

# REGULATOR INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8203080247 DOC. DATE: 82/03/04 NOTARIZED: NO DOCKET #  
 FACIL: 50-361 San Onofre Nuclear Station, Unit 2, Southern California 05000361  
 50-362 San Onofre Nuclear Station, Unit 3, Southern California 05000362  
 AUTH. NAME AUTHOR AFFILIATION  
 DIETCH, R. Southern California Edison Co.  
 RECIP. NAME RECIPIENT AFFILIATION  
 EISENHUT, D.G. Division of Licensing

SUBJECT: Forwards Series F potential finding repts processed & classified by GA Co. "F" designation differentiates repts from original 58 issued in interim rept. Addl repts will be submitted as completed.

DISTRIBUTION CODE: B001S COPIES RECEIVED: LTR 1 ENCL 63 SIZE: 69  
 TITLE: PSAR/FSAR AMDTS and Related Correspondence

NOTES: J Hanchett 1cy PDR Documents. L Chandler all Amdts. 05000361  
 D Scaletti 1cy Enviro Matl.  
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	IE/DEP/EPDB 35	1	1	IE/DEP/EPLB 36	3	3
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	NRR/DE/EOB 13	3	3	NRR/DE/GB 28	2	2
	NRR/DE/HGEB 30	2	2	NRR/DE/MEB 18	1	1
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	NRR/DE/SAB 24	1	1	NRR/DE/SEB 25	1	1
	NRR/DHFS/HFEB 40	1	1	NRR/DHFS/LQB 32	1	1
	NRR/DHFS/OLB 34	1	1	NRR/DHFS/PTRB 20	1	1
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64

59

63

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58

*Southern California Edison Company*



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ROSEMEAD, CALIFORNIA 91770

ROBERT DIETCH

VICE PRESIDENT

TELEPHONE

213-572-4144

March 4, 1982

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



Gentlemen:

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

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

PFR F006	Invalid	PFR F023	Observation
F007	Invalid	F025	Invalid
F013	Observation	F026	Invalid
F015	Finding	F030	Invalid
F016	Observation	F033	Invalid
F017	Observation	F055	Invalid
F018	Observation		

The "F" designation in these numbers is to differentiate these PFRs from the original 58 issued in the Interim Report.

We will transmit additional processed and classified PFRs to you as they are completed.

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, Licensing Branch #3 (w encl - 10)

*Bools  
1/63*

8203080247 820304  
PDR ADOCK 05000361  
A PDR

# POTENTIAL FINDING REPORT

## SONGS 2&3 SEISMIC DESIGN VERIFICATION

REVISION     **A. PREPARATION BY GA INITIATOR****AFFECTED ITEMS:**

Bechtel Drawing Control Log vs. Drawing 40011-0

**REQUIREMENT REFERENCE DOCUMENTS:**

Project Internal Procedures Manual, Section 8, Rev. 24, 8-27-81, paragraph 8.11, (Bechtel Proc.)

**BASIC REQUIREMENT:**

Each disciplines Drawing Control Log identifies those drawings requiring SCE approval.

**DESCRIPTION OF POTENTIAL FINDING:**

The Bechtel Drawing Control Log indicates the requirement of SCE approval on Drawing 40011-0. This drawing does not show the required approval.

*Invalid: A microfilm copy of this drawing was delivered to our document center on 2-19-82, Clog No- AC 13489478). The drawing was approved by SCE on 6-15-74 JTB Laffter 6-19-82*

PREPARED BY: JTB Laffter DATE: 1-29-82REJECTION OF GA TASK LEADER COMMENTS BY:                      DATE:             REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY:                      DATE:             **B. REVIEW BY GA TASK LEADER****COMMENTS**

*Agree that PFR should be invalid.*

*SD 2/19/82*

☒ AGREE PFR IS VALIDBY J. Breuer DATE 1/30/82☐ REQUEST RE-REVIEWBY                      DATE             ☐ DISAGREEBY                      DATE             ☒ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: J. BreuerDATE: 2/19/82

## C. REVIEW BY ORIGINAL DESIGN ORGANIZATION

## COMMENTS

drawing reviewed by the auditor was a blowdown mylar made to replace a damaged original. The SCE approval did not print up when the mylar was made. The microfilm made of the original shows that SCE approval was obtained.

☐ AGREE PF IS VALID☒ DISAGREEBY: Jim B. MarshDATE: 2/8/82

## D. RECOMMENDATION BY FINDINGS REVIEW COMMITTEE

DEFINITION ADEQUACY:

☒ ADEQUATE☐ INADEQUATE

VALIDITY:

☐ VALID☒ INVALID~~10 CFR 21:~~~~☐ NOT APPLICABLE~~~~☐ APPLICABLE~~~~10 CFR 50.55(e):~~~~☐ NOT APPLICABLE~~~~☐ APPLICABLE~~

CLASSIFICATION:

☐ OBSERVATION☐ FINDING

CLASSIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" \_\_\_\_\_

COMMENT ON "OBSERVATION" CLASSIFICATION

BY: S. A. KoutyDATE: 2/24/82

## E. TPT PROJECT MANAGER

☒ ACCEPT☐ REJECTBY: AWDATE: 2/25/82

# POTENTIAL FINDING REPORT

## SONGS 2&3 SEISMIC DESIGN VERIFICATION

REVISION A**A. PREPARATION BY GA INITIATOR**AFFECTED ITEMS: Bechtel-Purchase Specification S023-407-13, SCE #0447, 5-14-75**REQUIREMENT REFERENCE DOCUMENTS:**

Project Internal Procedures Manual, Section 11, Rev. 14, 10-15-80, paragraph 11.5.1.1, (Bechtel Procedure)

**BASIC REQUIREMENT:**

The last sentence of the 1st paragraph of Section 11.5.1.1 states "In general, the information provided should be in the following order and should include the subject matter as indicated."

**DESCRIPTION OF POTENTIAL FINDING:**

This P.S. S023-407-13 is for tanks for which requirements for special tooling is not normally a requirement. Therefore, the paragraph 11.5.1.1-9 addressing special tooling is not applicable to this purchase specification.

PREPARED BY: *D. D. Lafferty* DATE: *2-16-82*

REJECTION OF GA TASK LEADER COMMENTS BY: \_\_\_\_\_ DATE: \_\_\_\_\_

REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: \_\_\_\_\_ DATE: \_\_\_\_\_

**B. REVIEW BY GA TASK LEADER****COMMENTS**

*PFR should be closed based on the revision.*

*IN 10/10/80*  
☐ AGREE PFR IS VALID

BY \_\_\_\_\_

DATE *2/10/82*☐ REQUEST RE-REVIEW

BY \_\_\_\_\_

DATE \_\_\_\_\_

☐ DISAGREE

BY \_\_\_\_\_

DATE \_\_\_\_\_

☐ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: \_\_\_\_\_ DATE: \_\_\_\_\_

POTENTIAL FINDING REPORT  
SONGS 2&3 SEISMIC DESIGN VERIFICATION

REVISION --

**A. PREPARATION BY GA INITIATOR****AFFECTED ITEMS:**

Purchase specification 5023-407-13, SCE #0447, 5-14-75, (Bechtel P.S.).

**REQUIREMENT REFERENCE DOCUMENTS:**Project Internal Procedures Manual, Section 11, Rev. 14, 10-15-80,  
paragraph 11.5.1.1-Q, (Bechtel Proc.).**BASIC REQUIREMENT:**

The P.S. will stipulate that one full set of all special tools (new), wrenches, and dismantling accessories required for installing, operating and servicing equipment must be furnished by the vendor.

**DESCRIPTION OF POTENTIAL FINDING:**

The P.S. does not address the subject of special tool and accessory equipment.

PREPARED BY: *W. H. L. L. L.* DATE: 1-29-82  
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 VALIDBY *J. Bremer* DATE 1/30/82☐ REQUEST RE-REVIEW

BY \_\_\_\_\_ DATE \_\_\_\_\_

☐ DISAGREE

BY \_\_\_\_\_ DATE \_\_\_\_\_

☒ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: *J. Bremer*DATE: 2/15/82

**REVIEW BY ORIGINAL DESIGN ORGANIZATION**

**COMMENTS**

IPM states at the beginning of 11.5.1.1 in the last sentence "In general, the information provided should be in the following order and should include the subject matter indicated:" A tank does not require tools or accessory equipment.

☐ AGREE PF IS VALID

☒ DISAGREE

BY: Full B Marshall

DATE: 2/8/82

**RECOMMENDATION BY FINDINGS REVIEW COMMITTEE**

DEFINITION ADEQUACY:

☐ ADEQUATE

☐ INADEQUATE

VALIDITY:

☐ VALID

☐ INVALID

10 CFR 21:

☐ NOT APPLICABLE

☐ APPLICABLE

10 CFR 50.55(e):

☐ NOT APPLICABLE

☐ APPLICABLE

CLASSIFICATION:

☐ OBSERVATION

☐ FINDING

CLASSIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" \_\_\_\_\_

COMMENT ON "OBSERVATION" CLASSIFICATION \_\_\_\_\_

BY: \_\_\_\_\_

DATE: \_\_\_\_\_

**TPT PROJECT MANAGER**

☐ ACCEPT

☐ REJECT

BY: \_\_\_\_\_

DATE: \_\_\_\_\_

VIEW BY ORIGINAL DESIGN ORGANIZATION

COMMENTS

☐ AGREE PF IS VALID☐ DISAGREE

BY: \_\_\_\_\_ DATE: \_\_\_\_\_

D. RECOMMENDATION BY FINDINGS REVIEW COMMITTEEDEFINITION ADEQUACY: ☒ ADEQUATE ☐ INADEQUATEVALIDITY: ☐ VALID ☒ INVALIDCLASSIFICATION: ☐ OBSERVATION ☐ FINDINGJUSTIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" \_\_\_\_\_

COMMENT ON "OBSERVATION" CLASSIFICATION

BY: S. S. Kouty DATE: 2/19/82E. GA PROJECT MANAGER☒ ACCEPT☐ REJECTBY: A. W. Wessman DATE: 2/24/82

# POTENTIAL FINDING REPORT

## SONGS 2&3 SEISMIC DESIGN VERIFICATION

REVISION --

**A. PREPARATION BY GA INITIATOR****AFFECTED ITEMS:**

Ultimate Heat Sink Auxiliary Intake Structure Specification #41-2055.

**REQUIREMENT REFERENCE DOCUMENTS:**

- a) SCE SONGS 2&3 QA Manual, Chapter 6, "Document Control".
- b) Corporate Documentation Services Manual Section EDM 26-8-4, "Receipt, Control and Retrieval of Documents (except Drawings) at the General Office", and Section EDM 37-30-40, "Review and Release of Company Procurement Specifications, Addenda and SONGS 1 Mini-Specifications."

**BASIC REQUIREMENT:**

Corporate Documentation Services collects specification masters, verifies there are no obvious clerical errors, microfilms the master, and distributes copies in accordance with a distribution list to assure that the latest document and its changes are made available for reference and use.

**DESCRIPTION OF POTENTIAL FINDING:**

The CDS microfiche of Specification 41-2055, Rev. 2, does not contain page 28 of the specification. An examination of the hard copy from which the microfiche was made, and which is identified as the "distribution copy", does not contain page 28. It appears that Rev. 2 was distributed with a missing page. (Note: the copy received by GAC lacked page 28). Page 28 is in the section of the specification which describes the qualification testing to be performed to verify design.

PREPARED BY: B. L. Coleman DATE: 1/29/92

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 J. BreuerDATE 1/29/92☐ REQUEST RE-REVIEW

BY \_\_\_\_\_

DATE \_\_\_\_\_

☐ DISAGREE

BY \_\_\_\_\_

DATE \_\_\_\_\_

☐ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: \_\_\_\_\_ DATE: \_\_\_\_\_

REVIEW BY ORIGINAL DESIGN ORGANIZATION

## COMMENTS

☒ AGREE PF IS VALID

Comments attached

☐ DISAGREEPJB BY: R. L. Richter DATE: 2/4/82D. RECOMMENDATION BY FINDINGS REVIEW COMMITTEE

DEFINITION ADEQUACY:

☒ ADEQUATE☐ INADEQUATE

VALIDITY:

☒ VALID☐ INVALID

CLASSIFICATION:

☒ OBSERVATION☐ FINDINGJUSTIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" \_\_\_\_\_

COMMENT ON "OBSERVATION" CLASSIFICATION

The fact that Pg 28 was missing indicates that CDS did not perform its function properly. (SCE should be responsive to TPL of Impact Assessment.) However, in the case info from Pg 28 was contained on CC No 9.

