the reactor would remain shutdown by borated ECCS water residing in the sump following a LOCA. Since credit for the control rods is not taken in the analysis of a large-break LOCA, the borated ECCS water provided by the accumulators and the RWST non-borated water (no credit is taken for boron in the RWST) will result in the reactor core remaining subcritical, assuming all control rods are out. Reduced SI pump flows will have no effect on those volumes and boron concentrations assumed for this calculation. Therefore, the subcriticality requirement would be met with operation of Unit 2 with the revised ECCS performance requirements.

Hot Leg Switchover to Prevent Boron Precipitation

Post-LOCA hot leg recirculation switchover time is determined for inclusion in emergency procedures to ensure no boron precipitation occurs in the reactor vessel following boiling in the core. This time is dependent on power level and on the RCS, RWST, and accumulator water volumes and boron concentrations. Reduced IHSI flow rates will have no effect on the power level, or on the water volumes assumed for RCS, RWST, and the accumulators, and will have no effect on the boron concentration. Therefore, the subcriticality requirement would be met with operation of Unit 2 with the revised ECCS performance requirements.

Post-LOCA Long Term Core Cooling Minimum Flow Requirement

In accordance with the requirements of 10 CFR 50.46 for long term core cooling, a calculation is performed to determine the minimum flow rate required for hot leg recirculation mode. The minimum required flow rate for cold leg recirculation is determined by calculating the minimum required core cooling flow to remove 1.5 times the decay heat. The minimum required flow rate for hot leg recirculation is determined by calculating the minimum required core cooling flow to remove 1.3 times the decay heat. This results in a 300 gpm requirement for hot leg recirculation and a 347 gpm requirement for cold leg recirculation. Each RHR pump at DCPP is capable of supplying at least 1300 gpm to the hot or cold legs. Any RHR pump is capable of supplying adequate cooling flow to the core via the hot or cold legs. Consequently, the decrease in flow from SI pump 2-2 will have no significant impact on long term cooling capability at DCPP.

SGTR

Following an SGTR, which is similar to a small-break LOCA, ECCS flow maintains RCS inventory while the RCS is depressurized to equalize the RCS and ruptured steam generator (SG) pressures which stops the break flow. In addition to maintaining RCS inventory, the ECCS inhibits stopping the break flow since the pressures at which the ECCS is capable of injecting flows are higher than the pressure of an isolated, ruptured SG. The ECCS flow results in RCS pressure higher than the ruptured SG pressure and results in continued break flow. Therefore, ECCS flow must be terminated to stop break flow and recover from an SGTR. As a result of this, maximum ECCS flows are assumed in the analysis of an SGTR.

The SGTR offsite dose analysis and the margin-to-overfill analysis were performed using the maximum safeguards injection flow profile. This maximizes the primary-to-secondary break flow, which is conservative for both the margin-

to-overfill and offsite dose analyses. Since the maximum ECCS flow rates did not change, the current SGTR margin to overfill and offsite dose analyses remain bounding. Therefore, it is concluded that the revised minimum injection profile will not adversely affect the SGTR margin-to-overfill and offsite dose analyses for DCPP Unit 2.

Non-LOCA Analyses

Non-LOCA accidents include main steamline break, accidental depressurization of the main steam system, main feedwater line break, and spurious SI at power. The lower IHSI flows have no impact on the current DCPP Unit 2 non-LOCA safety analyses because the SI pump flows are not credited. Only changes to the high head SI flows from the centrifugal charging pumps impact the non-LOCA analyses. The IHSI flows are not credited for the non-LOCA analyses.

Since no SI pump flow is credited in any of the DCPP FSAR Update non-LOCA analyses which assume SI actuation, a reduced ECCS flow from the SI pump 2-2 has no adverse effect on the safety analyses.

Pump-to-Pump Interaction

Decreasing the minimum required dP for SI pump 2-2 increases the maximum allowable pressure difference between SI pumps 2-1 and 2-2. The affect of the increased pressure difference between the pumps was evaluated to determine if it would impact the potential for interaction between SI pumps 2-1 and 2-2 during pump mini-flow recirculation.

Pump-to-pump interaction was identified by the NRC as an issue in NRC Bulletin 88-04, "Potential Safety-Related Pump Loss." The concern in the Bulletin is that when two centrifugal pumps operate in parallel and one of the pumps is stronger than the other, the weaker pump may be dead-headed when the pumps are discharging into a common mini-flow recirculation header.

SI pump 2-2 is weaker than SI pump 2-1. The discharge piping configuration for these two pumps is as follows. Each mini-flow line originates upstream of the pump discharge check valve, but before joining the common mini-flow line, each individual mini-flow line has a flow restricting orifice. The orifice design reduces the pressure at the entrance to the common mini-flow line enough so that the weaker pump will still be able to recirculate at its required minimum flow. The orifice in the individual mini-flow lines desensitizes the system to strong/weak pump mini-flow concerns addressed in the Bulletin.

The measured recirculation flow for SI pump 2-2 is between 29 and 30 gpm, both historically from the time of pump installation as well as in the past six months. Pump minimum flow rate involves two considerations. The first consideration is termed the

"thermal minimum flow," which is the flow required to prevent the fluid inside the pump from reaching saturation conditions that could eventually lead to overheating, cavitation, vibration, and pump failure. The thermal minimum flow is 17 gpm, which is significantly below the measured flow. The other consideration is referred to as "mechanical minimum flow," which is the flow required to prevent mechanical damage when the pump is operated at off-design flow rates. The mechanical minimum flow requirement for the DCPP SI pumps is 27 gpm, which is below the expected mini-flow rate.

PG&E has performed a calculation to demonstrate that the measured flow rate for SI pump 2-2 will not decrease below 28 gpm, even if the performance of SI pump 2-2 was to degrade to the reduced pump curve defined by the 1430 psid mini-flow recirculation flow point and SI pump 2-1 was running at the same time.

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 quoted 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 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 consideration standards.

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

   The decrease of the minimum required dP for SI pump 2-2 does not increase the probability of an accident. The decreased dP will not alter the function of the operation of the SI pumps.

   The affect of the decrease in the minimum required dP for SI pump 2-2 was evaluated. The evaluation concluded that although the decreased dP would

result in a 35 degree F increase in PCT during a small- break LOCA, the maximum allowable PCT is not exceeded. Consequently, the consequences of the FSAR Update Chapter 15 accidents are not affected by the decreased dP.

The consequences of non-LOCA analyses were also evaluated. The evaluation determined that the conclusions in the FSAR Update Chapter 15 non-LOCA analyses were not affected by the decrease in SI pump 2-2 dP.

The possibility for pump-to-pump interaction of the Unit 2 SI pumps during mini-flow recirculation was evaluated since the maximum pressure difference between the pumps could be increased. Due to the presence of flow orifices in the mini-flow recirculation lines, the mini-flow is insensitive to changes in pump dP. Consequently, the operation of the pumps would not be affected by a decrease in the minimum required dP of SI pump 2-2.

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 proposed decrease in the minimum required dP for SI pump 2-2 does not involve any physical changes to the plant, and in particular, the emergency core cooling system.

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

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

An evaluation was performed to determine the impact of the decreased dP on the FSAR Update Chapter 15 accident analyses. The evaluation determined that the decreased dP would result in a 35 degree F increase in PCT during a small-break LOCA. However, the increase does not result in exceeding the maximum allowable PCT.

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

F. NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

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

G. ENVIRONMENTAL EVALUATION

PG&E has evaluated the proposed changes and determined 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 effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed changes meet the eligibility criteria 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.