UNITED STATES OF AMERICA

BEFORE THE NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
CINCINNATI GAS & ELECTRIC COMPANY, ET AL. (William H. Zimmer Nuclear Power Station)	)	Docket No. 50-358

MIAMI VALLEY POWER PROJECT'S PETITION TO SUSPEND CONSTRUCTION OF THE ZIMMER STATION

I. INTRODUCTION

1. This petition to the Nuclear Regulatory Commission ("NRC") is brought by the Miami Valley Power Project ("MVPP"). Based upon a three-month investigation conducted by MVPP's counsel, the Government Accountability Project ("GAP") of the Institute for Policy Studies, the petition seeks the immediate suspension of construction of the William H. Zimmer Unit 1 ("Zimmer") station. It is brought before the Commission rather than to the staff for the reasons presented below.

2. Cincinnati, Gas and Electric ("CG&E") has construction and operating responsibility for the Zimmer station, which is owned by CG&E (40%), Columbus and Southern Ohio Electric Company (28.5%) and Dayton Power and Light Company (31.5%) as tenants in common. The principal contractor at the site is the Henry J. Kaiser Company ("Kaiser", "KEI" or "HJK"). The architect/engineer is Sargent and Lundy, ("S&L"). CG&E obtained a construction permit number

CPPR-88 in October of 1972. Construction began in 1972.

3. During 1981 Zimmer was the subject of extensive NRC investigations. An April 8, 1981 Immediate Action Letter ("IAL") imposed a Quality Confirmation Project ("QCP"), as well as a management reorganization and a drastic increase in staff for the Quality Assurance ("QA") program on site. The IAL required CG&E to assume a direct, active role in the QA program. (Attachment 1)

4. During the summer of 1981 the Office of Inspector and Auditor ("OIA") conducted a criminal investigation into intentional violations of 10 C.F.R. Part 50, Appendix B. the NRC regulations on quality assurance. OIA investigated alteration or falsification of documentation and failures to conduct quality control inspections. Allegedly, the investigation was suspended because of difficulties in coordinating simultaneous NRC inquiries, one into safety-related issues and the other into criminal ones. Concerned about the possible premature suspension or termination of the criminal probe, GAP Legal Director Thomas Devine inquired about the investigation to the United States Attorney (Attachment 2) on March 19, 1982 and to NRC Region III ("RIII") by telephone on April 20, 1982. Region III Administrator James Keppler responded on May 14, 1982 (Attachment 3). On June 7 Mr. Keppler publicly informed the Commissioners that the criminal investigation had been reopened under the direction of the Department of Justice. A June 8, 1982 Cincinnati Enquirer news article (Attachment 4) reported that the United States Attorney's office was conducting the renewed investigation with the assistance of RIII personnel.

5. In December 1980 GAP submitted a complaint on behalf of Thomas

Applegate to a federal agency with some authority to force other agencies to pursue whistleblower disclosures. Among the allegations were charges about the gross inadequacies of a previous NRC investigation. In response to the disclosure by GAP during 1981 the Office of Inspector and Auditor ("OIA") investigated the previous NRC investigation at Zimmer. The August 7, 1981 report, Special Inquiry re: Adequacy of IE Investigation 50-358/80-9 at the William H. Zimmer Nuclear Power Plant, Office of Inspector and Auditor, U.S. Nuclear Regulatory Commission (August 7, 1981) ("OIA Report"). The OIA Report found that the Region III investigation that GAP had challenged was indeed unsatisfactory and had wrongly rejected Mr. Applegate's allegations of unacceptable welds at Zimmer. It also found that construction crews had made informal, undocumented repairs on welds concurrent with the NRC inspector's review of inaccurate paperwork on the very same welds. In response to the report, RIII conceded that the problems identified with its effort were generic, rather than limited to the investigation in question. On October 8, 1981, OIA informed NRC Chairman Nunzio Palladino that the RIII effort did not observe "(f)undamentals basic to all investigations..." (Attachment 5) Chairman Palladino agreed and on November 16 pledged the "necessary internal reforms" in a letter to Congressman Udall. (Attachment 6)

6. Although the OIA Report recognized NRC inadequacies in previous investigations, a November 2, 1981 Region III report on interim findings from a massive reinvestigation of Zimmer, IE Report No. 50-358/81-13 ("IE Report"), provided a glimpse at the breadth of the problems. The IE Report identified 40 noncompliances based on nearly 1,000 examples. Those noncompliances involved 12 of the 18 criteria contained in 10 C.F.R. Part

50, Appendix B -- the regulations that mandate an adequate QA program. The NRC proposed a $200,000 fine for Cincinnati Gas and Electric ("CG&E"), the steepest penalty in history for a nuclear power plant under construction. The justification for the fine was: (1) $50,000 for false QA records; (2) $50,000 for harassment of and retaliation against QC inspectors; and (3) $100,000 for failure to document and implement an adequate quality assurance program at Zimmer. On February 26, 1982 CG&E paid the $200,000 fine. In releasing the IE Report, Mr. Keppler characterized the Quality Assurance program at Zimmer as "totally out of control." (Attachments 7 and 8.)

7. During the Spring of 1982 MVPP learned that the IE Report only identified a small portion of the effects of the QA breakdown at Zimmer. MVPP also learned that RIII had taken nearly a five-month break from the ongoing field reinvestigation at Zimmer, while it determined the priorities of "Phase 2" of the effort. (Attachment 3, supra, at 1-2.) Due to the serious nature of this new evidence, and the failure of the NRC staff to inform the Atomic Safety and Licensing Board ("ASLB") fully about the Quality Assurance breakdown, on May 18, 1982 MVPP moved for leave to file eight new contentions related to the QA breakdown. The proposed contentions were: (1) Applicants have failed to ensure that the as-built condition of the plant reflects the final version of an acceptable design; (2) Applicants have failed to maintain adequate material traceability to identify and document the history of all material, parts, components and welds; (3) Applicants have failed to maintain an adequate QA program for vendor purchases; (4) Applicants have failed to maintain an adequate quality

assurance program to identify and correct construction deficiencies, in terms of organizational structure and premises; (5) Applicants have failed to maintain adequate controls to process and respond to internal Nonconformance Reports ("NR's"); (6) Applicants have continued illegal retaliation against QA/QC personnel who diligently attempted to perform their duties or disclose problems to the NRC; (7) Applicants have failed through the Quality Confirmation Program to address or assure adequate corrective action for the full extent of the QA breakdown; and (8) Applicants have failed to maintain the necessary character and competence to operate a nuclear power plant. (Attachment 9) On July 8, 1982, MVPP submitted a legal brief and evidence to the Atomic Safety License Board ("ASLB") in support of its proposed contentions. (Attachment 10)

8. The NRC Staff supported reopening the license proceeding and the litigation of intervenors' eight contentions. Region III Administrator Keppler also supported hearings. On July 15, 1982 the ASLB sua sponte reopened the licensing hearings to accept MVPP's new contentions. (Attachment 11) On July 26, 1982 MVPP submitted two additional affidavits in further evidence of its contentions.

9. On June 10, 1982 the House Subcommittee on Energy and the Environment of the Committee on Interior and Insular Affairs held hearings on the QA breakdown at Zimmer. Witnesses included participants from the NRC, CG&E, the State of Ohio, the National Board of Boiler Inspectors, and the QA workforce at the site. (Attachment 12)

10. On June 16, 1982 representatives from CG&E and MVPP presented their respective positions on the extent and significance of the QA

breakdown in a public briefing before the Commission. (Attachment 13)

11. The public health and safety issues raised by MVPP must be resolved before the URC issues an operating license. Those concerns are too significant to solely wait for the outcome of possibly protracted hearings. The breakdown is so severe that MVPP requests an immediate suspension of all work at the plant, pending a comprehensive investigation to determine the full extent and consequences of the QA breakdown and to assess responsibility for it.

II. DESCRIPTION OF PETITIONER

12. The Miami Valley Power Project is a longstanding and central intervenor in the Zimmer ASLB proceedings. MVPP is a wholly-owned subsidiary of the Cincinnati Alliance for Responsible Energy ("CARE"), a local advocate for serious examination of the construction deficiencies and quality assurance breakdown at the station.

III. JURISDICTION

13. This petition is brought before the Commission pursuant to the authority granted to it in 42 U.S.C. **2233(d), 2236(a), and 2237, and 10 C.F.R. **2.204, 2.206(c)(1), and 50.54. Furthermore, this petition invokes the inherent supervisory authority of the Commission to oversee all aspects of the regulatory and licensing process and assume "overriding responsibility for assuring public health and safety in the operation of nuclear power facilities." In the Matter of Consolidated Edison Co. of New York, Inc. (Indian Point, Units 1, 2 and 3). CLI-75-8, NRCI 7518, 173, (1975).

14. This inherent authority of the Commission has been exercised on a number of occasions, despite the absence of express procedural authorization in the regulations for Commission oversight or review. Petition for Emergency and Remedial Action, CLI-78-6, 7 NRC 400 (1978); see also, U.S. Energy Research and Development Administration (Clinch River Breeder Reactor Project), CLI-76-13, NRCI-76/8, 67, 75-76 (1976); Consumers Power Co. (Midland Unit 1 and 2), CLI-78-38, RAI-73-12, 1084 (1973). This authority is necessary for the Commission to carry out its mission to see that "public safety is the first, last, and a permanent consideration in any decision on the issuance of a construction permit or license to operate a nuclear facility." Power Reactor Development Corp. v. International Union, 367 U.S. 396,402 (1961).

15. The Commission's inherent authority is explicitly recognized in 10 C.F.R. *2.206(c)(1). 10 C.F.R. *2.206(a) and *2.206(b) provide a mechanism for petitions requesting show cause orders to be filed with the Director of Nuclear Reactor Regulation or the Director of Inspection and Enforcement, as appropriate, and reviewed sua sponte by the Commission. However, *2.206(c)(1) states:

> This review power does not limit in any way either the Commission's supervisory power over delegated staff actions or the Commission's power to consult with the staff on a formal or informal basis regarding institution of proceedings under this section.

16. In this case it is necessary for the Commission itself to take action. The NRC Staff has not adequately protected the public interest at Zimmer, as demonstrated by the extraordinary conclusions of the OIA Report. Further, despite the severity of findings in IE Report 50-358/81-13,

the Staff remains largely ignorant of the full scope of the QA breakdown. The NRC Staff has not investigated or attempted to determine all causes of the breakdown. Instead, RIII took months to reassess priorities and even now is unable to answer fundamental congressional inquiries about the effects of the QA breakdown at Zimmer. (Attachments 14A and 14B) As Mr. Keppler repeatedly conceded during June 10 congressional hearings, RIII does not know the effects on public safety of the QA breakdown. In short, although the plant is theoretically 97% complete, RIII has conceded that the quality of its construction cannot be determined.

17. The NRC Staff has repeatedly declined to halt construction at Zimmer until the full extent of the problems are identified. The Staff rejected a May 11, 1981 petition filed by GAP on behalf of Mr. Applegate. The RIII Staff rejected the repeated recommendations of is investigators to shut down the plant until the full extent of the QA damage could be assessed (Attachments 15A and 15B). The Staff is firmly committed to the Quality Confirmation Program, which it developed jointly with CG&E, as the solution to Zimmer's problems. It would be futile to refer this petition back to the Staff. Regrettably the empirical and structural failures of the QCP, as well as the Staff's failure to adhere to its own duties, is partially responsible for the continuing QA breakdown at Zimmer.

IV. BASES FOR IMMEDIATE SUSPENSION OF CONSTRUCTION

18. GAP's 1982 investigation of the Zimmer Quality Assurance Program is the basis for this petition. As discussed below, the results reveal that the current regulatory program does not confront the causes, full

scope for continuing nature of the QA breakdown.[1] Those failures are discussed below, organized according to MVPP's proposed licensing contentions.

A. Failure to Ensure that the As-built Condition of the Plant Reflects the Final Version of an Acceptable Design

CRITERION III - Design Control

19. A basic requirement of 10 C.F.R. 50, Appendix B, Criterion III -- Design Control, is that construction must reflect the final, approved design. Measures shall be established to: (1) assure that appropriate regulatory quality standards are specified in design documents and deviations from such standards are controlled; (2) select and review, for suitability of application, essential (safety-related) materials, parts, equipment and processes; (3) identify and control design interfaces and coordinate among participating design organizations; (4) verify or check the adequacy of design. "Design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design and be approved by the organization that performed the original design unless the applicant designates another responsible organization."

20. Zimmer documentation does not reflect the plant as built. Region III summary of a June 4, 1981 interview with Floyd Oltz, Kaiser's Quality Assurance Engineer/Records, reported:

> Oltz said that from a safety standpoint that documentation in all areas of the plant does not reflect the as-built condition of the plant and is not limited to the discrepancies identified by the NRC in the diesel generator room.
>
> (NRC IE Report No. 50-358/81-13, Attachment A, at 4)

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[1] The evidence presented in the petition is illustrative, not comprehensive.

