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SUBJECT: Resubmits info re ECCS compliance w/10CFR50.46 in response to NRC changes in peak cladding temp contained in Amends 65 & 64 to Licenses DPR-80 & DPR-82,respectively.Westinghouse position re ECCS flow TS changes also encl.

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James D. Shiffer
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October 4, 1991

PG&E Letter No. DCL-91-239

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Re: Docket No. 50-275, OL-DPR-80
Docket No. 50-323, OL-DPR-82
Diablo Canyon Units 1 and 2
Small Break and Large Break LOCA Reanalysis

Gentlemen:

On September 5, 1991, the NRC issued Amendment No. 65 to Facility Operating License No. DPR-80 and Amendment No. 64 to Facility Operating License No. DPR-82 for DCPP Units 1 and 2, respectively. In issuing these amendments, the NRC Staff identified the changes in Peak Cladding Temperature (PCT) that result from the amendments to be "significant" as defined in 10 CFR 50.46. Based on this finding, the Staff requested PG&E to submit a proposed schedule for an Emergency Core Cooling System (ECCS) reanalysis for small and large break loss-of-coolant accidents (LOCA).

As allowed by 10 CFR 50.46(a)(3)(ii), the licensee may take action, other than reanalysis, to show compliance with 10 CFR 50.46. Accordingly, PG&E is submitting Enclosure 1 to document the PCT changes as a result of Amendments 65 and 64 and to demonstrate that compliance with 10 CFR 50.46 is maintained. In each case, the change in PCT has been conservatively determined and the resulting PCT for the small and large break LOCAs are within the limit specified in 10 CFR 50.46. Therefore, a reanalysis for the small and large break LOCA is not required.

Additionally, PG&E requested Westinghouse to review the requirements of 10 CFR 50.46. Westinghouse subsequently determined that, based on its interpretation and experience with 10 CFR 50.46, a reanalysis for small and large break LOCAs is not necessary. Westinghouse has documented the basis for its conclusion in a position paper. PG&E agrees with the Westinghouse assessment and is including the position paper as Enclosure 2 for NRC consideration.

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Based on PG&E's demonstration of compliance with 10 CFR 50.46, as well as the Westinghouse position regarding applicability of 10 CFR 50.46 in this case, PG&E concludes that reanalysis for LOCAs is not necessary. Should it be necessary, PG&E is prepared to meet with the NRC Staff to discuss this matter further.

Sincerely,

James D. Shiffer

cc: Ann P. Hodgdon
John B. Martin
Phillip J. Morrill
Harry Rood
Howard J. Wong
CPUC
Diablo Distribution

Enclosures

5490S/0085K/RLT/371

ENCLOSURE 1

EMERGENCY CORE COOLING SYSTEM

COMPLIANCE WITH 10 CFR 50.46

EMERGENCY CORE COOLING SYSTEM

COMPLIANCE WITH 10 CFR 50.46

INTRODUCTION

PG&E requested and the NRC approved a change to the Technical Specifications to:

> Allow operation of the subsystems of the Emergency Core Cooling System (ECCS) associated with the Centrifugal Charging Pumps (CCPs) with the recirculation lines open during the injection phase of ECCS operation.
>
> Provide additional margin between the minimum and maximum CCPs and Safety Injection Pump (SIP) flow requirements, and
>
> Provide a surveillance requirement for the difference between minimum and maximum individual injection line flow (flow imbalance) for both the CCP and SIP lines.

10 CFR 50.46 requires licensees to provide, at least annually, a report to the NRC on the nature of changes to the ECCS evaluation model, or changes in the application of such a model that affect the PCT calculation. The last 10 CFR 50.46 report for DCPP Units 1 and 2 was submitted by PG&E on August 14, 1991, in DCL-91-204. The report covered ECCS model changes from March 1990 through May 1991.

The Technical Specification changes described above affect the minimum and maximum ECCS flow used in the ECCS evaluation models for large and small break LOCAs. The Safety Evaluation performed by Westinghouse in support of Amendments 65 and 64 determined the effect these changes have on the PCT and determined that for the small break LOCA, the change in PCT was in excess of 50°F.

