

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

License Amendment Request No. 96-03

Pursuant to 10 CFR 50.90, Pacific Gas and Electric Company hereby applies to amend its Diablo Canyon Power Plant Facility Operating License Nos. DPR-80 and DPR-82 (Licenses) to revise Technical Specification (TS) 3/4.5.2, "ECCS Subsystems - Tavg Greater Than or Equal to 350°F," to change the allowed outage time (AOT) for any one safety injection pump from 72 hours to 7 days. The AOT for the remaining emergency core cooling system equipment would remain at 72 hours.

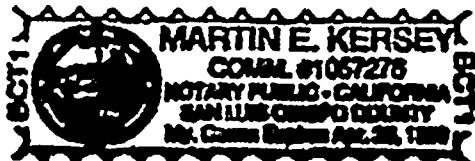
Information on the proposed TS change is provided in Attachments A, B, and C.

The change has been reviewed and is considered not to involve a significant hazards consideration as defined in 10 CFR 50.92 or an unreviewed environmental question. Further, there is reasonable assurance that the proposed change will not affect the health and safety of the public.

Sincerely,



Gregory M. Rueger

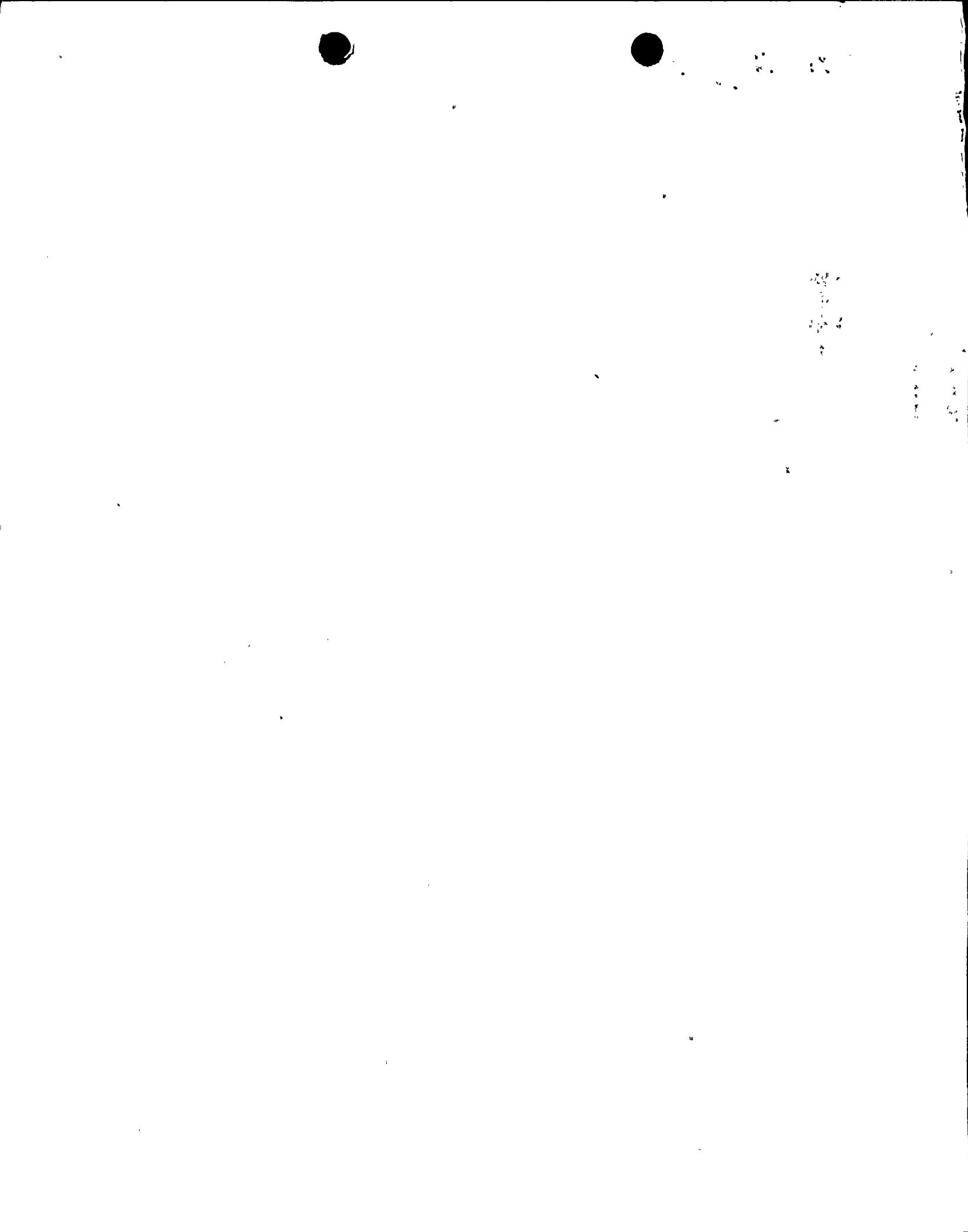


Subscribed and sworn to before me
this 15th day of February 1996

Attorneys for Pacific Gas
and Electric Company
Bruce R. Worthington
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Notary Public

Christopher J. Warner
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**REVISION OF TECHNICAL SPECIFICATION 3/4.5.2 - INCREASE SAFETY
INJECTION PUMP ALLOWED OUTAGE TIME FROM 72 HOURS TO 7 DAYS**

A. DESCRIPTION OF AMENDMENT REQUEST

This License Amendment Request (LAR) proposes to revise Technical Specification (TS) 3.5.2, "ECCS Subsystems - Tavg Greater Than or Equal to 350°F," to change the allowed outage time (AOT) for the safety injection (SI) pumps from 72 hours to 7 days. Specifically, the change adds a new footnote that increases the AOT for one SI pump from 72 hours to 7 days for performance of non-routine, emergent maintenance and that requires review by the Plant Staff Review Committee (PSRC), and Plant Manager approval prior to exceeding 72 hours.