BY: S. L. Kouty DATE: 2/24/82E. GA PROJECT MANAGER☒ ACCEPT☐ REJECTBY: Sh. Wernman DATE: 2/25/82

PFR No. F013

The missing page has been added to the distribution copy of Revision 2. This page was included in the original Engineering copy of this Revision and has been verified to be in the jobsite file copy which was used for original distribution to construction personnel.

This revision was performed solely to incorporate CC's 1 through 10 to allow issuance of possible future CC's. The work was actually performed in accordance with the CC's themselves, prior to their incorporation into the specification revision. The information shown on page 28 of Revision 2 was contained completely in CC No. 9 which formed the basis for the construction and testing activity.

Prepared By:

J. K. YANN

Approved By:

H. L. Richter 7/4/82 R  
H. L. RICHTER

# IMPACT ASSESSMENT

2408 PFR NO. F013

AFFECTED ITEM: SCE Specification #S023-41-2055

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

Unknown

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

Unknown

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

Unknown

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

No

5. ARE OTHER SIMILAR DEVIATIONS LIKELY TO EXIST ?

Yes, based on our review of overall CDS operations.

## OTHER COMMENTS:

Corrective action comments should come from the CDS organization. Verification of the jobsite file copy will be required. Jobsite copies for use are supposed to be issued by CDS, not Engineering.

PREPARED BY: B. L. Coleman DATE: 2/22/82

## COMMENTS:

BY: I. Bernal DATE: 2/22/82

POTENTIAL FINDING REPORT  
SONGS 2&3 SEISMIC DESIGN VERIFICATION

REVISION --

A. PREPARATION BY GA INITIATOR

## AFFECTED ITEMS:

Ultimate Heat Sink Auxiliary Intake Structure Calculation #DC-339.

## REQUIREMENT REFERENCE DOCUMENTS:

Engineering and Construction Dept. QA Procedure 24-7-15, "Performing Design Analysis for SONGS 1, 2&amp;3".

## BASIC REQUIREMENT:

Procedure 24-7-15 requires that the Responsible Engineer ensure that pertinent reference material is included within the analysis including identification of computer calculations; identifying program code name, inputs and outputs; and the basis for program verification.

## DESCRIPTION OF POTENTIAL FINDING:

Calculation DC-339, Rev. 1, dated 5/81, references the use of two computer programs, SAP 5.2 and SAP 4, each entitled "A Structural Analysis Program for Static and Dynamic Response of Linear Systems". The calculation does not identify the basis for program verification, nor indicate if the programs are verified/validated.

PREPARED BY: B. L. Coleman DATE: 1/29/82

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 VALIDBY S. B. BerridDATE 1/29/82☐ REQUEST RE-REVIEW

BY \_\_\_\_\_

DATE \_\_\_\_\_

☐ DISAGREE

BY \_\_\_\_\_

DATE \_\_\_\_\_

☐ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: \_\_\_\_\_ DATE: \_\_\_\_\_

REVIEW BY ORIGINAL DESIGN ORGANIZATION

## COMMENTS

☒ AGREE PFR IS VALID      Comments attached☐ DISAGREEBY: R. S. L. Richter DATE: 2/4/82D. RECOMMENDATION BY FINDINGS REVIEW COMMITTEEDEFINITION ADEQUACY:      ☒ ADEQUATE      ☐ INADEQUATEVALIDITY:      ☒ VALID      ☐ INVALIDCLASSIFICATION:      ☐ OBSERVATION      ☒ FINDINGJUSTIFICATION:CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" 3COMMENT ON <sup>SDK 2/24/82</sup>~~"OBSERVATION"~~ CLASSIFICATION

Similar procedural violations also noted on  
PFR F10, F11, F12, F13, F14, F16, F17

BY: S. L. Koutz DATE: 2/24/82E. GA PROJECT MANAGER☒ ACCEPT☐ REJECTBY: W. J. Wasserman DATE: 2/26/82

PFR No. F015

The calculation package covered in the 5/81 revision was not used in any form as a design basis for this structure. It is filed with the DC-339 package for record keeping purposes only since, although fully independent from the original calculations, it relates to the Auxiliary Intake Structure configuration. The computer programs used are commercially available programs and no verification was performed since these calculations were not used.

Prepared By:

  
J. K. YANN

Approved By:

  
H. L. RICHTER

# IMPACT ASSESSMENT

2408 PFR NO. F015

AFFECTED ITEM: SCE Calculation #DC-339

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

Unknown

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

Unknown

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

Unknown

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

Not if the computer programs have in fact been verified and correctly led Engineering to believe the calculation did not need to be used.

5. ARE OTHER SIMILAR DEVIATIONS LIKELY TO EXIST ?

No. There is no evidence that any other computer programs were used in the SCE design.

## OTHER COMMENTS:

Determination of a computer program's validation/verification status should be made and documented before the calculation is performed. There is no indication on the calculation that it was not used.

PREPARED BY: B. L. Coleman DATE: 2/22/82

## COMMENTS:

BY: J. Brunel

DATE: 2/24/82

POTENTIAL FINDING REPORT  
SONGS 2&3 SEISMIC DESIGN VERIFICATION

REVISION ---A. PREPARATION BY GA INITIATOR

AFFECTED ITEMS: Generic Program item uncovered during review of Ultimate  
Heat Sink Auxiliary Intake Structure

## REQUIREMENT REFERENCE DOCUMENTS:

- a) E&C Dept. QA Procedure 24-7-15, "Performing Design Analysis for SONGS 1,2&3"
- b) Document Review Distribution Matrix (DRDM).
- c) SCE SONGS 2&3 QA Manual, Chapter 3, "Design Control".

## BASIC REQUIREMENT:

The DRDM states that the minimum reviewers of Civil/Structural calculations includes the Project Engineer. Procedure 24-7-15 identifies among the reviewers an Independent Review Engineer, but not the Project Engineer. QAM Chapter 3 states that calculations shall be "checked (i.e., independently reviewed)"; however, Exhibit 3.1 of the QA Manual does not identify an individual who could be the Independent Review Engineer, nor does it

DESCRIPTION OF POTENTIAL FINDING: identify the Project Engineer.

Existing procedures which identify the required reviewers and approvers of Civil/Structural calculations are in conflict. Calculation DC-339 conforms to the review/approval requirements of E&C Procedure 24-7-15, but not the DRDM or QA Manual.

PREPARED BY: B. L. Coleman DATE: 1/29/82

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 VALIDBY S. BurnettDATE 1/29/82☐ REQUEST RE-REVIEW

BY \_\_\_\_\_

DATE \_\_\_\_\_

☐ DISAGREE

BY \_\_\_\_\_

DATE \_\_\_\_\_

☐ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: \_\_\_\_\_ DATE: \_\_\_\_\_

REVISION \_\_\_\_\_

**C. REVIEW BY ORIGINAL DESIGN ORGANIZATION****COMMENTS**☒ AGREE PFR IS VALID      Comments attached☐ DISAGREEBY: R. L. Richter DATE: 2/4/82**D. RECOMMENDATION BY FINDINGS REVIEW COMMITTEE**DEFINITION ADEQUACY:      ☒ ADEQUATE      ☐ INADEQUATEVALIDITY:      ☒ VALID      ☐ INVALIDCLASSIFICATION:      ☒ OBSERVATION      ☐ FINDINGJUSTIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" \_\_\_\_\_

## COMMENT ON "OBSERVATION" CLASSIFICATION

Existing procedures are in conflict. However, there appears to have been adequate review. QA Manual should also be made consistent.

BY: S. A. Kouz DATE: 2/24/82**E. GA PROJECT MANAGER**☒ ACCEPT☐ REJECTBY: Shirley DATE: 2/25/82

PFR No. F016

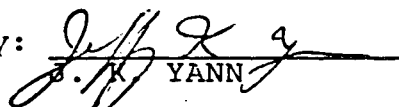
Agree PF is valid with additional comments as follows:

The requirements for review and approval of calculation DC-339 are contained in E&C 24-7-15 (formerly E&C 26-7-15). The calculation was approved consistent with this procedure by the Originator, Independent Review Engineer/Checker, Discipline Project Group Leader and Discipline Supervising Engineer. At the time of preparation of these calculations, the DRDM did not exist in its current form and there was no requirement for review by the Project Engineer. This approval was consistent with the SONGS 2/3 Project QA Manual Chapter 3 in the following manner.

- 1) The Independent Review Engineer/Checker's approval satisfies paragraph 3.2.2 which requires a check of the calculation by the originating design organization.
- 2) The approval by the Originator, Discipline Project Group Leader and Discipline Supervising Engineer satisfies paragraphs 3.2.4 and 3.2.6 which require review and approval from these individuals for calculations.

The Document Review Distribution Matrix (DRDM) Item C/S-01 currently indicates a review approval function for the Project Engineer regarding calculations. The DRDM requirements are not correct. The Project Engineer is not required to review/approve calculations. The controlling requirements for calculation review/approval are contained in E&C 24-7-15 which implements QA Manual Chapter 3 and PSAR Appendix A, Attachment 1. The DRDM will be revised accordingly.

Prepared By:

  
J. K. YANN

Approved By:

  
H. L. RICHTER

# IMPACT ASSESSMENT

2408 PFR NO. F016

AFFECTED ITEM: Generic Program Item

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

Unknown

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

Unknown

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

Unknown

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

No

5. ARE OTHER SIMILAR DEVIATIONS LIKELY TO EXIST?

No

6. OTHER COMMENTS:

There appears to be a sufficient number of reviewers. It is recommended that the various procedures be revised, as necessary, to make their review requirements coincide.

PREPARED BY: B. L. Coleman DATE: 2/22/82

COMMENTS:

BY: J. Burch

DATE: 2/22/82

POTENTIAL FINDING REPORT  
SONGS 2&3 SEISMIC DESIGN VERIFICATION

REVISION

A. PREPARATION BY GA INITIATOR

AFFECTED ITEMS: Generic Program item uncovered during review of Ultimate Heat Sink Auxiliary Intake Structure.

## REQUIREMENT REFERENCE DOCUMENTS:

SCE Engineering and Construction Dept. QA Procedure 40-9-7, "Distribution of Changes in NRC Regulations, NRC Regulatory Guides and Nuclear Standards for SONGS 1, 2&3".

BASIC REQUIREMENT: The Manager of Nuclear Engineering and Safety maintains an active status of standards related to the design, construction and operation of nuclear plants, including standards from ANSI, ASME, IEEE, etc. On a quarterly basis, a list of new or revised standards received during the previous quarter is provided to a number of managers. These individuals who receive the list are responsible to ensure that appropriate personnel in their organizations are advised of new or revised standards.

## DESCRIPTION OF POTENTIAL FINDING:

There is no evidence that a quarterly list of new and revised standards has been prepared and distributed to appropriate personnel for the design, construction and operation of SONGS 2&3.

PREPARED BY: [Signature] DATE: 1/29/82

REJECTION OF GA TASK LEADER COMMENTS BY: \_\_\_\_\_ DATE: \_\_\_\_\_

REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: M. CARDINALE DATE: 2/19/82  
SEE ATTACHMENTS A & BB. REVIEW BY GA TASK LEADER

## COMMENTS

☐ AGREE PFR IS VALIDBY J. Burne DATE 1/29/82☐ REQUEST RE-REVIEW

BY \_\_\_\_\_ DATE \_\_\_\_\_

☐ DISAGREE

BY \_\_\_\_\_ DATE \_\_\_\_\_

☒ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: J. BurneDATE 2/23/82

**C. REVIEW BY ORIGINAL DESIGN ORGANIZATION****COMMENTS**

The potential finding relates to "Action III - Processing Nuclear Standards" given in the referenced QA Procedure. That section of the procedure does not correctly reflect the systems in effect for handling nuclear standards and should be revised.