PG&E is reporting these changes and demonstrating compliance with 10 CFR 50.46 in response to the NRC Staff request for PG&E to perform a reanalysis. By showing that compliance with 10 CFR 50.46 is maintained, a reanalysis is not necessary.

CHANGES TO LARGE BREAK LOCA EVALUATION MODELS

As a result of the changes to the ECCS flow limits approved in Amendments 65 and 64, the minimum ECCS flow rates from the CCPs and SIPs could be reduced by as much as 114 gpm. This reduction in ECCS flow would result in a higher calculated PCT. However, the ECCS evaluation model has assumed a conservative value of zero psig for the containment pressure. For the large break LOCA event, this assumption results in a higher calculated value of the amount of ECCS injection flow spilling out the RCS break to containment.

For the spectrum of large break LOCA analyses performed for DCPP, the average containment pressure from the initiation of ECCS until PCT occurs is 17 psig. Using 17 psig as the containment pressure results in a reduction in the ECCS

flow spilled to containment and a minimum increase of 145 gpm in the ECCS injection flow to the RCS. This increase in injection flow more than offsets the reduction in injection flow approved by the amendment. Since this is a net increase in ECCS injection to the RCS, the PCT for large break LOCA is unaffected. The PCT for the Large Break LOCA remains at 2179°F, as reported previously in DCL-91-204.

The assessment of ECCS flow reduction and the compensating flow increase discussed above were conservatively determined by Westinghouse. Westinghouse has reasonable assurance that the overall affect on PCT, even when combined with the PCT changes previously reported in DCL-91-204 is conservative, and bounds any synergistic effects that may occur when the model changes are collectively considered. This assurance is based on Westinghouse's knowledge of the physics of the LOCA phenomena and on known evaluation model sensitivities.

Based on this analysis, and since the resulting PCT value has been shown to be below the 10 CFR 50.46 limit of 2200°F, no reanalysis beyond that already performed, is required to demonstrate compliance with 10 CFR 50.46.

CHANGES TO SMALL BREAK LOCA EVALUATION MODELS

Reduction in ECCS injection flow can also affect the calculated PCT for the small break LOCA. The limiting small break LOCA is a 4-inch break for Unit 2. As with the large break LOCA, the ECCS evaluation model used a conservative assumption regarding the pressure that ECCS injection flow is spilled to containment. It was assumed that spilling to containment would occur under the condition of zero psig back pressure. As will be explained below, this is conservative for the SIP flow.

The ECCS piping configuration at DCPP is designed such that the SIPs inject into the 10" accumulator line and the CCPs inject through a separate smaller 1.5" line. The standard assumption for small break LOCA analysis is to assume that the cold leg break is in the injection line itself if the break size is greater than the injection line, and that ECCS injection flow spills to containment at zero psig. However, if the break size is smaller than the injection line, then a more realistic assumption for determining the amount of ECCS spillage is to use the RCS pressure as the back pressure for determining the amount of ECCS spillage. This assumption is reasonable because the pressure in a large line with a small break will tend to follow RCS pressure.

Using the assumption of RCS back pressure for SIP flow spillage but maintaining the zero psig pressure assumption for the CCP flow and accounting for the reduction of ECCS flow due to the amendment changes, the net effect on PCT for the small break LOCA is a 58°F increase. As reported in DCL-91-204, the Small Break LOCA PCT is 1659°F for Unit 1 and 1742°F for Unit 2. Adding in the PCT increase of 58°F raises the PCT to 1717°F for Unit 1 and 1800°F for Unit 2.

The PCT increase discussed above was conservatively determined by Westinghouse. Westinghouse has reasonable assurance that the arithmetic summation of this PCT increase and the increases reported in DCL-91-204, are conservative, and bounds any synergistic effects that may occur when the model changes are collectively considered. This assurance is based on

Westinghouse's knowledge of the physics of the LOCA phenomena and on known evaluation model sensitivities. Although the absolute value of the change is greater than 50°F, the resulting PCT value is still well below the 10 CFR 50.46 limit of 2200°F. Therefore, no reanalysis, beyond that already performed, is required to demonstrate compliance with 10 CFR 50.46.