21. Work at Zimmer has largely proceeded on the basis of informal drawings or construction aids (ISKs and PSKs), instead of final design drawings approved by the architect/engineer Sargent and Lundy. Witness Richard Reiter explained, in a May 13, 1982 affidavit:

> There was a rampant problem of construction modifications being incorporated into the informal drawings before formal modifications were approved. The formal design is supposed to reflect the plant as-built.
>
> (Attachment 16 at 7)

Pipefitting foreman James Tyner, who worked at Zimmer from 1973-78, explained in a June 14, 1982 affidavit, that when Sargent and Lundy were not available, construction proceeded on the basis of ad-hoc modifications to the design.

MVPP has excluded evidence that is merely cumulative. The evidence that follows is sufficient, however, to illustrate a comprehensive breakdown that requires a comprehensive, extraordinary remedy, rather than a piecemeal "confirmation" program. In some instances the work was even inspected on the basis of field sketches. An August 18, 1980 Kaiser memorandum from Rex Baker to Phil Gittings stated that 49 packages of NX supports were being inspected on the basis of field sketches, rather than approved designs. (Attachment 18)

KAISER AND CG&E AWARENESS

22. A December 3, 1981 CG&E Audit Finding Report (Attachment 19A) and a December 16, 1981 Kaiser Corrective Action Report (Attachment 19B) show that the site document center did not even maintain an official listing of ISKs and PSKs until after December 1981. However, ISKs and PSKs

were an integral part of the construction process and then became the only reflection of the as-built configuration. An August 14, 1979 CG&E letter and subsequent communications (Attachments 20A-D) illustrate this revelation. CG&E requested from Kaiser a definition of the procedure by which it could be assured that the as-built configuration of the plant matched the latest design drawings' revisions. Kaiser replied that for piping, design drawings were received from S&L, reviewed, and translated into ISKs and PSKs for field construction. "(A)ctual work does not proceed without first receiving ISKs or PSKs..." The as-built configuration was reflected on these drawings, which would be transmitted to S&L to update the design drawings.

KAISER AND CG&E AWARENESS OF WRONGDOING

23. Kaiser and CG&E management knew better than to inspect the construction aids. Minutes of a joint February 28, 1975 KEI/CG&E Quality Assurance meeting revealed (Attachment 21):

> "...It is KEI's position that construction aids are not design drawings and do not have to be submitted to S&L for approval. Construction aids are initiated in the field to consolidate information needed by the crafts to assist them in performing their job. All construction aids must be used for the purpose intended. The purpose is clearly defined above the original title block. It is the responsibility of supervision for controlling the construction aids and seeing that the crafts use them for their intended purpose. KEI will inspect the Construction Inspection Plan which will reference the latest S&L approved drawing.
>
> Since construction needs sketches and will use sketches, inspection will only use them as reference drawings and final inspection will be performed to the latest released S&L drawing. In fact, all construction aids will carry the stamp. "This is a KEI sketch, use only for purpose noted above. Not to be used for final inspection."

This will be kept as an item which requires further review.

This commitment to use ISKs and PSKs for construction aids only, and to inspect to the design documents was subsequently reiterated in an October 6, 1976 CG&E letter (Attachment 22A) and the minutes of a February 7, 1977 Joint CG&E-KEI QA meeting (Attachment 22B).

24. This commitment was not met. Richard Reiter explained, in an August 20, 1982 affidavit (Attachment 23) that piping was inspected almost exclusively to ISKs and PSKs.

UNCONTROLLED DDCs

25. Traditionally, Kaiser and CG&E have not been able to keep an account of the Design Document Changes ("DDC"), the record of changes approved by S&L. In some instances, as W.W. Schwiers of CG&E observed in a May 23, 1973 letter to V.P. McMahon of Kaiser, the relevant DDCs were not included with the Sargent and Lundy specifications (Attachment 24).

26. A Kaiser memorandum dated February 2, 1982 (Attachment 25A) and a Kaiser memorandum dated February 3, 1982 (Attachment 25B) show that because Supplement #9 dated March 4, 1976 was not incorporated into S&L Design Specification H-2256, form #406-C was erroneously used in place of form #406-B for six years.

27. Richard Reiter stated that there was no system to retrieve DDCs applicable to a particular subject (Attachment 23, supra, at 5). This lack of a retrieval system had predictable effects, as shown in a November 1, 1979 CG&E letter (Attachment 26). When General Electric was asked for documentation generated for FDIs and FDDRs (which are requests for DDCs to be generated for the Reactor Vessel and its GE supplied appurtenances) it was not available.

Matters were obscured further by questionable practices like allowing construction to work to partially approved DDCs, a practice condoned by Kaiser (Attachments 27A, 27B, 27C).

DESIGN CONTROL PROCEDURES INADEQUATE

28. At Zimmer there was an historical failure to keep pace with design changes. To illustrate, a September 14, 1973 memorandum from Kaiser Site QA Manager W.W. Friedrich to CG&E General Engineering Department Manager A.E. Rothenberg pleaded for procedural requirements to assure receipt of final approved designs. He called for release of all approved designs through KEI Site Documentation Control. As Friedrich explained, "This is the only assurance we have that the latest approved drawing is issued and being used during the installation." He specifically requested that this requirement be imposed on all contractors (Attachment 28). On September 20, 1973 CG&E Principal QA Engineer Edward Pandorf responded:

> Unfortunately, procedures do not cover issuing these drawings to KEI (for the contractor in question), but CG&E has authorized construction and erection prior to receipt and issue of S&L approved drawings. We recognize that this situation is somewhat awkward for you, but it does not violate the AEC rules or the CG&E QA Manual (Attachment 29).

29. CG&E Field Audit #270 deficiencies showed discrepant revisions of the same drawings in different files (Attachment 30A). It also re-audited the deficiencies in Audit #197, September 25-27, 1978, which showed discrepant drawing identities for the same drawings in different files. (Id, at 2-4) Six of Audit #197s deficiencies remained open. CG&E Field Audit Report #293 dated December 26, 1979 and January 4, 1980 (Attachment 30B) re-audited the corrective action for Field Audit Report #270. Four out of thirteen of Audit Report #270s deficiencies remained open. A

Kaiser letter dated April 26, 1982 (Attachment 30C) explains why these items are still open, and encloses a memorandum from General Electric Company explaining why they will not fix these deficiencies. Kaiser requested further direction from CG&E.

A December 28, 1981 Kaiser Corrective Action Report (Attachment 31) shows that as of December 1981 no procedure existed to assure that the most recent revision of the design is in work packages. It states that "(T)he present uncontrolled situation will continue until a controlled measure is established and followed."

30. The design control procedures remained inadequate throughout the decade. On December 9, 1981 Assistant Director of Inspections Richard Jagger of the National Board of Boiler and Pressure Vessel Inspectors wrote to CG&E Senior Vice President, "Procedures were not being followed which would assure compliance with NCA-4134.3(c) of Section II Div. I ASME for the review, approval, release of documents necessitated by revisions." (Attachment 32, at 4.)

31. Personnel at Zimmer state that they do not know if they are correctly working with current design requirements. In a February 2, 1982 memorandum to Acting Site QA Manager D.L. Howard, Kaiser Senior QA Analyst David Jones disclosed that he had reviewed five copies of an S&L Design Specification being used by Kaiser personnel. During his review Mr. Jones found that different Kaiser personnel were working to different versions of the design, all outdated. He concluded, "Based on my limited research, it appears that a breakdown in significant portions of the Quality Program have (sic) occurred and determination should be made concerning reportable

items under Part #50 of the Code of Federal Regulations." (Attachment 25A, supra.)

32. Richard Reiter related that his 1979 QA training was to read an outdated, incomplete set of construction specifications (Attachment 23, supra, at 3). This was not an isolated incident, as the December 9, 1981 National Board letter found that "(p)rocedures were not being followed which would assure compliance with NCA-4134.3(c) of Section III, Div. I ASME for the review, approval, release of documents necessitated by revisions." (Attachment 32, supra at 3).

33. It is beyond argument that the official S&L design of the plant does not reflect the "as-built" condition. Pipefitter Ronald Yates recalled in a March 27, 1982 affidavit (Attachment 33 that in 1976 he was on a crew installing hundreds of hangers in the primary containment. "Approximately one out of eight hangers couldn't be installed, because the blueprints were inaccurate. Piping and other equipment was already located in the spots where the blueprints (drawings) said the hangers should go." (Attachment 33, at 1.) Similarly, Mr. Tyner stated, "It was impossible to locate hangers for the instrumentation piping according to the plant design drawings because the imbedment plates were not located in the place indicated in the design drawings." (Attachment 17, supra at 2.) Mr. Reiter, part of whose job for nearly two years was to review piping drawings for accuracy throughout the plant, put the results in perspective:

> In practice, almost all the drawings that I reviewed had some error. They were either incomplete or did not accurately reflect what was in the field...
>
> About 50% of the errors I observed were serious, however. For instance, on many occasions, the drawings did not accurately reflect the size of the installed piping. Due to the improper recording of the history for a pipe, the drawings would only reflect the original piping installed and miss the inserts of

> new piping. I would supplement the drawings with notes that piping had been added, but I only saw a small portion of the total records and it was not routine to fill in those gaps. I believe that full revisions are maintained for drawings being made now at Zimmer, but all the earlier records are suspect.

(Attachment 16, supra, at 2-3.)

Mr. Reiter also observed that the HUAC ducts were not accurately reflected in the design drawings. (Attachment 23, supra.)

34. DDCs were not always incorporated into the design in a timely manner, even when audits showed them not to be incorporated. Kaiser audit #374 reaudited Kaiser audit #361's deficiencies, which were that 9 ISKs did not have DDC SLM-379 incorporated. Audit #361 was on October 4, 1978 and audit #374 was on April 18, 1979. All 9 ISKs did not have DDC-SLM-379 incorporated. (Attachment 35A.)

35. The instructions on DDCs were not always followed accurately. A December 11, 1979 CG&E QA&S Surveillance Report (Attachment 35B) showed the concrete pad for panel 1PM21J installed per DDC S-1729 on October 17, 1979, even though a note was placed on the DDC on August 14, 1979 deleting the pad.

36. Enough conduit hangers were installed without design documents describing them that on April 9, 1979 W.W. Schwiers re-circulated two memoranda, one titled "Proposed Inspection Plan for Unidentified Conduit Hangers." (Attachment 35).

When Wayne Biehle wrote a "Description of Conduit Inspection" (Attachment 36) he quantified the accuracy of the design drawing describing conduits in the Control Room. He wrote:

> When the Control Room drawing was initially scoped for conduit runs, a total of 305 conduits were listed on the "Exhibit B". After field inspection, the list grew to 376. I might point out that it is impossible to affirm that every conduit run in a given area has in fact been inspected...

FAILURE TO APPROVE DESIGN MODIFICATIONS

37. There is no assurance that proper approval was ever secured for design modifications. As Mr. Yates explained, in 1978 he was trying to lay 3/4-inch stainless steel piping to monitor outside radiation releases.

> I couldn't place the piping where it was designated in the design, however, because there were so many other pipes and hangers in the way. The Kaiser engineer just said to squeeze it in any way possible, and he would get in touch later when he redrew his plans. He never contacted me.

(Attachment 33, supra at 2.)

38. Similarly, a May 12, 1982 ASME audit (Attachment 37) examined a 1973 S&L generic Design Specification for all piping systems. Using this case as an example, the ASME team found that a Registered Professional Engineer ("RPE") does not always certify all documents in the Design Specifications. "Nor does he certify revisions to said documents." (Id., at 5.)

39. S&L's criteria for approving DDCs may be suspect. As Mr. Tyner recalled, DDCs for hanger imbedment plates were issued casually to compensate for construction mistakes that violated the design:

> We asked questions about this procedure because it could create a problem to move any hangers in this manner since all the hangers were pre-loaded at a certain amount of poundage. If you moved one hanger you might have to move them all. Yet Kaiser would simply write DDC'sand not worry about how the overall design was being changed.

(Attachment 33, supra at 3.)

40. Richard Reiter described another instance wherein S&L questionably approved a DDC. When he reviewed records for the Off-Gas piping in the basement of the Auxilliary Building, he found that material traceability was not recorded. Upon inspection, the piping was so rusted that he could not even discern the Heat Numbers stamped into the elbows when they were forged. He wrote a Non-conformance report, which was voided when the entire Off-Gas system was down-graded to class D nonessential.

(Attachment 23, supra, at 7.)

As a result, the engineering justification for DDCs should be generally reviewed. In seems likely that sometimes S&L relied on strained reasoning to justify faits accompli, instead of using sound engineering decisions that had been made before installation.

41. After nearly a decade of suspect design decisions and drawings not adequately controlled or updated, there can be no reassurance the as-built condition of Zimmer reflects a proper final design. This weakness must be confronted in a comprehensive manner before seriously considering operation of the plant, or even final reviews for fuel loading. As former Kaiser consultant Jeffrey M. Nichols wrote on June 7, 1982 to Congressman Udall: Although some systems have been turned over, walkdowns are counter-productive under these conditions." (Attachment 38 at 3.)

