



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

Docket No. 50-275

JUL 11 1984

MEMORANDUM FOR: Richard H. Vollmer, Director
Division of Engineering
Office of Nuclear Reactor Regulation

FROM: James M. Taylor, Deputy Director
Office of Inspection & Enforcement

SUBJECT: EFFECTIVENESS OF QA PORTION OF THE DIABLO CANYON IDVP

In your memorandum of June 25, 1984, you requested confirmation that, for the extent of the Reedy audit of the Diablo Canyon IDVP, the findings of the audit were not in conflict with Mr. Yin's findings. Our assessment is that the RFR, Inc. audit results do not conflict with Yin's findings.

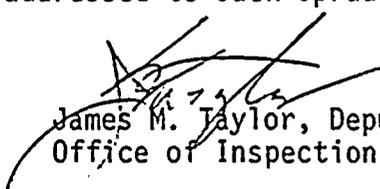
Based on your request and a telephone conversation on the afternoon of July 2 between Ted Sullivan of your staff and Jack Spraul of the QA Branch, we have reviewed the enclosures of your memo (particularly ITR-41) and Mr. Yin's findings as reported in his March 29, 1984 "Draft Investigation/Inspection Report," and his draft summary of findings of the same date. A comparison is given in the enclosure to this memorandum. The left column of the enclosure lists Mr. Yin's draft "Summary of Findings...." dated March 29, 1984. The right column reflects similar findings of the RFR, Inc. audit taken from ITR 41, Appendix G, "Corrective Action Program Conditions and Resolutions."

We conclude that the Yin audits and the RFR, Inc. audits located some similar areas of concern. For example, Mr. Yin's finding A indicates that he found inadequate indoctrination and training. RFR, Inc. reports a similar concern based on a review of training records.

There are areas in the right column of the enclosure where specific findings of Mr. Yin are not reflected in ITR-41. There is, however, some correspondence in 7 of the 8 general areas of Mr. Yin's concerns. In light of the sampling nature of the audit process, specific findings of Mr. Yin not being reflected in ITR-41 is not surprising. If the roles were reversed (i.e., if the ITR-41 findings were listed and the correspondence of Mr. Yin's findings shown) similar comments would be observed. Thus, we conclude that the specific findings of the RFR, Inc. audit do not appear to be in conflict with Mr. Yin's findings. Since Mr. Yin's audits (11/83-3/84) were conducted about a year after the RFR, Inc. audits (10/82-3/83), this could reflect a lack of effective corrective action.

Any questions on the above should be addressed to Jack Spraul on X-24530.

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James M. Taylor, Deputy Director
Office of Inspection and Enforcement

Enclosure: As stated

APR 11

APR 11 1964

Mr. Yin's Findings

- A. There were inadequate provisions in the program for personnel indoctrination and training. The small bore pipe support engineers were not familiar with important elements in both the QA and technical programs.
1. In the area of general technical and QA training, the program permits personnel performing safety-related design work w/o training up to 30 days.
 2. No measures or program provisions established to ensure adequate special training for the working staff on matters such as procedure revisions and problem trendings.
- B. QA program deficiencies and design nonconformances had not been identified and corrected promptly.
1. Site design organization management was insensitive to staff concerns, and did not initiate timely corrective actions.
 2. Lack of project timely response to PG&E QA findings. The delays were w/o justification.
 3. Lack of PG&E management attention to ensure timely responses to the audit findings.
 4. Bechtel audit finding corrective action scheduled completion dates were delayed without documented justification.
 5. Lack of PG&E audit finding corrective actions to identify the cause of the problem and the measures needed to prevent recurrence.
 6. Project corrective action only addressed specific problem areas identified in the PG&E audit findings and did not consider generic implication of the problems. QA concurred with this apparently inadequate corrective action.
 7. Inadequate Bechtel QA verification of OPEG corrective actions prior to close-out of audit findings. OPEG Personnel training continued to be inadequate.
 8. Lack of PG&E QA program measures to evaluate the effects of program efficiencies resulting in long delay of QA finding corrections prior to IDVP and CAP actions.
- C. Document control deficiencies were observed at the site design organizations.
1. Engineers were using out-of-date procedures for performing calculations.
 2. Inter-office memorandums were issued in lieu of procedures that bypassed review and approval process.
 3. Site Quality Engineer and Support Group Leader maintained outdated listings of the latest work procedure.