Changes to the TS are noted in the marked-up copy of the applicable TS page provided in Attachment B. The proposed TS page is provided in Attachment C.

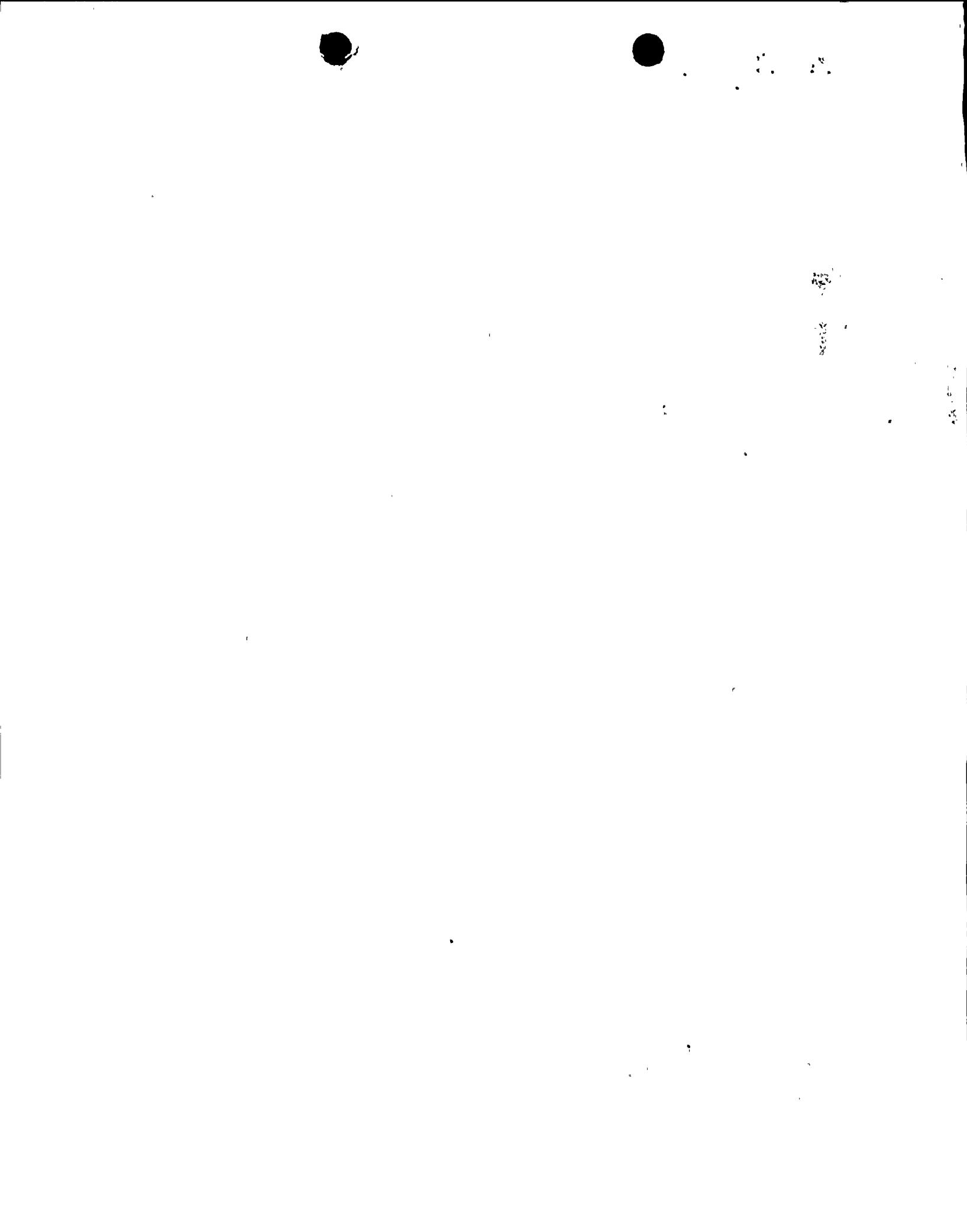
B. BACKGROUND

Emergency Core Cooling System (ECCS) Description

The function of the ECCS is to provide core cooling and negative reactivity to ensure that the reactor core is protected after a design basis accident. Major components of the ECCS include two high-head centrifugal charging pumps (CCPs), two intermediate-head SI pumps, and two low-head residual heat removal pumps in each unit. The ECCS pumps are normally in a standby, non-operating mode, although they may sometimes be used during normal operation. For example, the CCPs may be used to supplement the positive displacement charging pump. Following an accident, the ECCS pumps are actuated on an SI signal.