B. Failure to Maintain Adequate Material Traceability to Identify and Document the History of all Material, Parts, Components and Special Processes.

CRITERION VIII--Identification and Control of Materials, Parts and Components

42. 10 C.F.R. 50, Appendix B, Criterion VIII requires that identification and control measures be established to assure that each material, part or component "item is maintained by heat number, part number, serial number, or other appropriate means, either on the item or on records traceable to the item, as required throughout fabrication, erection, installation and use of the item." These measures "shall be designed to prevent the use of incorrect or defective materials, parts, and components." Similarly, Criterion IX

requires control of special processes, including welding. To illustrate, the weld must be traceable back to a properly qualified welder using the proper procedure with the right filler material.

43. The full extent of material traceability deficiencies is unknown. But all indications are that the breakdown has occurred on a massive scale. To illustrate, a 1979 CG&E field audit found that eight items checked out of 18 used in drywell steel modifications had traceability deficiencies. (The November 28, 1979 audit report, as well as subsequent followup correspondence are enclosed as Attachments 39 A-F.) After finding nearly a 50% deficiency rate, CG&E did not expand its audit to cover the full extent of the problem. The audit was initiated as the result of an NRC inspection that identified a substitution of one grade of steel for another. If a single item was significant enough to warrent an audit, a 50% deficiency rate should have lead to an even more extensive probe.

44. Kaiser QA Surveillance Report No. 2819 ("SR 2819"), issued on October 28, 1980 revealed that Kaiser ISKs and related documentation do not provide unique traceability for essential materials -- those materials going into the components necessary during an emergency. (Attachment 40) More specifically, the Surveillance Report challenged traceability for small-bore piping. SR 2819 pointed out examples where the drawings only gave overgeneralized identification of materials pictured. There would be one identification for multiple items welded together, instead of unique traceability.

The lack of traceability violated Kaiser's own procedures (QAP-9,3.7) and involved miles of piping and thousands of items fabricated on site. Mr. Reiter, the report's author, indicated that it means "we cannot specifically identify what has been installed and where." (Attachment 16, supra at 9.) In presenting

SR 2819, Reiter explained:

> In preparing NPP-1 forms for small bore isometrics, I must make assumptions which I feel compromise my integrity. See page two for further explanation of this.
>
> I am requesting a written directive telling me to make these assumption, or to re-evaluate all small bore isomentrics' material traceability documentation.

Mr. Reiter's supervisor Floyd Oltz told him to continue using the old procedure and never returned the Surveillance Report. (Attachment 16 supra at 8.) In the meantime, Oltz completed the Surveillance Report by concluding that no corrective action was necessary.[2/]

45. A related case of non-traceable materials involves thousands of NX hangers that are used to hang the small bore lines. Although the hangers had traceability when purchased, they were scrapped and refabricated from supplies on-site to meet union contract requirements. But as Mr. Reiter indicated, "Unfortunately, no one kept track of the heat numbers and traceability was lost permanently. As a result, those hangers might as well be garbage." (Id., at 10.) Mr. Reiter raised the problem with a top Kaiser management official, who termed it "ridiculous." But Reiter had already checked hundreds of hangers to confirm his allegation. He also had previously checked the scrap heaps where the hangers were piled up prior to refabrications. (Id.)

46. Mr. Reiter's affidavit also describes in depth six examples where identification marks that existed could not possibly be accurate, suggesting deliberate falsification (Attachment 1b, supra, at 3-7), or at best unreliability of existing identification.

[2/] Kaiser QA Manager Phillip Gittings later conceded that he was responsible for rejecting SR 2819. Gittings also added that Kaiser hired two QA Engineers who supported Mr. Reiter's conclusions. The NRC inspectors also

47. An internal July 1981 investigation conducted by the Kaiser Corporate Supplier Quality Engineer Sherrill J. Nolder, "Investigation of Supplier Quality Assurance at William H. Zimmer Nuclear Generating Station" ("Nolder Report") (Attachment 41) found that heat numbers were not categorized according to essential and non-essential use. As a result questionable items could be installed in essential systems. The investigation concluded that --

> An unknown number of forty foot beams were cut to eight feet and used in electrical applications without transcribing the heat numbers so that only one of each five beams is traceable...These beams and most of the Non-Essential upgraded to Essential materials are not traceable to the point of use. A combination of the use of color coding to delineate various types of usable materials (instead of individual piece or heat marking), the mixing of Non-Essential upgraded materials with Essential materials ([3]) and the mixing of Non-Essential and Essential heat members (sic) on the Document Control Boards has resulted in a loss of indentification and control of proper materials to the point of installation per the requirements of 10CFR50, Appendix B.

(Id, at 3.) In short, the Nolder investigation conceded failure to comply with 10 C.F.R. 50, Appendix B traceability requirements for essential material throughout Zimmer.

48. The Nolder investigation findings were consistent with HJK field audit 435, conducted by the site QA staff and released in final form July 1981. (Attachment 42) The audit covered the effectiveness of color coding for

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[2] (continued) agreed with Mr. Reiter, although curiously none of the non-compliances in IE Rep. No. 50-358/81-13 refer to SR 2819. (IE Rep. No. 50-358/81-13, Attachment A, at 3.)

[3] This was quantified as 80-90% of the structural materials used at the plant by Construction. (Infra, at 36 .)

traceability, based on a survey of 108 items. The audit found nine deficiencies, including missing color codes, wrong color codes, multiple colors for the same material, extra "identification" marks that couldn't be traced, procedures that do not require specific traceability and the absence of any procedure to provide reidentification after losing previous identification marks through sand-blasting. (Id.) Kaiser construction responded that no action would be taken because the entire audit was "invalid." As of April 1982 the audit remained open. (See June 10, 1982 testimony of David Jones, enclosed as Attachment 43, at 6.)

49. One of the causes for the lack of traceability is that materials were required to be traceable only so far as they are received. As Mr. Nichols stated,

> A major explanation for the traceability break-down is an early, fundamental mistake to only require traceability until materials were received, rather than installed. The effect for material fabricated on-site has been a disaster. The omission is so wide-spread that it is difficult to supply a reliable numbers estimate on the scope of the problem.

(Attachment 38, supra at 3.) In addition, unique traceability was required for large-bore piping shown on PSKs but not for small-bore piping shown on ISKs. A nonconforming lack of unique traceability was given an acceptable review on ISKs but listed on a Nonconformance Report if it occurred on a PSK. (Attachment 16, supra, at 8, and Attachment 40, supra.)

50. By 1978, CG&E and Kaiser management were aware of the traceability breakdown and issued urgent instructions to minimize future loss of traceability during construction. See, January 25, 1978 memorandum from R. Marshall (Attachment 44A) and June 15, 1979 memorandum from R. Marshall (Attachment 44B). But it is hard to break a tradition. Further, the 1981 Kaiser reports empirically demonstrated that a 1979 reform for future work could not remedy

all past problems and

already occurred.

51. An analogous problem has existed for special processes such as traceability of weld rods for filler metal used in welding. In a May 1, 1978 memorandum to all superintendents, Kaiser official C.K. Smith conceded general laxness in this area. (Attachment 45.) A January 3 through 7, 1980 Kaiser site audit (Attachment 46A) and a January 31, 1980 Kaiser memorandum to all Lead Inspectors and Welding Inspectors (Attachment 46B) confirmed a trend toward omission of procedures, amount of filler metal returned after welding, and key data necessary to properly trace the welds in 15 documentation packages out of 15 checked. NRC reports confirm that repeat violations continued for poor weld rod control. As last November's IE Report No. 50-358/81-13 observed, "RIII inspectors on numerous occasions during previous inspections have observed weld rods lying uncontrolled in the construction area." (IE Rep. No. 50-358/81-13, at 52: See also, id., at 49.) Also see (Attachment 23, supra at 10.) Also see Kaiser memorandum dated June 19, 1981 (Attachment 47A) where the policy of not requiring weld rod traceability is set forth. This policy is extended to many types of materials. (Attachment 47B, 47C, 47D, 47E.)

52. Again, part of the explanation was a tradition of limited QA service. As Mr. Tyner explained, during one period on 1976 construction did not even have the opportunity to maintain traceability:

> For a period during late 1976 there was no traceability of welding rods because the rod shck would not stay open on the second shift.
>
> Generally each Kaiser form states the types of welding rod one uses. The foreman will make out a rod withdrawal slip and when the welder draws that rod,he will sign the rod slip with his symbol and name. When the weld is finished, it is stamped with that symbol. This is done in order to ensure that the welding rod (sic)

> is done with the proper materials and that QA will be able to tell that the welding rod (sic) was installed properly.
>
> This was obviously impossible when the rod shack was closed because none of the workers could obtain rod withdrawal slips.

(Attachment 17, supra at 6.)

53. A second explanation for the lack of reliable traceability is improper alteration and/or falsification of existing records. Last November's NRC Report summarized an interview with a confidential witness who stated that weld rod issue forms routinely were falsified after the fact. (IE Rep. No. 50-358/81-13, at 50.) Nor has the practice ceased. A December 2, 1981 Kaiser Corrective Action Report (Attachment 48) on weld rod issue records from the previous day, found improper alterations and paperwork that failed to reflect the full quantity of weld rod possessed by the welder.

54. A third explanation for a lack of reliable traceability is the issuing of nonessential material for essential uses. Four Kaiser NRs dated October 21, 1981 (Attachment 49) describe some upgraded material.

55. Another technique has been to "void" HJK weld rod issue forms, a practice that continues as of December 1981. (See HJK Corrective Action Report No. 37, enclosed as Attachment 50.)

56. New procedures for weld repairs institutionalize the lack of traceability for that task. A new records procedure, the In-Process Inspection Deficiency Record ("IIDR"), is being used for weld repairs. As an April 19-23, 1982 CG&E audit finding roport (Attachment 51) conducted by Science Applications, Inc. ("SAI") reported, "IIDR's do not provide direct traceability of welder, weld procedure and revision, weld filler material type, size and heat lot numbers..."

57. Traceability for the welding special process is deteriorating. Kaiser and CG&E management have failed to implement the tightened requirements of 1979-1980. Instead, for weld repairs the new procedures discard the traceability requirements that have been violated for years.

C. Failure to Maintain an Adequate Quality Assurance Program for Vendors

CRITERION VII: Control of Purchased Material, Equipment and Services

58. 10 CFR Part 50, Appendix B, Criterion VII requires the applicant to establish measures that assure that purchased products "conform to the procurement documents," and provide "for source evaluation and selection, objective evidence of quality furnished by the contractor or subcontractor, inspection at the...source, and examination of products on delivery." Documentary evidence of conformance to procurement requirements -- sufficiently identifying the specific codes, standards or specifications met by the purchased products -- must be available at the plant prior to installation or use, and retained at the plant afterwards. The applicant or its designee is also required to periodically assess the effectiveness of the control of quality by the source.

59. During the history of Zimmer construction, Kaiser (and CG&E), have purchased materials, parts and components, as well as radiography and other services, from outside vendors. To illustrate the magnitude of the purchase program, Kaiser has made some 42,000 purchase orders for materials alone. (Attachment 41, supra, at 11.) Last November's NRC IE Report disclosed that inspectors were instructed not to look at vendor welds. Vendor items

were deleted from some Nonconformance Reports. (NRC IE Report No. 50-358/81-13, at _____,_____.) The Report does not reveal, however, the full extent of the problem, nor does it place responsibility for the vendor QA breakdown. Problems have existed with the entire vendor purchase program, since at least 1973.

60. In theory, the Approved Vendors List ("AVL") identifies the firms whose Quality Assurance programs have been verified. In a July 24, 1973 letter to Kaiser QA Manager W.J. Friedrich (Attachment 52), CG&E QA Principal Engineer E.C. Pandorf established the basic groundrules to qualify for the CG&E and S&L AVLs. He also asked Kaiser to revise its own QU Manual "(i)n order to have a consistent procedure for qualifying vendors who were to supply either essential or Code materials..." The "consistent procedure" was simple: they would read the vendor's QA manual, or other"description." Pandorf informed Mr. Friedrich that Kaiser could refer to the CG&E or S&L manuals, as necessary. Pandorf also informed Friedrich that if Kaiser wanted to engage in additional quality review "a request shall be submitted to Cincinnati Gas and Electric for approval of source evaluation or source inspection."

61. In practice, review of QA manuals is a totally inadequate basis for approving a vendor's QA program. As Mr. Jones explained in his testimony, "CG&E would just review the vendor's QA manual. That doesn't mean much. The most beautiful QA manual in the world is just a piece of paper. It can be bought, like a resume." (Attachment 43, supra, at 6.)

62. CG&E also controlled the budget for vendor surveys and began to prohibit them as early as 1974. In a Febrary 20, 1974 letter to A.E. Rothenberg, CG&E's Engineering Manager, (Attachment 53) Mr. Friedrich warned that Kaiser had written its QA Manual to survey vendors at the insistence of the ASME Code Committee. He emphasized:

> As a manufacturer and holder of an "N" stamp, we are obligated under section NA 3361 of the code for surveying and qualifying the Quality System Programs of suppliers.
> ...
> ...It has been our practice to perform surveys at the supplier's plant, and we wish to continue and not put our ASME status in jeopardy.
> ...
> This same requirement is imposed in Appendix B of 10CFR50 Criterion VII, and it would behoove you to review your procedures relative to essential hardware and act accordingly.