Corresponding RFR, Inc. Findings

A review of training records revealed that 9 engineers who had been scheduled for training at least three times since September 22, 1982 had not yet attended the training session. Also, one of three Bechtel staff members had not been to a training session and the personnel records were not complete for the three staff members.

Engineering non-conformance (Deficiency Reports, DR) do not appear to have been reviewed in a timely manner by QA; many DRs were observed to be past the close-out date. No evidence of requests for extensions of close-out dates could be located. (The time extensions are required to be initiated by the Engineering Chiefs).

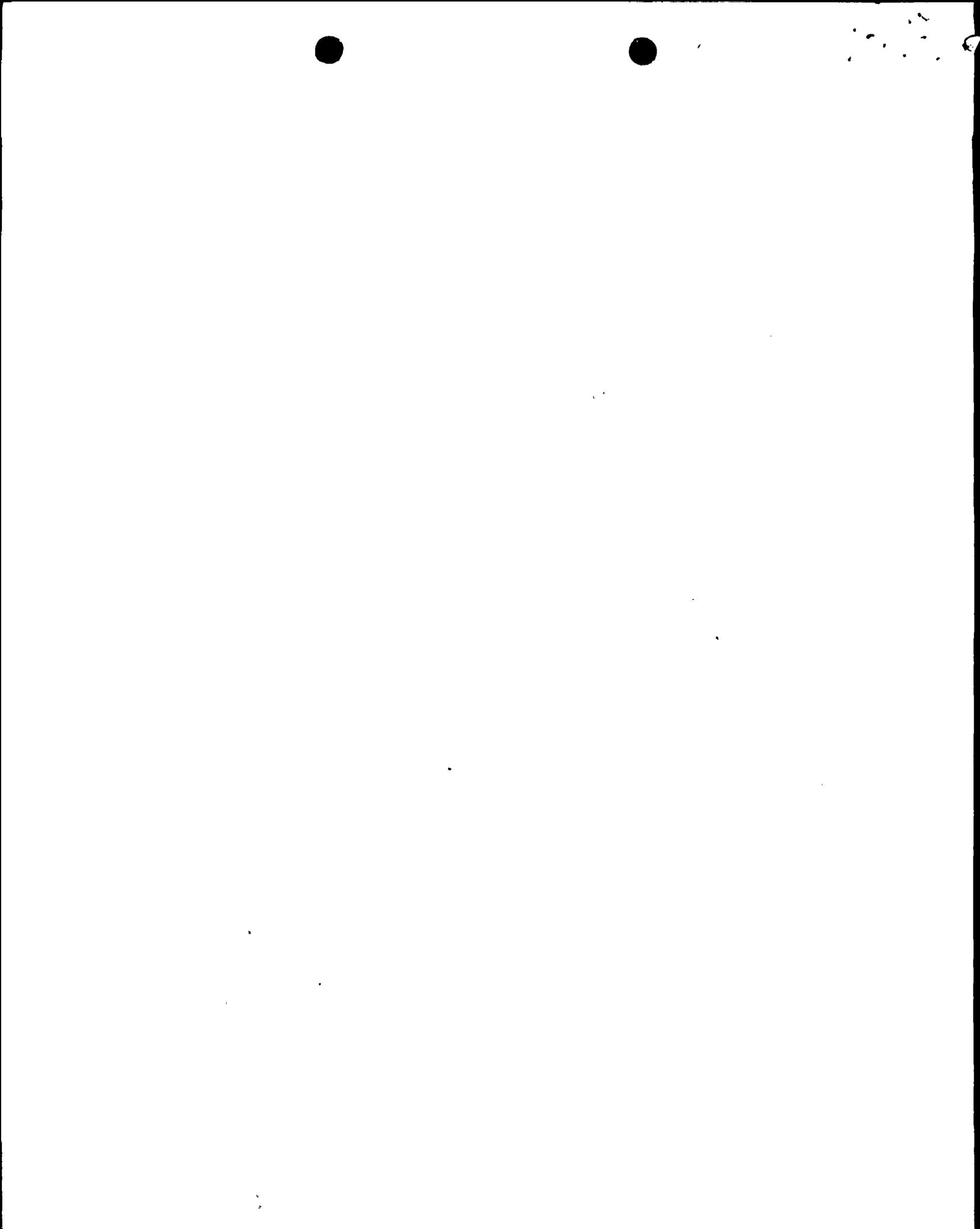
Follow-up action had not yet been taken at the time of the audit.

