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ACCESSION NBR:8202020292 DOC.DATE: 82/01/29 NOTARIZED: NO DOCKET #
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50-362 San Onofre Nuclear Station, Unit 3, Southern Californ 05000362
AUTH.NAME AUTHOR AFFILIATION
DIETCH,R. Southern California Edison Co.
RECIP.NAME RECIPIENT AFFILIATION
EISENHUT,D.G. Division of Licensing

SUBJECT: Forwards processed & classified potential finding repts (PFR).Repts were processed by GA Co.Addl PFRs will be transmitted during wk of 820201.

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	IE/DEP/EPDB	35	1	1	IE/DEP/EPLB	36	3	3
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	NRR/DE/EQB	13	3	3	NRR/DE/GB	28	2	2
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	NRR/DHFS/HFEB	40	1	1	NRR/DHFS/LQB	32	1	1
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	NRR/DSI/ETSB	12	1	1	NRR/DSI/ICSB	16	1	1
	NRR/DSI/PSB	19	1	1	NRR/DSI/RAB	22	1	1
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Southern California Edison Company

P. O. BOX 800

2244 WALNUT GROVE AVENUE

ROSEMEAD, CALIFORNIA 91770

ROBERT DIETCH
VICE PRESIDENT

TELEPHONE
213-572-4144

January 29, 1982

Director, Office of Nuclear Reactor Regulation
Attention: Mr. Darrell G. Eisenhut, Director
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Gentlemen:

Subject: Docket Nos. 50-361 and 50-362
San Onofre Nuclear Generating Station
Units 2 and 3

Enclosed are sixty-three (63) copies of the Potential Finding Reports (PFR) which have been processed and classified by General Atomic as follows:

PFR-0001 Observation	PFR-0023 Observation
PFR-0004 Invalid	PFR-0025 Invalid
PFR-0005 Invalid	PFR-0026 Invalid
PFR-0012 Invalid	PFR-0029 Invalid
PFR-0018 Invalid	PFR-0032 Invalid
PFR-0019 Invalid	PFR-0033 Invalid
PFR-0020 Invalid	PFR-0034 Finding
PFR-0021 Invalid	PFR-0039 Invalid
PFR-0022 Invalid	PFR-0041 Invalid

We will transmit additional processed and classified PFRs to you during the latter part of the week of February 1, 1982.

If you have any questions regarding this matter, please give me a call.

Very truly yours,

Robert Dietch

cc: NRC Region V, R. H. Engelken (w encl)
ETECH, H. R. Fleck (w encl)
H. Rood (To be opened by addressee only, with five copies of enclosure)

Boal
s
ltr

PFR NO. 2408-PFR-0001

REVISION B

POTENTIAL FINDING REPORT
SONGS 2&3 SEISMIC DESIGN VERIFICATION

A. PREPARATION BY GA INITIATOR

AFFECTED ITEMS: Safety Injection Line to Reactor Coolant Loop 1A
Piping Stress Analysis Package PSG 82

REQUIREMENT REFERENCE DOCUMENTS:

P&I Diagram 40112-10
Computer runs Q45H25 and Q39H59

BASIC REQUIREMENT:

Line 109-24"-C-LLO should be correctly identified in ISO Dwg. 1204-004-1 (Sh. 50 PSG 82).

DESCRIPTION OF POTENTIAL FINDING:

Although the line 109-24"-C- LLO was correctly modeled in computer runs Q45H25 and Q39H59, the ISO Dwg. 1204-004-1 (Sh. 50 PSG 82) incorrectly identified the line 109 as line No. 002-24"-C-LLO.

PREPARED BY: F. Lin DATE: 1-18-82

REJECTION OF GA TASK LEADER COMMENTS BY: _____ DATE: _____

REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: _____ DATE: _____

B. REVIEW BY GA TASK LEADER

COMMENTS

Agree with reviewer's disposition of BPC's response to PF definition.

☐ AGREE PF IS VALID BY [signature] DATE 1/19/82

☐ REQUEST RE-REVIEW BY _____ DATE _____

☐ DISAGREE BY _____ DATE _____

☐ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: _____ DATE: _____

PFR NO. 2408-PFR-0001

REVISION B

C. REVIEW BY ORIGINAL DESIGN ORGANIZATION

COMMENTS

☐ AGREE PF IS VALID

☐ DISAGREE

BY: _____ DATE: _____

D. RECOMMENDATION BY FINDINGS REVIEW COMMITTEE

DEFINITION ADEQUACY:	☒ ADEQUATE	☐ INADEQUATE
VALIDITY:	☒ VALID	☐ INVALID
CLASSIFICATION:	☒ OBSERVATION	☐ FINDING

JUSTIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" _____

COMMENT ON "OBSERVATION" CLASSIFICATION

Error in line table which does not affect design.

BY: S. L. Kouts DATE: 1/20/82

E. GA PROJECT MANAGER

☒ ACCEPT

☐ REJECT

BY: F. H. Neumann DATE: 1/22/82

A
0001

REVIEW BY ORIGINAL DESIGN ORGANIZATION COMMENTS

Drawing 1204-109-1 is for Unit 2 and 3. The configuration as shown is for Unit 3; however, line 109 is mirror image for Unit 2. No node points were shown on this drawing since they were shown on 1204-004-1. Line 109 is shown on 1204-004-1 between the check valve and node point 40 although not identified. The computer runs reflect the configuration shown on 1204-004-1 and therefore include this line.

☐ AGREE PF IS VALID

☒ DISAGREE

BY: [signature] DATE: 1-15-82

RECOMMENDATION BY FINDINGS REVIEW COMMITTEE

DEFINITION ADEQUACY:	☐ ADEQUATE	☐ INADEQUATE
VALIDITY:	☐ VALID	☐ INVALID
10 CFR 21:	☐ NOT APPLICABLE	☐ APPLICABLE
10 CRF 50.55(e):	☐ NOT APPLICABLE	☐ APPLICABLE
CLASSIFICATION:	☐ OBSERVATION	☐ FINDING

JUSTIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" _____

COMMENT ON "OBSERVATION" CLASSIFICATION

BY: _____ DATE: _____

TPT PROJECT MANAGER

☐ ACCEPT

☐ REJECT

BY: _____ DATE: _____

IMPACT ASSESSMENT

0001

PFR NO. 2408-PFR-001

1/21/82

AFFECTED ITEM: S. I. Line to Reactor Coolant Loop 1A, Piping Package PSG 82

1. IS THERE THE POTENTIAL FOR REDUCING DESIGN MARGINS TO THE EXTENT DESIGN ALLOWABLES ARE EXCEEDED OR DESIGN REQUIREMENTS ARE NOT MET ?

   No

2. IS THERE THE POTENTIAL THAT THE ITEM MIGHT FAIL OR ENDANGER OTHER ITEMS DURING AN SSE ?

   No

3. COULD THE FAILURE OF THIS ITEM DURING AN SSE CREATE A SUBSTANTIAL SAFETY HAZARD ?

   No

4. COULD THE PROCEDURAL VIOLATION CREATE A SUBSTANTIAL SAFETY HAZARD ?

   No

5. ARE OTHER SIMILAR DEVIATIONS LIKELY TO EXIST ?

   I cannot make judgment based on this one case.

6. OTHER COMMENTS:

   Per discussion with Bechtel on January 11, 1982, Bechtel was aware of the incorrect identification of the line 109 on ISO Dwg. 1204-004-01.

PREPARED BY: F. Lin DATE: 1-18-82

COMMENTS:

Agree with reviewer's impact assessment based on BPC's response to PF clarification.

BY: DATE: 1/19/82

POTENTIAL FINDING REPORT
SONGS 2 & 3 SEISMIC DESIGN VERIFICATION

2408-PFR-0004
PFR NO. _____
REVISION _____

A. PREPARATION BY GA INITIATOR

AFFECTED ITEMS: Safety Injection Line to Reactor Coolant Loop 1A
Piping Stress Analysis Package PSG-245

REQUIREMENT REFERENCE DOCUMENTS:
User's Manual ME 101 linear elastic analysis of piping systems.

BASIC REQUIREMENT:
ASME Section III NC-3673.2 requires that a stress intensification factor be used for reducers.

DESCRIPTION OF POTENTIAL FINDING: At node points 144 and 145 where the highest DBE seismic stress occurs (7180 psi) the reducer is not specified in the input and there is no stress intensification factor applied at that location. The code requires a stress intensification factor for reducers be used which would increase stresses.

I agree with the Original Design Orgs. Comments
Neville Marsh
1/20/82

PREPARED BY: N. Marsh DATE: 1-11-82
REJECTION OF GA TASK LEADER COMMENTS BY: _____ DATE: _____
REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: _____ DATE: _____

B. REVIEW BY GA TASK LEADER

COMMENTS

I agree with the above Design Orgs comments
C Charman 1/20/82
PSO 1/26/82

☑ AGREE PF IS VALID BY C Charman PSO DATE 1-11-82
☐ REQUEST RE-REVIEW BY _____ DATE _____
☐ DISAGREE BY _____ DATE _____
☐ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: _____ DATE: _____

PFR NO.
REVISION 0004 0002

REVIEW BY ORIGINAL DESIGN ORGANIZATION

COMMENTS

Per NC-3673.2, the stress intensification factor at the reducer is calculated on page 12 of calculation M-1204-063-2 (PSG 245). The SIF for this reducer was determined to be one, and therefore, the SIF at this location is included in the analysis. See Summer 1976 Addenda to NC-3673-2 for corrected formula.