SI Pump Maintenance Program

PG&E has implemented activities to maintain the reliability of the SI pumps at Diablo Canyon Power Plant (DCPP). This effort consists of developing preventive maintenance procedures, personnel training, and implementing a reliability centered maintenance program. The purpose of the maintenance program is to minimize the number of pump failures by maintaining the SI pumps in a mechanical and electrical condition that maximizes their availability. The program is based on plant experience, vendor information on pump maintenance, surveillance testing, and plant procedures. Also included in the maintenance program are evaluations of risk and availability required as part of implementation of the Maintenance Rule.



SI Pump AOT

AOT limits for engineered safety feature equipment in the TS are typically 72 hours. An AOT period of 72 hours is usually sufficient to perform necessary preventive or corrective maintenance required on the SI pumps. Infrequently, maintenance activities are performed at DCPP that may require a longer AOT, such as rotating element repair or complete pump replacement. These activities may take longer than 72 hours, but could be completed within 7 days.

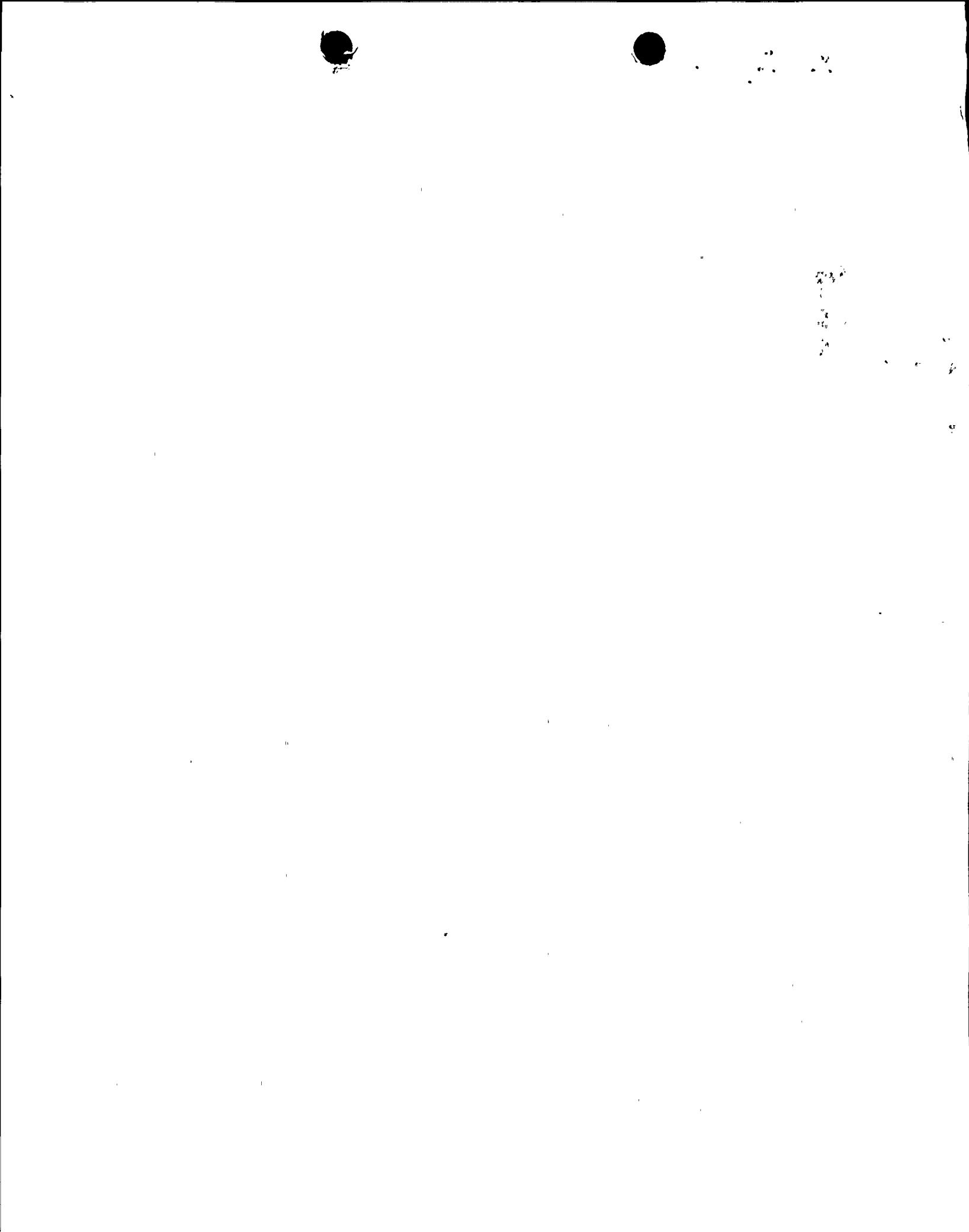
In March 1995, SI pump 2-2 was replaced during power operation when the pump failed a quarterly performance test. Because pump performance had been trending downwards, advance planning had been completed to prepare and stage a spare SI pump. This included verification that installation of the new SI pump would not affect the flow characteristics of the SI system such that a new ECCS flow balance test would be required. No significant problems were encountered during the replacement activities. However, pump replacement and testing took 68 hours, providing little margin to address emergent problems during replacement. A contingency LAR and enforcement discretion request to extend the AOT had been submitted to the NRC, but they were not required and were subsequently withdrawn.