At the present time, up-to-date copies of standards are maintained through Edison Office Services' subscription to "Information Handling Services." Nearly all standards are  
(continued on Page 3)

☐ AGREE PF IS VALID

☒ DISAGREE

BY: D. F. Pibner

DATE: 2-5-82

**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

*Procedure not followed but an equivalent system was in effect*

BY: S. D. Koub

DATE: 2/24/82

**E. QA PROJECT MANAGER**

☒ ACCEPT

☐ REJECT

BY: A. W. Wierman

DATE: 2/25/82

available on microfilm from Office Services. The index and microfilm are updated every 60 days to ensure that the latest revision of all standards is available for use.

Individual engineering and operations user groups have unique needs for nuclear standards depending on their responsibilities. For this reason each group maintains its own set of standards according to their needs. All user groups avail themselves of the centralized standards services described above.

SCE Nuclear Engineering and Safety subscribes to "ICONS" which provides copies of ANS draft standards and all approved ANS standards in order to keep abreast of new nuclear standards under development.

Revisions to Regulatory Guides and proposed revisions issued for comment are the methods used by the NRC to endorse or request industry review of new and revised standards. The Edison program for review of these documents is described in Action II of E&C 40-9-7. By this programmatic distribution of regulatory guides, the basic requirement of advising appropriate personnel of impending changes in standards is accomplished. Thus effective means have been in place to ensure that user groups have current standards available for engineering, construction, and operation relative to SONGS 1, 2, & 3. E&C QA Procedure 40-9-7 does not correctly depict the mechanisms for accomplishing this objective and will be revised accordingly.

In accordance with TPT 2408-PD-3, Sec. C. 2) b), the response to the above referenced PFR by the Original Design Organization, SCE, is insufficient to invalidate this PFR.

While the response clearly indicates that an equivalent system is in effect to disseminate new and revised standards to the appropriate personnel, it is equally clear that the provisions of the referenced procedure are not being followed. For this reason I believe the finding should be marked "valid" on page 2, section C, instead of "disagree".

The corrective action cited by SCE is appropriate but does not indicate a time when it will be implemented and is further evidence that the PFR is valid.

A handwritten signature in cursive script, appearing to read "M. Smith".

Record of Long Distance Telephone Call

Party: Called ☒  
Calling ☐

Date: 2/19/82  
Time: Completed 11:15  
Started 11:07  
On-line 8 min

Name D.F. PILMER  
Company SCE  
Location ROSEMEND  
Telephone No: A/C 213 No. 572-1989

Discussion: PFR NO. FO17  
MR. PILMER AGREES THAT THE PROCEDURE  
WAS NOT FOLLOWED AND IN THIS RESPECT THE  
PFR IS VALID. HE ALSO STATED THAT  
IT IS NOT RELEVANT TO DESIGN SAFETY AND  
THAT AN EQUALIZER SYSTEM WAS BEING USED  
AND THAT THE PROCEDURE HAS ALREADY BEEN  
REVISED TO DELETE THE REQUIREMENT.

Record Made by M. CARDINALE

Distribution:

# IMPACT ASSESSMENT

2408 PFR NO. E017

AFFECTED ITEM: Generic Program Item

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?

No

6. OTHER COMMENTS:

SCE's response clearly indicates that there is an equivalent system in effect for the dissemination of NRC Reg. Guides and Standards. The quarterly publication of the new/revised standards has minimal impact on that system and no perceivable impact on design safety.

PREPARED BY: *[Signature]*

DATE: 2/23/82

COMMENTS: None

BY: *J. Bernal*

DATE: 2/23/82

POTENTIAL FINDING REPORT  
SONGS 2&3 SEISMIC DESIGN VERIFICATIONREVISION --A. PREPARATION BY GA INITIATOR

## AFFECTED ITEMS:

Purchase Specification S023-407-13, SCE #0447, 5-14-75, (Bechtel P.S.)

## REQUIREMENT REFERENCE DOCUMENTS:

Project Internal Procedures Manual, Section 11, Rev. 14, 10-15-80  
(Bechtel Proc.)

## BASIC REQUIREMENT:

All SCNs must be incorporated not later than 120 days following the date when the first SCN was issued against a specification.

## DESCRIPTION OF POTENTIAL FINDING:

SCN-M0024 was issued against the Purchase Specification on 6-15-78 and incorporated on 10-18-78 (125 days). The SCN involved a welding deviation to avoid distortion of the annular ring section during welding. See the attached SCN.

PREPARED BY: T.H. Laffter DATE: 1-29-82

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 VALIDBY J. BurrellDATE 1/30/82☐ REQUEST RE-REVIEW

BY \_\_\_\_\_

DATE \_\_\_\_\_

☐ DISAGREE

BY \_\_\_\_\_

DATE \_\_\_\_\_

☒ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: J. BurrellDATE: 2/10/82

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☐ FINDINGJUSTIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" \_\_\_\_\_

COMMENT ON "OBSERVATION" CLASSIFICATION

*Trivial Procedural violation*BY: *S J Kouz*DATE: *2/19/82 Sdk*  
*2/18/82*E. GA PROJECT MANAGER☒ ACCEPT☐ REJECTBY: *Glenn*DATE: *2/24/82*

**C. REVIEW BY ORIGINAL DESIGN ORGANIZATION****COMMENTS**

The additional 5 days taken to incorporate SCN M-24 into specification S023-407-13 caused by a delay in the final processing. It did not constitute a problem, other than a procedural variation, since the welding sequence to be included was already being utilized under specification S023-407-3, as stated in the SCN note.

☒ **AGREE PF IS VALID** - Additional 5 days has no affect on equipment.

☐ **DISAGREE**

SNF: Full BM BY: Full BM DATE: 2/8/82

**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**

☐ **CLASSIFICATION:**

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" \_\_\_\_\_

COMMENT ON "OBSERVATION" CLASSIFICATION

BY: \_\_\_\_\_ DATE: \_\_\_\_\_

**E. TPT PROJECT MANAGER**

☐ **ACCEPT**

☐ **REJECT**

BY: \_\_\_\_\_ DATE: \_\_\_\_\_



SAN ONOFRE NUCLEAR GENERATING STATION  
UNITS 2 & 3  
FIELD CHANGE REQUEST/DCN/SCN  
JUN 07 1978  
JOB NO. 10079

1. FCP NO <u>12461-M</u>	12A QUALITY CLASS <u>II &amp; III</u>	12C DCN/SCN NO <u>N/A</u>
DATE <u>5-12-78</u>	12B SPEC ADDEND NO. <u>3</u>	12D DATE <u>6-15-78</u>
2. PAGE <u>1</u> OF <u>1</u>		12E. SCN NO <u>M-24</u>
3. UNIT NO <u>2E3</u>		

4. DRAWING OR SPEC. <u>5023-407-13</u>	SHEET NO. <u>0</u>	REV. <u>0</u>	5. TITLE <u>REFUELING WATER AND CONDENSATE STORAGE TANKS</u>
6. DESIGN ORIGIN: ENGRG <input checked="" type="checkbox"/> VENDOR <input type="checkbox"/> (IDENTIFY)			NAME

7. EXISTING CONDITION: PARAGRAPH 4.9.3.3.8 NOW READS IN PART: "... ARE DEPOSITED. BLOCK WELDING IS NOT PERMITTED."

8. CHANGE REQUEST/SKETCH  
TO REMAIN WITHIN TOLERANCE AND AVOID DISTORTION OF THE ANNULAR RING SECTIONS DURING WELDING, CHANGE PARAGRAPH 4.9.3.3.8 TO READ IN PART: "... ARE DEPOSITED. BLOCK WELDING IS PERMITTED ONLY ON THE LONGITUDINAL BUTT WELDS IN THE ANNULAR RING OR OUTER BOTTOM PLATES, AS APPLICABLE, AND ONLY TO THE LIMITED EXTENT NECESSARY TO PREVENT DISTORTION OF THE ANNULAR RING OR BOTTOM PLATES WHEN MAKING THE SHELL TO BOTTOM CORNER WELD."

NOTE: THIS WELDING SEQUENCE WAS RECOMMENDED AND UTILIZED UNDER SPECIFICATION 5023-407-3 TO PREVENT DISTORTION.  
(REFER TO DOCUMENT NO. 5023-407-3-104.)

PROJECT ENGINEERING APPROVAL PER K. WALVEKAR/F. RIPPETOE 5/10/78 L.D. Dawes

10. REVIEWED BY DATE		9. <u>GREG DAWES</u> PREPARED BY	
CIVIL _____	PIPE _____	11. APPROVAL OF FLD/POSITION <u>W.H. 5/15/78</u> PROJECT FIELD ENGINEER	
ELEC _____	INSTR _____	DATE <u>5/12/78</u>	
MECH <u>AS Wright 5-12-78</u>	NUC <u>[Signature]</u>		
WELD _____	OAE <u>[Signature]</u>		
12. PROJECT ENGRG APPROVAL: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> EGS <u>[Signature]</u> P.E. <u>[Signature]</u> DATE <u>6/15/78</u>			
WORKS <u>Approved by D.S. PARKER, M&amp;OS, on 6/14/78.</u>			
13. QUALITY ASSURANCE ENGINEER (FIELD): _____		DATE _____	
14. SCE ENGINEERING APPROVAL _____		DATE _____	
15. BECHTEL QUALITY ENGINEER/QUALITY ASSURANCE <u>[Signature]</u>		DATE <u>7/13/78</u>	
16. ADDITIONAL DISTRIBUTION _____			

## IMPACT ASSESSMENT

2408 PFR NO. -F018

AFFECTED ITEM: Purchase Specification S023-407-13, SCE #0447, 5-14-75

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

NA

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

NA

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

NA

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

No

5. ARE OTHER SIMILAR DEVIATIONS LIKELY TO EXIST?

Yes

### OTHER COMMENTS:

The SCN attached to the PFR indicates that the welding deviation was already in use under S023-407-3 to prevent distortion and thus the engineer held the SCN up until two more SCNs were ready to be incorporated into an addendum.

PREPARED BY: *PH Laffter*

DATE: 1-29-82

### COMMENTS:

BY: *J. Brown*

DATE: 2/18/82

# POTENTIAL FINDING REPORT

## SONGS 2&3 SEISMIC DESIGN VERIFICATION

REVISION ---A. PREPARATION BY GA INITIATOR

## AFFECTED ITEMS:

Piping Analysis for Segments 78, 82, 57, 74, 117

## REQUIREMENT REFERENCE DOCUMENTS:

Bechtel's PIPM Section 14.5.1. Required Approvals - Design Calc.  
(Rev. 10 date 3-9-81)

## BASIC REQUIREMENT:

Quality Class I or II design must be reviewed and approved by the Chief Engineer or his designee.

## DESCRIPTION OF POTENTIAL FINDING:

The Chief Engineer did not sign the following Piping Analyses for Segments 78, 82, 57, 74, 117. These are either Quality Class I or II.

(Memo D. L. Kinnsch to R. L. Roger, June 13, 1979 indicates that the Chief Engineer will no longer review pipe stress calc.)

PREPARED BY: H C Hopkins DATE: 2-1-82 (Task B Procedural Review)

REJECTION OF GA TASK LEADER COMMENTS BY: H C Hopkins DATE: ---

REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: H C Hopkins DATE: 2-18-82

B. REVIEW BY GA TASK LEADER

## COMMENTS

The Kinnsch memo called for a revision to Project Procedure. This was never done, and an inconsistency with the Bechtel PIPM has persisted for almost 2 years.

☒ AGREE PFR IS VALID

BY

J. Burr

DATE

2/1/82☐ REQUEST RE-REVIEW

BY

DATE

☐ DISAGREE

BY

DATE

☒ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY:J. Burr

DATE:

2/1/82

C. REVIEW BY ORIGINAL DESIGN ORGANIZATION

## COMMENTS

The noted memorandum states that sufficient pipe stress calculations have been reviewed by the Chief Engineer's staff to assure their acceptability that no further review is required. Since the memorandum stated the Chief's position it was not considered necessary to change the Project Internal Procedures Manual since the procedures are general in their direction. Because of the magnitude of pipe stress calculations this direction was changed, for pipe stress calculations only by a memorandum from the Chief.