Agree with Comment
Neville Marsh
1/20/81

☐ AGREE PF IS VALID

☒ DISAGREE

BY: ______ DATE: 1-15-82

D. RECOMMENDATION BY FINDINGS REVIEW COMMITTEE

DEFINITION ADEQUACY:	☒ ADEQUATE	☐ INADEQUATE
VALIDITY:	☐ VALID	☒ INVALID
~~10 CFR 21:~~	~~☐ NOT APPLICABLE~~	~~☐ APPLICABLE~~ SLK 1/20/82
~~10 CFR 50.55(e):~~	~~☐ NOT APPLICABLE~~	~~☐ APPLICABLE~~
CLASSIFICATION:	☐ OBSERVATION	☐ FINDING

JUSTIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" ______

COMMENT ON "OBSERVATION" CLASSIFICATION

BY: S. L. Koutz DATE: 1/20/82

E. TPT PROJECT MANAGER

☒ ACCEPT

☐ REJECT

BY: ______ DATE: 1/22/82

POTENTIAL FINDING REPORT
SONGS 2&3 SEISMIC DESIGN VERIFICATION

2408-PFR-0005
PFR NO. _____
REVISION _____

A. PREPARATION BY GA INITIATOR

AFFECTED ITEMS: Safety Injection Line to Reactor Coolant Loop 1A
Piping Stress Analysis Package PSG-78

REQUIREMENT REFERENCE DOCUMENTS: Pipe Support Drg No. S2-S1-059-H-006

BASIC REQUIREMENT:

Calculations use latest design loads.

DESCRIPTION OF POTENTIAL FINDING: Support X-rigid at node 143 Drg. No. S2-S1-059-H-006 shows design loads of (+29850 and -25100). Sheet 63 of PSG No. 78 is given as (+43510 and -39901) for the loading at that support. An unsubstantiated statement that higher loads are still within the margin of safety was made.

I agree with the original design orgs. comments
Neville Marsh 1/20/82.

PREPARED BY: N. Marsh DATE: 1/11/82

REJECTION OF GA TASK LEADER COMMENTS BY: _____ DATE: _____

REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: _____ DATE: _____

B. REVIEW BY GA TASK LEADER

COMMENTS:

I agree with the original design orgs comments
C Charma 1/20/82

☒ AGREE PF IS VALID BY C Charma DATE 1-21-82

☐ REQUEST RE-REVIEW BY _____ DATE _____

☐ DISAGREE BY _____ DATE _____

☐ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: _____ DATE: _____

PFR NO. [illegible]0005

REVISION _____

REVIEW BY ORIGINAL DESIGN ORGANIZATION — COMMENTS

Apparently, the actual physical configuration was not clear to the reviewer. -51-059-II-006 is only a block in compression. It was obvious to the design engineer that a load of 44 KIPS can be adequately transmitted through a 6" X 6" X 7/8" thick block of steel(σ = 44/6 X 6 = 1.222 ksi vs. Allow of 31.9 ksi).

Agree with Comment.
Neville Marsh
1/20/82

☐ AGREE PF IS VALID

☐ DISAGREE DSC

BY: [illegible] DATE: 1-15-82

D. RECOMMENDATION BY FINDINGS REVIEW COMMITTEE

DEFINITION ADEQUACY:	☒ ADEQUATE	☐ INADEQUATE
VALIDITY:	☐ VALID	☒ INVALID
~~10 CFR 21:~~	☐ NOT APPLICABLE	☐ APPLICABLE
~~10 CRF 50.55(e):~~	☐ NOT APPLICABLE	☐ APPLICABLE
CLASSIFICATION:	☐ OBSERVATION	☐ FINDING

SAK 1/20/82

JUSTIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" _____

COMMENT ON "OBSERVATION" CLASSIFICATION

BY: S. L. Kouty DATE: 1/20/82

E. TPT PROJECT MANAGER

☒ ACCEPT

☐ REJECT

BY: G L Wesman DATE: 1/22/82

PFR NO. 2408-PFR-0012

REVISION _____

POTENTIAL FINDING REPORT
SONGS 2&3 SEISMIC DESIGN VERIFICATION

A. PREPARATION BY GA INITIATOR

AFFECTED ITEMS: LPSI Pump P-016 and Support Structure

REQUIREMENT REFERENCE DOCUMENTS:

1. San Onofre 2 & # FSAR, Fig. 3.7A-93, 3.7A-94 and 3.7A-95, Bldg. Response Spectra.
2. CE Spec. 1370-PE-410, Rev. 07
3. Vendor (I-R) Pump General Arrangement and Installation Criteria Documents C-8 x 20 WDFB6 x 21, Rev. 01 and L.N. 8x20WDFB6x21, Rev. 01
4. Vendor Analysis Report EAS-TR-7625N

BASIC REQUIREMENT:

Vendor used acceleration values of 1.0 G vertical and 1.5 g horizontal for static analysis of pump components, which assumes little if any amplification of building accelerations.

DESCRIPTION OF POTENTIAL FINDING:

Potential failure of pump support structure design to meet assumptions used in vendor analysis and potential overstress of pump mounting bolts. Check calculation indicates strength of mounting bolts specified by vendor may be marginal. Documents on design and analysis of pump support structure were not available for this review.

PREPARED BY: J. D. Stanley T. D. Stanley DATE: 1-13-82

REJECTION OF GA TASK LEADER COMMENTS BY: _____ DATE: _____

REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: _____ DATE: _____

B. REVIEW BY GA TASK LEADER

COMMENTS

Re-review with availability of additional information obtained from BPC.

Pump support structure drawings and analysis were obtained from BPC and reviewed. The rigidity of the support structure was determined to be adequate and a re-check of the mounting bolts using seismic loadings consistent with the natural frequency and damping of the pump/support assembly and actual (lower) piping nozzle loadings indicated by BPC piping analyses rather than the design loadings used in the vendor calculations indicated the strength of the bolts to be adequate.

J. D. Stanley 1/23/82

☐ AGREE PF IS VALID BY _____ DATE _____

☑ REQUEST RE-REVIEW BY [signature] DATE 1/22/82

☐ DISAGREE BY _____ DATE _____

∴ PFR is invalid. FSO 1/23

☐ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: _____ DATE: _____

PFR NO. 3408-PFR-0012

REVISION ~~SDC~~ 1/24/82

C. REVIEW BY ORIGINAL DESIGN ORGANIZATION COMMENTS

☐ AGREE PF IS VALID

☐ DISAGREE

BY: _____ DATE: _____

D. RECOMMENDATION BY FINDINGS REVIEW COMMITTEE

DEFINITION ADEQUACY:	☒ ADEQUATE	☐ INADEQUATE
VALIDITY:	☐ VALID	☒ INVALID
CLASSIFICATION:	☐ OBSERVATION	☐ FINDING

JUSTIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" _____

COMMENT ON "OBSERVATION" CLASSIFICATION

BY: S. L. Kouts DATE: 1/24/82

E. GA PROJECT MANAGER

☒ ACCEPT

☐ REJECT

BY: G. L. Weinman DATE: 1/24/82

PFR NO. 2408 PFR-0018

REVISION -

POTENTIAL FINDING REPORT
SONGS 2&3 SEISMIC DESIGN VERIFICATION

A. PREPARATION BY GA INITIATOR

AFFECTED ITEMS: 'Safety Injection Line to Reactor Coolant Loop 1A, Piping Stress Analysis Package PSG-78, Node 146 (Incorrectly shown as Node 147, Ref. 2408-PFR-0006) Tag No. S2-S1-039-E-009.

REQUIREMENT REFERENCE DOCUMENTS:

Specification S023-409-2, Nuclear Service Pipe Supports, Hangers and Accessories for San Onofre Nuclear Generating Station, Units 2 and 3, Page 4F-9 (4/24/74).

BASIC REQUIREMENT: Structural Steel Design per AISC Spec. (Feb. 12, 1969).

DESCRIPTION OF POTENTIAL FINDING:

Revised Calculation P450-1.109 - 9.100, Sht. 1 uses weld allowable stress of 13.6 KSI, which is the allowable in AISC Spec (1963) for E60XX electrode. The weld allowable stress in AISC (1969) is 18 KSI for E60XX electrode. The calculation uses weld allowable stresses for 2 different electrodes without calling out the electrodes.

This PFR is considered to be invalid (See attachment)

PREPARED BY: A. Zimmer Allan Zimmer DATE: 1-18-82 Allan Zimmer 1/23/82

REJECTION OF GA TASK LEADER COMMENTS BY: _____ DATE: _____ 1/23

REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: _____ DATE: _____

B. REVIEW BY GA TASK LEADER

COMMENTS

☑ AGREE PF IS VALID BY [signature] DATE 1/15/82

☐ REQUEST RE-REVIEW BY _____ DATE _____

☐ DISAGREE BY _____ DATE _____

☐ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: _____ DATE:

PFR NO. 2408 PFR-0018

REVISION - -

POTENTIAL FINDING REPORT
SONGS 2&3 SEISMIC DESIGN VERIFICATION

A. PREPARATION BY GA INITIATOR

AFFECTED ITEMS: Safety Injection Line to Reactor Coolant Loop 1A, Piping Stress Analysis Package PSG-78, Node 146 (Incorrectly shown as Node 147, Ref. 2408-PFR-0006) Tag No. S2-S1-059-H-009.

REQUIREMENT REFERENCE DOCUMENTS:

Specification SO23-409-2, Nuclear Service Pipe Supports, Hangers and Accessories for San Onofre Nuclear Generating Station, Units 2 and 3, Page 4F-9 (4/24/74).

BASIC REQUIREMENT: Structural Steel Design per AISC Spec. (Feb. 12, 1969).

DESCRIPTION OF POTENTIAL FINDING:

Revised Calculation P450-1.109 - 9.100, Sht. 1 uses weld allowable stress of 13.6 KSI, which is the allowable in AISC Spec (1963) for E60XX electrode. The weld allowable stress in AISC (1969) is 18 KSI for E60XX electrode. The calculation uses weld allowable stresses for 2 different electrodes without calling out the electrodes.

PREPARED BY: A. Zimmer DATE: 1-18-82

REJECTION OF GA TASK LEADER COMMENTS BY: _____ DATE: _____

REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: _____ DATE: _____

B. REVIEW BY GA TASK LEADER

COMMENTS

☑ AGREE PF IS VALID BY _____ DATE 1/15/82

☐ REQUEST RE-REVIEW BY _____ DATE _____

☐ DISAGREE BY _____ DATE _____

☐ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: _____ DATE: _____

PFR 018 SDC 1/26/82 SLK 1/29/82

PFR NO. 2408-PFR-018

REVISION ____

C. REVIEW BY ORIGINAL DESIGN ORGANIZATION

COMMENTS

The weld stress allowable of 13.6 ksi is not used in the referenced calculation. BPC design methodology uses the lower allowable stress of the two electrodes used for pipe support steel which are given in Specifications S023-206-18 and CSP207.