Currently, the new SI pump 2-2 is showing signs of potential degradation of pump differential pressure. To more closely monitor the potential degradation, the pump is being tested on an accelerated test frequency. The next test is currently scheduled to be performed on February 22, 1996. Planning has been completed to prepare and stage a spare SI pump in the event that the test results indicate significant degradation that impacts the operability of the pump. The proposed TS change would provide additional time for circumstances and contingencies associated with significant maintenance or replacement activities and testing.

DCPP Administrative Procedure AD7.ID4, "On-line Maintenance Scheduling," specifies durations for planned work and provides guidance to minimize TS equipment out of service (OOS) time. The procedure limits the planned OOS duration to the time necessary to complete only the required maintenance, in general not to exceed one half the AOT. For AOTs up to 72 hours, all activities are planned to be worked 24 hours a day to completion. For the SI pumps, extension beyond 72 hours would only be used for non-routine, emergent maintenance, and only with approval of the PSRC and the Plant Manager prior to exceeding 72 hours. Work during the extended period would continue around the clock to minimize the time beyond 72 hours.

C. JUSTIFICATION

With one SI pump inoperable, the current action is to restore operability within 72 hours, or be in at least Hot Standby within the next 6 hours and in Hot



Shutdown within the following 6 hours. Increasing the SI pump AOT from 72 hours to 7 days would provide a more reasonable time to diagnose serious problems, determine and complete corrective actions, complete any required ECCS flow balance calculations, and perform post-maintenance operability testing.

Increasing the AOT is consistent with recommendations of NUREG-1024, "Technical Specifications - Enhancing the Safety Impact." NUREG-1024 states:

Allowable outage times that are too short will subject the plant to unnecessary trips, transients and fatigue cycling. Outage times that are too short also may result in less thorough repair and post-repair testing before equipment is returned to service.

Permanently extending the AOT minimizes the resources required of both the NRC staff and PG&E. Each time an SI pump indicates potential degradation, the DCPP system and maintenance engineers who are responsible for the pump must evaluate performance and make inquiries and plans for continued testing and potential pump replacement. The workload involves intensive review and preparation of contingency design and calculation material. If a concurrent enforcement discretion or emergency LAR is required, the same engineers are involved in technical reviews, decreasing their ability to focus on solutions to the equipment problems. Likewise, demands are placed on NRC staff resources for situations that are repetitive and non-risk significant.

Seven-day AOTs have recently been approved for Haddam Neck Plant and South Texas Project, Units 1 and 2. Additionally, Millstone Unit 2 submitted an ECCS AOT extension request as the lead plant for the Combustion Engineering Owners Group.

D. SAFETY EVALUATION

A probabilistic risk assessment (PRA) was performed to determine the effect of extending the AOT for the SI pumps from 72 hours to 7 days. First, the additional core damage probability (CDP) was calculated for an assumed event conservatively assuming use of the full 7-day AOT. An evaluation was then performed to determine the rate of pump failures that could require use of an extended AOT. Two failure rates, one based on pump failure rate data as used in the DCPP PRA and another based solely on industry (Nuclear Plant Reliability Data System) (NPRDS) data, were determined. A conservative failure rate for the SI pumps was then chosen based on the derived failure rates and used as input to determine the impact of pump failure on the DCPP core damage frequency (CDF).

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Background on Model

The DCPP PRA (DCPRA) is a full-scope, Level 1 PRA that evaluates the frequency of experiencing reactor and plant damage as a result of both internal and external initiating events. While the PRA was performed for DCPP Unit 1 only, the DCPRA is equally applicable to DCPP Unit 2 considering the substantial similarities between the two units.

The NRC review and acceptance of the original PRA evaluation, DCPRA-1988, is summarized in the Safety Evaluation Report, Supplement No. 34 (NUREG-0675, June 1991). Much of the review of the DCPRA-1988 was performed by Brookhaven National Laboratory, and the review is documented in NUREG/CR-5726.