☐ AGREE PF IS VALID☒ DISAGREE

SNF

BY: Pat B. MarshallDATE: 2/8/82D. RECOMMENDATION BY FINDINGS REVIEW COMMITTEE

DEFINITION ADEQUACY:

☒ ADEQUATE☐ INADEQUATE

VALIDITY:

☒ VALID☐ INVALID~~10 CFR 21:~~~~☐ NOT APPLICABLE~~~~☐ APPLICABLE~~

10 CFR 50.55(e):

☐ NOT APPLICABLE☐ APPLICABLE *SAK*

CLASSIFICATION:

☒ OBSERVATION☐ FINDING

CLASSIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" \_\_\_\_\_

COMMENT ON "OBSERVATION" CLASSIFICATION

*Procedural violation but adequate review provided.*BY: S. D. KoubDATE: 2/24/82E. TPT PROJECT MANAGER☒ ACCEPT☐ REJECTBY: A. W. WomackDATE: 2/25/82

# Interoffice Memorandum

F023

To: R. L. Rogers  
Subject: Review of Pipe Stress Calculations

File No.

Date: June 13, 1979

From: D. L. Kinnsch

Of: Plant Design

At: LAPD Ext. 4192

Copies to:  
J. E. Dempsey  
D. J. Freeland  
N. W. Evans  
K. P. Ellis  
H. R. Gavankar

A sufficient number of pipe stress calculations (stress summaries) have been reviewed by the Chief Mechanical Engineer's staff to assure that the criteria and methodology utilized on the SONOS 2 and 3 Project is acceptable. As a result, these documents will no longer be reviewed by the Chief except as outlined in the attached memo from J. E. Dempsey dated February 23, 1979. Please revise any applicable Project procedures that may be affected by this change.

*D. L. Kinnsch*  
D. L. Kinnsch

DLK/DJT

10079  
459-6  
100 PC-26525

JUN 13 1979

PROJECT	
PROJECT	
D.E.C.	
PROJECT ADMIN	
PROJECT ADMIN	
PROJECT C.E.	
PROJECT C.S.E.	
PROJECT E.E.	
PROJECT M.E.	
PROJECT PLANT DES.	
PROJECT N.E.	
PROJECT O.A.	
PROJECT C.S.SCH E.	
PROJECT C.C.E.	
PROJECT C.P.E.S.	
PROJECT C.E.	
PROJECT E.	

R. 2110

# IMPACT ASSESSMENT

2408 PFR NO. -F023

AFFECTED ITEM: Piping Analysis for Segments 78, 82, 57, 75, 117

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

N/A

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

N/A

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

N/A

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

Unlikely

5. ARE OTHER SIMILAR DEVIATIONS LIKELY TO EXIST?

Yes

6. OTHER COMMENTS:

Section 14.5.1 PIPM (attached) states the requirement. Modifications and revisions follow the procedure defined in Section 1 PIPM (attached). The memorandum does not follow PIPM revision procedure. The result is that the responsibility for final review and approval of Quality Class I or II design is no longer clearly defined.

PREPARED BY: H. C. Waples DATE: 2-19-82

COMMENTS: *Loss of the Chief Engineer's signature does not compromise the Independent Review. This is still done by the checker, and reviewed by the Group Leader + Eng. Group Supervisor. The Chief's review was another level of overall review function.*  
*The problem here is procedural, not*  
*SB 2/24/82*

BY: J. Burrell DATE: 2/11/82

## Section 1

### GENERAL INFORMATION

#### 1.1 PURPOSE

The purpose of this section is to describe the function, preparation, control, revision, review, and approval of the SONGS 2 and 3 Project Internal Procedures Manual (PIPM).

#### 1.2 GENERAL

The PIPM, which is prepared, controlled, and maintained by the project, provides direction and specific procedures for orderly performance of project functions and activities. The manual is based on standards established by Bechtel and Southern California Edison to suit the project scope of work. When other standards are applicable to the project, they are identified as such and referenced accordingly in the applicable procedures.

Procedures in the reference manual respond to the 18 criteria of 10 CFR 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," and to the requirements of American National Standards Institute standard, ANSI N45.2-1971, "Quality Assurance Program Requirements for Nuclear Power Plants." As a result, the manual and those project activities performed in accordance with the procedures in the manual are subject to quality program audits. (Deficiencies disclosed by these audits must be corrected, including changes to the manual, if necessary.)

The PIPM is divided into individual sections, identified by numbers. The SONGS 2 & 3 Project Quality Engineer (PQE) or designee is responsible for the overall development and change control functions of this manual.

Each page of the manual is identified with a page number, revision number, and revision date. The initial issue of a section is "REV 0";

## GENERAL INFORMATION

each subsequent change to a page is assigned a succeeding revision number. Black vertical bars on the margin of a revised page indicate the difference from the previous issue of the page. When extensive changes are made throughout a section, the entire section is reissued with the next revision number, but without the change bars.

Manual revisions are issued when required, rather than periodically.

### 1.3 DEVELOPMENT, REVIEW AND APPROVAL

Each section of the PIPM is developed under the direction of the PQE, based on data supplied by and coordinated with the appropriate project engineering and/or project support groups using the New Procedure Request form (Exhibit 1-A). Initially this form is only a request for a new procedure. Once it is approved by the Project Engineer it becomes an authorization to proceed with the research and development of the new procedure. The material prepared from this data is submitted to the PQE for review, comment and coordination of any input changes. Other reviewers may be selected for the prepublication review by the Project Engineer (PE). Comments on any material returned as not approved may be resolved with the respective reviewer before publication at the discretion of the Project Engineer. All Project Internal Procedures must be reviewed, approved and signed by the Project Quality Engineer or his designee.

After resolution and incorporation of pertinent review comments, the material is presented for authorizing approval of the PE and the Engineering Manager (EM) or designees. These approvals are indicated by the corresponding approval signatures on the title page of each section of the manual. Those procedures which impact Nuclear Safety related (Quality Class I and II) items are routed to the Project Quality Assurance Engineer for review. The authorizing approval cycle applies to the initial issue and subsequent revisions to each section. The Procedure Change and Approval Flow Diagram (Figure 1-1) provides the sequence of handling procedure changes in addition to the detailed instructions on the back of the Procedure Change Request/Notice (PCR/N) form.

## GENERAL INFORMATION

#### 1.4 CHANGE CONTROL

To change an issued procedure, a PCR/N form (Exhibit 1-B) is filled out. Initially this form is only a request to change a specific procedure. (Instructions for completing the PCR/N form are provided on the back side of the form.) The review and approval cycle for procedure revisions is the same as for the original procedure. Once approved by the PE and with an effectivity date assigned, the request now becomes an order or notice to incorporate the change.

On or after the effectivity date stipulated, a procedure revision will be issued or copies of the PCR/N distributed to all manual holders for notice of the change. Those PCR/Ns that are change notices will be incorporated in the respective procedures within 90 days or when five PCR/Ns are outstanding, whichever is sooner. Urgently required PCR/Ns will be handled on an expedited basis.

#### 1.5 NUMBERING SYSTEM

In the previous PCR identification system, each section of the PIPM was numbered and had a specific letter designated for that section. The letter was used as the first character of the PCR number and followed by a sequential number to identify a specific PCR. An example of changes to Section 8, Drawing Preparation, would be as follows: PCR H-1, H-2, H-3, etc. The present numbering system effective on the revision 1 date of section 1, is as follows: The first number of the PCR/N No., used in block 19 of the PCR/N form, will be the number of the affected procedural section. This number will be followed by a dash preceding a number (starting with 1) which will be in sequential form for each succeeding change. An example of changes to Section 8, Drawing Preparation would be 8-1, 8-2, 8-3 for the first, second, third changes, respectively to section 8.

However, PCR/N numbers that were assigned and cancelled may be later reassigned and therefore out of sequence with respect to the succession of changes.

## GENERAL INFORMATION

**1.6 DISTRIBUTION**

Distribution of the PIPM, revisions, and PCR/Ns is controlled by the PA and is implemented by Document Processing (DP). Document Processing is maintained by Bechtel Publications to handle published project documents. Each copy of the manual has a copy control number, which is used to assign a specific copy to an authorized recipient. Document Processing maintains an updated control register of distributed manuals, and uses a special interoffice memorandum (Exhibit 1-C) as a transmittal form to forward each published issue, revision, or change notice to the recipients listed on the register. The memorandum, in addition to identifying the material being transmitted, has a coupon that the recipient must sign, detach and return to DP to acknowledge receipt. The returned, signed receipts are kept on file by DP.

**1.7 DETAILED PROCEDURES**

See details provided in the Procedure Change and Approval Flow Diagram, Figure 1-1.