The AISC Code allowable stress for seismic loads is 16.93 ksi in the leg of the weld (based on Fy = 31.9 ksi and E60XX electrodes and a 1/3 increase in allowable for seismic loading). The calculation is conservative because the weld allowables used are less than the AISC Code allowable for seismic loads.

☐ AGREE PF IS VALID

☒ DISAGREE

S HF

BY: _____ DATE: 1/31/82

D. RECOMMENDATION BY FINDINGS REVIEW COMMITTEE

DEFINITION ADEQUACY:	☒ ADEQUATE	☐ INADEQUATE
VALIDITY:	☐ VALID	☒ INVALID
~~10 CFR 21:~~	~~☐ NOT APPLICABLE~~	~~☐ APPLICABLE~~ SLK 1/24/82
~~10 CRF 50.55(e):~~	~~☐ NOT APPLICABLE~~	~~☐ APPLICABLE~~
CLASSIFICATION:	☐ OBSERVATION	☐ FINDING

JUSTIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" _____

COMMENT ON "OBSERVATION" CLASSIFICATION

BY: S. D. Kouty DATE: 1/24/82

E. TPT PROJECT MANAGER

☒ ACCEPT

☐ REJECT

BY J. K. Wessman DATE 1/24/82

GENERAL ATOMIC COMPANY

GA 268 REV. 6-79

CALCULATIONS FOR			
EQUIP. NO.	PROJ. NO.	CALC. NO.	PAGE OF
PREPARED BY A. Zimmer	DATE	REF. DOCUMENTS: Attachment to PFR-018 0018	
REVIEWED BY	DATE		
APPROVED BY	DATE		

1/24/82

A.

Per a telecon on 1/23/82 with R.C. Rogers and others from Bechtel, it was stated that the Bechtel design engineers were instructed, as a policy, to use conservative allowable stresses instead of the allowables defined in the design spec (5023-409-2 p. AF-9) and FSAR (3.8.3.3.2) for DBE loading. It was also stated in the same telecon that the weld leg allowable of 14.85 KSI used in the calculation (P450-1.109-9,100) is equal to the AISC (1969) weld leg allowable of 18 KSI x 0.707 = 12.73 KSI times a factor of 1.167. This allowable stress increase of 16.7% for seismic loading is one half the allowable stress increase mentioned in the original design org. PFR-0019 review dated 1/21/82 (i.e. 33 1/3% increase to 16.93) but is conservative. A 9.57 leg weld allowable (13.6 KSI throat allowable) is also used in the calc but is also conservative. Therefore, the initiator agrees with the original design organization's review statement that the allowables used in the calculation are conservative for DBE loading and results in a conservative design. Therefore, PFR-0018 is considered to be invalid by the initiator.

Allen Zimmer 1/23/82

1/23

Sec 12
1/19/82
10:00

PFR NO. 2403-PFR-0019
REVISION -

POTENTIAL FINDING REPORT
SONGS 2&3 SEISMIC DESIGN VERIFICATION

A. PREPARATION BY QA INITIATOR

AFFECTED ITEMS: Safety Injection Line to REactor Coolant Loop 1A, Piping Stress Analysis Package PSG-73, Node 145 (Incorrectly shown as node No. 147, Ref. 2403-PFR-0006).
Tag # S2-S1-DSG-H-008

REQUIREMENT REFERENCE DOCUMENTS:

Specification SO23-409-2, Nuclear Service Pipe Supports, Hangers and Accessories for San Onofre Nuclear Generating Station, Units 2 and 3, Page 4F-9 (4-24-74).

BASIC REQUIREMENT:

Allowable stress under DBE loading for structural steel is 0.90 times the minimum guaranteed yield stresses listed in the AISC Spec. (Feb. 12, 1969).

DESCRIPTION OF POTENTIAL FINDING: Revised calculation P450-1.109 - 9.100, Sht. 1 uses bending allowable = 19.14 KSI (0.6Fy x 0.9) and weld shear allowable stresses of 15.6 KSI and 21.0 KSI which are not equal to 0.9 x Fy per the basic requirement.

PFR is invalid (See attached reason)
Allen Zimmer 1/23/82

PREPARED BY: A. Zimmer DATE: 1/16/82

REJECTION OF QA TASK LEADER COMMENTS BY: _____ DATE: _____

REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: _____ DATE: _____

PSD 1/23/82

B. REVIEW BY QA TASK LEADER

COMMENTS

☑ AGREE PF IS VALID BY _____ DATE 1/23/82

☐ REQUEST RE-REVIEW BY _____ DATE _____

☐ DISAGREE BY _____ DATE _____

PFR NO. 2408-PFR-0019

REVISION -

POTENTIAL FINDING REPORT
SONGS 2&3 SEISMIC DESIGN VERIFICATION

A. PREPARATION BY GA INITIATOR

AFFECTED ITEMS: Safety Injection Line to REactor Coolant Loop 1A, Piping Stress Analysis Package PSG-78, Node 146 (Incorrectly shown as node No. 147, Ref. 2408-PFR-0006), Tag No. S2-S1-059-H-009

REQUIREMENT REFERENCE DOCUMENTS:

Specification SO23-409-2, Nuclear Service Pipe Supports, Hangers and Accessories for San Onofre Nuclear Generating Station, Units 2 and 3, Page 4F-9 (4-24-74).

BASIC REQUIREMENT:

Allowable stress under DBE loading for structural steel is 0.90 times the minimum guaranteed yield stresses listed in the AISC Spec. (Feb. 12, 1969).

DESCRIPTION OF POTENTIAL FINDING: Revised calculation P450-1.109 - 9.100, Sht. 1 uses bending allowable = 19.14 KSI (0.6Fy x 0.9) and weld shear allowable stresses of 13.6 KSI and 21.0 KSI which are not equal to 0.9 x Fy per the basic requirement.

PREPARED BY: Allan Zimmer A. Zimmer DATE: 1/16/82

REJECTION OF GA TASK LEADER COMMENTS BY: _____ DATE: _____

REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: _____ DATE: _____

B. REVIEW BY GA TASK LEADER

COMMENTS

☑ AGREE PF IS VALID BY [signature] DATE 1/18/82

☐ REQUEST RE-REVIEW BY _____ DATE _____

☐ DISAGREE BY _____ DATE _____

☐ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: _____ DATE: _____

PFR 0019 #6 REVISION
SLK 1/24/82

REVIEW BY ORIGINAL DESIGN ORGANIZATION COMMENTS

The AISC allowable bending stress for structural steel is 0.6 Fy = 19.4 ksi (A-36 steel at 300°F). For DBE loading, the allowable bending stress for structural steel is 0.9 Fy = .71 ksi (A-36 steel at 300°F). Bechtel conservatively used 19.14 ksi allowable bending stress for DBE loading.

For weld allowable stresses, BPC design methodology uses the lower allowable stress of the two electrodes used for pipe support steel which are given in Specifications S023-206-18 and CSP207.

☐ AGREE PF IS VALID

☒ DISAGREE

The AISC Code allowable stress for seismic loads is 16.93 ksi in the leg of the weld (based on Fy = 31.9 ksi and E60XX electrodes and a 1/3 increase in allowable for seismic loading). The calculation is conservative because the weld allowables used are less than the AISC Code allowable for seismic loads.

S HF

BY: [signature] DATE: 1/21/82

RECOMMENDATION BY FINDINGS REVIEW COMMITTEE

DEFINITION ADEQUACY:	☒ ADEQUATE	☐ INADEQUATE
VALIDITY:	☐ VALID	☒ INVALID
~~10 CFR 21:~~	~~☐ NOT APPLICABLE~~	~~☐ APPLICABLE~~
~~10 CRF 50.55(e):~~	~~☐ NOT APPLICABLE~~	~~☐ APPLICABLE~~
CLASSIFICATION:	☐ OBSERVATION	☐ FINDING

SLK 1/24/82

NOTIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" _____

COMMENT ON "OBSERVATION" CLASSIFICATION

BY: [signature] DATE: 1/24/82

TPT PROJECT MANAGER

☒ ACCEPT

☐ REJECT

BY: [signature] DATE: 1/24/82

GA 268 REV. 6-79

GENERAL ATOMIC COMPANY

CALCULATIONS FOR			
EQUIP. NO.	PROJ. NO.	CALC. NO.	PAGE OF
PREPARED BY A. Zimmer	DATE	REF. DOCUMENTS: Attach. 2408 - PFR-0019	
REVIEWED BY	DATE		
APPROVED BY	DATE		

A.

Per a telecon on 1/23/82 with R.L. Rogers and others from Bechtel, it was stated that the Bechtel design engineers were told, as a policy, to use conservative allowable stresses instead of the allowables defined in the design spec (5023-409-2 p. AF-9) and FSAR (3.8.3.3.2) for DBE loading. It was also stated in the same telecon that the weld leg allowable of 14.85 KSI used in the calculation (P450-1.109-9,100) is equal to the AISC (1969) weld leg allowable of 18 KSI x 0.707 = 12.73 KSI times a factor of 1.167. This allowable stress increase of 16.7% for seismic loading is one half the allowable stress increase mentioned in the original design org. PFR-0019 review dated 1/21/82 (i.e. 33 1/3% increase to 16.93) but is conservative. Therefore, the initiator agrees with the original design organization's review statement that the allowables used in the calculation are conservative for DBE loading and results in a conservative design. Therefore, PFR-0019 is considered to be invalid by the initiator.

Allan Zimmer 1/23/82

JBO 1/28

PFR NO. 2408-PFR-0020
REVISION -

POTENTIAL FINDING REPORT
SONGS 2&3 SEISMIC DESIGN VERIFICATION

A. PREPARATION BY GA INITIATOR

AFFECTED ITEMS: Safety Injection Line to Reactor Coolant Loop 1A, Piping Stress Analysis Package PSG-78. Calculation Sheets for Node 167, Tag No. S2-S1-059-2003.