CONCLUSION

Changes to the ECCS evaluation models have been described for the large break and the small break LOCA. In both cases, the effect on ECCS flows and the corresponding effect on PCT were conservatively determined and it has been shown that the resulting PCT is within the 2200°F limit specified in 10 CFR 50.46. Additionally, it is recognized by the NRC that the methods used in this evaluation (Appendix K 10 CFR 50) are highly conservative. The following is an excerpt from the September 16, 1988 Federal Register (35996) which issued the final rule on 10 CFR Part 50:

> considerable research has been performed that has greatly increased the understanding of the ECCS performance during a LOCA. It is now confirmed that the methods specified in Appendix K, combined with other analysis methods currently in use, are highly conservative and that the actual cladding temperatures which would occur during a LOCA would be much lower than those calculated using Appendix K methods.

Considering this statement by NRC Staff, and the fact that the PCT increases determined by Westinghouse are conservative and bound any synergistic effect that may occur from multiple model changes, a reanalysis of the large break and small break LOCA is not required.

ENCLOSURE 2

WESTINGHOUSE POSITION REGARDING THE REPORTING AND REANALYSIS REQUIREMENTS OF 10 CFR 50.46 RELATIVE TO THE ECCS FLOW TECHNICAL SPECIFICATION CHANGES FOR DIABLO CANYON POWER PLANT UNITS 1 AND 2

ATTACHMENT

WESTINGHOUSE POSITION REGARDING THE REPORTING AND REANALYSIS REQUIREMENTS OF 10CFR50.46 RELATIVE TO THE ECCS FLOW TECHNICAL SPECIFICATION CHANGES FOR THE DIABLO CANYON POWER PLANT UNITS 1 AND 2

EXECUTIVE SUMMARY

Westinghouse performed a conservative assessment of the effect of the changes in Technical Specifications for the Diablo Canyon Power Plant Units 1 and 2. The changes would result in a reductions in the ECCS flow. The assessment was performed following the guidelines provided by Reference 1. and in accordance with the requirements of 10CFR50.59. The assessment found that compliance with the requirements of 10CFR50.46(b) would be maintained.

Westinghouse considers the ECCS Evaluation Model to be the calculational framework for performing LOCA analyses. Westinghouse does not consider plant specific input to be part of the ECCS Evaluation Model. Since the calculational framework was not altered for the assessment of the plant specific application of the ECCS flow performance inputs to Diablo Canyon Power Plant Units 1 and 2 ECCS analysis results, it is the position of Westinghouse that a report or reanalysis under the requirements of 10CFR50.46 is not required.

BACKGROUND

Westinghouse provided information regarding the effect of proposed changes to the emergency core cooling system (ECCS) flow requirements in support of an amendment to the facility operating license for the Diablo Canyon Power Plant Units 1 and 2. The following changes to the ECCS flow assumptions were proposed:

a. A change to the ECCS flow configuration which assumes that the centrifugal charging pump (CCP) miniflow recirculation lines open during the injection phase of a postulated loss-of-coolant accident (LOCA),

b. A change to the ECCS minimum and maximum flow requirements for the CCP and intermediate head safety injection (IHSI) pump flow rates to provide additional margin in the flow requirement assumptions, and

c. A change to the ECCS injection line flow imbalance assumptions for the CCP and IHSI injection paths.

These changes would alter the ECCS flow assumptions employed in the ECCS analyses for the Diablo Canyon Power Plant, Units 1 and 2. Consequently, an evaluation of the effect of the ECCS flow changes on the results of the ECCS analysis was performed to support the relaxation in the ECCS flow requirements. During the evaluation of the effect of the change on the ECCS flow assumptions, conservative values were relaxed regarding the containment pressure and the back pressure at the injection point assumed to calculate the ECCS flow performance. The final results of the assessment were provided to the Pacific Gas and Electric Company.