The March 4, 1974 response from CG&E (Attachment 54) tersely rejected Kaiser's plea for this minimum step:

> The Cincinnati Gas & Electric Company's policy, which should also guide Kaiser Engineers policy on the Zimmer project, with regard to vendor quality system surveys, is as follows:
>
> A survey at the vendor's plant is not required for inclusion on a list of bidders.
> ...
> We shall expect Kaiser Engineers cooperation by observing this policy on the Zimmer project.

63. As pointed out in a letter to Kaiser from The Hartford Steam Boiler Inspection and Insurance Company (Attachment 55) "(s)ince K.E.I. is the symbol stamp holder...this responsibility (of vendor surveys) cannot be assumed by any other organization such as CG&E..."

64. The CG&E practice of refusing Kaiser requests for vendor Quality Surveys continued over the years. As the minutes of a joint CG&E/Kaiser QA meeting pointed out, KEI will continue to submit requests to perform vendor evaluations (for approval of Class I materials suppliers) until further direction is given." (Attachment 21, supra, at 4.) To illustrate, on March 15, 1977 Mr. Friedrich requested a survey for a supplier of code class forged and stainless steel pipe fittings. On March 18, 1977 CG&E's Principal QA Engineer W.W. Schwiers refused. (Attachment 55.)

65. Kaiser QA Managers also continued to protest the absence of surveys. For instance, on October 26, 1981 Mr. Paul Kyner warned in a memorandum to Kaiser Corporate QA Vice President David Howard, "I fear that unless we make some basic changes to the way we have looked at this business of approving vendors we are only delaying the inevitable." (Attachment 56.) Mr. Kyner specifically cited, inter alia, the following "very questionable" practice -- "(a)pproval of a vendor by review of his Quality Manual only."

THE AVL'S LACK OF INTEGRITY

66. CG&E also shrank the scope of the Approved Vendors List. The Nolder report described the CG&E policy "that only material manufacturers had to be on the Approved Vendor List not material suppliers..." The Nolder investigation found that this restriction violated both ASME requirements and Kaiser's own QA rules. (Attachment 41, supra, at 6.)

67. In practice the AVL did not supply an effective control on vendors. For example, the Nolder report reveals,

> Once a vendor's name is placed on the Approved Vendors' List, it is difficult if not impossible to remove it. One survey qualifies a vendor for life; the HJK QAP's do not specify a period of time for resurveying. According to the QE/Lead Inspector, it is nearly impossible to remove a supplier for poor performance, but they remain on or were placed back on the AVL. Some suppliers have been added by memorandum (CG&E and KEI) based on history of performance; most of the memorandums are unavailable as are the histories qualifying them. The current AVL (3/20/81) contains names of Code suppliers whose certification has expired.

(Attachment 25, supra, at 8.)

68. The AVL was and is not comprehensive. For example, suppliers were approved for specific, rather than generic, commodities. As a result, the Nolder Report found that "many of the materials used to build Zimmer have been left off of the AVL." (Id., at 8-9.) One example involved "(a) tremendous volume of instrument fittings...ordered from the sole distributor, Cincinnati Valve, which has never been approved as a material supplier." (Id., at 7.) Another case involved the purchase of an unknown number of steel beams from the Frank Adams Company, a local junk dealer. The Nolder Report found no evidence the junk vendor had ever been approved or added to the AVL. Adams supplied steel beams that eventually were installed for "essential" use. (Id., at 4, 8 and Appendix B.) Bob Ehas put it in perspective in a handwritten note to Bill Schwiers on Jan. 20, 1981 - "Frank Adams - a Cinti scrap dealer supplied a large amount of the beams... installed in the Aux and Rx building supporting essential hangers..." He was told "...that 30-40% of the W8X17 beams..." were upgraded. (Attachment 57.)

Mr. Nichols put the practice in perspective: "Frank Adams is a junkyard dealer that does not have an internal nuclear QA program."

69. Kaiser audits tracked the ongoing inadequacy of the AVL. October 30-31, 1978, in Kaiser Audit No. 366 (Attachment 57) then-auditor (later QA Manager) P.S. Gittings found, "Approved Suppliers List is inaccurate with a suppliers evaluation method listed as survey when approval was given through use of Paragraph 3.9.1 (acceptable Quality Assurance Manual)."

70. On November 25, 1979, in Audit Report No. 400, Kaiser auditor A.E. Kaplan found, inter alia, that the Approved Vendors' List required updating. He also observed that certifications approving vendors' programs were missing from the files or had expired. (Audit Report No. 400 and related correspondence are enclosed as Attachments 58 A-F.) Auditor Kaplan put his findings in their proper scope: "Told Ken I thought the AVL is in deep trouble and I would send

him a memo to this effect." (Attachment 58A.) In the promised December 7, 1979 memorandum (Attachment 58D) Kaplan concluded, "The Auditor sincerely believes we could not pass an outside audit (NRC, CG&E) of our Supplier Q.A. and Vendor Control."

71. On December 14, 1979, Kaplan noted in a memorandum to Floyd Oltz (Attachment 58F) the effect that key portions of his audit had achieved. "The sum and substance...is that absolutely no corrective action has been taken with regard to Audit Report No. 400 Findings assigned to and accepted by F. Oltz at the Post Audit conference. All Findings remain open." (Emphasis in original.) CG&E did not support the Kaiser auditors in their stalled challenge to the integrity of the AVL. To the contrary, shortly after Kaplan's protest the Kaiser audit function was discontinued at CG&E's direction. (Attachment 43, at 11.) (Infra, at ____.)

72. Finally, in an October 23, 1981 Kaiser memorandum from Dave Howard to Mark Albertin (Attachment 60), Kaiser discontinued use of the existing AVL and established a task force to create a new test. Mr. Kyner, one of two members on the task force, warned that the new list would be meaningless if it were compiled under the old premises: "Unless we make the suggested changes, we are only perpetuating these problems and by procedure will be required to place vendors back on the Approved Vendors List with very little justification." (Attachment 56, supra.) But Mr. Kyner did not remain long enough to see that his concerns were enforced. CG&E is now firmly in charge of the program and the utility has categorically rejected all complaints about the AVL. (For further examples, See June 9, 1982 Cincinnati Enquirer news article, enclosed as Attachment 61.)

73. CG&E's 1973 policy to use its own AVL as the basis for Kaiser purchases also was improper under ASME rules. CG&E did not have the "N-stamp" that represents authority to compile an AVL for ASME purchases. The ASME audit team observed:

> In some instances Kaiser was required to place material manufacturers on the Approved Vendors List based on CG&E's "personal experience" or by virtue of appearing on the case register.
> ...
> Cincinnati Gas and Electric Company must cease preventing Kaiser from the performance of those Code activities which are required to be performed by Kaiser's Certificate of Authorization.

(Attachment 37, supra, at 6.)

74. The practice, which continued throughout the last decade, also violated Kaiser's own QA program. As a January 18, 1982 Kaiser memorandum from R. Lawton to D. O'Keefe (Attachment 62) explained, "After an extensive review of the H.J.K. Quality Assurance Program and ancillary documents, I am unable to find authorization from H.J.K. to purchase from vendors on the basis that they appear on the CG&E Approved Vendors/Suppliers List." (See also Attachment 41, supra, at 6.)

75. A similar policy was in effect regarding Nondestructive Examination ("NDE") services, such as radiography. For instance, in 1980 Nuclear Energy Services, Inc. ("NES") replaced Peabody Megnaflux ("PM" or "Peabody") as supplier of NDE services at Zimmer. As a May 13, 1981 Corrective Action Report ("CAR") (Attachment 63) found, however, NES was performing ASME code work -- a Kaiser responsibility -- without first being on Kaiser's AVL. This loophole effectively circumvented Kaiser's legal requirement to verify the quality of nondestructive tests at Zimmer.

76. In theory, NES was working to Kaiser's QA procedures. In fact,

NES did not even have a copy of Kaiser's QA Manual. As Mr. Jones testified, "NES was not following the Kaiser QA procedures and was barely familiar with our manual." (Attachment 43, supra, at 10.) In effect, NES was performing NDE on essential ASME equipment without a formal Quality Assurance program.

77. On March 12, 1982, during an audit of NES, Kaiser auditor T. Eversult uncovered this condition. Although this audit was not yet complete, Mr. Eversult wrote a March 12, 1982 memorandum to Kaiser QA Manager Walter Hedzick (Attachment 64) that "a determination should be made for stop work order and possible 50-55e." Mr. Hedzick responded, according to eyewitness Jones, "I don't want to see any more of these types of memos. They tend to embarrass us and cause more accusations and allegations." (Attachment 43, supra, at 10.) Mr. Hedzick did not act on the memorandum, and Mr. Eversult was removed from the audit group after he protested manipulation of his findings on NES. (Id., at 10.)

78. During the summer of 1981, Kaiser finally developed a plan to "correct" all the purchases from vendors who were on CG&E's AVL, but not on the Kaiser's AVL: qualify CG&E for Kaiser's own AVL. As Mr. Jones pointed out, to CG&E's dismay, however, the Kaiser auditors learned that the utility would not qualify. The utility could not locate key procedures to justify their AVL selections, or even one reliable, comprehensive AVL. When CG&E representatives were informed of the findings in pre-audit conference, they challenged Kaiser's authority to conduct the audit and refused to cooperate. The audit was stopped. Eventually, a new team "approved" CG&E under watered-down criteria. (Attachment 43, supra, at 6-7.)

INADEQUATE INSPECTION OF PURCHASES

79. CG&E also set the groundrules for inspection of the actual purchases.

A March 28 and April 9, 1974 exchange of correspondence between Kaiser and CG&E (Attachments 65A and 65B) confirmed the groundrules in actual purchases: 1) CG&E would maintain all documentation to prove the qualifications of vendors on its own AVL. 2) With a few exceptions, CG&E would not use a formal program to certify purchases had been released for shipment. 3) CG&E, not Kaiser, would develop the necessary documentation requirements checklist for CG&E vendor purchases. 4) CG&E did not "anticipate the need" for a specific document certifying that all required document requirements were passed, before items were installed. 5) Kaiser's receiving inspection responsibilities were limited to surface observations such as shipping damages and identification. 6) CG&E not Kaiser, would conduct the increased inspections necessary for "essential" purchases, and CG&E did "not plan to conduct in-depth reviews of documentation for non-essential components." 7) Kaiser was not to review documents previously accepted by CG&E from its own vendors. (See also Exhibit I to Attachment 10, supra.)

80. CG&E encouraged the policy of Kaiser conducting only the most limited inspection. For instance, on September 19, 1975 Mr. Pandorf informed Kaiser, "It will not be necessary to include Documentation as an item on your Receiving Inspection Plans." On occasion, Kaiser officials repeated their positions that source inspections were needed for specific purchases. (See, e.g., August 19, 1974 memorandum from W.J. Friedrich to E.A. Borgmann, enclosed as Attachment 66.)

81. The utility's basic philosophy was to trust the vendor's paperwork. In a June 5, 1982 affidavit (Attachment 67) former Kaiser Quality Control Engineer Victor Griffin -- recalled CG&E Vice President Earl Borgmann's excuse when the two engaged in a television debate: "We have to put our trust in the manufacturers." Mr. Griffin explained, "CG&E...essentially just relied on the vendor's paperwork to buy parts off the shelf." (Id., at 2.)

82. Mr. Griffin pointed out vendor paperwork frequently does not accurately reflect the condition of purchased items. As he explained, "This practice of trusting the paperwork would turn the blood of any decent quality control engineer in the country to ice...You don't purchase nuclear parts and components like a jar of nails from the shelf of a hardware store, or like a carburator from the auto parts shop." He listed the necessary minimum requirements:

> (1) Tell the vendor to gather the parts that would be assembled into, for example, a valve. The individual vendor parts must be inspected when assembly has reached a hold point, after which it can continue if all is in order. Interim inspections at hold points are mandatory, because parts are hidden within the component after assembly is completed.
> (2) After assembly, it is necessary to test the component under operating conditions in a dry run. This should occur in the vendor's plant. Then the part can be approved.

(Id., at 2.)

83. CG&E's policy of performing only superficial receipt inspections for identification and transit damage illustrates further deficiencies. Kaiser decided to go beyond the usual surface inspection on the Nash condensor, an essential component. When Mr. Griffin broke the seal and looked inside, he saw the motor had broken off. Due to a core shift, the flange supporting the motor had walls of uneven thickness, and the flange had cracked. (Id., at 5.)