REQUIREMENT REFERENCE DOCUMENTS:
Specification 5023-409-2 "Nuclear Service Pipe Support, Hangers and Accessories for SONGS 2 and 3" Certified 4/24/74, p. 47-9

BASIC REQUIREMENT:

Allowable stresses under DSR for structural steel at standard temperature shall be 0.9 times the minimum guaranteed yield stresses listed in AISC Spec. 1969.

DESCRIPTION OF POTENTIAL FINDING: Sheet 3 of the calculation uses .6 Fy x 0.9 = 19.14 KSI for allowable bending stress. Sheet 4 uses 13.6 KSI for the allowable shearing stress in the weld. (Material and weld electrode not identified).

PFR is invalid. See 2408-PFR-0019. The subject of this PFR is the same as PFR-0019. Disposition is O.K. 1/24/82

PREPARED BY: T.T.Lee DATE: 1-18-82

REJECTION OF GA TASK LEADER COMMENTS BY: _____ DATE: _____

REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: _____ DATE: _____

B. REVIEW BY GA TASK LEADER

COMMENTS

☑ AGREE PF IS VALID BY [signature] DATE 1/18/82

☐ REQUEST RE-REVIEW BY _____ DATE _____

☐ DISAGREE BY _____ DATE _____

☐ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: _____ DATE: _____

PFR NO. 2403-PFR-0020

REVISION -

POTENTIAL FINDING REPORT
SONGS 2&3 SEISMIC DESIGN VERIFICATION

A. PREPARATION BY GA INITIATOR

AFFECTED ITEMS: Safety Injection Line to Reactor Coolant Loop 1A, Piping Stress Analysis Package PSG-78. Calculation Sheets for Node 167, Tag No. S2-S1-059-H008.

REQUIREMENT REFERENCE DOCUMENTS:
Specification S023-409-2 "Nuclear Service Pipe Support, Hangers and Accessories for SONGS 2 and 3" Certified 4/24/74, p. 4F-9

BASIC REQUIREMENT:

Allowable stresses under DBE for structural steel at standard temperature shall be 0.9 times the minimum guaranteed yield stresses listed in AISC Spec. 1969.

DESCRIPTION OF POTENTIAL FINDING:
Sheet 3 of the calculation uses .6 Fy x 0.9 = 19.14 KSI for allowable bending stress. Sheet 4 uses 13.6 KSI for the allowable shearing stress in the weld. (Material and weld electrode not identified).

PREPARED BY: T.T.Lee DATE: 1-18-82

REJECTION OF GA TASK LEADER COMMENTS BY: _____ DATE: _____

REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: _____ DATE: _____

B. REVIEW BY GA TASK LEADER

COMMENTS

☑ AGREE PF IS VALID BY [signature] DATE 1/18/82

☐ REQUEST RE-REVIEW BY _____ DATE _____

☐ DISAGREE BY _____ DATE _____

☐ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: _____ DATE: _____

PFR-020 REVISION ____

SK 1/24/82

C. REVIEW BY ORIGINAL DESIGN ORGANIZATION

COMMENTS

This is identical to that of PFR-0019.

"The AISC allowable bending stress for structural steel is 0.6 Fy = 21.6 ksi (A-36 steel. For DBE loading, the allowable bending stress for structural steel is 0.9 Fy = 32.4 ksi (A-36 steel) Bechtel conservatively used 19.14 ksi allowable bending stress for DBE loading.

For weld allowable stresses, BPC design methodology uses the lower allowable stress of the two electrodes used for pipe support steel which are given in Specifications S023-206-18 and CSP207.

☐ AGREE PF IS VALID

☑ DISAGREE

The AISC Code allowable stress for seismic loads is 16.93 ksi in the leg of the weld (based on Fy = 36 ksi and E60XX electrodes and a 33 1/3% increase in allowable for seismic loading). The calculation is conservative because the weld allowables used are less than the AISC Code allowable for seismic loads."

BY: _____ DATE: 1/23/82

D. RECOMMENDATION BY FINDINGS REVIEW COMMITTEE

DEFINITION ADEQUACY:	☒ ADEQUATE	☐ INADEQUATE
VALIDITY:	☐ VALID	☒ INVALID
~~10 CFR 21:~~	~~☐ NOT APPLICABLE~~	~~☐ APPLICABLE~~
~~10 CRF 50.55(e):~~	~~☐ NOT APPLICABLE~~	~~☐ APPLICABLE~~
CLASSIFICATION:	☐ OBSERVATION	☐ FINDING

SK 1/24/82

JUSTIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" _____

COMMENT ON "OBSERVATION" CLASSIFICATION

BY: L. L. Kouts DATE: 1/24/82

E. TPT PROJECT MANAGER

☒ ACCEPT

☐ REJECT

BY: _____ DATE: 1/24/82

PFR NO. 2408-PFR-C021

REVISION -

POTENTIAL FINDING REPORT
SONGS 2&3 SEISMIC DESIGN VERIFICATION

A. PREPARATION BY QA INITIATOR

AFFECTED ITEMS: Safety Injection LIne to Reactor Coolant Loop 1A, Piping Stress Analysis Package PSG-78. Calculation sheets for Node 167. Tag No. S2-SL-059-H003.

REQUIREMENT REFERENCE DOCUMENTS:

Specification 5023-409-2, "Nuclear Service, Pipe Support Hangers and Accessories for SONGS 2 & 3 , Certified 4/24/74, p. 47-9.

BASIC REQUIREMENT: Structural Design per AISC Specification. (Feb. 12, 1969)

DESCRIPTION OF POTENTIAL FINDING:

Calculation sheet 4 uses 13.6 KSI for the allowable shearing stress in the weld. In AISC Spec. 1969 the corresponding allowable is 18.0 KSI.

PFR is invalid See response to PFR-0018. 1/24/82

PREPARED BY: T.T.Lee DATE: 1-18-82

REJECTION OF QA TASK LEADER COMMENTS BY: _____ DATE: _____

REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: _____ DATE: _____

B. REVIEW BY QA TASK LEADER COMMENTS

☑ AGREE PF IS VALID BY [signature] DATE 1/18/82

☐ REQUEST RE-REVIEW BY _____ DATE _____

☐ DISAGREE BY _____ DATE _____

☐ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: _____ DATE: _____

PFR NO. 2408-PFR-0021

REVISION -

POTENTIAL FINDING REPORT
SONGS 2&3 SEISMIC DESIGN VERIFICATION

A. PREPARATION BY GA INITIATOR

AFFECTED ITEMS: Safety Injection LIne to Reactor Coolant Loop 1A, Piping Stress Analysis Package PSG-78. Calculation sheets for Node 167. Tag No. S2-SL-059-H008.

REQUIREMENT REFERENCE DOCUMENTS:

Specification SO23-409-2, "Nuclear Service, Pipe Support Hangers and Accessories for SONGS 2 & 3 , Certified 4/24/74, p. 4F-9.

BASIC REQUIREMENT: Structural Design per AISC Specification. (Feb. 12, 1969)

DESCRIPTION OF POTENTIAL FINDING:

Calculation sheet 4 uses 13.6 KSI for the allowable shearing stress in the weld. In AISC Spec. 1969 the corresponding allowable is 18.0 KSI.

PREPARED BY: T.T.Lee DATE: 1-18-82

REJECTION OF GA TASK LEADER COMMENTS BY: _____ DATE: _____

REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: _____ DATE: _____

B. REVIEW BY GA TASK LEADER COMMENTS

☑ AGREE PF IS VALID BY [signature] DATE 1/18/82

☐ REQUEST RE-REVIEW BY _____ DATE _____

☐ DISAGREE BY _____ DATE _____

☐ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: _____ DATE: _____

SLK 1/24/82

PFR 0021

PFR NO. 2408-PFR-0

REVISION ____

REVIEW BY ORIGINAL DESIGN ORGANIZATION COMMENTS

Response is identical to that of PFR-0018.

"BPC design methodology uses the lower allowable stress of the two electrodes used for pipe support steel which are given in Specifications S023-206-18 and CSP207.

The AISC Code allowable stress for seismic loads is 16.93 ksi in the leg of the weld (based on Fy = 36 ksi and E60XX electrodes and a 33 1/3% increase in allowable for seismic loading). The 14.85 ksi allowable was used considering only half the increase (i.e., 16 1/2% instead of 33 1/3%). The calculation is thus conservative because the weld allowables used are less than the AISC Code allowable for seismic loads."

☐ AGREE PF IS VALID

☒ DISAGREE

BY: R Rogan DATE: 1/22/82

D. RECOMMENDATION BY FINDINGS REVIEW COMMITTEE

DEFINITION ADEQUACY:	☒ ADEQUATE	☐ INADEQUATE
VALIDITY:	☐ VALID	☒ INVALID
~~10 CFR 21:~~	~~☐ NOT APPLICABLE~~	~~☐ APPLICABLE~~ SLK 1/24/82
~~10 CRF 50.55(e):~~	~~☐ NOT APPLICABLE~~	~~☐ APPLICABLE~~
CLASSIFICATION:	☐ OBSERVATION	☐ FINDING

JUSTIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" ____

COMMENT ON "OBSERVATION" CLASSIFICATION

BY: S. L. Kouty DATE: 1/24/82

E. TPT PROJECT MANAGER

☒ ACCEPT

☐ REJECT

G H Weinman 1/24/82

PFR NO. 2408-PFR-0022

REVISION _____

POTENTIAL FINDING REPORT
SONGS 2&3 SEISMIC DESIGN VERIFICATION

A. PREPARATION BY GA INITIATOR

AFFECTED ITEMS: Safety Injection Line to Reactor Coolant Loop 1A. Piping Stress Analysis Package PSG-78. Calculation sheets for Node 167. Tag No. S2-S1-059-H008.

REQUIREMENT REFERENCE DOCUMENTS:

Not Applicable

BASIC REQUIREMENT:

Not Applicable

DESCRIPTION OF POTENTIAL FINDING:

The way the bending moment My was calculated in Sheet 3 for W6x25 (vertical) is difficult to justify from the mechanics point of view.