A report for the first audit of DCP Site Engineering conducted by PG&E appeared not to have been issued within 30 days as required.

The manual of implementing Procedures, Instructions and Design Criteria Memoranda (DCM) had instances of non-compliance with the requirements of EMP 5.2 for procedure preparation, approval, issue, and control. Fourteen examples cited.

Appendix J & K to DCM M-9 had been replaced by memos.

General comment - The date of effectivity, as listed in the Table of Contents, was not specified in or on the Procedure Cover Sheet. The "Approved by" signature last entered did not always agree with the Table of Contents effectivity date.



4. Design personnel was performing calculations without having adequately controlled procedures for extended periods of time.

Procedural definition for small bore piping design packages had not yet been issued. Eighteen receipt acknowledgment cards had not been returned.

These generic DCN's had not followed the consultant and safety review requirements of procedure 3.60N.

D. There had been inadequate or lack of procedures for the design organizations.

Procedural definition for small bore piping design packages had not yet been issued.

1. Lack of provision to handle and resolve field initiated design questions and requests by the PG&E home office.
2. Lack of prescription of the limited conditions where piping thermal stresses could be released by installation of gaps within rigid restraints.
3. Inadequate stress walkdown inspection program to ensure freedom of interferences. Procedures did not fully incorporate IEB 79-14 requirements, and the acceptance criteria were relying on design piping movement predictions that were not always observed to be accurate.
4. Ways that support joint loading can be reduced at structure connection were not prescribed. Unacceptable pin joint models were observed.
5. Lack of "Tolerance Clarification" procedural prescription on what could be "quickly fixed" at site without major revision of the existing calculations.
6. Lack of sufficient references and engineering data for the site engineers to perform calculations that had resulted in personnel reliance on uncontrolled outside materials.

There was no documented statement identifying which designs were required to have design verification by the Site Engineering Group.

E. Deficiencies observed that could have been the results of personnel not following the procedures.

Several instances noted where procedures were not followed. For example:

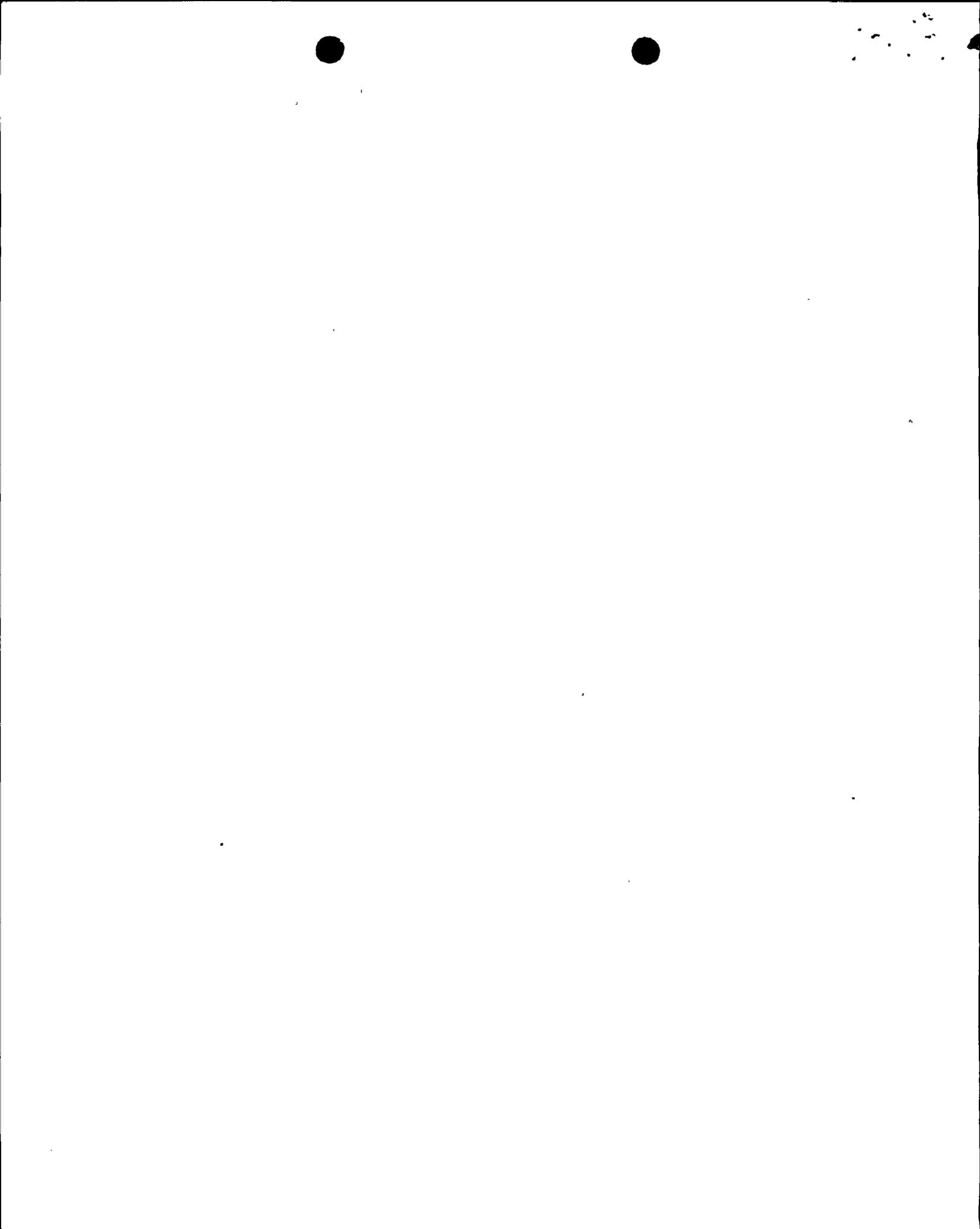
1. Lack of S/B support calculation checks resulted in errors unrevealed.
2. "Preliminary" data identification and subsequent review of the calculation against final data were not done.
3. Personnel Training was not requested by the supervisors in a timely manner.
4. Stress walkdown inspections failed to identify all unintentional piping restraints.