GENERAL INFORMATION

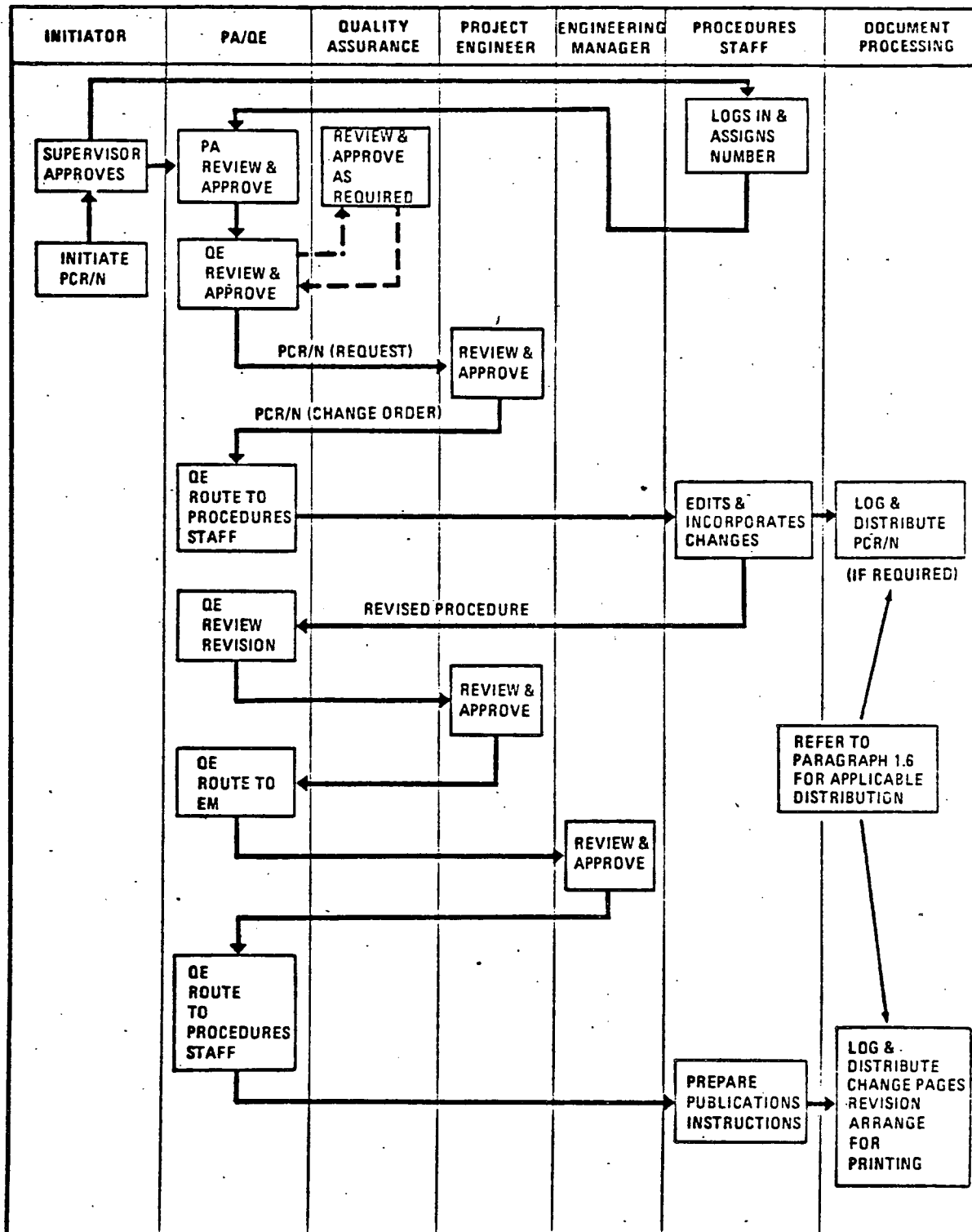


Figure 1-1 PROCEDURE CHANGE AND APPROVAL FLOW DIAGRAM

## GENERAL INFORMATION

SAN ONOFRE NUCLEAR GENERATING STATION UNITS 2 & 3  
NEW PROCEDURE REQUEST  
JOB NO. 10079

PROPOSED TITLE _____				SECTION NO. _____										
MANUAL TITLE. <input type="checkbox"/> PIPM <input type="checkbox"/> PEPM <input type="checkbox"/> _____														
ORIGINATOR/REQUESTOR _____				DATE _____										
<b>PURPOSE OF PROCEDURE</b>														
<input type="checkbox"/> CLARIFY OPERATIONS				<input type="checkbox"/> REG. AGENCY REQUEST: _____										
<input type="checkbox"/> PROJECT MGMT. REQUEST				_____										
<input type="checkbox"/> CLIENT REQUEST: _____				<input type="checkbox"/> RESOLVE AUDIT: _____										
_____				<input type="checkbox"/> OTHER: _____										
_____				_____										
<b>PROCESSING REQUIREMENTS</b> R = REVIEW      A = APPROVE      S = DOCUMENT SIGNATURE														
FUNCTION		R	A	S	FUNCTION		R	A	S	FUNCTION		R	A	S
ENGR. MGR.					CHIEF ENGR.					FIELD QA/QC				
PROJ. MGR.					STARTUP MGR.					CLIENT PM				
PE					QA					CLIENT PE				
APE					QE					CLIENT QA				
EGS					PA									
NUCLEAR EGS					COST/SCHED. ENGR.									
EGL					CONST. MGR.									
CHECKER					PROJ. FIELD ENGR.									
<b>RESPONSIBILITIES</b>														
LOGGING _____ FILING _____														
DISTRIBUTION _____														
<b>DISTRIBUTION</b>														
LIST NO. _____ <input type="checkbox"/> CONTROLLED <input type="checkbox"/> UNCONTROLLED														
<b>REVIEW TRANSMITTAL METHOD</b>														
<input type="checkbox"/> DRN <input type="checkbox"/> IOM <input type="checkbox"/> INFORMAL MEMO <input type="checkbox"/> _____														
<b>CONTENTS TO INCLUDE</b>										<b>REMARKS</b>				
<input type="checkbox"/> FORMS <input type="checkbox"/> SAMPLES										_____				
<input type="checkbox"/> LOGS <input type="checkbox"/> STEP BY STEP PROCEDURE										_____				
<input type="checkbox"/> FLOW DIAGRAMS <input type="checkbox"/> _____										_____				
<b>AUTHORIZATION TO DEVELOP</b>														
_____ PROJECT ENGINEER										_____ DATE				

100 0047 (10/1/79) 1/22

Exhibit 1-A.

NEW PROCEDURE REQUEST

## GENERAL INFORMATION



SAN ONOFRE NUCLEAR GENERATING STATION UNITS 2 &amp; 3

## PROCEDURE CHANGE REQUEST/NOTICE

19. PCR/N NO

AFFECTED DOCUMENT:

1. SHEET 1 OF \_\_\_\_\_

2. SECTION NO. \_\_\_\_\_ 3. TITLE \_\_\_\_\_

4. EXISTING REVISION NO. \_\_\_\_\_ 5. APPROVAL/DISAPPROVAL ACTION REQUIRED BY \_\_\_\_\_

6. REQUESTOR \_\_\_\_\_ 7. DATE \_\_\_\_\_

8. DESCRIPTION OF CHANGE: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

TYPICAL

SUPERVISOR  
9. APPROVAL \_\_\_\_\_ 10. DISCIPLINE/GROUP \_\_\_\_\_ 11. DATE \_\_\_\_\_12. QUALITY ASSURANCE APPROVAL REQUIRED YES ☐ NO ☐

13. PROJECT ADMINISTRATOR APPROVAL \_\_\_\_\_ DATE \_\_\_\_\_

APPROVAL SIGNATURES  
14. QUALITY ASSURANCE \_\_\_\_\_ DATE \_\_\_\_\_

15. QUALITY ENGINEERING \_\_\_\_\_ DATE \_\_\_\_\_

16. OTHER APPROVALS (REQUIRED BY THE PROJECT ENGINEER):

NAME \_\_\_\_\_ TITLE \_\_\_\_\_ DATE \_\_\_\_\_

NAME \_\_\_\_\_ TITLE \_\_\_\_\_ DATE \_\_\_\_\_

17. EFFECTIVITY DATE \_\_\_\_\_

18. PROJECT ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_

PF-691(10079) 12/75

Exhibit 1-B : PROCEDURE CHANGE REQUEST/NOTICE (Sheet 1 of 2)

## GENERAL INFORMATION

PROCEDURE CHANGE REQUEST/NOTICE  
FORM INSTRUCTIONSREQUESTER PROVIDES THE FOLLOWING INFORMATION AND FORM ROUTING:

1. SHEET 1 OF \_\_\_\_\_ - enter total number of pages of the PCR
2. SECTION NO. - section number of the procedure
3. TITLE - the title of the affected procedure
4. EXISTING REVISION NO. - the current revision number of the procedure as indicated on the title page (which may be different from the revision number on the pages changed)
5. APPROVAL/DISAPPROVAL ACTION REQUIRED BY - the date by which this action is to be accomplished
6. REQUESTER - signature of the originator
7. DATE - the form preparation date
8. DESCRIPTION OF CHANGE - briefly describe the change and the reason for such changes. (It is preferable to mark up a copy of the existing procedure with the desired changes noted in red and attach to the form)
9. SUPERVISOR APPROVAL - signature of your supervisor
10. DISCIPLINE/GROUP - the name of discipline or group entered by the supervisor
11. DATE - date of approval by supervisor

PROJECT QUALITY ENGINEER (PQE) OBTAINS THE FOLLOWING APPROVALS:

12. QUALITY ASSURANCE APPROVAL REQUIRED - if the change impacts Nuclear Safety-Related (Quality Class I or II) procedures, check the YES box - otherwise check NO
13. PROJECT ADMINISTRATOR APPROVAL - route to PA for signature and approval date.
14. QUALITY ASSURANCE - signature of QA and approval date if the change impacts Nuclear Safety-Related (Quality Class I or II type) procedures.
15. QUALITY ENGINEERING - signature of PQE or designee and approval date
16. OTHER APPROVALS - PE designates others as deemed necessary to review and approve change. PQE obtains their approvals as required.
17. EFFECTIVITY DATE - PE designates the date that this change is to become effective.
18. PROJECT ENGINEER - PE's signature and date of final approval changes the request to an authorized change  
Upon obtaining all proper approvals, route to the writing group for incorporation.

WRITING GROUP INTERNAL PROCESSING:

19. Log in and assign PCR/N number and incorporate in appropriate procedure.

PF-681(10079) 12/78

Exhibit 1-B PROCEDURE CHANGE REQUEST/NOTICE (Sheet 2 of 2)

Bechtel

Rev. 10 Date 3-9-81

#025  
1023

SAN ONOFRE NUCLEAR GENERATING STATION  
UNITS 2 & 3  
PROJECT INTERNAL PROCEDURES MANUAL

ENGINEERING  
SECTION 14  
CALCULATIONS

Approved by: *A. H. Enright*  
PROJECT ENGINEER

Approved by: *A. J. Quinn*  
ENGINEERING MANAGER

Approved by: *J. H. A.*  
PROJECT MANAGER

## Section 14 - CALCULATIONS

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## CALCULATIONS

The Record of Revisions block on the calculation title sheet shall always show any pages added and the number of the last page; e.g.: "Added Supplement Number 1, pages 1-25", or "Added pages 35-47".

If Revision 1 includes a change in the total number of pages, then the total number of pages, and the number of the last page of the original calculation shall be noted in the space at the bottom of the title page; e.g.: "Rev. 0 comprised 142 pages, pp 1-139, plus pages 27A, 27B, and 27C."

Appendices or attachments comprising pages taken from other documents, calculations, or computer printouts may be included as part of calculations, but the following procedures must be observed:

1. Each page must be numbered, dated, and identified with a title and the calculation number.
2. Each page must be initialed by the responsible engineer to indicate approval of the content.

#### 14.5 REQUIRED APPROVALS

The levels of approval required for an individual calculation depend on the specific function within the overall project design. The EGS is responsible for determination of levels (1) through (4) and for providing a recommendation to the Chief Engineer for levels (5) and (6). The Chief Engineer is responsible for assigning approval levels (5) and (6). (see Paragraph 14.5.1)

##### 14.5.1 DESIGN CALCULATION

Design calculations are those prepared for direct use in developing the final design, and numerical specification parameters. All design calculations require the full signatures of the originating engineer and the assigned checker on the title sheet, plus initials on all subsequent calculation sheets. The signature of the EGS or designee is

mandatory on the title sheet. The Chief Engineer's signature is not required after initial release, unless otherwise decided by the EGS.

10 Calculations covering those phases of a plant design that are critical to plant performance or safety will be recommended by the EGS for review and approval by the Chief Engineer. Chief Engineer's signature not required after initial release, unless otherwise decided by the EGS.

Calculations that require a professional engineer's stamp, or that support nuclear Quality Class I or II design, must be reviewed and approved by the Chief Engineer or his designee.

#### 14.5.2 COMPUTER PROGRAM

The Chief Engineer's approval of computer calculations used to perform design calculations occurs indirectly when the Chief Engineer approves the individual subject calculation. No signoff approval on the individual computer calculation will be made by the Chief Engineer.

Other computer programs, such as those that use timeshare or desk-type calculators, must be approved to the same level as the applicable calculation unless otherwise specified by the EGS.

#### NOTE

Computer input data for pipe-stress calculations that require a Professional Engineers stamp, or that support ASME nuclear Class 1 design, must be checked. Computer input data for pipe-stress calculations that support ASME nuclear Class 2 design will be reviewed by the EGL and checked at his discretion.

#### 14.6 CHECKING AND REVIEW

For the purposes of these procedures, the word "check" is used to indicate a complete technical, mathematical, and procedural verification of the calculation.

## General Atomic Company

QUALITY ASSURANCE DEPARTMENTRecord of Long Distance Telephone Call

Party: Called ☒  
 Calling ☐

Date: Feb 17, 1982

Time: Completed 8:40

Started 8:05

On-line 35 min

Name Mitch Mitchhart

Company Bechtel

Location Whittier - SONG Project Office

Telephone No: A/C213 No. 946 1819 x 352

Discussion - Review of facts, procedures and  
disagreements on subject PFR: F020, 23, 24  
25, 26, & 27. per GA Project Procedure #9 (1-19-82)

F020 - Mitchhart to check why stated Qual.  
Class I procedures should not apply.

F023 - Right of Chief Mechanical Engineer to change  
PIPM procedure and responsibility by memo  
only. No written authority cited. Contrary  
statements in Section 1 of PIPM. No resolution

F024 - Calculation revision at this late date.  
- verbal assurances that these were minor  
clear-up of calculations. No resolution

F025 - Internal revisions not shown on title sheet  
Agreed that final approval covered these  
not required form and

F026 - Incomplete sheet labeling - agreed that  
labeling not per PIPM on some sheets.  
Considering Manual change.

F027 - Page numbering form and intent not followed.  
Procedures don't forbid present practice,  
but create potential weakness - actual  
practice needs to be stated so  
improvement - GA may be instituted

Record Made by N C Hopkins

Distribution: J. S. Sharma, B. Larcher, J. Brenick

POTENTIAL FINDING REPORT  
SONGS 2&3 SEISMIC DESIGN VERIFICATION

A. PREPARATION BY GA INITIATOR

AFFECTED ITEMS:

Piping Analysis for Segment 74

REQUIREMENT REFERENCE DOCUMENTS:

Bechtel's PIPM Section 14.7 Revisions (Rev. 10 date 3-9-81)

BASIC REQUIREMENT:

Revisions follow the same procedure as original calc.