PREPARED BY: T. T. Lee T.T.L. DATE: 1-18-82

REJECTION OF GA TASK LEADER COMMENTS BY: _____ DATE: _____

REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: _____ DATE: _____

B. REVIEW BY GA TASK LEADER

COMMENTS

Perform alternate calculation and compare results with BPC's.

The reviewer has performed the alternate calc. Load comparison was judged reasonable. JSO 1/24

Received the "as-built" revised calculation in connection with PFR-0025. PFR-0022 is invalid

The "as-built" calc's invalidates the subject of this PFR. JSO 1/24/82 1/24/82

☐ AGREE PF IS VALID BY _____ DATE _____

☑ REQUEST RE-REVIEW BY [signature] DATE 1/26/82

☐ DISAGREE BY _____ DATE _____

☐ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: _____ DATE: _____

PFR NO. 2408-PFR-0022
REVISION _____

C. REVIEW BY ORIGINAL DESIGN ORGANIZATION COMMENTS

☐ AGREE PF IS VALID

☐ DISAGREE

BY: _____ DATE: _____

D. RECOMMENDATION BY FINDINGS REVIEW COMMITTEE

DEFINITION ADEQUACY: ☒ ADEQUATE ☐ INADEQUATE

VALIDITY: SLK 1/24/82 ~~☑ VALID~~ ☒ INVALID

CLASSIFICATION: ☐ OBSERVATION ☐ FINDING

JUSTIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" _____

COMMENT ON "OBSERVATION" CLASSIFICATION

BY: S. L. Kouts DATE: 1/24/82

E. GA PROJECT MANAGER

☒ ACCEPT

☐ REJECT

BY: G. H. Neuman DATE: 1/24/82

PFR NO. 2403-PFR-0023

REVISION _____

POTENTIAL FINDING REPORT
SONGS 2&3 SEISMIC DESIGN VERIFICATION

A. PREPARATION BY GA INITIATOR

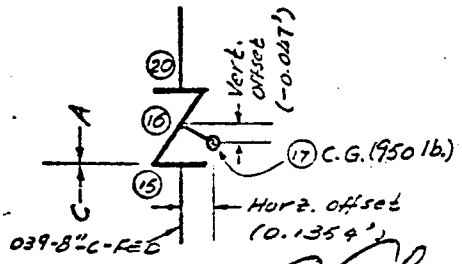
AFFECTED ITEMS: Safety Injection Line to Reactor Coolant Loop 1A
Piping Stress Analysis Package PSG-78.

REQUIREMENT REFERENCE DOCUMENTS:

ISO Drg. 1204-043-1, Computer Run Q22L27.

BASIC REQUIREMENT: Valve C.G. should be correctly modeled for computer input.

DESCRIPTION OF POTENTIAL FINDING:



Node 17 is the node for the C.G. of the valve. The valve has vertical and horizontal offsets.

Vertical offset is included in the computer model, however, the horizontal offset is not included.

PREPARED BY: A. Chuang DATE: 1-18-82

REJECTION OF GA TASK LEADER COMMENTS BY: _____ DATE: _____

REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: _____ DATE: _____

B. REVIEW BY GA TASK LEADER

COMMENTS

☑ AGREE PF IS VALID BY [signature] DATE 1/19/82

☐ REQUEST RE-REVIEW BY _____ DATE _____

☐ DISAGREE BY _____ DATE _____

☐ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: _____ DATE: _____

0023 PFR NO. 2400-[illegible]

REVISION [illegible]

C. REVIEW BY ORIGINAL DESIGN ORGANIZATION

COMMENTS

Orientation of a check valve in a horizontal run is normally with bonnet up. Therefore, the C.G. offset, although negligible, can be readily identified and used in the computer model of the piping system. However, this is a case where a check valve is located in a vertical run and the orientation of the bonnet about the vertical axis is not controlled. The analyst has accounted for the axial offset because it is known. The lateral offset of 1-5/8 inches can be neglected since the valve is in an 8 inch schedule 140 line and taking it into account would result in minute differences in stresses and support loads. There is no effect on the design.

☒ AGREE PF IS VALID - However, the effect on the design is not significant.

☐ DISAGREE ~~Acc STF~~

BY: [signature] DATE: 1/21/82

D. RECOMMENDATION BY FINDINGS REVIEW COMMITTEE

DEFINITION ADEQUACY:	☒ ADEQUATE	☐ INADEQUATE
VALIDITY:	☒ VALID	☐ INVALID
~~10 CFR 21:~~	☐ NOT APPLICABLE	☐ APPLICABLE
~~10 CRF 50.55(e):~~	☐ NOT APPLICABLE	☐ APPLICABLE
CLASSIFICATION:	☒ OBSERVATION	☐ FINDING

SdK 1/23/82

JUSTIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" _____

COMMENT ON "OBSERVATION" CLASSIFICATION Horizontal offset increase stress ~ 0.33% of allowable. Allowables not exceeded.. OK

BY: S. A. Kouh DATE: 1/23/82

E. TPT PROJECT MANAGER

☒ ACCEPT

☐ REJECT

BY: [signature] DATE: 1/24/82

IMPACT ASSESSMENT

2408-PFR-0023
PFR NO. _____

AFFECTED ITEM: Safety Injection Line to Reactor Coolant Loop 1A Piping Stress Analysis Package PSG-78

1. IS THERE THE POTENTIAL FOR REDUCING DESIGN MARGINS TO THE EXTENT DESIGN ALLOWABLES ARE EXCEEDED OR DESIGN REQUIREMENTS ARE NOT MET ?

   No

2. IS THERE THE POTENTIAL THAT THE ITEM MIGHT FAIL OR ENDANGER OTHER ITEMS DURING AN SSE ?

   No

3. COULD THE FAILURE OF THIS ITEM DURING AN SSE CREATE A SUBSTANTIAL SAFETY HAZARD ?

   No

4. COULD THE PROCEDURAL VIOLATION CREATE A SUBSTANTIAL SAFETY HAZARD ?

   No

5. ARE OTHER SIMILAR DEVIATIONS LIKELY TO EXIST ?

   There is no indication at this time another similar deviation will exist.

6. OTHER COMMENTS:

It is believed that the impact due to this PFR to the design of Safety Injection System piping and supports is not significant.

PREPARED BY: A. Chuang A. Chuang DATE: 1-22-82

COMMENTS:

Agree.

BY: _____ DATE: 1/23/82

Rec'd 1/20/82 8:00 am

PFR NO. 2408-PFR-0025

REVISION -

POTENTIAL FINDING REPORT
SONGS 2&3 SEISMIC DESIGN VERIFICATION

A. PREPARATION BY GA INITIATOR

AFFECTED ITEMS: Safety Injection Line to Reactor Coolant Loop 1A, Piping Stress Analysis Package PSG-78. Calculation Sheets for Node 167. Tag No. 52-S1-059-H008

REQUIREMENT REFERENCE DOCUMENTS:

Not Applicable

BASIC REQUIREMENT:

Not Applicable

DESCRIPTION OF POTENTIAL FINDING:

The note on Sheet 1 ,"Margin of safety in as-built calculations is adequate to accommodate increased loads. Include DCN's 1, 2, 3,4,5, & 6"is not substantiated. (DCN5 & 6 modified dimensions.) Sheet 3 shows an 1% safety margin based on the original dimension and load magnitude. The increase in the maximum horizontal load shown in Sheet 1 is 32%. No discussion on the effect of changed dimension was provided.

PREPARED BY: T. T. Lee T.T.L. DATE: 1/18/82

REJECTION OF GA TASK LEADER COMMENTS BY: _____ DATE: _____

REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: _____ DATE: _____

B. REVIEW BY GA TASK LEADER COMMENTS

☐ AGREE PFR IS VALID BY R.D.L. DATE 1/19/82

☐ REQUEST RE-REVIEW BY _____ DATE _____

PFR NO. 2408-PFR-0025

REVISION –

POTENTIAL FINDING REPORT
SONGS 2&3 SEISMIC DESIGN VERIFICATION

A. PREPARATION BY GA INITIATOR

AFFECTED ITEMS: Safety Injection Line to Reactor Coolant Loop 1A, Piping Stress Analysis Package PSG-78. Calculation Sheets for Node 167. Tag No. S2-S1-059-H008

REQUIREMENT REFERENCE DOCUMENTS:

Not Applicable

BASIC REQUIREMENT:

Not Applicable

DESCRIPTION OF POTENTIAL FINDING:

The note on Sheet 1 ,"Margin of safety in as-built calculations is adequate to accommodate increased loads. Include DCN's 1, 2, 3,4,5, & 6"is not substantiated. (DCN5 gives modified dimensions.) Sheet 3 shows an 1% safety margin based on the original dimension and load magnitude. The increase in the maximum horizontal load shown in Sheet 1 is 32%. No discussion on the effect of changed dimension was provided.

PREPARED BY: T. T. Lee T.T.L. DATE: 1/18/82

REJECTION OF GA TASK LEADER COMMENTS BY: _____ DATE: _____

REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: _____ DATE: _____

B. REVIEW BY GA TASK LEADER

COMMENTS

☑ AGREE PF IS VALID BY [signature] DATE 1/19/82

☐ REQUEST RE-REVIEW BY _____ DATE _____

☐ DISAGREE BY _____ DATE _____

☐ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: _____ DATE: _____

PFR 025 1/24/82 REVISION 60025

C. REVIEW BY ORIGINAL DESIGN ORGANIZATION — COMMENTS

The "as-built" revision dated 11/23/81 of the calculation inadvertently was not forwarded to you. Revisions 1 and 2 were sent. Revision 2 references the as-built calculation in the statement "Margin of Safety in As-Built Calcs...". The as-built calc. is attached.