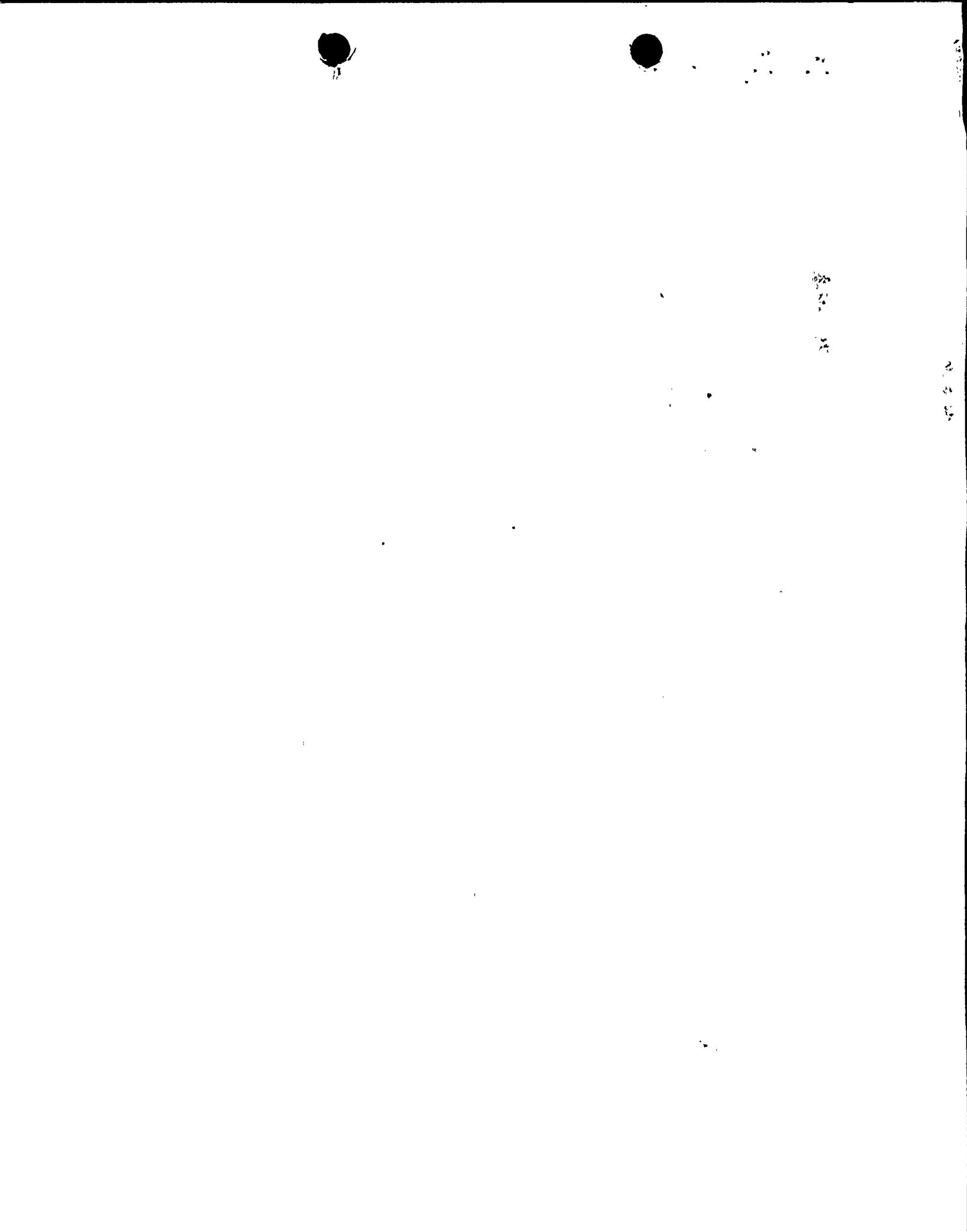
To fulfill the requirements of NRC Generic Letter 88-20, and as part of PG&E's living PRA program, the DCPRA is updated at regular intervals to reflect current plant design and operation. All updates to the DCPRA (and analyses using the DCPRA) are fully documented in calculation files and independently reviewed by PG&E engineers. All computer software is maintained under configuration control consistent with software quality assurance programs used for safety-related software at DCPP.

Evaluation

Using the current DCPRA model described above, a PRA was performed to determine the effect on annual CDF associated with an increase in the SI pump AOT from 72 hours to 7 days. The PRA assumed that the increased AOT would only be needed in the event of an SI pump failure, and the average SI pump unavailability due to STPs, scheduled preventative maintenance events, and other minor maintenance events would be unaffected.

Assuming that the most risk significant SI pump is removed from service for the full 7 day AOT, the additional CDP added from seismic and internal event initiators (impact on fire initiators is negligible) is 2.6×10^{-7} per event per year. For conservatism, the full 7-day AOT is assumed in this PRA for all SI pump outages requiring more than 72 hours. The SI pumps would not be expected to require extended AOTs annually. Therefore, estimates of the rate of pump failures that could require an extended AOT were made, and a conservative bounding value was chosen based on these estimates. The product of the added CDP per event and the expected events per year is the average increase in annual CDF.

The PRA analysis attempted to bound the SI pump failure rate (and hence the frequency for using the increased AOT) by using two different estimations in determining the SI pump failure rate. To generate the first estimate of SI pump failure rate, specific DCPP operating experience for the SI pumps was used to



update generic distributions (from PLG Inc.) of SI pump failure rates in a manner consistent with the typical data updating process used in the DCPRA. The SI pump failure rate per year is defined as the sum of the expected failure-to-start failure rate per year and the expected failure-to-run failure rate per year. The failure-to-start failure rate was calculated as the product of the updated failure-to-start failure rate per demand and the expected number of pump demands per year. The failure-to-run failure rate was calculated as the product of the updated failure-to-run failure rate per hour and the expected pump operating hours per year. The resulting SI pump failure rate is estimated to be 0.037 per year.