WESTINGHOUSE PROCESS FOR PERFORMING SAFETY ASSESSMENTS

Westinghouse supports changes to the plant configuration, in part, by assessing the effect of proposed changes on the licensing basis ECCS analysis. Alteration of the plant configuration may necessitate a change to the LOCA licensing basis which may be implemented through new analytical efforts or through supplemental information regarding the effect of the change in plant configuration on the ECCS analysis as documented in the FSAR. Changes to the LOCA licensing basis may result whenever changes to the plant configuration represented in the ECCS analyses and documented in the final safety analysis report (FSAR) are made. Changes to the plant configuration may affect the ECCS analysis plant specific input or may affect the ECCS Evaluation Model inputs or assumptions. Changes to the plant configuration may therefore be categorized follows:

1) Those plant configuration changes which alter the ECCS Evaluation Model and which are reportable under the requirements of 10CFR50.46:
   This may occur whenever plant changes alter the equipment operability or performance characteristics to the extent that plant configuration is outside the range of fundamental assumptions employed in the ECCS Evaluation Model which could invalidate the generic NRC approved input or methodology which is specifically tied to a physical model in the Evaluation Model.

2) Those plant configuration changes which alter the plant specific input to an ECCS Evaluation Model calculation which are evaluated under the criteria of 10CFR50.59 and for which information is provided to the NRC under the requirements of 10CFR50.71:
   This may occur when plant changes alter the performance characteristics of plant equipment to the extent that the plant specific input used in the ECCS analysis calculation are not bounded. Plant specific input variables are not considered part of the ECCS Evaluation Model.

Westinghouse has developed procedures in accordance with the requirements of 10CFR21 and Appendix B to 10CFR50 for the treatment of changes to the LOCA licensing basis. Since 10CFR50.46 also contains reporting requirements specifically for the ECCS Evaluation Model, additional processes have been developed to assure that the appropriate information is reported whenever the LOCA-related licensing basis may result in a change to the ECCS Evaluation Model.

To support changes to the plant configuration which may alter the ECCS licensing basis, Westinghouse performs an assessment of the effect of the change on the ECCS analysis using guidelines set forth in Reference 1 by following the general methods described in Reference 2. The application of the general methods described in Reference 2 are judged to be conservative and to provide reasonable assurance that actual ECCS reanalysis would result in calculated values of the PCT lower than those determined in the assessments.

An evaluation of the effect and a determination of the safety significance is performed in support of plant changes whenever information indicates that a revision to the LOCA-related plant licensing basis may be necessary. If the evaluation indicates that the plant change affects the plant specific inputs to the ECCS Evaluation Model analysis calculation, then an assessment of the effect of the proposed change on the ECCS analysis results is performed. The assessments are performed in a manner which provides reasonable assurance that the effect of the changes is conservatively estimated on the following basis:

1. The assessed effect is determined based upon prior ECCS Evaluation Model sensitivity studies,

2. The assessed effect is determined through knowledge of the effect of the change on the ECCS Evaluation Model plant specific input parameters and the effect of these parameters on the physical models in the ECCS Evaluation Model, and

3. The assessed effect is determined through experience and judgment gained through the performance of the ECCS Evaluation Model for similar changes.

Sensitivity studies performed to support plant design changes have indicated that, using the above information sources, the estimated effect of any given change on the assessed value for the peak cladding temperature is conservatively determined.

Similarly the interactive effects of multiple changes are also conservatively determined. Typically the conservative effects are linearly combined, however an assessment of the effect for multiple changes considers the potential interactive effects based upon experience with the input and physical models in the calculational framework. Westinghouse studies have indicated that comprehensive assessments of the effect of multiple changes also conservatively estimate the effect of multiple changes on the assessed value for the calculated peak cladding temperature relative to the results which would be obtained from an actual ECCS reanalysis.