The revised calculation removed the concern raised. The PFR is invalid. The revised calculation should be reviewed. 1/24/82

☐ AGREE PF IS VALID

☒ DISAGREE

SUFFICE

BY: JH Rogers DATE: 1/21/82

KO 1/24/82

D. RECOMMENDATION BY FINDINGS REVIEW COMMITTEE

DEFINITION ADEQUACY:	☒ ADEQUATE	☐ INADEQUATE	agree initial concern has been resolved. Committee will check on review of revised calcs.
VALIDITY:	☐ VALID	☒ INVALID	
~~10 CFR 21:~~	~~☐ NOT APPLICABLE~~	~~☐ APPLICABLE~~ SdK 1/24/82	
~~10 CRF 50.55(e):~~	~~☐ NOT APPLICABLE~~	~~☐ APPLICABLE~~	
CLASSIFICATION:	☐ OBSERVATION	☐ FINDING	

JUSTIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" _____

COMMENT ON "OBSERVATION" CLASSIFICATION

BY: S. D. Kouty DATE: 1/24/82

E. TPT PROJECT MANAGER

☒ ACCEPT

☐ REJECT

BY: JH Wiesman DATE: 1/24/82

1/14 10:00

POTENTIAL FINDING REPORT
BONG 203 SEISMIC DESIGN VERIFICATION

2408 - PFR-0026
REVISION ____

A. PREPARATION BY QA INITIATOR

AFFECTED ITEMS: Safety Injection Line to Reactor Coolant Loop 1A, Piping Stress Analysis Package PSG-78, Node 146 (Incorrectly shown as Node 147, Ref. 240X-PFR-0006) Tag. No. 82-01-039-H-009.

REQUIREMENT REFERENCE DOCUMENTS:

Specification 3023-409-2, Nuclear Service Pipe Supports, Hangers and Accessories for San Onofre Nuclear Generating Station, Units 2 and 3 , Section 45.1

BASIC REQUIREMENT:

Materials used in the support should be called out on drawings and documents.

DESCRIPTION OF POTENTIAL FINDING:

Calculations and drawings do not identify steel type nor weld electrode used.

PFR Considered invalid. See comment next page

C Jimmo 1/22/92

PREPARED BY: A. Kinser DATE: 1/13/92

REJECTION OF QA TASK LEADER COMMENTS BY: _____ DATE: _____

REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: _____ DATE: _____

B. REVIEW BY QA TASK LEADER COMMENTS

☑ AGREE PF IS VALID BY [signature] DATE 1/16/92

☐ REQUEST RE-REVIEW BY _____ DATE _____

☐ DISAGREE BY _____ DATE _____

☐ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: _____ DATE: _____

PFR NO. 24[illegible]-0026 REVISION ____

PFR026 SdK 1/24/82

C. REVIEW BY ORIGINAL DESIGN ORGANIZATION

COMMENTS

It is Bechtel methodology not to indicate the material and welding process/electrodes on each calculation. The material and welding process requirements are specified in Specification S023-206-18 "Quality Class I & II Specification for Special Miscellaneous Steel..." for vendor material, and specification CSP207 for field fabrication.

Since Bechtel methodology does not require the material to be called out on the drawings and calculations but is covered in the specs, this potential finding ~~has no impact~~ is not valid. Clarification was obtained by a Telecon with R. L Rogers on 1/22/82 Ellen Zemmer 1/22/82

☐ AGREE PF IS VAUD

☒ DISAGREE

RE STAFF

BY: R L Rogers DATE: 1-21-82

D. RECOMMENDATION BY FINDINGS REVIEW COMMITTEE

I agree PFR is invalid. PSO 1/24 1/28

DEFINITION ADEQUACY:	☒ ADEQUATE	☐ INADEQUATE
VALIDITY:	☐ VALID	☒ INVALID
~~10 CFR 21:~~	~~☐ NOT APPLICABLE~~	~~☐ APPLICABLE~~
~~10 CRF 50.55(e):~~	~~☐ NOT APPLICABLE~~	~~☐ APPLICABLE~~
CLASSIFICATION:	☐ OBSERVATION	☐ FINDING

SdK 1/24/82

JUSTIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" ____

COMMENT ON "OBSERVATION" CLASSIFICATION

BY: S. A. Kouts DATE: 1/24/82

E. TPT PROJECT MANAGER

☒ ACCEPT

☐ REJECT

BY: G R Weinman DATE: 1/24/82

PFR NO. 2408-PFP-0029

REVISION _____

POTENTIAL FINDING REPORT
SONGS 2&3 SEISMIC DESIGN VERIFICATION

A. PREPARATION BY GA INITIATOR

AFFECTED ITEMS: Engineered Safety Features Actuation System Auxiliary Relay Cabinet (2L-34)

REQUIREMENT REFERENCE DOCUMENTS: General Engineering Specification for Engineered Safety features Actuation System Auxiliary Relay Cabinet, Specification No. 00000-ICE-3002, Rev. 04, July 14,1975, Combustion Engineering, Inc.

BASIC REQUIREMENT:
Paragraph 5.11.3 of the Specification states in part that functional equipment shall be tested in accordance with Section 5.7.1.

DESCRIPTION OF POTENTIAL FINDING:

Section 5.7.1 does not exist as a part of the specification.

Stan Rodkin

PREPARED BY: Stan Rodkin DATE: 1-18-82

REJECTION OF GA TASK LEADER COMMENTS BY: _____ DATE: _____

REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: _____ DATE: _____

B. REVIEW BY GA TASK LEADER COMMENTS

☑ AGREE PF IS VALID BY Stan Rodkin DATE 1/19/82

☐ REQUEST RE-REVIEW BY _____ DATE _____

☐ DISAGREE BY _____ DATE _____

☐ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: _____ DATE: _____

PFR NO. [illegible]-PFR-0029

REVISION

C. REVIEW BY ORIGINAL DESIGN ORGANIZATION COMMENTS

Reference to 5.7.1 in paragraph 5.11.3 of the specification is a typographical error. The reference should have been 5.11.4. Although the error exists, all requirements of the specification were met under section 5.11.4.

I AGREE THAT C-E'S RESPONSE IS ADEQUATE. THIS PFR IS INVALID. [signature] 1-23-82

☐ AGREE PF IS VALID

☐ DISAGREE

[initials] 1/23

ATTN: G. WESSMAN PFR-0029

Page 3 of 4

BY: V C Hall DATE: 1/22/82

D. RECOMMENDATION BY FINDINGS REVIEW COMMITTEE

DEFINITION ADEQUACY:	☒ ADEQUATE	☐ INADEQUATE
VALIDITY:	☐ VALID	☒ INVALID
CLASSIFICATION:	☐ OBSERVATION	☐ FINDING

JUSTIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" ______

COMMENT ON "OBSERVATION" CLASSIFICATION

BY: S. L. Koutz DATE: 1/24/82

E. GA PROJECT MANAGER

☒ ACCEPT

☐ REJECT

BY: G. L. Wessman DATE: 1/24/82

PFR NO. 2408-PYA-0032

REVISION - B

POTENTIAL FINDING REPORT
SONGS 2&3 SEISMIC DESIGN VERIFICATION

A. PREPARATION BY QA INITIATOR

AFFECTED ITEMS: The Seismic Category I Motor Control Centers (MCC).

REQUIREMENT REFERENCE DOCUMENTS: Bechtel Power Corporation Spec. No. 2023-302-4 and 8 Addendum "Quality Class II and III Spec. for Motor Control Centers for the Southern California Edison, San Onofre Nuclear Generating Stations Units 2 and 3:"

BASIC REQUIREMENT: Section 4.8 of Spec. states that the elevation and location of each MCC will be as specified in Exhibit A (Appendix B of the Spec.).

DESCRIPTION OF POTENTIAL FINDING:

1. Exhibit A includes Electrical line drawings, Elevation, and location information is missing.
2. Because the vendor does not know where MCC's are located he does not know which response spectra to test to (50' or Grade).

PREPARED BY: A. Middleton DATE: 1-19-82

REJECTION OF QA TASK LEADER COMMENTS BY: _____ DATE: _____

REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: _____ DATE: _____

B. REVIEW BY QA TASK LEADER COMMENTS

☑ AGREE PF IS VALID BY [signature] DATE 1/19/82

☐ REQUEST RE-REVIEW BY _____ DATE _____

☐ DISAGREE BY _____ DATE _____

☐ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: _____ DATE: _____

REVISION 5
0032
SLK
1/24/82

C. REVIEW BY ORIGINAL DESIGN ORGANIZATION — COMMENTS

Elevations and locations of MCC's are shown on the one line diagrams of Exhibit A, e.g., one line diagram 30137, Rev. B identifies location as "Control Building ESF SWGR Room 2A El. 50'-0"."

Agree PFR is invalid
However Bechtel spec. text is not clear on this point
Alan Muddlet
1/23/82

☐ AGREE PF IS VALID
☒ DISAGREE

BY: [signature] DATE: 1/22/82

D. RECOMMENDATION BY FINDINGS REVIEW COMMITTEE

FSO 1/23/82

DEFINITION ADEQUACY:	☒ ADEQUATE	☐ INADEQUATE
VALIDITY:	☐ VALID	☒ INVALID
~~10 CFR 21:~~	~~☐ NOT APPLICABLE~~	~~☐ APPLICABLE~~
~~10 CRF 50.55(e):~~	~~☐ NOT APPLICABLE~~	~~☐ APPLICABLE~~
CLASSIFICATION:	☐ OBSERVATION	☐ FINDING

SLK 1/24/82

JUSTIFICATION:

Discussion with F. Ofelt on 1/24/82 confirms that in spite of qualified remark above PFR is invalid
SLK
1/24/82

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" _____

COMMENT ON "OBSERVATION" CLASSIFICATION

BY: S. L. Kouty DATE: 1/24/82

E. TPT PROJECT MANAGER

☒ ACCEPT

☐ REJECT

BY: [signature] DATE: 1/24/82

PFR NO. 2403- PFR-0033

REVISION —

POTENTIAL FINDING REPORT
SONGS 2&3 SEISMIC DESIGN VERIFICATION

A. PREPARATION BY QA INITIATOR

AFFECTED ITEMS: Safety Injection Line to Reactor Coolant Loop 1A
Piping Stress Analysis Package PSG-78

REQUIREMENT REFERENCE DOCUMENTS:
ISO Drg. 1204-043-1

BASIC REQUIREMENT: Valve weight be included in axial restraint calculations.