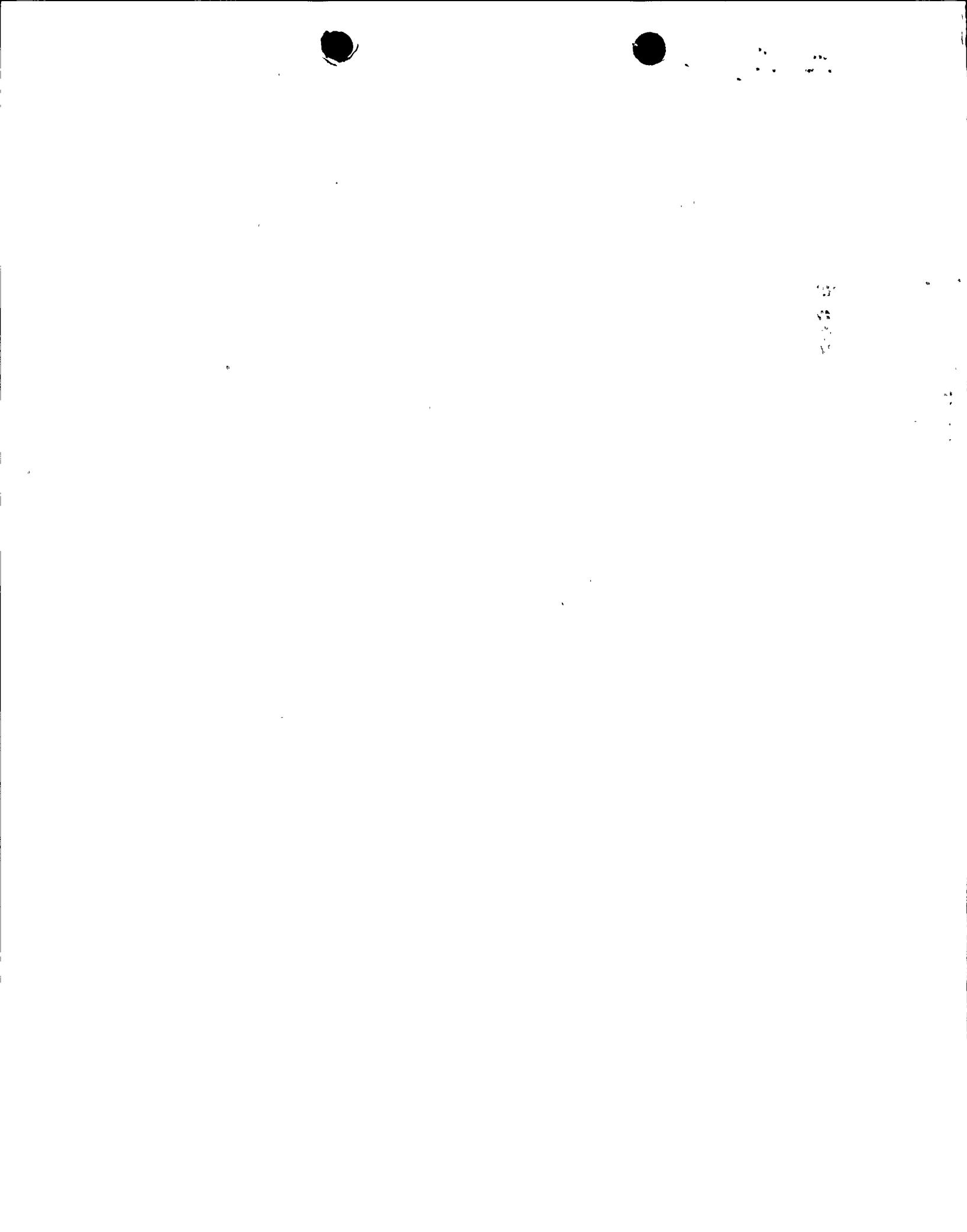
In the other estimate of SI pump failure rate, the NPRDS was used to query all failures for SI pumps with the identical manufacturer and model. SI pump failure events due to seal or gland failures were screened out since these failures are easily diagnosed and corrected; that is, unlikely to require use of a 7-day AOT. All other valid SI pump failures were counted. The average pump failure rate per year was then estimated as the ratio of the total failures and the total operating years for the units with similar SI pumps. In this estimate, the SI pump failure rate is expected to be 0.038 per year.

A conservative SI pump failure rate of 0.05 failures per year (per pump) was then assumed. The increase in the DCPRA annualized CDF of 1.2×10^{-4} per year (seismic + internal events + fire) was then calculated to be 0.02 percent. This result is consistent with expectations, since the success paths in the PRA model for core cooling require that either one or two of the four charging or SI pumps (depending on the assumed accident) are available to provide high pressure injection flow into the reactor coolant system. Consequently, if the charging pumps, 230 kV offsite startup power, and all other safety-related equipment are operable (as was assumed in this calculation), the impact on risk of having one SI pump inoperable for 7 days is relatively insignificant.

Effect of Other Equipment Outages

The increased AOT is intended to be used only in the event of a major SI pump repair. Additionally, during the extended AOT period, no other ECCS equipment will be removed from service for planned maintenance or testing, and high risk evolutions will be avoided. In the unlikely event of emergent or unplanned maintenance on other equipment that may arise during the extended SI pump AOT, the risk increase (for internal event initiators) has been pre-calculated for those two component combinations (SI pump + other) OOS that are allowed by short TS action statements.

Emergent work would most likely occur on normally operating equipment (i.e., non-standby) as a result of an operating failure. Table 1 below presents the additional maximum CDP (for internal events only) for the two component combinations potentially expected. The additional CDP is calculated based on the



AOT of the "other" component OOS, which in these cases is 72 hours. Also presented is the additional CDP from internal events only, assuming that the "other" component is OOS singularly for a 72-hour AOT. Table 1 demonstrates that in the potential two component combinations of equipment OOS during the extended AOT period, the majority of added risk is due to the unavailability of the "other" component, such that the added unavailability of the SI pump is not a significant risk contributor during this period.