As an example of one such study, an evaluation for the small break LOCA analysis of the effect of the following changes was performed for a typical 4-loop dry containment plant similar in design to the Diablo Canyon Power Plant:

1. An increase in the main steam safety valve (MSSV) setpoint was conservatively estimated to result in an increase in the peak cladding temperature of 78°F,

2. An increase in the auxiliary feedwater enthalpy switchover delay time was conservatively estimated to result in an increase in the peak cladding temperature of 111°F,

3. A revision to the safety injection flow rate assumptions was conservatively estimated to result in an increase in the peak cladding temperature of 58°F, and

4. A revision to the ECCS Evaluation Model convergence criteria input parameters was conservatively estimated to result in a peak cladding temperature decrease of 0°F.

5. A revision to the core power distribution was conservatively estimated to result in a peak cladding temperature decrease of 0°F.

In total, the peak cladding temperature was conservatively estimated to increase by approximately 247°F for the accumulation of the multiple changes to the ECCS licensing basis. However, when an analysis calculation was performed which incorporated all of the changes, it was determined that the peak cladding temperature had decreased by approximately 33°F.

From this study and others, Westinghouse has reasonable assurance that the conservative process by which Westinghouse performs assessments of plant configuration changes and the consideration of the potential interactive effect of multiple changes on the ECCS licensing basis that the net effect of multiple changes is conservatively estimated.

WESTINGHOUSE INTERPRETATION OF THE ECCS EVALUATION MODEL

The definition of the ECCS Evaluation Model is provided in 10CFR50.46(c)(2)

> " An Evaluation Model is the calculational framework for evaluating the behavior of the reactor coolant system during a postulated loss-of-coolant accident (LOCA). It includes one or more computer programs and all other information necessary for application of the calculational framework to a specific LOCA, such as mathematical models used, assumptions included in the programs, procedure for treating the program input and output information, specification of those portions of analysis not included in computer programs, values of parameters, and all other information necessary to specify the calculational procedure."

Westinghouse has interpreted an ECCS Evaluation Model to be the CALCULATIONAL FRAMEWORK for performing LOCA analyses. Westinghouse ECCS Evaluation Models include multiple computer programs which contain the equations representing the important physical phenomena, the numerical solution schemes for solving the equations, the method for transferring information from one computer code to another, the inputs and assumptions that are specifically associated with the model's calculational framework, and the procedures for treating the inputs and outputs which have been specifically reviewed and found acceptable by the Nuclear Regulatory Commission. Currently, Westinghouse does not consider plant specific input to be part of an ECCS Evaluation Model. The following historical information, in part, forms the basis for the Westinghouse conclusion that plant specific input is not part of the ECCS Evaluation Model:

During the original review of the Westinghouse ECCS Evaluation Models following promulgation of 10CFR50.46 in 1974, the NRC staff required the following as a result of question 3.10.5 in Reference 3:

> " It will be necessary to specify which modeling option is proposed for inclusion in the Westinghouse ECCS Evaluation Model whenever a code contains several modeling options in order to satisfy the documentation requirements of Appendix K."

The NRC recognized that some inputs were required for ECCS Evaluation Model calculations and some inputs were not part of the ECCS Evaluation Model.

In Reference 4, Westinghouse specified the code input options for ECCS Evaluation Model calculations. The input options were related to specific models in the computer code, such as the kinetics reactivity feedback option. Inputs related to plant specific parameters such as volumes, lengths, etc., were not specified as ECCS Evaluation Model code input options. In Appendix E of Reference 4, Westinghouse provided a summary of the design code options for the Westinghouse ECCS Evaluation Model. Plant specific input was not specified as part of the ECCS Evaluation Model. In fact, Reference 4 clearly indicates that code options not specifically utilized in licensing evaluations and for compliance with Appendix K to 10 CFR Part 50 are not considered part of the Evaluation Model. Reference 4 was reviewed and approved by the NRC.

The NRC's Safety Evaluation Report for Reference 5 states the following in Section I, "Background;"

> " This SER documents the staff review of the NOTRUMP computer program for calculating small break loss of coolant accidents (LOCA). Our review concludes that NOTRUMP is acceptable for calculating small break LOCA events. ...The following is our evaluation of the Westinghouse small break LOCA model using NOTRUMP."