DESCRIPTION OF POTENTIAL FINDING: Sheet 44 Calculation for the axial restraint at data point 5 did not include the weight of 950 lbs for valve (8"-372-A-552) although the weight of the piping (033-8"-C-PED) on both sides of the valve was included.

Agree PFR-0033 is invalid 1/24/82 A. Chuang

PREPARED BY: A. Chuang A. Chuang DATE: 1/19/82

REJECTION OF QA TASK LEADER COMMENTS BY: _____ DATE: _____

REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: _____ DATE: _____

B. REVIEW BY QA TASK LEADER

COMMENTS

☑ AGREE PF IS VALID BY [signature] DATE 1/19/82

☐ REQUEST RE-REVIEW BY _____ DATE _____

☐ DISAGREE BY _____ DATE _____

☐ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: _____ DATE: _____

SLK 1/24/82

0033

PFR NO. 2408-PFR-(

REVISION _____

C. REVIEW BY ORIGINAL DESIGN ORGANIZATION

COMMENTS

Sheet 44 of calc. no. M-1204-043-2 (PSC-78) is a calculation to take into account the axial seismic load on data point 5. The calculation is conservative because it includes all the mass on the axial run on both sides of the data point. Loadings on data point 5 as a result of the valve mass is accounted for in the dynamic analysis and therefore not included in the calculation shown on Sheet 44.

agree PFR-0033 is invalid.

☐ AGREE PF IS VALID

☒ DISAGREE

BY: [signature] DATE: 1/22/82

1/24/82 [signature] SLK 1/24/82

D. RECOMMENDATION BY FINDINGS REVIEW COMMITTEE

DEFINITION ADEQUACY:	☒ ADEQUATE	☐ INADEQUATE
VALIDITY:	☐ VALID	☒ INVALID
~~10 CFR 21:~~	~~☐ NOT APPLICABLE~~	~~☐ APPLICABLE~~
~~10 CRF 50.55(e):~~	~~☐ NOT APPLICABLE~~	~~☐ APPLICABLE~~
CLASSIFICATION:	☐ OBSERVATION	☐ FINDING

SLK 1/24/82

JUSTIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" _____

COMMENT ON "OBSERVATION" CLASSIFICATION

BY: S. L. Kouts DATE: 1/24/82

E. TPT PROJECT MANAGER

☒ ACCEPT

☐ REJECT

[signature] 1/24/82

POTENTIAL FINDING REPORT
SONGS 2&3 SEISMIC DESIGN VERIFICATION

PFR NO. 0034

REVISION -

A. PREPARATION BY GA INITIATOR

AFFECTED ITEMS: SCE Quality Assurance Procedure N18.04, Rev. 18 (11/23/81) and prior revisions - "QA Organization Audits - Scheduling, Planning, Performance, Documentation, and Follow-Up"

REQUIREMENT REFERENCE DOCUMENTS:

10CFR50, Appendix B - Criterion 18 and Regulatory Guide 1.144 (Rev. 1, 9/80), with its endorsed ANSI/ASME N45.2.12-1977.

BASIC REQUIREMENT: Appendix B requires that "A comprehensive system of planned and periodic audits shall be carried out to verify compliance with all aspects of the quality assurance program and to determine effectiveness of the program." ANSI/ASME N45.2.12-1977 states: "The objectives of the audit system are: 3.2.3 to assess the effectiveness of the quality assurance program;"

DESCRIPTION OF POTENTIAL FINDING:

SCE Quality Assurance Procedure N18.04 did not specify assessment of effectiveness of the quality assurance program as an audit objective. Consequently, QA audits concerned with seismic design output implementation might confirm compliance with established controls, for example, without determining effectiveness.

PREPARED BY: W. J. Durand DATE: 1/19/82

REJECTION OF GA TASK LEADER COMMENTS BY: _____ DATE: _____

REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: _____ DATE: _____

B. REVIEW BY GA TASK LEADER COMMENTS

☒ AGREE PF IS VALID BY L Brewer DATE 1/19/82

☐ REQUEST RE-REVIEW BY _____ DATE _____

☐ DISAGREE BY _____ DATE _____

☐ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: _____ DATE: _____

VIEW BY ORIGINAL DESIGN ORGANIZATION COMMENTS

QAP N18.04, Revision 18*(11/23/81), paragraph 5.4.5 requires that audit reports include a summary of audit results (i.e., an evaluation statement regarding the effectiveness of the quality assurance program.) Previous revisions did not include this provision.

AGREE PF IS VALID EXCEPT AS NOTED ABOVE

~~DISAGREE~~

BY: J. M. Cinnon DATE: 1-21-82

COMMENDATION BY FINDINGS REVIEW COMMITTEE

FINITION ADEQUACY: ☒ ADEQUATE ☐ INADEQUATE

ALIDITY: ☒ VALID ☐ INVALID

CLASSIFICATION: ☐ OBSERVATION ☒ FINDING

JUSTIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" 2

COMMENT ON "OBSERVATION" CLASSIFICATION

Y: S. L. Kouts DATE: 1/23/82

A PROJECT MANAGER

☐ ACCEPT

☐ REJECT

Y: A. Weinman DATE: 1/23/82

IMPACT ASSESSMENT

2408PFR NO. -0034

AFFECTED ITEM: SCE Quality Assurance Procedure N18.04

1. IS THERE THE POTENTIAL FOR REDUCING DESIGN MARGINS TO THE EXTENT DESIGN ALLOWABLES ARE EXCEEDED OR DESIGN REQUIREMENTS ARE NOT MET ?

   Not applicable

2. IS THERE THE POTENTIAL THAT THE ITEM MIGHT FAIL OR ENDANGER OTHER ITEMS DURING AN SSE ?

   Not applicable

3. COULD THE FAILURE OF THIS ITEM DURING AN SSE CREATE A SUBSTANTIAL SAFETY HAZARD ?

   Not applicable

4. COULD THE PROCEDURAL VIOLATION CREATE A SUBSTANTIAL SAFETY HAZARD ?

   Conceivable. See Item 6, below.

5. ARE OTHER SIMILAR DEVIATIONS LIKELY TO EXIST ?

   None were identified in the procedure review.

6. OTHER COMMENTS: QA audits performed to SCE QA Procedure requirements prior to 11/23/81 may have verified compliance with documented QA program requirements without assessing the effectiveness of the controls. The established controls may have been deficient or requirements may have been omitted. Conceivably, requirements for proper implementation of seismic design outputs may have been inadequate for effective control.

PREPARED BY: W. J. Leonard DATE: 1/22/82

COMMENTS: Agree with above

BY: J. Bruno DATE: 1/23/82

Southern California Edison Company
P. O. BOX 800
2244 WALNUT GROVE AVENUE
ROSEMEAD, CALIFORNIA 91770

January 25, 1982

J. J. ADRIAN
MANAGER
GENERATION ENGINEERING
AND DESIGN

TELEPHONE
(213) 572-2944

Mr. George L. Wessman, Project Manager
Torrey Pines Technology
P. O. Box 81608
San Diego, CA 92138

Dear Mr. Wessman:

Subject: Independent Seismic Design Verification
San Onofre Nuclear Generating Station
Units 2 and 3

This is to advise you that in the rush of getting a response out to you we have inadvertently submitted a partial response on PFR 0034. Accordingly, we are retransmitting our response on the subject PFR to reflect the accurate and complete explanation on this item.

We apologize for the inconvenience.

Very truly yours,

Enclosures

2408 PFR NO. 0034

POTENTIAL FINDING REPORT
REVISION -

SONGS 2&3 SEISMIC DESIGN VERIFICATION

A. PREPARATION BY GA INITIATOR

AFFECTED ITEMS: SCE Quality Assurance Procedure N18.04, Rev. 18 (11/23/81) and prior revisions - "QA Organization Audits - Scheduling, Planning, Performance, Documentation, and Follow-Up"

REQUIREMENT REFERENCE DOCUMENTS:

10CFR50, Appendix B - Criterion 18 and Regulatory Guide 1.144 (Rev. 1, 9/80), with its endorsed ANSI/ASME N45.2.12-1977.

BASIC REQUIREMENT: Appendix B requires that "A comprehensive system of planned and periodic audits shall be carried out to verify compliance with all aspects of the quality assurance program and to determine effectiveness of the program." ANSI/ASME N45.2.12-1977 states: "The objectives of the audit system are: 3.2.3 to assess the effectiveness of the quality assurance program;"

DESCRIPTION OF POTENTIAL FINDING:

SCE Quality Assurance Procedure N18.04 did not specify assessment of effectiveness of the quality assurance program as an audit objective. Consequently, QA audits concerned with seismic design output implementation might confirm compliance with established controls, for example, without determining effectiveness.

PREPARED BY: M. J. Leonard DATE: 1/19/82

REJECTION OF GA TASK LEADER COMMENTS BY: _____ DATE: _____

REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: _____ DATE: _____

B. REVIEW BY GA TASK LEADER COMMENTS

☒ AGREE PF IS VALID BY L. Brewer DATE 1/19/82

☐ REQUEST RE-REVIEW BY _____ DATE _____

☐ DISAGREE BY _____ DATE _____

☐ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: _____ DATE: _____

2408- PFR NO. -0034

REVISION -

C. REVIEW BY ORIGINAL DESIGN ORGANIZATION

COMMENTS

QAP N18.04, Revision 18 (11/23/81), paragraph 5.4.5 requires that audit reports include a summary of audit results (i.e. an evaluation statement regarding the effectiveness of the quality assurance program.) Previous revisions did not include this provision.

☒ AGREE PF IS VALID EXCEPT AS NOTED ABOVE. SEE ATTACHMENT 1 FOR COMMENTS.