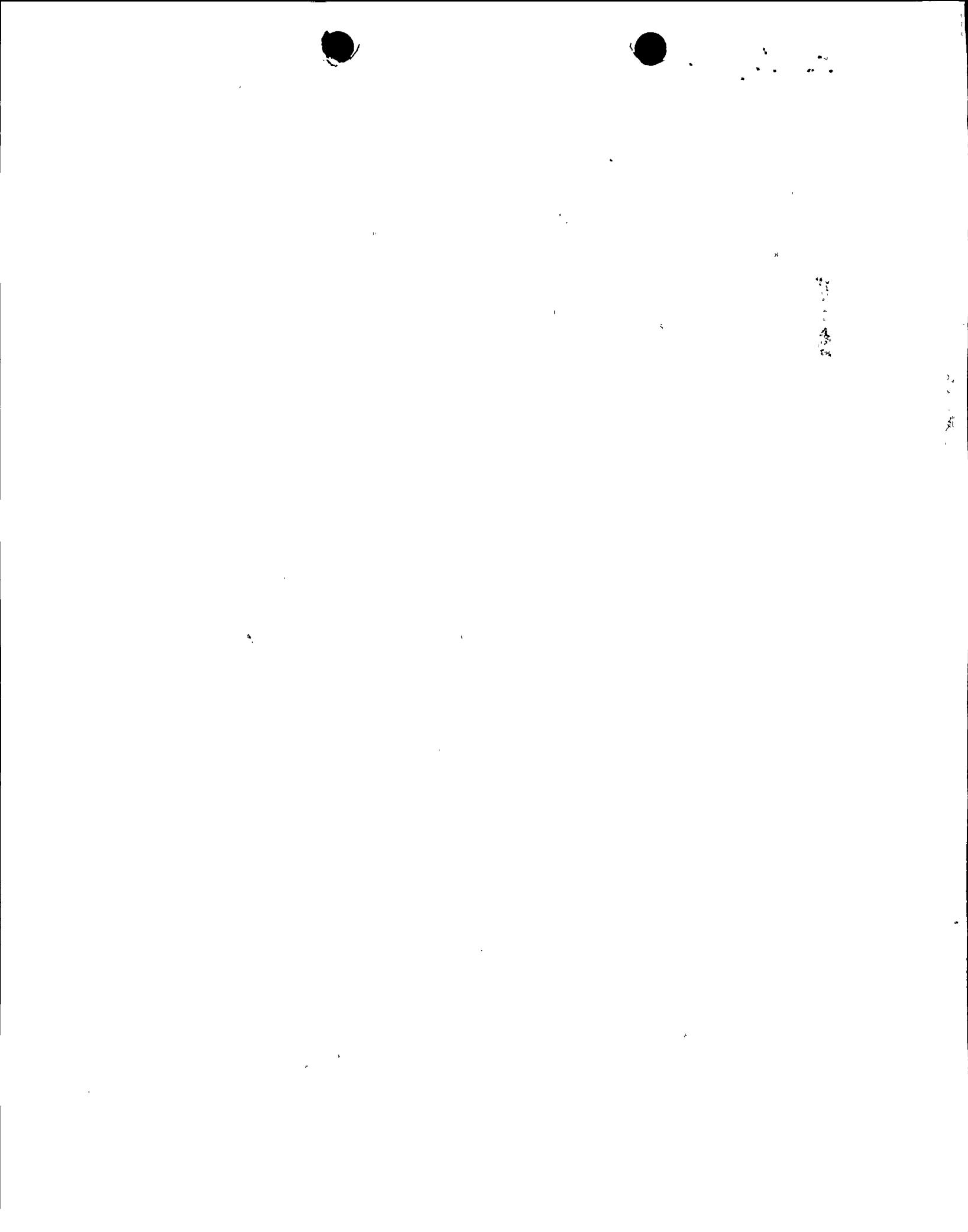
TABLE 1		
"Other" Component	Additional CDP for one SI pump (7 days) + "Other" Component OOS (72 hours)	Additional CDP for "Other" Component Only OOS (72 hours)
Centrifugal Charging Pump	4.9×10^{-7}	3.5×10^{-7}
Component Cooling Water Pump	9.3×10^{-7}	8.6×10^{-7}
Auxiliary Salt Water Pump	2.9×10^{-6}	2.8×10^{-6}

If other emergent work were to occur during use of the 7-day AOT, the PSRC would review this condition and determine if the situation and its associated risk warrant continuing operation, or shutting the unit down.

Compensatory Measures

The extended AOT would only be used for infrequent pump repairs that would otherwise require plant shutdown or enforcement discretion to complete. For these infrequent occasions where the action statement might be entered for greater than the currently allowed 72 hours, the redundant pumps would be available and all other train related maintenance would be curtailed. To control plant configuration and assure that the assumptions of the PRA remain valid, the following compensatory measures would be implemented when exceeding the current 72-hour AOT of the SI pumps.

1. During the use of the extended AOT, no other planned maintenance or testing would be performed that would render other ECCS or associated support equipment inoperable.
2. Planned ECCS train-related maintenance and surveillance testing would be suspended until the replacement and testing of the pump is completed.
3. Scheduled load following would not be performed.
4. Planned 230 kV system maintenance and testing would be suspended during the use of the extended AOT.



