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REGION V

July 30, 1982

CPY-624-82

Licensee Event Report (LER) 82-07
Update Report

Mr. R. H. Engelken
Regional Administrator
U. S. Nuclear Regulatory Commission
Region V
Creekside Oaks Office Park
1450 Maria Lane, Suite 210
Walnut Creek, CA 94596-5368

Dear Sir:

Licensee Event Report 82-07 for the Trojan Nuclear Plant was submitted to the NRC on May 28, 1982. This report identified a nonconservative spray modeling error invalidating the Trojan containment analysis used to establish a revised maximum positive containment operating pressure limit, Technical Specification 3.6.1.4. The LER 82-07 corrective action was to temporarily adopt an administrative limit of 0.5 psig that was known to be both conservative and consistent with the existing FSAR analysis and original Technical Specification limit pending determination of the appropriate value for maximum positive containment operating pressure.

Attached is an update of LER 82-07 containing a summary of a reanalysis of the Trojan containment response to the design basis loss-of-coolant accident. This reanalysis demonstrates that the maximum positive containment operating pressure of 1.6 psig stated in Trojan Technical Specification 3.6.1.4 is an acceptably conservative upper limit. Hence, we will remove the administrative limit of 0.5 psig and return to using the Technical Specification limit of 1.6 psig. No change to Technical Specification 3.6.1.4 is necessary. This completes corrective actions as documented in the attached updated LER 82-07.

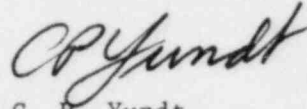
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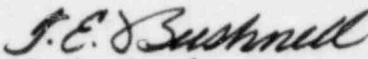
Mr. R. H. Engelken
July 30, 1982
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If you have any questions or comments, please direct them to Lief
Erickson (503) 226-5610.

Sincerely,



C. P. Yundt
General Manager


for

R. L. Steele
Manager, Nuclear Projects Engineering

Attachments

c: LER Distribution
File 93.24a(Q)

REPORTABLE OCCURRENCE

1. Report No.: 82-07
2. Report Date:
 - a. Update Report July 30, 1982
 - b. Previous Report May 28, 1982
3. Occurrence Date: May 14, 1982
4. Facility: Trojan Nuclear Plant, P. O. Box 439, Rainier, Oregon 97048.
5. Identification of Occurrence:

During a review of Containment analyses, a nonconservative Containment spray modeling error was identified in a Trojan computer simulation model. This model was used to evaluate Containment response during a DBA-LOCA. The analysis provided the basis for License Change Application (LCA) 16, submitted December 10, 1976, that increased the maximum positive Containment operating pressure of Technical Specification 3.6.1.4 from 0.5 psig to 1.6 psig. Sensitivity analyses using this model with the error corrected indicated that a conservative analysis of Containment pressure during a Design Basis Loss-of-Coolant Accident beginning at 1.6 psig might result in Containment design pressure being exceeded.

6. Conditions Prior to Occurrence:

The Plant was in Mode 6, refueling shutdown for Cycle 5.

7. Description of Occurrence:

During a review of the conservative analysis assumptions in the DBA Containment analysis used to support LCA 16, the Containment spray model was discovered to be in error. According to FSAR assumptions, the activation of Containment spray occurs as a step increase to full flow at 52 seconds into the transient. The LCA 16 spray flow versus time inputs resulted in a ramp increase between time zero and 52 seconds. Thus, credit for spray flow prior to 52 seconds caused an underprediction in the peak Containment pressure by approximately 0.5 psig.

8. Designation of Apparent Cause of Occurrence:

The apparent cause of this deficiency is attributed to improper interpretation of computer code modeling requirements. The analysis was conducted prior to the existence of an established procedure for documentation and independent review of safety-related calculations at PGE on a division wide basis.

9. Analysis of Occurrence:

This deficiency had no effect on either Plant or public safety. The Containment design pressure was not exceeded. The Containment operating pressure was not allowed to approach the Technical Specification limit of 1.6 psig. As described below, subsequent analysis has shown the 1.6 psig limit to be conservative relative to predicted Containment response during a DBA event.

10. Corrective Action:

An administrative limit of 0.5 psig maximum positive Containment operating pressure was established pending determination of the correct maximum positive Containment pressure. This 0.5 psig pressure is known to be conservative and is consistent with the FSAR analysis and the original Technical Specification limit. (This administrative limit has not been effective since the Plant has been in Modes 5 and 6 since the error was reported.)

Procedures were verified to require documentation and independent review of analyses which form the basis for changes to the operating license.

A revised Containment analysis has been completed. This analysis includes a correct spray flow model and a revised heat transfer model to bare concrete surfaces, taking full credit for this heat transfer mechanism as was intended in the analysis supporting LCA 16. Starting with an initial Containment pressure of 0.0 psig, the peak pressure calculated is 57.3 psig. A second analysis starting from an initial pressure of 2.0 psig calculated a peak pressure of 59.9 psig. A more detailed summary and figure outlining the Containment pressure versus time are included in Attachment 1.

The results demonstrate that the Trojan Technical Specification 3.6.1.4 limit of 1.6 psig is a conservative upper limit, bounded and supported by the DBA analysis, and contains adequate margin. Thus the Technical Specification is valid and no further action is required. The administrative limit of 0.5 psig is subsequently removed.