DESCRIPTION OF POTENTIAL FINDING:

1) Page 1B - notes revision not shown on title page; (2) pp 19-22 indicate corrections, no revision generated. Corrections are not dated or initialed.

Agree with Bechtel response - PFR F025 Invalid  
HCHopkins 2-18-82

PREPARED BY: H C Hopkins DATE: 2-1-82 (Task B Procedural Review)

REJECTION OF GA TASK LEADER COMMENTS BY: \_\_\_\_\_ DATE: \_\_\_\_\_

REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: \_\_\_\_\_ DATE: \_\_\_\_\_

B. REVIEW BY GA TASK LEADER

COMMENTS

Agree that PFR should be considered "Invalid"  
per above  
SA 2/18/82

☒ AGREE PF IS VALID

BY J. Berru DATE 2/1/82

☐ REQUEST RE-REVIEW

BY \_\_\_\_\_ DATE \_\_\_\_\_

☐ DISAGREE

BY \_\_\_\_\_ DATE \_\_\_\_\_

☒ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: J. Berru

DATE: 2/18/82

**C. REVIEW BY ORIGINAL DESIGN ORGANIZATION****COMMENTS**

Comments on page 1B generated DT: 5/27/80. Rev. 0 was done on 6/4/80 (final issue). 1B is not a revised sheet but part of original calc.

2. Correction/addition on page 19-22 are reviewer's comments and are not part of any revision. The signature of reviewer/checker appeared on top of the pages. These pages are part of Rev. 0 because checker signed before calc. was released for Rev. 0.

☐ AGREE PF IS VALID

☒ DISAGREE

BY: RR Rogers

DATE: 1/12/82

**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

JUSTIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" \_\_\_\_\_

COMMENT ON "OBSERVATION" CLASSIFICATION \_\_\_\_\_

BY: \_\_\_\_\_

DATE: \_\_\_\_\_

**E. TPT PROJECT MANAGER**

☐ ACCEPT

☐ REJECT

BY: \_\_\_\_\_

DATE: \_\_\_\_\_

2/19/82

JPC

## General Atomic Company

QUALITY ASSURANCE DEPARTMENTRecord of Long Distance Telephone CallParty: Called ☒  
Calling ☐

Date: Feb 17, 1982

Time: Completed 8:40

Started 8:05

On-line 35 min

Name Mitch MitchhartCompany BechtelLocation Whittier - SONG Project OfficeTelephone No: A/C213 No. 946 1819 x 352

Discussion - Review of facts, procedures and  
disagreements on subject PFR: F020, 23, 24  
25, 26, & 27. per GA Project Procedure #9 (1-19-82)

F020 - Mitchhart to check why stated Qual.  
Class I procedures should not apply.

F023 - Right of Chief Mechanical Engineer to exchange  
PIPM procedure and responsibility by memo  
only. No written authority cited. Contrary  
statements in Section I of PIPM. No resolution

F024 - Calculation revision at this late date.

- verbal assurances that these were minor  
clear-up of calculations. No resolutions

F025 - Internal revisions not shown on title sheet

Agreed that final approval covered these

F026 - <sup>not required form and</sup> Incomplete sheet labeling - agreed that

labeling not per PIPM on some sheets.

Considering Manual changes.

F027 - Page numbering form and intent not followed.

Procedures do not forbid present practice.

but create potential weakness - actual

practice needs to be stated so

improvement - GA may be instituted

Record Made by N. C. Noyes

Distribution: J. S. Harman, B. Larcher, J. Aronick

REVIEW BY ORIGINAL DESIGN ORGANIZATION

## COMMENTS

☐ AGREE PF IS VALID☐ DISAGREE

BY: \_\_\_\_\_ DATE: \_\_\_\_\_

D. RECOMMENDATION BY FINDINGS REVIEW COMMITTEEDEFINITION ADEQUACY: ☒ ADEQUATE ☐ INADEQUATEVALIDITY: ☐ VALID ☒ INVALIDCLASSIFICATION: ☐ OBSERVATION ☐ FINDINGJUSTIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" \_\_\_\_\_

COMMENT ON "OBSERVATION" CLASSIFICATION

BY: S. A. Kouty DATE: 2/19/82E. GA PROJECT MANAGER☒ ACCEPT☐ REJECTBY: Shilman DATE: 2/24/82

POTENTIAL FINDING REPORT  
SONGS 2&3 SEISMIC DESIGN VERIFICATION

2408 PFR NO. F026

REVISION --

A. PREPARATION BY GA INITIATOR

AFFECTED ITEMS:

Piping Analysis for Segments 78, 82, 57, 74, 117

REQUIREMENT REFERENCE DOCUMENTS:

Bechtel's PIPM Section 14.4.3 Calculation Sheets (Rev. 10 date 3-9-81)

BASIC REQUIREMENT:

"Calc must be formed on suitable Calc. Sheets (Form LAO 0513 or Form LAO 0514)"

These forms require specific legend information which, if missing, make review difficult.

DESCRIPTION OF POTENTIAL FINDING: The following contain calculations not on calc sheets and missing legend information.

<u>Piping Segment</u>	<u>Pages of Calculations</u>	<u>Improper Sheets</u>
78	44	7
82	23	5
57	28	5
74	17	7
117	30	8

Invalid.  
Agree with Bechtel  
response. See  
F021 for missing  
Legend information  
H C Hopkins 2-18-82

PREPARED BY: H C Hopkins DATE: 2-1-82 (Task B Procedural Review)

REJECTION OF GA TASK LEADER COMMENTS BY: \_\_\_\_\_ DATE: \_\_\_\_\_

REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: \_\_\_\_\_ DATE: \_\_\_\_\_

B. REVIEW BY GA TASK LEADER

COMMENTS

Agree that PFR should be considered "invalid"  
per above.  
SB 2/18/82

☒ AGREE PF IS VALID

BY

J. Brown

DATE

2/1/82

☐ REQUEST RE-REVIEW

BY

DATE

☐ DISAGREE

BY

DATE

☒ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY:

J. Brown

DATE:

2/18/82

**C. REVIEW BY ORIGINAL DESIGN ORGANIZATION****COMMENTS**

Bechtel's review of the calculations cited did not disclose any procedural violations. The potential findings as listed appear to result from a misunderstanding of the procedures as stated in the auditing checklist. For example, Bechtel has no procedural requirement to use forms that look exactly as shown in the manual since they are labeled typical, not mandatory. It is only necessary that the information on the form is typical to that in the manual. Therefore, such pages as spectra curves, DCN's, reference material will be used in the form in which it was developed rather than redrawn to put it into the form shown as typical in the procedure.

☐ AGREE PFR IS VALID☒ DISAGREEBY: *DR*DATE: 2/12/82**D. RECOMMENDATION BY FINDINGS REVIEW COMMITTEE**

DEFINITION ADEQUACY:

☐ ADEQUATE☐ INADEQUATE

VALIDITY:

☐ VALID☐ INVALID

10 CFR 21:

☐ NOT APPLICABLE☐ APPLICABLE

10 CFR 50.55(e):

☐ NOT APPLICABLE☐ APPLICABLE

CLASSIFICATION:

☐ OBSERVATION☐ FINDINGJUSTIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" \_\_\_\_\_

COMMENT ON "OBSERVATION" CLASSIFICATION \_\_\_\_\_

BY: \_\_\_\_\_

DATE: \_\_\_\_\_

**E. TPT PROJECT MANAGER**☐ ACCEPT☐ REJECT

BY: \_\_\_\_\_

DATE: \_\_\_\_\_

QUALITY ASSURANCE DEPARTMENTRecord of Long Distance Telephone CallParty: Called ☒  
Calling ☐Date: Feb 17, 1982Time: Completed 8:40Started 8:05On-line 35 minName Mitch MitchhartCompany BechtelLocation Whittier - SONG Project OfficeTelephone No: A/C213 No. 946 1819 x 352

Discussion - Review of facts, procedures and  
disagreements on subject PFR: F020, 23, 24  
25, 26 & 27. per GA Project Procedure #9 (1-19-82)

F020 - Mitchhart to check why stated Qual.  
Class I procedures should not apply.

F023 - Right of Chief Mechanical Engineer to change  
PIPM procedure and responsibility by memo  
only. No written authority cited. Contrary  
statements in Section I of PIPM. No resolution

F024 - Calculation revision at this late date.  
- verbal assurances that these were minor  
clear-up of calculations. No resolution

F025 - Internal revisions not shown on title sheet

Agreed that Final approval covered those  
not required form and

F026 - Incomplete sheet labeling - agreed that  
labeling not per PIPM on some sheets.  
Considering Manual change.

F027 - Page numbering form and intent not followed.  
Procedures do not forbid present practice,  
but create potential weakness - actual  
practice needs to be stated so  
improvement ~~GA~~ may be instituted

Record Made by H. C. NoykenDistribution: J. S. Harman, B. Larcher, J. Brenick

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☐ FINDINGJUSTIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" \_\_\_\_\_

COMMENT ON "OBSERVATION" CLASSIFICATION

BY: S. D. KoutzDATE: 2/19/82E. GA PROJECT MANAGER☒ ACCEPT☐ REJECTBY: GH WeissmanDATE: 2/24/82

POTENTIAL FINDING REPORT  
SONGS 2&3 SEISMIC DESIGN VERIFICATION

2408 PFR NO. F030

REVISION A

A. PREPARATION BY GA INITIATOR

AFFECTED ITEMS:

Calculations C270-01-02 and C270-01-03 (Cable Tray Hanger Calc)

REQUIREMENT REFERENCE DOCUMENTS:

Bechtel Project Internal Procedures Manual, Sec. 14.3, Rev. 10, 3/9/81

BASIC REQUIREMENT:

Each calculation must be identified with a calculation number and file number.

DESCRIPTION OF POTENTIAL FINDING:

Calculations C270-01-02 and C270-01-03 have only eight digits which is contrary to the 9 digit example given in PIPM. However, there are no written requirements which specify that the calculations must be identified with a 9-digit number.

PREPARED BY: [Signature] DATE: 2-16-82

REJECTION OF GA TASK LEADER COMMENTS BY: \_\_\_\_\_ DATE: \_\_\_\_\_

REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: \_\_\_\_\_ DATE: \_\_\_\_\_

B. REVIEW BY GA TASK LEADER

COMMENTS

PA should be checked based on this review

INVAID

AGREE PF IS VALID AD

BY [Signature] DATE 2/15/82

☐ REQUEST RE-REVIEW BY \_\_\_\_\_ DATE \_\_\_\_\_

☐ DISAGREE BY \_\_\_\_\_ DATE \_\_\_\_\_

☐ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: \_\_\_\_\_ DATE: \_\_\_\_\_

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☐ FINDINGJUSTIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" \_\_\_\_\_

COMMENT ON "OBSERVATION" CLASSIFICATION

BY: S. L. Koutz DATE: 2/19/82E. GA PROJECT MANAGER☒ ACCEPT☐ REJECTBY: Al Wimmer DATE: 2/24/82

POTENTIAL FINDING REPORT  
SONGS 2&3 SEISMIC DESIGN VERIFICATION

2408 PFR NO. F030

REVISION --

A. PREPARATION BY GA INITIATOR

AFFECTED ITEMS:

Calculations C270-01-02 and C270-01-03 (Cable Tray Hanger Calculations)

REQUIREMENT REFERENCE DOCUMENTS:

Bechtel Project Internal Procedures Manual, Section 14.3, Rev. 10, 3-9-81.

BASIC REQUIREMENT:

Calculations are identified with a nine digit number, e.g., C256-2-02-01. Some disciplines have only the first five digits.

DESCRIPTION OF POTENTIAL FINDING:

Calculations C270-01-02 and C270-01-03 have only eight digits.