Summary

Conservative PRA evaluations of the effect of the SI pump outages that would require use of an extended AOT were performed. Based on the results of these evaluations, the change in annual CDP is not considered risk significant. Therefore, PG&E believes 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 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:

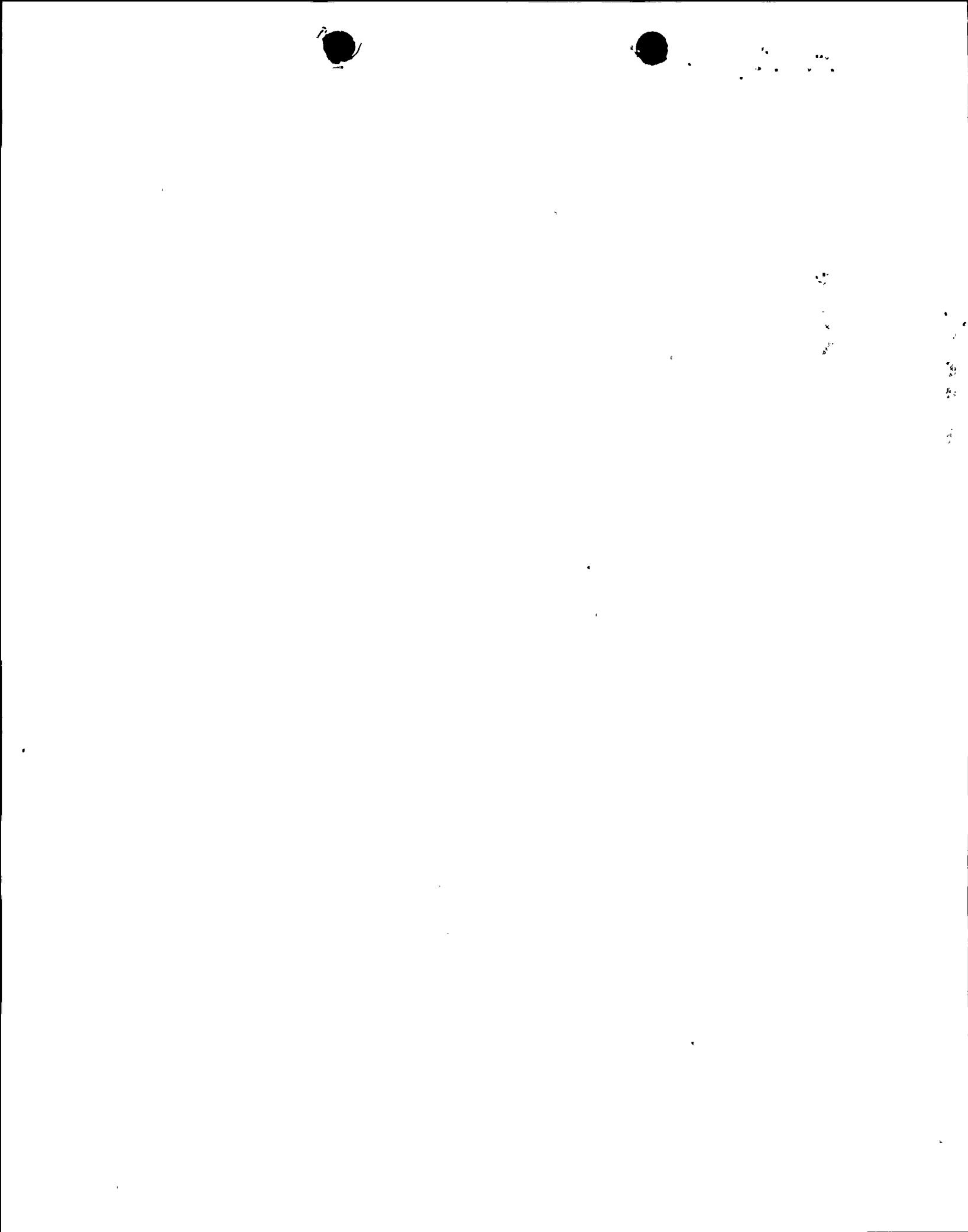
- (1) *Involve a significant increase in the probability or consequences of an accident previously evaluated; or*
- (2) *Create the possibility of a new or different kind of accident from any accident previously evaluated; or*
- (3) *Involve a significant reduction in a margin of safety.*

The following evaluation is provided pursuant to 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 proposed allowed outage time (AOT) extension does not change the operating practices of Diablo Canyon Power Plant (DCPP). Although the proposed change increases the allowed time in which the safety injection (SI) system may be out of service for maintenance or testing, this extended AOT will only be used in emergent circumstances.

Increasing the AOT for the SI pumps does not involve physical alteration of any plant equipment and does not affect analysis assumptions regarding functioning of required equipment designed to mitigate the consequences of accidents. Further, the severity of postulated accidents and resulting radiological effluent releases will not be affected by the increased AOT.



Finally, the probabilistic risk assessment determined that the increase in the core damage probability is not considered significant.

Therefore, the proposed change does 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 increase to the SI pump AOTs does not change the method by which DCPP operates. Further, the proposed change would not result in any physical alteration to any plant system, and there would not be a change in the method by which any safety related system performs its function.

Therefore, the proposed change does 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?*

There is no safety analysis impact since the extension of the SI pump AOT interval will have no effect on any safety limit, protection system setpoint, or limiting condition of operation. There is no hardware change that would impact existing safety analysis acceptance criteria.

Therefore, the proposed change does 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 activities associated with this license amendment request satisfy the no significant hazards consideration standards of 10 CFR 50.92(c). Accordingly, a no significant hazards finding is justified.

G. ENVIRONMENTAL EVALUATION

PG&E has evaluated the proposed change and determined the change does 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 change meets 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.