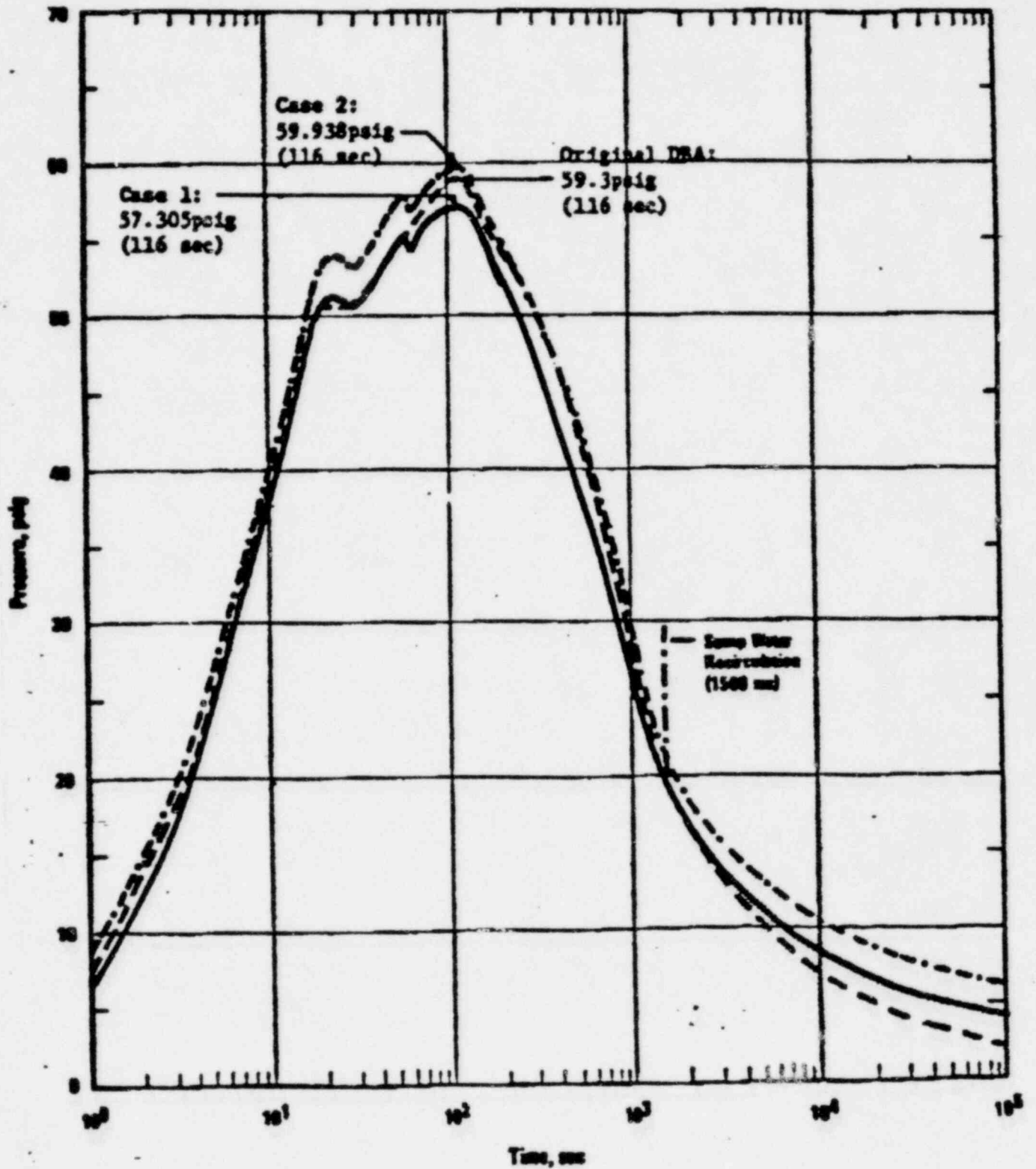
UPDATE LICENSEE EVENT REPORT 82-07
REVISED TROJAN CONTAINMENT ANALYSIS

The revised Trojan DBA-LOCA Containment Analysis was conducted by using the latest version of Bechtel Power Corporation's COPATTA Containment Analysis Code. The COPATTA Code has been fully tested and documented, and is consistent with the methodology presented in Bechtel Topical Report BN-TOP-3, Revision 4, "Performance and Sizing of Dry Pressure Containments", dated October 1977. An earlier version of the COPATTA Code was used to conduct the original Trojan Containment analysis, documented in the Final Safety Analysis Report.

All input data used for the revised analysis was consistent the original Trojan DBA-LOCA analysis with the exception of credit for full heat transfer to bare concrete heat sink surfaces as was the intent in License Change Application 16, and a slight change in the accounting of pump safety injection flow included in the blowdown data. The spray model was verified to be correct and consistent with the original analysis assumptions.

In order to completely establish the basis for an acceptable maximum positive Containment operating pressure technical specification, two cases were run. The first established base case DBA-LOCA pressure and temperature curves for a 0.0 psig initial Containment pressure. The peak pressure was calculated to be 57.3 psig at 116 seconds. A second run was made, starting with an initial Containment pressure of 2.0 psig. This resulted in a peak pressure prediction of 59.9 psig at 116 seconds. Figure 1 graphically shows the results of the reanalysis in relation to the original Trojan DBA-LOCA pressure prediction.

The analysis results demonstrate that the current Trojan Technical Specification 3.6.1.4 limit of 1.6 psig is a conservative upper limit for maximum positive Containment operating pressure.



**FIGURE 1; Containment Pressure versus Time -
 DEFS Gallium Break - Maximum Engineered Safety Features**