84. CG&E's President William J. Dickhoner still does not believe source inspections were ever necessary. Rather, he perceived source evaluations more as attempts by Kaiser inspectors to take vacations (presumably at suppliers' manufacturing sites) at the utility's expense. As Mr. Dickhoner stated publicly last month, "I don't think there was anything sinister in telling people who were working for us how to proceed. They were traipsing all over the country on junkets that weren't required." (Attachment 61, supra.)

85. Even when Kaiser or CG&E management conceded that required source inspections were skipped, corrective action has been limited to future purchases. At least in some cases, items purchased previously without required inspections will be allowed to remain in the plant with their quality unverified. (See, e.g., a June 5, 1981 Kaiser CAR enclosed as Attachment 68.)

86. CG&E is reluctant to make retrograde repairs, in part, because it may lose warranties on the product. To illustrate, valves are assembled in a series of steps and then sealed. The inspections for work on the inside must be done before the valve is sealed. If the seal is broken without permission, the vendor can refuse to honor the warranty. As Mr. Griffin explained, "(N)ow CG&E cannot disseminate the components, parts and materials to do the inspections that should have been done at the hold points. It would lose the warranty. Nevertheless, this step must not be skipped." (Attachment 67, supra, at 6-7.)

MANIPULATION OF PAPERWORK

87. CG&E and Kaiser did not even perform adequate paperwork reviews. Mr. Griffin pointed out that "frequently the paperwork was not even checked for up to 1½ years." (Id., at 3.) The Nolder Report revealed that the review procedures, and resulting documentation, were so sloppy that they represented a professional embarrassment: "These records do not represent compliance with the QAP requirements and would cause an unbiased observer to question their validity as well as the qualifications of personnel generating and approving them..." To illustrate the effects, heat numbers for both essential and non-essential items have been grouped together, and non-essential items were approved for essential use. (Attachment 41, supra, at 3, 9-10.)

88. The mixing of essential and non-essential items was one symptom of a serious, fundamental breakdown in the vendor QA program. The Nolder Report found that 80 to 90 percent of structural materials were purchased as non-essential and later upgraded. "(A)s a cost saving policy, CG&E directed that structural materials be purchased as Non-essential and later upgraded to Essential for construction purposes..." (Id., at 3.) Mr. Griffin was an eyewitness to the practice: "When we didn't have material from approved vendors, he would release it from the non-essential materials stockpile and in effect upgrade it. I refused to engage in this practice, because it violated Kaiser's own QA manual. Friedrich did not argue with me; he just did it himself." (Attachment 67, supra, at 3). To further compound the problem, on October 8, 1974, W.W. Schwiers instructed Mr. Friedrich to stop requesting "Certificates of Compliance" for non-essential components, in an effort to "reduce Document Deficiency Notices." (Attachment 69.)

89. Essential materials are subject to very stiff requirements to verify quality. They may only be bought from approved vendors. Essential purchases require heat traceability and material certificates. Significant defects on essential purchases must be reported to the NRC under 10 C.F.R. Part 21. Essential purchases also contain more detailed documentation for the Receiving Inspection Plan. (Attachment 41, supra at 3-4.) In effect, the CG&E upgrading program bypassed the traditional nuclear QA program for essential material purchases.

90. When somehow the QA program actually caught a nonconforming condition on a vendor purchase, CG&E was again prepared to circumvent the proper response. In the spring of 1973, CG&E directed Kaiser to change all NR's written on vendor purchases to Inspection Reports ("IR"), if the purchases were returned to the vendor before installation. This would

prevent the NRL from being informed of the nonconformances as an Inspection Report is not shown to the NRC like an NR. It is not given the review to which NRs are subjected. See (Attachment 70) for three examples of an Inspection Report. This policy also makes it impossible to compile accurate "percent defective statistics" on outside vendors, the QC trend analysis normally used to evaluate vendors. (Attachment 67, supra at 4.)

91. As a result of the vendor QA program breakdown, even vendors with the most severe deficiencies passed through CG&E and Kaiser's Quality Assurance program. Mr. Nichols recalls that in the early 1970s he had temporarily shut down the Bristol plant for "completely inadequate welding procedures on-site." (Attachment 38, supra, at 2.) And IE Report No. 50-358/81-13 listed noncompliances involving Bristol Steel purchased for the containment in the early 1970s. (§ 7.1.8) Yet Bristol Steel and the welds for structural steel in the containment are also a major focus of the Quality Confirmation Program, Tasks I and X.

92. The May 12, 1982 ASME interim report cites numerous deficiencies for the LaBarge Corporation. The ASME team also disagreed with the "Accept-As-Is" disposition for Kaiser NR's that identified the same problems. The ASME team warned, "The National Board Audit Team believes that similar problems exist in all Section III materials provided by LaBarge and possibly other suppliers. This shall be resolved by Kaiser." (Attachment 37, supra, at 11.)

93. ASME's fears had already been documented in internal Kaiser reports that were disregarded. The reports indicated Kaiser knew in 1976 that 400 feet of LaBarge-purchased pipe was originally obtained from an unapproved vendor. Kaiser knew as soon as the pipe was received. But Mr. Friedrich wrote off the internal Document Deficiency Notice by waiving the AVI requirement. Again, the loophole was no mere technicality. The piping was laboratory tested and

found deficient. Mr. Friedrich then voided the resulting NR. On January 30, 1982 a new NR was written for the same piping. (See Attachment 71 for a summary and compilation of the relevant reports and documents on this purchase.)

94. Zimmer did not participate in the vendor QA standards of the nuclear industry. As a result, any corrective action will have to be comprehensive. As Mr. Griffin summarized:

> On balance, the significance of my affidavit is that the quality control program for vendor purchases has failed for ten years, not just a few. It is inadequate to just reinspect parts purchased over the last few years. They all have to be covered. Further, a surface inspection will miss all of the flaws hidden underneath.

(Attachment 67, supra, at 6.)

D. Failure to Maintain an Adequate Quality Assurance Program To Identify and Correct Construction Deficiencies

CRITERIA I and II - Organization and Quality Assurance Program

95. Most of the criteria of 10 C.F.R. Part 50, Appendix B, stem from Criterion I - Organization, and Criterion II - Quality Assurance Program ("QAP"). The criteria require a carefully controlled and documented QAP, with necessary staffing and training. Criterion I also describes the premise that provides legitimacy to a licensee's QA program: "Such persons and organizations [performing quality assurance functions] shall have sufficient authority and organizational freedom to identify quality problems; to initiate, recommend, or provide solutions; and to verify implementation of solutions." At Zimmer CG&E policies dominated these premises, and in the process took the rest of the quality assurance program -- step-by-step.

96. The premise for quality assurance at Zimmer was simple: at the maximum, do the minimum. The entirety of this petition demonstrates that violations of minimum government and professional requirements were common.

Mr. Griffin recalled a letter from CG&E that "directed us only to conform to minimum NRC requirements." (Attachment 67, supra, at 4.) Mr. Griffin was correct. There were many such letters, from the beginning of construction. On December 16, 1971, CG&E's Chief Engineer A. E. Rothenberg set the basic groundrules:

> This letter will confirm a CG&E policy previously reported orally at two consecutive engineering and coordination meetings.
>
> THE QUALITY ASSURANCE EFFORT AS REQUIRED BY THE USAEC IS TO BE LIMITED TO CLASS I ITEMS ONLY.
>
> ON OTHER THAN CLASS I ITEMS THERE WILL BE NO SUCH QUALITY ASSURANCE EFFORT BUT SOUND ENGINEERING AND CONSTRUCTION INSPECTION PRACTICES, AS NORMALLY EXERCISED BY THE UTILITY INDUSTRY, WILL BE CARRIED OUT ON THE ENTIRE JOB.
>
> (An identical letter has been sent to Sargent & Lundy.)

(Attachment 72, capitals in original.) A week later CG&E reiterated the December 16 policy while reviewing a proposed Kaiser QA manual: "Based on the above, the preface to the Manual should indicate that the scope of KEI quality assurance activities is limited to Class I generally and expanded to lower classes as directed by CG&E." (Attachment 73.) To illustrate how critical the omissions were, on November 7, 1980 three CG&E and one Kaiser official signed an order that certain preoperational testing "shall not require certification by Henry J. Kaiser that all Construction QA documentation has been reviewed." (Attachment 74.) In other cases CG&E simply relieved Kaiser entirely of QA responsibilities, such as when it replaced Kaiser on October 19, 1976 for the Electric Operating Test Department program. (Attachment 75.) The CG&E policy was to let supposedly sound construction industry practices govern quality assurance for all non-Class I safety-related items instead of nuclear-related regulations. But the QA department has responsibilities beyond Class I. The codes direct that the QA effort apply to all Class I, II and III items without exception.

THE SUBORDINATION OF QA TO CONSTRUCTION

97. CG&E policy inherently defeated the key premise of Criterion I -- organizational independence and authority for QA personnel to do their jobs. This violation was a major factor in last November's fine. (NRC IE Report 50-358/81-13, at .) The report failed to disclose, however, that the program had operated illegally for ten years, since 1971. The subordination of QA to construction was not an isolated occurrence; it permeated the program. This subordination was sufficiently entrenched that construction did not fear to threaten QA inspectors. A Lead Electrical Quality Engineer indicated that "Bob Marshall...walked into the Quality Control Office one day and shouted to everyone present 'I will see that all of you QC people will never work at a Kaiser site again'." (Attachment 76.) For another example, a March 18, 1975 letter from Mr. Pandorf to Kaiser's Friedrich (Attachment 77) suggested that field instructions and procedures for inspections ("QACMI" and "CIP") should be "developed by the people responsible for construction" and "specified as construction or management directives." (Id., at 2-3.) This effectively would allow construction to decide when and if the QA program would be applied. In 1974, CG&E repeatedly forbade Kaiser from extending QA field procedures to installation work, and discontinued QA procedures that covered installation. (Attachments 78A-C.) Mr. Pandorf extended the construction department's control to nonconformance reports, a Quality Control Inspector's primary tool to trigger the QA correction process.

> Obviously the inspectors who find nonconformances would have an input, but the preparation should go back to the most knowledgeable party, which is Construction Engineering. Certainly the preparation should not be done by QA Engineers.

(Attachment 77, supra, at 4.) Further, in a November 30, 1976 memorandum, Kaiser Construction Executive E. V. Knox reported that CG&E's William Schwiers "expressed his opinion on organization that inspection personnel should report

to Construction Engineering for control and Quality Engineers should audit and surveil for assurance that things are done properly." (See July 9, 1982 letter to Chairman Palladino and exhibits, enclosed as Attachment 79, at Exhibit 5.)

98. To illustrate the effects, on March 4, 1975 CG&E responded to Kaiser's request to hire a QA painting inspector. Mr. R. J. Van Veen said that the "painting foreman and the craft superintendent can perform the necessary inspection." (Attachment 80.) In other words, in addition to building the plant, construction crews would do the QA inspections for their own work. The policy institutionalizes conflicts of interest as it attempts to combine two organizations -- with distinct roles and perspectives -- into one organization, without additional staff. It is incompatible with 10 C.F.R. Part 50, Appendix B, but has been a way of life at Zimmer from the beginning.

99. The way of life continued. On March 6, 1981 Mr. Terry Harpster, who served as NRC Project Manager for Zimmer and was on-site from October 1977 to September 1979, spoke with NRC OIA investigators. (Attachment 81.) Harpster explained the effects of financial and time pressure from the construction department on a QC program that lacks independence: "Harpster said that for a QC inspector to stop construction for any deficiencies, he would have to hold up many phases of construction of a $1 billion plant; so the QC inspectors normally do what they are told." On December 9, 1981 Mr. Jagger's report for the National Board of Boiler and Pressure Vessel Inspectors described the current status: "Persons performing Quality Assurance program inspections [at Zimmer] were not being provided the required freedom and authority to initiate quality control functions." (Attachment 32, supra, at 3.) As but one of many examples, in 1982 CG&E and Kaiser also adopted an IIDR system which reaffirms the superior authority of construction to thwart QC inspectors from correcting identified deficiencies to their satisfaction. (Infra, at 71 .)

100. Even within its own corporate structure, Kaiser QA did not have organizational independence from CG&E. CG&E attempted to control official communications between the Kaiser site and corporate QA offices. For instance, on May 23, 1975 Mr. Schwiers wrote to Kaiser about QA procedures for special processes like welding and heat treatment. (Attachment 82.) He concluded, "Please discontinue the policy of sending procedures to Oakland for approval prior to acceptance. Sending the procedure to Oakland delays immediate use of the procedure.... If this policy is not clear, please contact me at your earliest convenience." While the CG&E policy was clear, again it violated 10 C.F.R. Part 50, Appendix B. Criterion I requires "sufficient independence from cost and schedule" considerations that any QA staffer "at any location...shall have direct access to such levels of management as may be necessary to perform this function."