PREPARED BY *[Signature]* DATE: 1-2-82

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 2/2/82

☐ REQUEST RE-REVIEW

BY \_\_\_\_\_ DATE \_\_\_\_\_

☐ DISAGREE

BY \_\_\_\_\_ DATE \_\_\_\_\_

☒ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: *[Signature]* DATE: 2/15/82

**C. REVIEW BY ORIGINAL DESIGN ORGANIZATION****COMMENTS**

- Project Internal Procedures Manual has no requirement for the use of any specific quantity of numbers in identifying a calculation. An example is provided but this does not imply any specific quantity of numbers. The only requirement is that the number provide ready retrievability.

☐ AGREE PFR IS VALID☒ DISAGREE

SHE

BY: Paul B. MarkDATE: 2/8/82**D. RECOMMENDATION BY FINDINGS REVIEW COMMITTEE**

DEFINITION ADEQUACY:

☐ ADEQUATE☐ INADEQUATE

VALIDITY:

☐ VALID☐ INVALID

10 CFR 21:

☐ NOT APPLICABLE☐ APPLICABLE

10 CFR 50.55(e):

☐ NOT APPLICABLE☐ APPLICABLE

CLASSIFICATION:

☐ OBSERVATION☐ FINDING

JUSTIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" \_\_\_\_\_

COMMENT ON "OBSERVATION" CLASSIFICATION \_\_\_\_\_

BY: \_\_\_\_\_ DATE: \_\_\_\_\_

**E. TPT PROJECT MANAGER**☐ ACCEPT☐ REJECT

BY: \_\_\_\_\_ DATE: \_\_\_\_\_

POTENTIAL FINDING REPORT  
SONGS 2&3 SEISMIC DESIGN VERIFICATION

PFR NO. 2408-PFR-F033

REVISION \_\_\_\_\_

A. PREPARATION BY GA INITIATOR

AFFECTED ITEMS: Design criteria for Seismic Class I Cable Raceway Support System  
(Bechtel calculations No, C270-01-02 and C270-01-03)

REQUIREMENT REFERENCE DOCUMENTS:

1. SONGS FSAR 3.8.4.2.3.B Amendment 18 4/80
2. SONGS Project Design Criteria Manual Section 2.2 Civil/Structural Rev. 2, 5/21/76
3. Globe Strut Catalog G-643/USG/Rev. 12/80 p. 71

BASIC REQUIREMENT:

Please see attachment number 1.

DESCRIPTION OF POTENTIAL FINDING:

Detailed description of this PFR is given in attachment No. 2.

PREPARED BY: R. T. Sun *RTS* DATE: 2/3/82.

REJECTION OF GA TASK LEADER COMMENTS BY: \_\_\_\_\_ DATE: \_\_\_\_\_

REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: \_\_\_\_\_ DATE: \_\_\_\_\_

B. REVIEW BY GA TASK LEADER

COMMENTS

*Globe Strut test data have been received.  
Re-review this PFR.*

*The Globe strut test data have been evaluated in conjunction with PFR-009 which has been classified as a Finding by the Findings Review Committee. The committee has suggested that the Corrective Action Plan address general concerns, including use of general catalog data. In subsequent discussions with BPC on PFR-009, it is now considered that the subject of PFR-F033 is adequately covered by the on-going actions on PFR-009. It is therefore recommended that PFR-F033 be invalidated. RTS 2/22/82*

AGREE PFR IS VALID BY \_\_\_\_\_ DATE \_\_\_\_\_

☒ REQUEST RE-REVIEW BY *RTS* DATE 2/5/82

☐ DISAGREE BY \_\_\_\_\_ DATE \_\_\_\_\_

☐ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: \_\_\_\_\_ DATE: \_\_\_\_\_

*Concur with initiator's re-evaluation to invalidate PFR. 12/23*

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☐ FINDINGJUSTIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" \_\_\_\_\_

COMMENT ON "OBSERVATION" CLASSIFICATION

*Covered by PFR 009*BY: *S. L. Kouly*DATE: *2/24/82*E. GA PROJECT MANAGER☒ ACCEPT☐ REJECTBY: *Sh. W. Warner*DATE: *2/25/82*

Attachment No. 1

PFR No. 2408-PFR-0033

Revision \_\_\_\_\_

Basic Requirement

SONGS FSASR 3.8.4.2.3B states: "Project design and construction specifications prepared for SONGS Units 2 and 3 should emphasize important points of the industry standards for the design and construction of the Seismic Category I Structures, and reduce options that otherwise would be permitted by the industry standards. Unless specifically noted otherwise, these specifications do not deviate from the applicable industry standards. They cover the following subject headings:

Miscellaneous Steel and Embedded Material

*In addition,*

^ Appropriate industry standards for seismic Category I Structures should base allowable load ratings on a conservatively derived envelope of loading conditions and should be based on either testing (with results in certified test reports) or analyses of those conditions.

Attachment No. 2

PFR No. 2408-PFR-F033

Revision\_\_\_\_\_

Per Requirement Reference Documents 1 and 2, the Design of Seismic Category I Cable Raceway Support System for SONGS Units 2 and 3 must conform to applicable codes, industry standards and specifications, as outlined in FSAR 3.8.4.2.3 and SONGS Project Design Criteria Manual. It has been found that the calculations on the design of the Raceway Support System make extensive use of design allowables from Globe Strut Catalog (Ref. 3) as the basis for the design. Attachment No. 3 ( 2 pages) shows sample calculation sheets of Bechtel CAL C270-01-03, Sheet 118 and CAL C270-01-02, Sheet 364 using Globe Strut Catalog pullout allowables. Attachment 4 shows the indicated Globe Strut pullout allowable load ratings. For CI-3812 the indicated allowable pullout load is 2474 lb in any 12 inch length. There is no test data, certified test report, or analyses contained in that catalog to indicate the bases for the indicated load, and to demonstrate that the load envelopes all conditions of shear and pullout which can exist in every 12 inch length. Alternatively, there is no indication in the calculation that BPC has such data in their records.

SIGNATURE R. Wunderlich DATE 4/16/76CHECKED D. Tatum DATE 4/20/76PROJECT SONGS 2<sup>nd</sup> E3JOB NO. 10079-003SUBJECT ELECTRICAL CONDUIT SUPPORTSSHEET 113 OF 446ATTACHMENT NO. 3PER NO. 240B-PFR-4033PAGE 1 OF 2H2 DIRECTION

FROM THE GLOBE STRUT CATALOG, THE ALLOWABLE  
PULLOUT LOAD PER FOOT OF EMBEDMENT (S.F.=2.0)  
FOR A CL-5812 EMBEDDED STRUT IS

$$2370 \text{ lb} >> 454.5 \text{ OK}$$

VL DIRECTION

FORCES IN THIS DIRECTION ARE RESISTED BY BEARING  
OF THE STRUT ON THE CONCRETE.

$$\text{BEARING AREA} = (12 \times 1\frac{1}{2}) = 17.5 \text{ in}^2$$

$$\text{ALLOWABLE BEARING} = (85 \times \phi \times f_c) = (85 \times .7 \times 4000) = 2380 \text{ PSI}$$

$$\text{ALLOWABLE BEARING FORCE} = (17.5 \times 2380) = 46.4 \text{ KIPS/ft OF EMBEDMENT}$$

$$>> .54 \text{ K/ft OK}$$

THIS SUPPORT IS CAPABLE OF TAKING THE MAXIMUM POSSIBLE  
LOADS (ASSUMING THE SUPPORT IS FULLY LOADED WITH 4"  
CONDUITS) IN ANY OF THE THREE DIRECTIONS. SINCE THE  
ALLOWABLE LOADS IN ANY OF THE THREE DIRECTIONS ARE  
MUCH GREATER THAN THE MAXIMUM ACTUAL LOADS IT IS  
ASSUMED THAT THE SUPPORT IS ALSO CAPABLE OF TAKING  
THE SIMULTANEOUS APPLICATION OF THE MAXIMUM LOADS IN  
THE H1 AND VL DIRECTIONS AND ALSO THE SIMULTANEOUS  
APPLICATION OF THE MAXIMUM LOADS IN THE H2 AND VL  
DIRECTIONS.

THE SUPPORT CAPACITY IS DEFINED BY THE MAXIMUM  
POSSIBLE HORIZ. SEISMIC LOAD PER FOOT OF EMBEDMENT  
ASSUMING THE MAXIMUM SUPPORT SPACING OF 8'. THE MAX. HORIZ  
SEISMIC LOAD IS 454.5 lb/ft OF EMBEDMENT (SAY 460)

SUPPORT CAPACITY,  $W_{max} = 460 \text{ lb/ft OF STRUT EMBEDMENT}$

NOTE: THIS SUPPORT CAPACITY IS APPLICABLE FOR VERTICAL OR HORIZONTAL  
CONDUIT RUNS

SIGNATURE J.M. Murphy DATE 8-20-75

CHECKED T. Brown DATE 11-2-75

PROJECT SONGS #1 & #3

JOB NO. 100793000

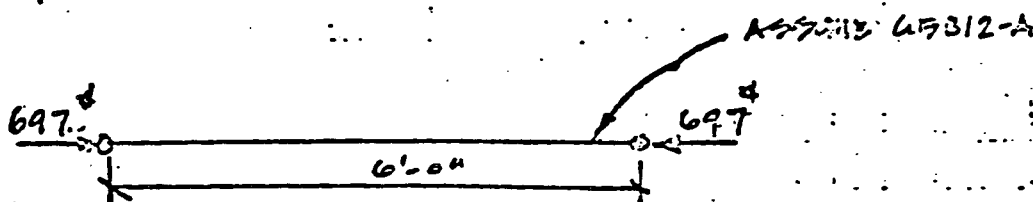
SUBJECT STEEL W/ I W/ TRAY SUPPORTS

SHEET 264 OF 27

ATTACHMENT NO. 3  
PAGE 2 OF 2

PER NO. 2408-PER-FO33  
REV.

CHECK LOADING TO LONGITUDINAL BRACING.  
@ PT. B. TWO BRACES EFFECTIVE. ASSUMES  
COMPRESSION. MAX. LENGTH APPROX. 6'



$$\frac{KL}{r_g} = \frac{(1.0)(6')12}{0.59"} = 122.0 < 200 \text{ O.K.}$$

$$F_a = 0.522 F_y - \left( \frac{F_y \times KL/r_g}{1494} \right)$$

$$= 0.522 \times 33 - \left( \frac{33 \times 122}{1494} \right)$$

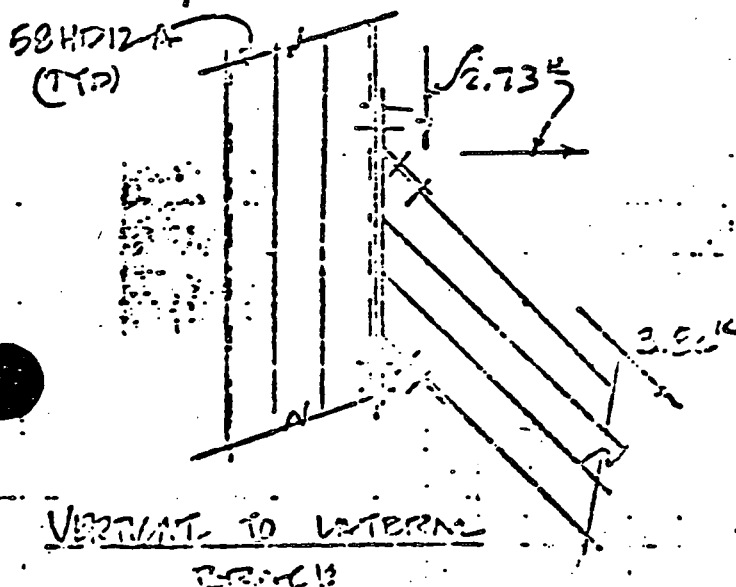
$$= 9.96 \text{ ksi}$$

$$f_a = \frac{697\#}{1.04 \text{ in}^2} = 670 \text{ psi} < 9,960 \text{ psi O.K.}$$

USE C5312-A FOR LONGITUDINAL BRACING

### CHECK CONNECTIONS

### SUP RESISTANCE



$$C5312 \text{ W/ } 1/2" \text{ BOLT} = 1121 \text{ #/BOLT} \times 1.33$$

$$= 1491 \text{ #/BOLT}$$

$$\frac{3800\#}{1491 \text{ #/BOLT}} = 2.59 = 3 - \text{BOLTS}$$

BY INSPECTION VERTICAL AND  
HORIZ. LOADS O.K. FOR  
CONNECTION.