The Signature Register had not been completed.

No evidence could be found that the Chief responsible for the Piping Discipline had provided formal DCCL approval at the time of the audit.

F. There had been design control deficiencies identified during the program review and hardware inspections.

1. Design criteria conflict in control of pipe support structural frequencies.



2. Inadequate design evaluation of as-built deviations from design.
3. Lack of program provisions to control preliminary design data provided through telephone, and to verify the calculation against subsequent final data when made available.
4. There was no design consideration for synchronizing loading between closely spaced rigid/rigid restraints, and rigid restraint/anchors.
5. Snubbers were inoperable due to placing them in close proximity with rigid restraints and anchors.
6. Lack of ALARA considerations associated with the use of snubbers.
7. Lack of documented design interface procedure for OPEG Piping Stress Group and Pipe Support Group.
8. Support field design change breakdown.

Quick acceptance and fixes of design deviations bypassed measures including prior calculations made, review, and approval. There had been thousands of supports being "fixed" this way.

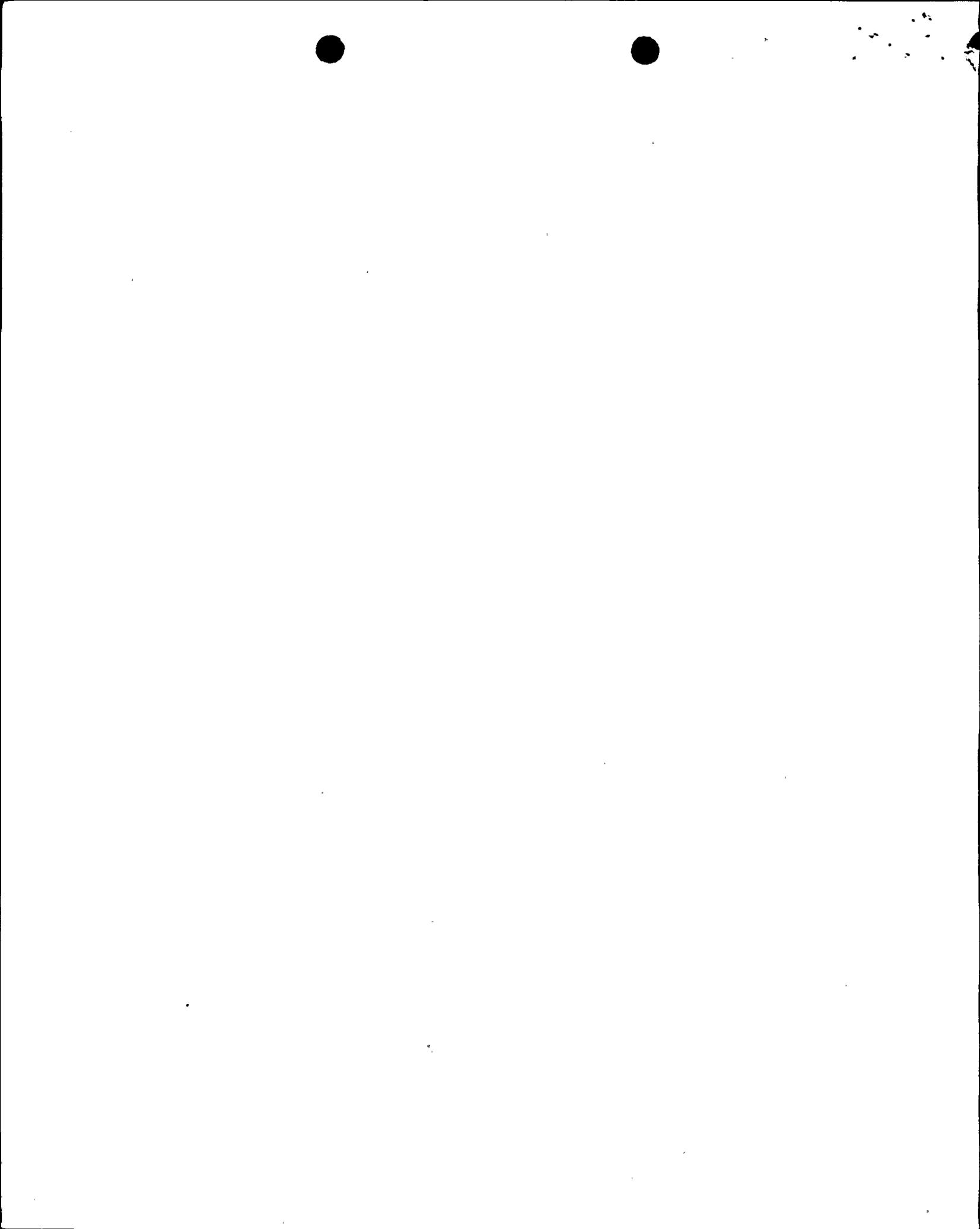
- G. Inadequate licensee technical QA audits and surveillances to identify and correct the design control and program deficiencies revealed during this inspection/investigation.

1. When a QA audit item could not be evaluated due to a lack of project activities, followup of the item was not planned.
2. Lack of QA audit documentation of specific materials reviewed that leads to closing out of the audit findings.
3. Lack of QA documentation of materials reviewed during the conduct of the audit.
4. Lack of technical QA audits to independently verify that OPEG calculation inputs were checked to be in compliance with engineering procedures.
5. Auditor did not take the initiatives to investigate why there had not been any Discrepancy Reports issued by the site design group.
6. Relative to a document control audit, the auditor discovered that, since March, 1983, the control of OPEG procedures was conducted at the PG&E and Bechtel, San Francisco offices. There was no attempt made to revise the audit checklist to cover these activities.
7. Relative to the same document control audit, the checklist was modified to cover the subject OPEG activities, 10 months later the benefit of timely audit to ensure program compliance had been

A management audit had not been conducted and had not been scheduled at the time of the audit.

The following conditions were found from auditing calculations:

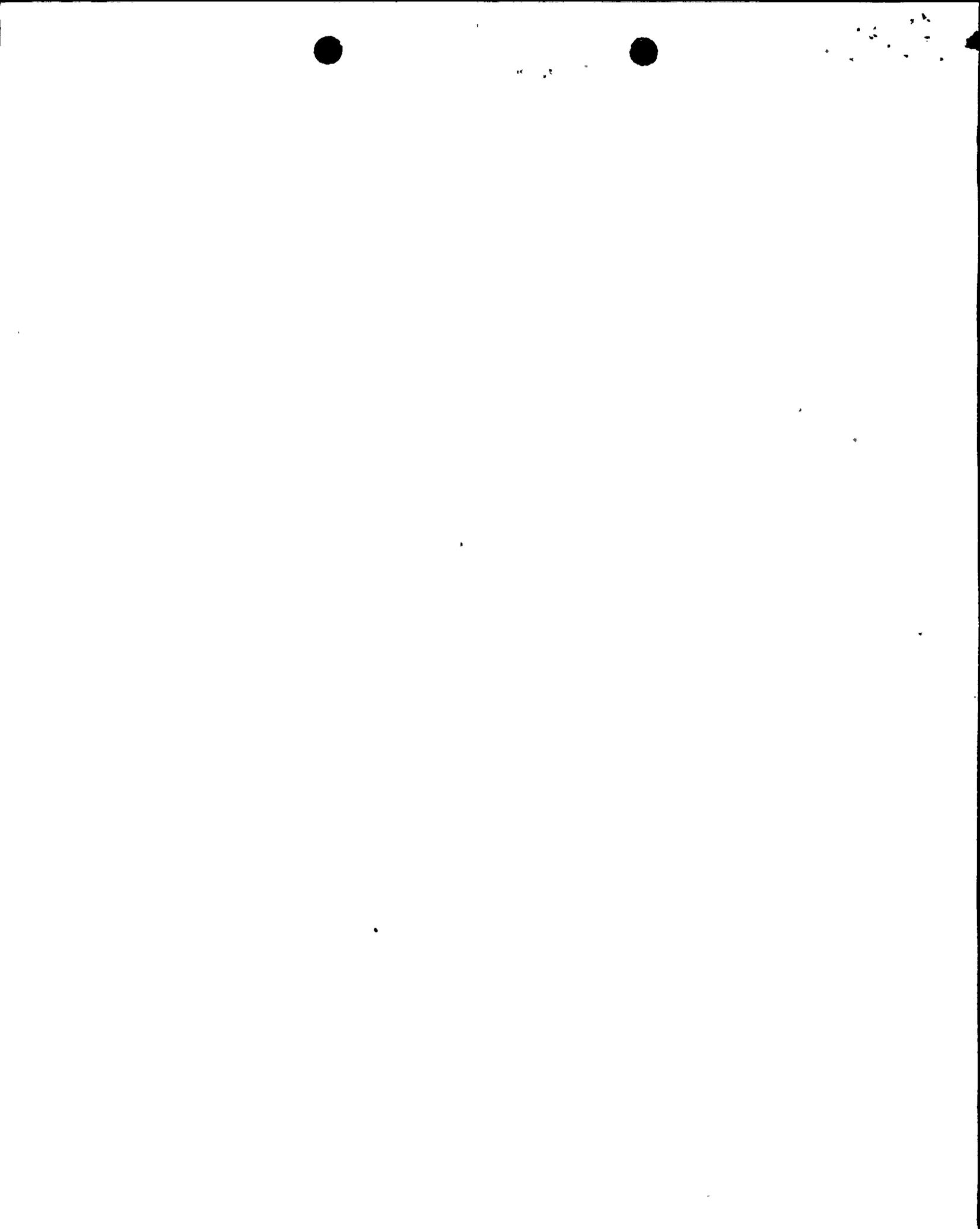
1. Some signatures missing;
2. Not all pages numbered;
3. Calculation indexes incomplete;
4. References incomplete. (The source of input data was not always shown); and
5. A list of items which establish "Preliminary Status" was not included.



H. Inadequate PE&E and Bechtel control of procured engineering services.

1. Lack of procedure to ensure effective design interface between PG&E and Westinghouse.
2. Lack of DCP control of procedures to be used by the contractors.
 - a. Lack of measures to ensure that contractors had received required design criteria.
 - b. Lack of justification on unrequired criteria and procedures being sent to the contractors.
3. Relative to DCP audit of contractors, technical audits of Imprell, Cygna and Westinghouse had not been performed.
4. Design procedures and instructions utilized by Imprell, Cygna, and Westinghouse had not been reviewed and approved by the PG&E and Bechtel engineering and QA departments.
5. PG&E did not perform QA program type audits of Westinghouse in 1983, when most of the CAP analytical work was carried out.
6. The PG&E QA program audit of Westinghouse, No. 20506, "Seismic Re-Verification," conducted on May 25-28, 1982, did not include a review of piping analysis and pipe support calculation to ensure implementation of procedural requirements.
7. Relative to contractor internal audits, Cygna technical review for design analysis and calculation was questionable.
8. Relative to contractor internal audits, the Westinghouse QA program type audit was considered to be inadequate and deficient.
9. Relative to contractor internal audits, there had not been any technical audits conducted by Westinghouse.

One supplier, TERA, had been reviewed and approved but not yet audited to confirm the implementation of the QA Program. ANCO was only conditionally approved with follow-up action required. A Corrective Action Request was outstanding regarding Quadrex.



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