INADEQUATE QA STAFFING

101. As Criterion I recognizes, it is not possible to have a sound QA program without an adequate staffing level. Until April 8, 1981 CG&E refused to honor this rule, despite the sometimes desperate pleas of Kaiser QA managers. The nature of the struggle is clear from a 1974 exchange of correspondence. On October 14, 1974, Kaiser's Site QA Manager Friedrich urgently requested the personnel to carry out the department's duties. He explained,

> [I]t is absolutely necessary to hire the inspection personnel to assure the requirements of 10CFR50, Appendix B are met.
>
> Every effort is being made to comply with the drawings and specifications, codes, and standards with a minimum number of people, but it is becoming virtually impossible to continue working in all the areas with the present staff.
>
> The Quality Assurance program as written and approved by ASME and AEC was predicated on the attached organization chart. In order to continue the program and maintain the current confidence that the system is sound and adequate, it behooves us to complete the manpower staffing as quickly as possible.

(Attachment 83.) Despite Friedrich's warning of certain failure to meet minimum code and AEC requirements, CG&E refused the request. In an October 30, 1974 letter (Attachment 84), CG&E President William Dickhoner responded, "We have reviewed your request for authority to build up your inspection forces and it appears to us that there is no justification for increasing the current staff strength.... [W]e are unwilling to accede to your request for new hiring at this time."[5/] In a November 1, 1974 memorandum (Attachment 85), Kaiser executive V. P. McMahon reacted realistically: "Needless to say, we cannot conduct a proper Q.A. program without the necessary manpower."

102. CG&E remained unimpressed. On December 9, 1974 Kaiser requested 23 additional non-manual personnel. On January 15, 1975 CG&E's Earl Borgmann agreed to hire five or possibly six. (Attachment 96.) He conceded an inability to "completely judge your needs" but explained, "[T]he level of expenditures attained to date on this project makes it mandatory to tighten the control reins, hopefully without jeopardizing your efforts." (Emphasis added.)

103. Internal Kaiser memoranda from later in 1975 indicate that Mr. Borgmann was hoping for a miracle. On February 17, 1975 Friedrich wrote that--

> [I]t is obvious that (4) four mechanical or welding inspectors cannot cover the work of 150 or 200 welders. I will continue to request more inspectors in this discipline until I have a sufficient number to inspect the work satisfactorily.
>
> ...
>
> This analysis represents the minimum effort required by the codes and standards, the AEC, and that necessary to provide the control needed by Kaiser Engineers. Needless to say, we cannot conduct a proper QA program without the necessary manpower.

[5/] Mr. Dickhoner's justification was ironic. He did not want Kaiser to duplicate the inspection efforts of such subcontractors as CB&I and Bristol, whose QA performances later led to serious violations of ASME and NRC requirements in the containment lining and structural steel, respectively. (Supra, at .)

(Attachment 87.) On March 26, 1975 Mr. Friedrich noted, "We do not even have [QC inspection] coverage on the second shift which is building up." (Attachment 88.) On August 1, 1975 Mr. Friedrich requested Oakland to approve four more inspectors to the staff of 13. (Attachment 89.) Friedrich explained:

> These additions will bring our total inspection staff to 17. This represents a ratio of one inspector for every 51 direct craftsmen. By comparison this is far less than any nuclear plant being built under 10CFR50. It is also risky business to operate so lean that sickness, vacation or personnel quitting without timely replacements could seriously jeopardize quality.
> ...
> Right now we are getting by with temporary summer help, under the Affirmative Action Program Summer Employment of Youths.

104. QA staffing remained substandard. Even in 1978, during one of the busiest construction periods, there was only a total of 38 persons on Zimmer's QA force. (Attachment 90.) Other nuclear construction sites have substantially larger QA staffs to perform their responsibilities.

105. Kaiser's requests for an adequate number of inspectors continued to fall on deaf ears until the NRC's April 8, 1981 Immediate Action Letter. (See MVPP Motion for Leave to File New Contentions, Attachment 9, supra.) Mr. Tyner, who left in 1978, recalls the situation was so bad that the construction supervisors unsuccessfully requested enough QA inspectors to keep pace:

> Many times we waited hours and sometimes days before the QA inspectors came to check the welds. I believe that was because of inadequate staffing.
> ...
> Our supervisors at Kaiser told us that they had requested more QA personnel from CG&E. However, the number of QA personnel never kept pace with the number of journeymen tradesmen.

(Attachment 17, supra, at 4.)

106. The QA short-staffing at Zimmer extended beyond Kaiser, even to the number of Authorized Nuclear Inspectors ("ANI") available to enforce the American Society of Mechanical Engineers ("ASME") code. As Assistant Director

of Inspections Richard Jagger explained in a December 9, 1981 letter to Mr. Borgmann,

> A review of the Authorized Inspectors logs on site showed that for approximately 90% of the time period under which this plant was under construction, only one ANI has been assigned. The plant is now 97% complete. It is impossible for one ANI to inspect to ASME requirements under normal situations, and to assume one ANI can maintain proper inspection monitoring when the Quality Assurance Program is not functioning properly is ludicrous.
>
> One ANI in a nuclear plant under construction can only give cosmetic and token type inspection service. If the ASME third party inspection philosophy is to be meaningful, we must have proper and adequate inspection by ANI.

(Attachment 32, supra, at 4.)

107. Mr. Jagger's comments could apply equally to the Kaiser QA program. Although staffing levels are adequate since the Immediate Action Letter, that does not compensate for the effects of drastic short-staffing for a decade. The significance is that until 1981, as a routine Kaiser inspectors did not have enough time to make thorough assessments of potential problems. The deficiency throws the quality of all inspections into question and dictates that current "confirmation" reforms must be comprehensive.

INADEQUATE TRAINING

108. Of course, it is not sufficient merely to have warm bodies; the QA personnel must be properly trained and qualified. Again minimum requirements were not met. The CG&E policy on training was summed up in the Minutes of a February 28, 1975 CG&E-KEI QA meeting: "E. C. Pandorf cautioned KEI not to go overboard on training and to use the inclement weather for such activity." (Attachment 91.) The hesitation to fully train QA personnel turned into a long pause. A March 28, 1980 Kaiser memorandum (Attachment 92) listed the following assignment: "[I]nitiate development of a QA Indoctrination Training Program and submittal/approval of requisition for new training personnel."

109. The inadequate training program has persisted since the Immediate Action Letter, negating the effect of personnel increases. To illustrate, a November 24, 1981 CG&E Corrective Action Report (Attachment 93) identified the "[f]ailure to train inspectors adequately prior to performing Inspections," due to "[n]o evidence of training" for certain QA procedures. The CAR stated that the failures violated ANSI standards and the Region III IAL, Item 5.

110. As an April 1982 Science Applications, Inc. ("SAI") Semi-Annual Management Audit (Attachment 94) revealed, the problem persists. The audit found "no objective evidence...that NED [Nuclear Engineering Department] personnel are being indoctrinated, trained, qualified or certified in accordance with procedural requirements." (AFR 82-1-1.) The particular problem had persisted for years. See Attachment 23, supra, at 13, where Richard Reiter says his NED training was almost nonexistent.

111. Mr. Harpster described the net effect of combined construction financial pressure and untrained personnel -- disintegration of the QA effort:

> Harpster said that sometimes so many things are wrong that a plant is out of control. Harpster concluded that "Zimmer was out of control." Harpster explained that a licensee's ability to get money for the construction of a nuclear power plant (by, e.g., the sale of bonds) is based upon the percentage of completion of the plant. He said that this results in a situation where the construction personnel attempt to turn things over as completed before they are ready. Harpster said that what then happens is that the licensee staff is not properly prepared or trained to handle them. He said when the licensee finds things that are wrong, they cannot fix or test them properly. What they must do is give the problems back to construction to be remedied. Harpster said this is indicative of a construction QC program that does not work.

(Attachment 81, supra.) For example, Mr. Harpster pointed out that "the employee who was being placed in charge of the start up operation only had about three months actual experience in the plant.... [A]s a practical matter, there was no QA program for operations." (Id.)

112. Even when training sessions were conducted, sometimes the classes taught the wrong procedures. Mr. Nichols explained, "[P]ersonnel are trained in procedures that have already been superceded. In fact, when I left recently the procedures used to certify Level I and Level II Document Reviewers...did not even meet ANSI standards." (Attachment 38, supra, at 3.)

113. The approach to qualifications standards was also to skirt the minimum. To illustrate, a July 28, 1981 internal Kaiser memorandum specified that CG&E was committed to the 1973 ANSI standards requiring QA personnel to have high school diplomas. (Attachment 95.) On August 11, 1981, CG&E responded to an NRC request for verification that CG&E met the standards of the codes to which it was committed. CG&E's response was to dilute its qualification standards and certify individuals without high school degrees. (Attachment 96.)

114. As with training, personnel were qualified to outdated QA procedures. (Attachment 38, supra, at 3-4.) According to a February 4, 1981 Kaiser memorandum from K. Shinkle to C. A. Burgess, the problem of being trained to improper procedures existed at every one of the 16 training classes Mr. Shinkle attended. (Attachment 97.)

115. The result has been unqualified personnel throughout the Zimmer QA program. As seen above, co-op students were given key inspection duties. An October 27, 1976 letter from Mr. Schwiers stated forthrightly, "We intend that, during the balance of the construction work, a student and alternate be assigned for use in enforcing Quality Assurance requirements." (Attachment 98.) The questionable qualifications extended to the supervisor (Attachment 16, supra, at 13-14) and top management levels (Attachment 38, supra, at 3-4).

116. The lack of proper qualifications and training has compromised reliability of QC inspections. The effects are illustrated again by internal documents issued since the NRC began its April 1981 reform program. An October 30,

1981 CG&E Corrective Action Report (Attachment 99) listed, inter alia, the following deficiencies: "1. Documenting inspections on Xerox copies. 2. Inspection personnel not addressing obvious documentation problems on NR, CAR, etc.... 3. Partial inspections of items being documented by hand written notes. 4. The use of "Courtesy Inspections" to accomplish repair of nonconforming items.... 7. Lack of attention to properly documenting conditions in the field and thereby failing to implement the intent of the QA program." The C.A.R. illustrated the cause of each example cited to support the conclusions as, "Supervision and Training inadequate."

117. Within the past few months, CG&E has conceded that training and qualifications for inspectors remain fundamentally deficient. An April 30, 1982 Quality Confirmation Program status report questioned the competence of the inspectors performing Task I inspections. All 1,685 nonconformance reports generated by these inspectors during the QCP were placed on hold, the inspection procedures were revised, and the inspectors were retrained before beginning the reinspection of Task I items. (Attachment 100.)

INADEQUATE QA PROCEDURES

118. As seen previously with subcontractors, in many key instances mandatory inspections did not occur at all. For example, a June 13, 1979 Field Audit Report found that embedded plates and angle plates had been fabricated on-site for a year without QA inspections. (Attachment 101.) The audit incisively identified why the inspections didn't take place. There was no QA procedure for "alerting QA inspection personnel when fabrication will commence." (Id., at 3.) Inadequate procedures have also neutralized stepped-up training programs. (Supra, at .) These were only symptoms of another generic problem at Zimmer -- incomplete, outdated, or incorrect QA procedures and manuals.

119. Even when a procedure existed for QA inspection of construction work, there was an excellent chance the procedure was either obsolete or incorrect. A December 14, 1979 letter from Mr. Schwiers informed Kaiser that "the copies which all work is being done to are obsolete.... Work is presently being performed contrary to approved procedures." (Attachment 102.) Mr. Shinkle's February 4, 1981 memorandum puts the issue in perspective for all QA manual and field procedures:

> All of the sessions have shown that every procedure needs [sic] revised. Several of the procedures to not meet the minimum requirements of the specifications or standards established for this site include 10 CFR 50 App. B. Criteria V. These procedures could be a significant problem....

(Attachment 97, supra.)

120. On June 7, 1982, Mr. Nichols disclosed that the post-IAL process of revising the QA manuals has proven ineffective:

> [A]fter the NRC found the KEI QA manual deficient, the entire manual was rewritten. Unfortunately, only the organization and language were changed, not the substance. The QA procedures remain just as deficient under 10 CFR 50, Appendix B as before the NRC report.

(Attachment 38, supra, at 1.) The April 1982 SAI audit demonstrated that procedural amendments are still suspect. The audit found that QA procedures for anchor bolts in core-drilled holes were improperly revised through a site communique, rather than the normal approval process. (Attachment 94, supra, AFR-82-1-2.) In short, the absence of minimally adequate QA procedures and manuals throughout construction of Zimmer undercuts the foundation of every QA conclusion. There is no confidence about what rules the QA personnel have applied -- their own, the professional codes, or the NRC regulations.

UNDOCUMENTED CONSTRUCTION AND REPAIR WORK

121. For some construction work there was not even an inadequate QA procedure. None existed at all. Procedural gaps for specific tasks could be expected in the early stages of construction. But it is surprising that procedural gaps have been a recurring phenonemon in recent years. For instance, a July 31, 1980 surveillance report indicated many instances where flanges and valves were being disassembled and reassembled without an approved procedure for torquing, or tightening, the bolts. The report added that in a majority of cases vendor QA manuals on-site did not give torque requirements. The corrective action statement was merely to ask the construction department for guidance on industry standards. (Attachment 103.) In light of the critical safety significance of valves, it is hard to accept that QA procedures should not apply when they are disassembled and reassembled. In fact, an August 27, 1981 CG&E Corrective Action Report confirmed, "There needs to be an inspection procedure for torquing valve bolts and torque sequence as well as a procedure for witnessing and inspecting and documenting the same." (Attachment 104.) Similarly, a November 19, 1981 CAR reported, "There is no procedure in effect which insures adherence to the above requirement [for uniform contact and stress in bolting gasketed flanged joints] nor any approved documentation on file." (Attachment 105.) The late discovery of these nonexistent procedures raises a real question about what percentage of Class I systems have been omitted from <u>any</u> QA oversight for particular construction work.