☐ DISAGREE

1-25-82

BY: J.M. Cesmon DATE: 1-21-82

D. RECOMMENDATION BY FINDINGS REVIEW COMMITTEE

DEFINITION ADEQUACY:	☐ ADEQUATE	☐ INADEQUATE
VALIDITY:	☐ VALID	☐ INVALID
CLASSIFICATION:	☐ OBSERVATION	☐ FINDING

JUSTIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" _____

COMMENT ON "OBSERVATION" CLASSIFICATION

BY: _____ DATE: _____

E. GA PROJECT MANAGER

☐ ACCEPT

☐ REJECT

BY: _____ DATE: _____

ATTACHMENT 1

RESPONSE TO POTENTIAL FINDING REPORT 0034
SAN ONOFRE UNITS 2 AND 3 SEISMIC DESIGN VERIFICATION

The preliminary finding is presented in two parts:

(1) Quality Assurance Organization procedure (N18.04 - Rev. 17) does not specify, as an audit objective, an assessment of effectiveness of the quality assurance program.

(2) As a consequence of (1) QAO audits concerned with seismic design output implementation might confirm compliance with established controls without determining the effectiveness of the quality assurance program.

The first part of the preliminary finding is directed to the written procedures of the SCE QA Organization and it is valid. Assessment of effectiveness was not stated as a specific, separate objective in the same manner as in ANSI N45.2.12. However, the QA Manual for Units 2 and 3 Chapter 18, Section 18.0.1 does require a program effectiveness evaluation. The intent of the draft of ANSI N45.2.12 was first used by SCE in the development of procedures late in 1974. The standard was issued in 1977.

Prior to 1974 the SCE audit program was based on Appendix B to 10CFR50. That regulation requires the audit program "to verify compliance with all aspects of the quality assurance program" and to "determine the effectiveness of the program." Audit plans and reports of results in the period 1971-1973 do not indicate "assessment of effectiveness of the quality assurance program" as a specific, separate objective of the audit. However, a review of audit plans and reports in that period and later periods shows that effectiveness was examined by the auditor. This is documented by recommendations and requests for corrective action which reflect an assessment which went beyond a mere check of step-by-step compliance with established procedures.

The evolution of the audit program from 1971 to 1977 was concurrent with the general development of QA philosophy in the nuclear power industry. As might be expected, the number of findings which would be classified as "program omissions" versus the number which would be called "program noncompliances" was larger in that period. This reflects the thrust of the SCE audit program which measured effectiveness of the quality assurance program in all areas and recommended the strengthening of procedures where weakness was detected. As an example, Audit Report AE 4.0.2.3.0, which was performed in September, 1973 had an audit plan objective for document review of "determining for each documented reviewer the extent of review which took place." The recommended corrective action resulting from the audit included steps which were directed to improving and assuring Quality Assurance Program effectiveness.

The program requirement for a verification of "overall effectiveness of the Quality Assurance Program" has been clearly stated in Chapter 18 of the Project Quality Assurance Manual since the earliest issues and that intent has been carried out. QAO management has recognized that the wording of the standard and the regulation posed a possible need for a detailed procedural requirement to "assess effectiveness." One approach which was considered was to require the auditor to write a summary paragraph which would be an explicit assessment of effectiveness. This approach was not adopted because assessment of effectiveness is best accomplished by examining the output of persons performing safety related activities. Actual effectiveness was accomplished by verified corrective action.

Special audits and management reviews have been performed in areas where less than satisfactory effectiveness was detected. To maintain an overall assessment of effectiveness, a series of periodic reports is made to management. A weekly progress report is made by supervisors to the Manager, Quality Assurance; a summary review of Nonconformance Reports and Corrective Action Requests is performed quarterly. Results of the review and corrective action to correct any adverse quality trends are reported by supervisors to the Manager, Quality Assurance. In addition, a quarterly report to higher management maintains visibility of trends and allows management to assess the effectiveness of the program. Procedural requirements for this series of reports are given in QAP's: N2.02, N2.06 and N2.07.

On a yearly basis (approximately), the Manager, Quality Assurance has employed independent consultants to assess the effectiveness of the Quality Assurance Organization.

The second part of the preliminary finding poses the possibility that, as a consequence of the lack of a specifically stated objective in the Quality Assurance Organization Procedure, SCE auditors may not have assessed the effectiveness of the quality assurance program in the area of seismic design. That possibility can be evaluated by a review of audits performed and corrective actions accomplished. QAP N18.04, paragraph 5.1.5(c), states that regularly scheduled audits may be supplemented by special audits when an independent assessment of program effectiveness is considered necessary. When the regular audits indicated a weakness in effectiveness, special audits were performed. One form of special audit which was widely used in the area of design activity is the joint audit. Joint audit teams are composed

of qualified auditors from the QA Organization and technical specialists from other SCE organizations such as Design Engineering. Coordination of audit planning, performance and reporting is done by a Lead QA Auditor. The QAO members of audit teams assist technical specialists in conducting a detailed audit of the results of an activity such as design. A total of nine such joint audits were performed in the Bechtel Design Office during the period in question. The reports and verified corrective actions from these audits document the fact that SCE QAO did assess the effectiveness of the quality assurance program.

J. M. Curran

J. M. CURRAN
Manager, Quality Assurance

1-25-82
Date

PFR NO. 2498-PFR-0039

REVISION _____

POTENTIAL FINDING REPORT
SONGS 2&3 SEISMIC DESIGN VERIFICATION

A. PREPARATION BY GA INITIATOR

AFFECTED ITEMS: I&C Equipment Field Mounting Design - Installation and Applicable Details and Drawings for 2LT-0312 and Associated Devices - Calculations for Seismic Category I Mounting Stand and Plate.

REQUIREMENT REFERENCE DOCUMENTS:

Not Applicable

BASIC REQUIREMENT:

Not Applicable

DESCRIPTION OF POTENTIAL FINDING: On Calculation Sheet 20 when checking the 3/4" diameter holes for 1/2" diameter bolts, there is no reference source given for the assumed pre-tension bolt value and the slip coefficient.
On Calculation Sheet 25 the value of the stiffness of concrete expansion anchor was given, but the reference source (IOM Calculation No. C-258-7.04, Sheet No. 169) which contains this value was not provided.
On Calculation Sheets 24 and 27 the correct moment of inertia for the support stand should be 21.9 in^4 rather than 17.3 in^4.

PREPARED BY: D. Tow D. Tow DATE: 1-20-82

REJECTION OF GA TASK LEADER COMMENTS BY: _____ DATE: _____

REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: _____ DATE: _____

B. REVIEW BY GA TASK LEADER

COMMENTS

Re-review requested with additional documents obtained from BPC.

Additional information obtained from BPC on 1/22/82 was reviewed for Items 1 and 2 with results showing that the values used in the calculation were reasonable.

On Item 3 above, BPC admits using a lighter section ($I = 17.3\ in^4$) in the calculation but in the final design a heavier section ($I = 21.9\ in^4$) was installed. This, however, has no effect on the overall results of the analysis since using a smaller structural section results in a more conservative assumption for the natural frequency computation.

Therefore, this PFR is invalid. D. Tow 1/23/82 FSO 1/23/82

☐ AGREE PF IS VALID BY _____ DATE _____

☑ REQUEST RE-REVIEW BY FSO DATE 1/23/82

☐ DISAGREE BY _____ DATE _____

☐ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: _____ DATE: _____

PFR NO. 2408-PFR-0039
REVISION _____

C. REVIEW BY ORIGINAL DESIGN ORGANIZATION COMMENTS

☐ AGREE PF IS VALID

☐ DISAGREE

BY: _____ DATE: _____

D. RECOMMENDATION BY FINDINGS REVIEW COMMITTEE

DEFINITION ADEQUACY:	☒ ADEQUATE	☐ INADEQUATE
VALIDITY:	☐ VALID	☒ INVALID
CLASSIFICATION:	☐ OBSERVATION	☐ FINDING

JUSTIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" _____

COMMENT ON "OBSERVATION" CLASSIFICATION

BY: S. A. Kouts DATE: 1/24/82

E. GA PROJECT MANAGER

☒ ACCEPT

☐ REJECT

BY: A. L. Lussman DATE: 1/24/82

PFR NO. 2408-PFR-0041

REVISION _____

POTENTIAL FINDING REPORT
SONGS 2&3 SEISMIC DESIGN VERIFICATION

A. PREPARATION BY GA INITIATOR

AFFECTED ITEMS: I&C Equipment Field Mounting Design - Installation and Applicable Details and Drawings for 2LT-0312 and Associated Devices - Calculations for Seismic Category I Mounting Stand and Plate.

REQUIREMENT REFERENCE DOCUMENTS:

Not Applicable

BASIC REQUIREMENT:

Not Applicable

DESCRIPTION OF POTENTIAL FINDING:

No reference sources or data sheets were given for the weight of instruments and associated tubing, valves, and plates on Sheets 19, 20 and 21.

PREPARED BY: D. Tow M. Tow DATE: 1-20-82

REJECTION OF GA TASK LEADER COMMENTS BY: _____ DATE: _____

REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: _____ DATE: _____

B. REVIEW BY GA TASK LEADER

COMMENTS

A simple check, e.g. taking a material weight take-off of the plate, brackets, and tubing shown on drawings, appear to confirm reasonableness of weights and loads used in design.

Re-review of the weight values from the additional documents obtained from BPC on 1/22/82 showed that weight values used in the analysis were reasonable and conservative. Therefore, this PFR is invalid. M. Tow 1/23/82 [illegible] 1/23/82

☐ AGREE PF IS VALID BY _____ DATE _____

☑ REQUEST RE-REVIEW BY [illegible] DATE 1/22/82

☐ DISAGREE BY _____ DATE _____

☐ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: _____ DATE: _____

PFR NO. 2408-PFR-0041

REVISION _____

C. REVIEW BY ORIGINAL DESIGN ORGANIZATION

COMMENTS

☐ AGREE PF IS VALID

☐ DISAGREE

BY: _____ DATE: _____

D. RECOMMENDATION BY FINDINGS REVIEW COMMITTEE

DEFINITION ADEQUACY:	☒ ADEQUATE	☐ INADEQUATE
VALIDITY:	☐ VALID	☒ INVALID
CLASSIFICATION:	☐ OBSERVATION	☐ FINDING

JUSTIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" _____

COMMENT ON "OBSERVATION" CLASSIFICATION

BY: S. L. Kouts DATE: 1/24/82

E. GA PROJECT MANAGER

☒ ACCEPT

☐ REJECT

BY: G. H. Weissman DATE: 1/24/82