In Section IV, "Review of the Westinghouse NOTRUMP SBLOCA Application," the NRC's Safety Evaluation Report for Reference 5 states the following;

> " The design dependent user input parameters are not reviewed in this report."

The Safety Evaluation Report for Reference 5 indicates that the Westinghouse small break LOCA Evaluation Model was reviewed, but that the plant design dependant input variables were not reviewed as part of the ECCS Evaluation Model. The approved safety evaluation report did not consider the plant specific input to be part of the ECCS Evaluation Model.

In Reference 6, the Westinghouse interpretation of the definition of the ECCS Evaluation Model was again provided to the NRC as follows;

> " Westinghouse considers the ECCS Evaluation Model to consist of the calculational framework for evaluating the behavior of the reactor coolant system during a postulated loss-of-coolant accident (LOCA). The Westinghouse ECCS Evaluation Models include multiple computer programs which contain the equations representing the important physical phenomena, the numerical solution schemes for solving the

equations, the method for transferring information from one computer code to another, the inputs and assumptions that are specifically associated with the model's calculational framework, and the procedures for treating the inputs and outputs which have been specifically reviewed and found acceptable by the Nuclear Regulatory Commission. The Attachment does not contain information regarding modifications to plant specific inputs altered by plant design changes under 10CFR50.59 or other means which may affect the results of LOCA analysis performed with the Westinghouse ECCS Evaluation Models."

Westinghouse has not received any indication, either directly from the NRC or indirectly from an NRC response to a licensee, that the above interpretation is incorrect.

In Reference 7, the NRC discusses the intent of the revision to 10CFR50.46 which became effective October 17, 1988. The NRC stated the following;

" One commentor interpreted the use of the words "or in the application of such a model" as requiring reporting when facility changes (already reportable under 10CFR50.59), resulting in model input changes, occur.

NRC Response:
" The regulatory language referred to is intended to ensure that applications of models to areas not contemplated during initial review of the model do not result in errors by extending a model beyond the range that it was intended. The Commission does not believe that further clarification of this requirement is necessary and has not done so in the final rule."

Based on the above information from References 3, 4, 5, 6, and 7, Westinghouse concludes that the methods and values used to calculate plant specific input such as peaking factors, geometry, ECCS configuration, etc., need not be considered part of the ECCS Evaluation Model. Westinghouse does, however, check to ensure that changes in the input values that reflect plant changes do not extend the application of the Evaluation Model beyond the range of applicability.

Application of the calculational framework to any plant specific ECCS analysis may include plant specific inputs specified at the nominal values, conservative bounding values, or conservative values to simplify the calculation of the input. It is Westinghouse position that credit for the removal of the excess conservatism from values chosen to simplify the calculation may be taken with ample technical justification to offset a related change.

ASSESSMENT OF ECCS FLOW CHANGES FOR DIABLO CANYON UNITS 1 AND 2

Westinghouse supported, in part, changes to the ECCS flows by performing an assessment of the effect of the changes to the ECCS flow rates on the ECCS analysis results for the Diablo Canyon Power Plant Units 1 and 2. The assessment credited conservative input assumptions which were made to simplify the analysis process in the prior ECCS analysis:

Large Break LOCA Evaluation:

The assessment for the large break LOCA analysis examined the ECCS flow rates which would result specifically for Diablo Canyon with the revised technical specifications and determined that the ECCS analysis peak cladding temperature result would decrease relative to the current ECCS analysis results if a reanalysis were to be performed. While the previous analysis assumed that the ECCS flow spilled to a containment pressure of 0 psig, the assessment examined the ECCS flow rates which assumed the ECCS flows spilled to a containment pressure consistant with the containment backpressure determined in the ECCS analysis.

Small Break LOCA Evaluation:

The assessment for the small break LOCA analysis examined the worst case ECCS flow rates which could result specifically for Diablo Canyon with the revised technical specifications. The ECCS flow available for the various break sizes was examined crediting the backpressure to which the spilling ECCS flow would be subjected. It was determined that there would be a net reduction in the ECCS flow available for the small break LOCA. Based upon the magnitude of the flow reduction, it was conservatively determined that the small break LOCA ECCS analysis peak cladding temperature result could increase by approximately 58°F.