122. The result of QA inspection and procedural omissions has been undocumented, informal construction and repair work. Under the IIDR system those conditions are perpetual. The plant is left in a "quality indeterminate" state. At Zimmer an unknown number of deficiencies may lie dormant, having circumvented the QA system. There is no dispute that unapproved repairs should

not occur. As Mr. Schwiers explained in a September 22, 1975 CG&E letter,

> Recently, it was brought to our attention that temporary revisions to essential components have occurred in the field without appropriate authorization. This situation covered removal of manifolds on the main steam isolation valves during the installation of these valves. Procedures of this type jeopardize the warranty and assurance of the proper operation of the equipment at a future date.

(Attachment 106, at 1.)

123. The policy against unapproved modifications has not always been followed, however. To illustrate, an August 27, 1981 CG&E memorandum noted that an improperly dispositioned NR dictated removal of vendor-installed terminal blocks and electrical wiring for eleven motor operated valves. The memorandum expressed concern that unapproved work could damage the wiring through vibrations, and negate the warranties. Further, the informal changes were not incorporated into the vendor's drawings. (Attachment 107.) These practices have been repeated, at least for GE purchases, weld repairs, and parts substitution after hydrostatic testing. (Infra, at .)

MISSING RECORDS

124. The problem of missing irretrievable records has existed for years at Zimmer. (See, e.g., a December 6, 1979 memorandum from Authorized Nuclear Inspector Lowell Burton, enclosed as Attachment 108.) If anything, it has intensified since CG&E assumed control of QA records through the April 8, 1981 IAL. A December 21, 1981 GE audit (Attachment 109) revealed the level of functional paralysis. The GE auditors gave CG&E two days to find 22 work packages, with the following results:

> Because of CG&E's control of records in a central vault, Kaiser Quality Engineering personnel indicated that retrieval could present some problems. This proved to be the case as only eight mechanical Work Packages were delivered late on the 19th and no electrical documentation was made available.

(Attachment 109, supra, at 1.)

125. The composite effect of missed inspections, inspections to the wrong procedures, and missing documentation is that in an unknown number of cases, the quality of work at Zimmer is indeterminate. As the November 24, 1981 CAR stated--

> Quality Inspection Procedures and Verification Documents lack sufficient qualitive [sic] and quantitative data and clarity regarding documentation to provide objective evidence of acceptability.
>
> A. CG&E has had to stop Inspection attempts when inspections were going to be performed to inadequate Procedures/Verification Documents and unapproved Procedures/Documents as referenced in Item 1 above.
>
> B. Actions Violated following requirements
>
> (1) ANSI N45.2 Section 6,11
> (2) Region III IAL Item 4,5
> (3) QAP 7
> (4) 10 CFR50 Criterion 7.

(Attachment 93, supra, at 4.)

126. The proper response to undocumented quality indeterminate work is clear. Critical safety items must be removed from the system. The ASME survey team applied that standard to pumps and valves, unless documentation could be provided that the work was performed to ASME Code requirements. (Attachment 37, supra, at 11-12.)

INADEQUATE OR NONEXISTENT AUDIT PROGRAM

127. 10 C.F.R. Part 50, Appendix B, Criterion XVIII requires a "comprehensive system of planned and periodic audits...to verify compliance with all aspects of the quality assurance program and to determine the effectiveness of the program." If the auditing system were functioning properly, the basic training, inspection, procedure and documentation deficiencies described above would have stopped recurring.

128. CG&E has long been aware of the need to improve its audit program. In a January 16, 1975 letter, after a "disappointing" NRC audit, CG&E's E. C. Pandorf conceded that "further training, auditing, inspecting, and surveillance are required to assure implementation of the KEI Quality Assurance Program." Pandorf informed Kaiser that "we must and will put more emphasis on auditing your activities." (Attachment 110.) Not only did CG&E fail to honor its own auditing responsibilities (NRC IE Report 50-358/81-13, at 152), it also prevented Kaiser from conducting audits. The 1981 GE audit report disclosed, "HJK audit function was discontinued at the direction of CG&E...." (Attachment 109, supra, HJK 81-1-3.)

129. While CG&E has reinstated the audit program, there are still severe questions whether it meets the standards of 10 C.F.R. Part 50, Appendix B. Again, the key flaw is the lack of organizational freedom. As Mr. Jones' congressional testimony pointed out, the QA procedures built in conflicts of interest by giving the Manager of Quality Engineering ("QE") extensive review authorization over audits. Unfortunately, the QE Department could be the target of the same audit it oversees. In one instance, when auditors wrote up a memorandum challenging NES deficiencies as a potential 50.55(e) report, they were ordered to stop writing embarrassing memoranda. On another occasion when the auditors challenged CG&E's own failure to meet AVL standards, the audit was postponed and the personnel replaced. In April 1982 the new audit training coordinator even told auditors as a general practice to refrain from writing memoranda, recording observations, or making recommendations. Mr. Jones protested what he characterized as a "gag order." As he explained to Congress, "Without the required authority and organizational freedom, effective implementation of a quality assurance program is impossible." (Attachment 43, supra, at 4-10.)

THE NEED FOR CORRECTIVE ACTION

130. Effective corrective action is the bottomline for a quality assurance program. Getting results requires a comprehensive response to identified violations. As Mr. Schwiers complained in a May 9, 1973 letter (Attachment 111), about an audit of weld rod control,

> In conclusion, the corrective action does not reflect what had caused the breakdown of the welding rod control. The statement as indicated, sounds good but I have doubts as to individual instruction eliminating the reoccurrence of the deficiency as covered by the audit.

Unfortunately, the continuing lack of weld rod control throughout the decade (supra, at) indicates that the causes were never addressed.

131. A second premise for effective corrective action is to learn the full scope of the damage that has already occurred. If the initial testing sample identifies deficiencies, the sample must be expanded until the extent of the problem can be identified with a high degree of confidence. At Zimmer the QA response was not expanded as serious symptoms were identified. Again, however, at Zimmer the corrective action response skirted the problems. When specific examples of NRC or code violations were identified, at best those violations were corrected. The full extent of each problem frequently has remained a mystery, because initial identification did not trigger wider QA verification efforts. (Attachment 23, supra, at 5.)

132. Beyond learning the full scope of previous damage, an effective corrective action program must address deficiencies retroactively. Particularly in a plant 97% complete, it is of relatively little significance to follow procedures for the last 3%, but ignore the effects of improper procedures on the previous 97%. Even in 1981 after the Immediate Action Letter, CG&E restricted corrective action to future violations. To illustrate, a July 1, 1981 CG&E memorandum discussed a Stop Work Order against construction practices the NRC

felt could lead to bolt and concrete damage. The memorandum discussed appropriate procedural and training revisions before concluding, "The conditions which resulted in the Stop Work Order have been resolved and work may resume." (Attachment 112.) Unfortunately, the memorandum did not mention a review to determine the effects of the previous policy.

133. The combined and continuing impact of inadequate training, improper qualifications, lack of organizational freedom, abuse of procedures, inadequate inspections and minimal corrective action is clear. The QA program at Zimmer still has not mastered the basics since the April 1981 NRC-imposed reform program. The November 24, 1981 CAR notes the frustration that 11 of 23 other CAR's in 1981 were for inadequate inspection procedures or the absence of verification documents. As the report concluded, "[S]erious deficiencies exist in Management's Control of assurances that the Zimmer QA/QC Program is established, implemented, and proven to meet the requirements" of 10 C.F.R. 50, Appendix B, the IAL, and the ANSI standards. (Attachment 93, supra, at 4, emphasis in original.)

HEAT TREATMENT

134. The breakdown of the QA structure at Zimmer can be illustrated through its impact on key construction tasks. For instance, heat treatment is an essential process to maintain the strength of piping. Heat treatment compensates for the stresses created by welding. Too little heat treatment could fail to relieve piping stress; too much treatment could create new damage. A May 13, 1976 ASME survey reported, however, that cumulative heat treatment practices at Zimmer were deficient. There was no procedure to assure that cumulative heat treatment times were within the manufacturer's specified limits. (Attachment 113.)

135. While the ASME survey team properly identified the heat treatment problem, CG&E and Kaiser had to implement the corrective action. Not

surprisingly, severe heat treatment deficiencies still existed six years later. This time the code requirements for preheating the piping were ignored. This basic deficiency was recently discovered for some of the most critical safety-related lines in the plant. As the ASME survey team disclosed, "The problem is generic throughout the Feedwater system and may exist in the following systems: Residual Heat, HP Core Spray, Mainsteam and Reactor Feedwater." (Attachment 37, supra, at 8-9.)

HYDROSTATIC TESTS

136. The major milestone for each system is the hydrostatic test, which subjects pipes and valves to more pressure than under normal operations. The tests were witnessed by Kaiser and CG&E representatives, as well as the Authorized Nuclear Inspector. Hydrostatic tests are a sensitive operation, since over-pressurization could weaken the piping and valves internally, causing them to wear out unexpectedly. Again the QA program displayed repeated weaknesses. Initially, required drawings were missing from the test packages. A January 25, 1980 memorandum reported this omission as a "prevalent finding." (Attachment 114.)

137. Improper procedures were used during the hydrostatic tests, again after the IAL reform. A November 12, 1981 Surveillance Report (Attachment 115) reported QA deficiencies for hydro-tests in the main steam piping. The surveillance, however, found that pressure gauges used in the test exceeded maximum allowable ranges. The gauges were not directly connected to the component. Vents were not adequate to purge air pockets. While the test was satisfactorily performed at another time, the first, ill-measured test could have weakened the piping. A May 17, 1982 Nonconformance Report disclosed overpressurization in the reactor core isolation cooling system during 1979 tests. Eight valves and five pipelines received almost 40% more than the maximum permissible test pressure. (Attachment 116.) Hardware damage can result. For example, Mr. Reiter's affidavit provides an account of eyewitnesses that seals were blown and water spewed

out during the hydrostatic test for the Reactor Pressure Vessel. (Attachment 16, supra, at 13.)

138. Additional repairs and modifications also created loopholes in hydrostatic test coverage. For instance, Mr. Tyner reported that new welds were installed in the containment after the hydro tests, and instrumentation lines were rerouted. This new work escaped hydrostatic testing, to the best of Mr. Tyner's knowledge. (Attachment 17, supra, at 6.) In 1979, CG&E and Kaiser responded by lowering the QA standards sufficiently to permit post-test welded attachments without conducting the hydro test again. (Attachment 117.)

WELDING

139. The most basic activity on-site, welding, is the best model to illustrate the structural breakdown of the Zimmer QA program. As seen above, traceability of welding materials has traditionally been deficient. (Supra, at .) The scope of Zimmer's welding problem recently has been aired in news articles (Attachments 118A-B), as well as five reports presented since December 10, 1981 by CG&E to the NRC under 10 C.F.R. 50.55(e). (Docket No. 50-358/M-29, 34, 38, 45, 49.) The analysis below will review the scope of welder QA violations and the organizational characteristics behind the problem.

140. Initially, CG&E's philosophy of not going beyond the minimum -- particularly with respect to qualifications -- underpinned welding. A February 10, 1975 letter (Attachment 119) from Mr. Pandorf instructed, "Chapter BB-201 [of the Ohio Building Code] does not require state certification of welding labs. KEI should discontinue its efforts to obtain certification of its weld testing facility." Gladstone Laboratories got the job. Gladstone has conducted tests for weld procedures and operator qualifications, trained weld inspectors at Zimmer, and even conducted reinspections of welds Zimmer previously rejected. Gladstone's perspective was revealed in an April 9, 1980 letter to CG&E. (Attachment 120.) Gladstone was serving as an "impartial third party" to resolve

a dispute whether 250 welds were acceptable. Gladstone's conclusions belied its bias: "At this point in time it appears that a welding problem really does not exist. The difficulty seems to stem from confused, obsessively critical, perhaps even intimidated visual weld inspection...." Warning against "exalted nit-picking," the Gladstone Vice-President philosophized, "Life does not present distressing trade-offs. Environmental issues and regulatory demands can become counterproductive."