FLOOR CONNECTIONS

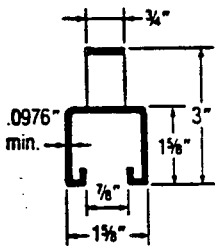
$$\text{PULL-OUT C5312} = 2474 \text{ #}$$

$$\text{IN ANY 12" LENGTH} = 3,290\#$$

$$3,290\# > \text{O.K.}$$



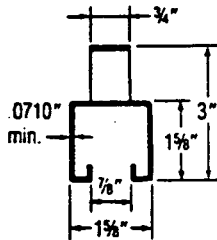
## CONTINUOUS CONCRETE INSERTS AND ACCESSORIES



**CI-5812 Series**  
(allowable single-point  
pullout load: 2370 lb.\*)

Cat. No.	Length
CI-5812-8	8"
CI-5812-12	12"
CI-5812-16	16"
CI-5812-24	24"
CI-5812-32	32"
CI-5812-40	40"
CI-5812-48	48"
CI-5812-72	72"
CI-5812-80	80"
CI-5812-96	96"
CI-5812-120	120"
CI-5812-144	144"
CI-5812-168	168"
CI-5812-192	192"
CI-5812-216	216"
CI-5812-240	240"

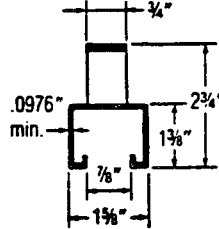
\*One load only applied in any 12-in  
length, factor of safety=2.0.



**CI-5814 Series**  
(allowable single-point  
pullout load: 1565 lb.\*)

Cat. No.	Length
CI-5814-8	8"
CI-5814-16	16"
CI-5814-24	24"
CI-5814-32	32"
CI-5814-40	40"
CI-5814-48	48"
CI-5814-72	72"
CI-5814-80	80"
CI-5814-96	96"
CI-5814-120	120"
CI-5814-144	144"
CI-5814-168	168"
CI-5814-192	192"
CI-5814-216	216"
CI-5814-240	240"

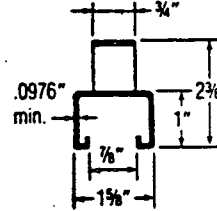
\*One load only applied in any 12-in  
length, factor of safety=2.0.



**CI-3812 Series**  
(allowable single-point  
pullout load: 2474 lb.\*)

Cat. No.	Length
CI-3812-8	8"
CI-3812-12	12"
CI-3812-16	16"
CI-3812-24	24"
CI-3812-32	32"
CI-3812-40	40"
CI-3812-48	48"
CI-3812-72	72"
CI-3812-80	80"
CI-3812-96	96"
CI-3812-120	120"
CI-3812-144	144"
CI-3812-168	168"
CI-3812-192	192"
CI-3812-216	216"
CI-3812-240	240"

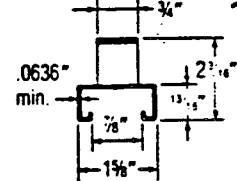
\*One load only applied in any 12-in  
length, factor of safety=2.0.



**CI-1012 Series**  
(allowable single-point  
pullout load: 2412 lb.\*)

Cat. No.	Length
CI-1012-8	8"
CI-1012-12	12"
CI-1012-16	16"
CI-1012-24	24"
CI-1012-32	32"
CI-1012-40	40"
CI-1012-48	48"
CI-1012-72	72"
CI-1012-80	80"
CI-1012-96	96"
CI-1012-120	120"
CI-1012-144	144"
CI-1012-168	168"
CI-1012-192	192"
CI-1012-216	216"
CI-1012-240	240"

\*One load only applied in any 12-in  
length, factor of safety=2.0.

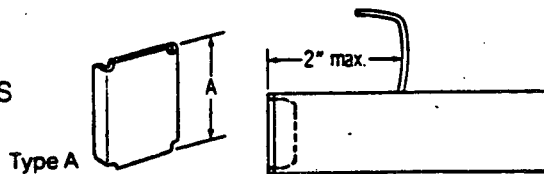


**CI-1315 Series**  
(allowable single-point  
pullout load: 1202 lb.\*)

Cat. No.	Length
CI-1315-8	8"
CI-1315-16	16"
CI-1315-24	24"
CI-1315-32	32"
CI-1315-40	40"
CI-1315-48	48"
CI-1315-72	72"
CI-1315-80	80"
CI-1315-96	96"
CI-1315-120	120"
CI-1315-144	144"
CI-1315-168	168"
CI-1315-192	192"
CI-1315-216	216"
CI-1315-240	240"

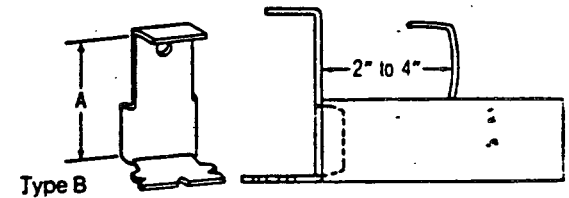
\*One load only applied in any 12-in  
length, factor of safety=2.0.

# END CAPS FOR CONCRETE INSERTS AND CHANNELS



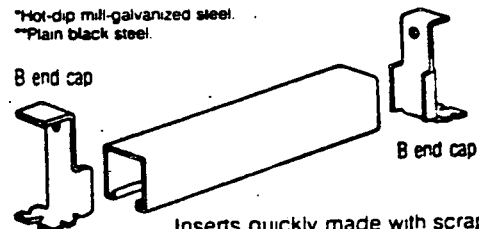
Cat. No.	Use with Channel	Dimension
G-9023	G-9028	A
G-9024	G-9029	A
G-9025	G-9030	A
G-9026	G-9031	A
G-9027	G-9032	A

\*Hot-dip mill-galvanized steel.  
\*\*Plain black steel.



Cat. No.	Use with Channel	Dimension
G-9210	G-9215	A
G-9211	G-9216	A
G-9212	G-9217	A

\*Hot-dip mill-galvanized steel.  
\*\*Plain black steel.



POTENTIAL FINDING REPORT  
SONGS 2&3 SEISMIC DESIGN VERIFICATION

PFR NO. 2408-PFR-F-055

REVISION \_\_\_\_\_

A. PREPARATION BY GA INITIATOR

AFFECTED ITEMS: Pipe Support 167, 203, 826, 152, 200, 52, 166, 178, 93, 77, 466, 146  
(GA item 23, 30, 32, 27, 29, 24, 21, 28, 26, 25, 31, 22)

REQUIREMENT REFERENCE DOCUMENTS:

PIPM Section 14.7, Rev. 10 (dated 3/9/81)

BASIC REQUIREMENT:

Revisions must be recorded in the control logs within 15 working days.

Please Void  
This is a duplicate of F068  
Warner Choahui Jr  
2-22-82

DESCRIPTION OF POTENTIAL FINDING:

A check of the Project files showed that the calculations for the above were being revised (revision 2) and the documentation was not complete. The title sheet for Calc No. P 450-1.44 was not approved for Rev. 2. Also Calc No. P-450.1.50. These calculations include all of the above affected items. Attached are title sheets for -1.44 and -1.50.

PREPARED BY: W C Hopkins Jr DATE: 2-11-82

REJECTION OF GA TASK LEADER COMMENTS BY: \_\_\_\_\_ DATE: \_\_\_\_\_

REJECTION OF ORIGINAL DESIGN ORG. COMMENTS BY: \_\_\_\_\_ DATE: \_\_\_\_\_

B. REVIEW BY GA TASK LEADER

COMMENTS

This is a duplicate of F068. Two  
numbers were taken out by mistake  
SB 2/24/82

PFR is invalid. SB 2/24/82

AGREE PF IS VALID

BY J. Bretnal DATE 2/19/82

☐ REQUEST RE-REVIEW

BY \_\_\_\_\_ DATE \_\_\_\_\_

☐ DISAGREE

BY \_\_\_\_\_ DATE \_\_\_\_\_

☐ REVIEW OF ORIGINAL DESIGN ORGS. COMMENTS BY: \_\_\_\_\_ DATE: \_\_\_\_\_

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☐ FINDINGJUSTIFICATION:

CLASSIFICATION CRITERION NO. RESULTING IN "FINDING" \_\_\_\_\_

COMMENT ON "OBSERVATION" CLASSIFICATION

*PFR is Exact duplicate of PFR F068*BY: *S. J. Kouz*DATE: *2/24/82*E. GA PROJECT MANAGER☒ ACCEPT☐ REJECTBY: *Shl Werman*DATE: *2/25/82*

F055

# CALCULATION TITLE SHEET

SONGS UNITS 2E3 JOB NO. 10079-007  
SUBJECT PIPE SUPPORTS CK CALLS SUS 2 BHA  
SHEET 1 OF 4800  
DISCIPLINE PL  
FILE NO. P-450  
CALC. NO. P-450-1.44  
QUALITY CLASSIF. I  $\Delta$   
NO. LAST PAGE 11  
ORIGINATOR SIG. [Signature] DATE 4/3/80  
CHECKER SIG. [Signature] DATE 7-3-80  
LEVEL OF REVIEW [1] [2] [3] [4] [5] [6] CHECK AS REQUIRED

P.E. STAMP IF REQ'D

ORIGINAL ISSUE

	NAME	DATE	SIGNATURE
3 GROUP LEADER	RUSSELL DALBY	7/3/80	[Signature]
4 EGS	Salah Mohamed	7-3-80	[Signature]
5 SPECIALIST			
6 CHIEF			
OTHER			

RECORD OF REVISIONS

REVISION	DATE	ENG.	CKR	EGL	EGS	SPEC.	CHIEF
1 CORRECTED QUALITY CLASSIF.	5-15-81	SR	[Signature]	[Signature]	SAM		
2 CONFORMED CALC TO PSDL							

FOR CRITERIA & PROCEDURES SEE CALL NO P450-010  
THIS CALCULATION INCLUDES CALL P450-1.44-1 Thru  
P-450-1.44-771  
Rev A includes adding supplements 772 & 773  
- pipe support design. [Signature]

FOR CIVIL/STRUCTURAL  
VERIFICATION OF THE  
BUILT CONDITION,  
SEE CALC. NO. P-450-1.109

# CALCULATION TITLE

THIS PACKAGE WAS PICKED UP  
FROM BECHTEL ON 2/8/1982  
IT IS APPLICABLE TO  
ITEM 21 & 22 SHEET 1 OF 1770

SONGS UNIT 282 JOB NO. 10079-002 DISCIPLINE 41D  
SUBJECT PIPE SUPPORTS C/S CALCS SUS 2 B3C FILE NO. P-450

CALC. NO. P-450-1.50

① ORIGINATOR SIG. [Signature] DATE 3/3/80 QUALITY CLASSIF. I A ✓

② CHECKER SIG. [Signature] DATE 7/3/80 NO. LAST PAGE 4

LEVEL OF REVIEW [X] [X] [X] [X] [X] [X] CHECK AS REQUIRED 1 of

P.E. STAMP IF REQ'D

## ORIGINAL ISSUE

	NAME	DATE	SIGNATURE
③ GROUP LEADER	RUSSELL DALLY	7/3/80	[Signature]
④ EGS	Salah mohamed	7-3-80	[Signature]
⑤ SPECIALIST			
⑥ CHIEF			
OTHER			

## RECORD OF REVISIONS

REVISION	DATE	ENG.	CKRN	EGL	EGS	SPEC.	CHIEF
CORRECTED QUALITY CLASSIF.	5-15-8	SR	P. Viny	1/11/8	SAM		
CONFIRMED CALCS TO PSDL							

FOR CRITERIA E PROCEDURES SEE CALL P450-01D  
THIS CALCULATION INCLUDES CALL P450-1.50-1 THRU  
P-450-1.50-335.

Rev. A includes re-calc for supplement(s) 7

FOR CIVIL/STRUCTURAL  
VERIFICATION OF THE  
AS-BUILT CONDITION,  
SEE C.I.C. NO. P-450-1

109