Evaluation Findings:

Since the prior ECCS analysis contained conservatisms in the plant specific input, not governed by the requirements of Appendix K to 10CFR50 and not specified as part of the ECCS Evaluation Model calculation framework, it is Westinghouse position that the change in the plant specific input does not require reporting under the requirements of 10CFR50.46. There was no change to the ECCS Evaluation Model, the calculational framework or any of the information necessary to specify the calculation framework. Plant specific application of the calculational framework utilizing changes to the plant specific input parameters resulted in a value for the ECCS analysis results which maintained compliance with the requirements of 10CFR50.46(b) for both the large break and small break LOCA analyses.

The effect on the ECCS analysis results of the changes to the plant specific input parameters was assessed under the criteria of 10CFR50.59 using the guidance provided in Reference 1. For the large break LOCA, it was determined that an ECCS analysis incorporating the assessed changes would result in a calculated peak cladding temperature that is lower than that currently reported for the Diablo Canyon Power Plant Units 1 and 2. For the small break LOCA, it was determined that an ECCS analysis incorporating the assessed changes could result in a calculated peak cladding temperature that is 58°F higher than that currently reported for the Diablo Canyon Power Plant Units 1 and 2.

In these assessments, a conservative estimate of the ECCS performance that would result for the Diablo Canyon plant was compared to the ECCS performance represented in the original ECCS analysis. It was determined that the existing analysis was bounding for the large break LOCA and was assessed a penalty of 58°F for the small break LOCA which was shown to be in continuing compliance with the requirements of 10CFR50.46(b). Westinghouse typically does not recommend reanalysis for changes to the plant configuration when results are obtained which show continuing compliance with 10CFR50.46(b). It should be noted that assessments for plant configuration changes for which the configuration change is bounded are often not quantified since the ECCS licensing basis analysis remains conservative.

CONCLUSIONS:

In summary, Westinghouse performed a conservative assessment of the effect of the changes to the ECCS flows in the Diablo Canyon Power Plant Units 1 and 2. The assessment was performed following the guidelines provided by Reference 1 and in accordance with the requirements of 10CFR50.59. The assessment determined that compliance with the acceptance criteria of 10CFR50.46 would be maintained for the ECCS flow change. Westinghouse concluded that a conservative safety evaluation may be performed in accordance with the requirements of 10CFR50.59 for plant configuration changes which may result in an increase in the peak cladding temperature providing that compliance with the requirements of the 10CFR50.46 acceptance criteria is maintained. Since the calculational framework was not altered for the assessment of the plant specific application of the ECCS flow performance inputs to Diablo Canyon Power Plant Units 1 and 2 ECCS analysis results, it is the position of Westinghouse that a report or reanalysis under the requirements of 10CFR50.46 is not required.

REFERENCES:

1. NSAC-125, "Guidelines for 10 CFR 50.59 Safety Evaluations," June 1989.

2. WCAP-8986, Perturbation Technique for Calculating ECCS Cooling Performance," C. M. Thompson and V. J. Esposito, February 1977.

3. WCAP-8339 (Non-proprietary), "Westinghouse Emergency Core Cooling System Evaluation Model - Summary," June 1974

4. WCAP-8472-A (Non-proprietary), "Westinghouse ECCS Evaluation Model: Supplementary Information," June 1974

5. WCAP-10081-A (Non-Proprietary), ""Westinghouse Small Break ECCS Evaluation Model Using the NOTRUMP Code," Lee, N., et. al., August 1985

6. NS-NRC-89-3463, "10CFR50.46 Annual Notification for 1989 of Modifications in the Westinghouse ECCS Evaluation Models," Letter from W. J. Johnson (Westinghouse) to T. E. Murley (NRC), Dated October 5, 1989.

7. "Emergency Core Cooling Systems; Revisions to Acceptance Criteria," Federal Register, Volume 53, Number 180, pp.35996-36005, September 16, 1988.