141. A January 29, 1982 Kaiser "mini-audit" (Attachment 121) of Gladstone's work revealed wide-ranging deficiencies, including-- 1) no evidence of previous self-audits; 2) vague and incomplete records on material certification, filler material and inspections; 3) no documented evidence of periodic calibration for test equipment; 4) no list of approved sources for material purchases; 5) no provision for source inspections in purchase orders; 6) visual tests on raw materials as the sole means to assure physical and chemical properties; 7) little or no weld rod control; 8) no formal written inspection instructions; and 9) numerous omissions and deviations between Kaiser and Gladstone records for weld procedures. The report concluded,

> On the basis of this mini-audit it is quite apparent that this supplier has never implemented a formal Quality Control Program at this location. ...[T]heir lack of a formal Quality Control Program raises an Aura of Doubt as to their overall credibility and their capability to complete the Kaiser P/O's - (Contract) to the Referenced Standards.

The scope of Gladstone's impact on Zimmer extends to the first years of work:

> During the period August 1972 thru May 1974, some twenty (20) weld procedures and one (1) hundred and fifteen (115) welders were qualified thru the Gladstone location. The welders were processed directly to Gladstone from the union hall. The documentation on both the procedure and the performance tests is incomplete (missing material certs - weld data sheets - inspection/failure records, etc.).

142. The qualifications of welders at Zimmer have become a major focus of public concern. To illustrate, a July 27, 1982 news article revealed record problems for qualifications of nearly half of 500 current Zimmer welders and almost all of some 2,000 previous welders on-site over the last decade. And NRC official Dorwin Hunter confirmed that current suspect welders are having difficulty passing retests. (Attachment 118C, supra.) As seen by the Gladstone role back to 1972, the scope of suspect welder qualifications truly covers the entirety of work on-site. Mr. Tyner, who worked on-site from 1973-78, described how qualifications issues were resolved:

> When we came up against a weld requiring a procedure for which we could not find a qualified welder, the weld would be done with a person not qualified in that procedure. Later the person who did the weld would be tested and said to be qualified after-the-fact.

(Attachment 17, supra, at 3.)

143. The tradition of welders with suspect qualifications parallels the tradition of limited, subordinate involvement with welder qualifications. For example, on February 22, 1980 Chief Welding Engineer Worley O. Puckett announced in a memorandum that he would replace the QA program for "visual inspection on weld test coupons prior to radiography or a bend test." (Attachment 122.) An October 28, 1981 Kaiser corporate audit (Attachment 123) revealed both the lack of QA oversight and the predictable consequences:

> Contrary to the above, four (4) separate visits to the weld test shop revealed no Q.A. representative in the test lab. area on two (2) occasions, while a total of five (5) to eight (8) welders were engaged in operator qualifications. It was also noted that the welders taking these tests had freedom of movement and the latitude of visiting other test booths in the test lab. area.

(Id., at 21.) On January 12, 1982, Mr. Puckett announced, "As of todays [sic] date there will not be a second party in the test booth...." (Attachment 123.)

144. A review of internal reports and welder qualification records reveals the scope of the problem. Welders were tested to qualify for one procedure, and then worked to another more difficult task. An example occurred on the "Main Stream Seal Heads." (Attachment 124.) See also, Attachment 123, supra, at 15. In general, a February 23, 1982 internal memorandum (Attachment 125) described "welder qualification report forms - Q-IG (HJK and State of Ohio) that carry a number of discrepancies. Wrong thickness of qualification limits, wrong thickness of test piece, incomplete and unsigned report etc. are some of the problems...."

145. Twenty-one examples of welder qualification records from 1978-1982 submitted by counsel to the NRC staff contain the following characteristics--

a) same test referenced on both carbon steel and stainless steel qualification forms;

b) testing to 3/8th inch thickness pipes and that "qualified" the welder 3/4th inch thickness;

c) absence of evidence that mandatory procedures such as break tests were performed for certain qualification levels;

d) documentation that two X-rays were taken of weld coupons, when four were required;

e) reference to radiography of test welds, when radiography is not the appropriate non-destructive examination;

f) approval of test results by unqualified individuals;

g) weld rod issue slips that did not release enough electrode to perform the tests supposedly passed;

h) inconsistencies in the records for the thicknesses to which welders had supposedly qualified;

i) unexplained changes in pen to xeroxed copies of qualification records, which consistently upgrade the records;

j) signatures on the qualification records that do not match the stamp log; and

k) despite all these record deficiencies, a uniform absence of X-ray films, reader sheets or shooting sketches to verify any of the various versions of the records.

146. QA documentation standards for welding were deficient at Zimmer, with far reaching ramifications. The case of Class D piping is revealing. Again CG&E established the groundwork by ordering Kaiser to minimize the QA records. As Mr. Schwiers explained in a June 1, 1973 memorandum (Attachment 126),

> In accordance with your recent request concerning clarification as to the requirements for documentation for Class D Piping on the Phase I installation, I am attaching a copy of a note from R.L. Wood relative to this subject. As indicated, the requirements for documentation is an owner's prerogative and therefore, the pipe can be released for installation.

On January 21, 1975 Mr. Borgmann tersely affirmed the policy in a letter to Kaiser: "The KE-WELD-1 form is not required for Class D welds and is not to be used. These instructions are to be implemented immediately." (Attachment 127.) On June 12, 1978, a Kaiser memorandum (Attachment 128) reported that construction inspection plans could substitute for KEI-1 forms. The problem was that in many cases the piping was purchased as Class D and then upgraded to D+. A September 24, 1981 Kaiser inquiry to Sargent & Lundy inquired whether--

> 1) All documents related to Class D+ systems are required to handle and control the same manner as that of A, B, C classes.
>
> 2) Material traceability is required for all D+ systems, including systems upgraded to D+ during the course of construction.

(Attachment 129A.) A June 23, 1982 S&L response answered "yes" to each question. (Attachment 129B.) As seen earlier (supra, at ..) weld rod traceability and missing KEI-1 forms are a widescale problem at Zimmer. This evidence helps to explain why the problem exists and how difficult it is to solve. There are no traceability records to find. Due to CG&E's order not to provide more than minimally-required documentation, the necessary records to support the upgrading were never generated.

147. At any rate, the quality of welding QA records has not met the standards adopted. To illustrate, a February 26, 1979 audit report (Attachment

130) disclosed, "Only 3 of 20 KE Weld-1 Forms reviewed were acceptable. Only 12 of 20 Radiographic Reports were found acceptable without corrections to be made." Also see Attachment 123, supra, generally.

148. The quality of documentation for weld inspections has also been inadequate. As the December 9, 1981 letter from Mr. Jagger observed, "[A] search of the files failed to show that appropriate documentation had been provided [to support QC 'Transfer Acceptance Stamps' on weld histories]. Hence many of the welds which had been stamped acceptable under this proviso must be classified as questionable until the documentation is complete." (Attachment 32, supra, at 3.) The October 30, 1981 CAR reveals the extremes of the records deterioration. An inspector verbally rejected welds without documentation or KE-1A forms, and then accepted them through a note. (Attachment 99, supra, at 2.)

149. Welding QC inspection procedures may be as deficient as documentation. Mr. Jagger's December 9 letter revealed that several different approaches were used to inspect small bore "pull back" or fit-up, "some of which would prevent verification and inspection as required by Article NB-3661.5(b)." (Attachment 32, supra, at 3-4.)

150. The QA deficiencies have spilled over to compromise weld repairs as well. A February 23, 1982 memorandum reflected that weld repair cards have "re-work instructions that do not meet the code requirements." (Attachment 131.) As a result, the quality of repairs are suspect. A February 16, 1982 Surveillance Report (Attachment 132) on previously inspected and accepted weld repairs in the Main Stream system shows that the concern has substance. One weld in question had a root gap of 1/4" to 5/16", and another approximately 3/8", when the welding procedure specified a maximum gap of 1/8" only.

151. The above Surveillance Report illustrates the Zimmer QA effort at its best; as well as why the program is deficient. The Surveillance Report noted

that the two welds in question had been cut out. Improved procedures and improved training were promised "to prevent re-occurence of these problems at the earliest possible date." Unfortunately, the document is solely prospective. There was no discussion of followup to determine the full scope of excessive root gaps and cut out any other deficient welds. (Attachment 109, supra.) As a result, the full scope of weld problems remains a mystery. The welds might have been repaired that way routinely for the last decade.

152. A variety of other welding activities illustrates the extent of the de facto limit to Zimmer QA -- stop doing it wrong in the future. A February 22, 1979 Kaiser memorandum (Attachment 133) conceded that the requirement to enter base metal ASME specification numbers on weld repair cards had not been complied with "in the past." The corrective action was to "please from the [sic] date forth enter ASME specification Numbers for all KE-1 forms." There was no reference to identifying and verifying specifications for cards written "in the past."

153. The philosophy persisted after the April 1981 IAL. In a September 2, 1981 memorandum (Attachment 134) the chief welding engineer reported, "Just recently, we run [sic] across a welder, welding to a procedure which he was not qualified to." Again, the only corrective action was prospective:

> In order to avoid this problem in the future, I would like all superintendent to indoctrinate all their General Foremen on the proper procedures on how to fill out a Weld 2 Form (Rod Slip). Also, make sure all welders are qualified to the procedure that reflects on the Weld 2 Form (Rod Slip), which the General Foreman or Foreman fills out for each days work.

154. Amazingly, the prospective-only approach to corrective action even applied to missing surveillances and inspections. A July 28, 1981 CG&E CAR (Attachment 135) disclosed,

Description of Condition:

> HJK does not have a procedure, nor do they provide for surveillance and documentation of AWS D1.1-72 para. 6.5.3 and 6.5.4 requirements. Specifically surveillance for verifying that welders with the parameters specified by the applicable approved welding procedures, is not being performed.

The Kaiser August 18, 1981 corrective action response failed to mention going back to cover the missing surveillances and inspections: "HJK-SPPM 4.6 will be revised to include the requirements stated above. In the future, HJK Inspectors will conduct the necessary surveillance inspections and document their activities in accordance with HJK-QACMI No. G-14." (Id.) CG&E's September 11, 1981 "Verification of Corrective Action" reflected satisfaction with Kaiser's effort: "The corrective action taken has been reviewed and found acceptable. A follow-up review of the revised HJK-SPPM 4.6 will be performed at a later date." (Id.)

155. The radiography effort for radwaste piping welds illustrates the failure to expand the QA effort as problems are identified. A July 20, 1977 Kaiser memorandum (Attachment 136) reported that four random X-rays had been performed on radwaste piping, out of 18 that needed to be radiographed to meet the 20% testing standard. All four welds were rejected. The memorandum requested approval to X-ray 14 more welds and reach the 20% figure, without expanding the sample after the utter failure of the first four samples. A June 14, 1982 letter from Sargent & Lundy outlined a specific formula for expanding the X-ray sample as individual welds are rejected. (Attachment 137.)

156. Another symptom of an ineffective QA program is the occurrence of repetitive violations. A November 10, 1981 Kaiser Corrective Action Report identified a hanger work package where the welder was not qualified for the procedure used. This was the second occurrence. (Attachment 138.) A November

19, 1981 CAR reported that, for a third time, a welder had used the wrong rod for the stainless welding procedure used. (Attachment 139.)

157. There is no reason to believe that CG&E and Kaiser have altered their approach to welding problems. It appeared that constructive steps were being taken, through a "Welding Task Force" (Attachment 99, supra, at 6.) and by reporting significant deficiencies to the NRC through reports under 10 CFR 50.55(e). At the moment of truth, however, CG&E chose a different approach. According to news accounts, in July 1982 CG&E told the NRC that only 19 instances among nearly 500 welders raised serious problems for establishing welder qualifications, although Kaiser reviewers could only document fully the qualifications of eight welders. Before speaking with the NRC, CG&E had been explicitly warned that it would be impossible to prove the qualifications of 10%-15% of the welders because records "either never existed or were irretrievably lost." (Attachment 118B, supra.) CG&E maintained its seige mentality after the retesting effort began on the first 103 welders. Despite Mr. Hunter's candid assessments (infra), CG&E immediately denied any welders had "flunked." Mr. Hunter accurately described the utility's perspective in the welder qualification review: "CG&E 'tends to take the positive side of the coin' in disputes about Zimmer's problems, Hunter said. They say that a guy is innocent until proven guilty. I say they're guilty until proven innocent." (Attachment 118D, supra.) On the basis of the above evidence, Mr. Hunter's assessment applies to all the welding done at Zimmer. As he candidly admits, "Prior to last April, their records are a shambles. I don't think they -- or we -- realize the extent of the problem yet." (Attachment 118C, supra.) But there can be little confidence in the fact finding objectivity of an organization that perceives its role as a defendant in the adversary process. Similarly, there can be little confidence in effective CG&E-controlled corrective action, for the

utility still insists that there was nothing to correct. Counsel has referred additional witnesses and sent an affidavit to the NRC Staff concerning the events leading to the welder retesting program and irregularities in the retesting effort currently underway. (See,e.g. Attachment 140.)

E. Failure to maintain adequate controls to process and respond to internal Nonconformance Reports

158. Norconformance reports are the key safeguard to assure routine identification and correction of QA violations. It does not matter if procedures are violated or if hardware is deficient. Nor does it matter if the violation involves 10 CFR 50, Appendix B, or Kaiser's own QA Manual. (Attachment 79 and related exhibits, supra.) As an internal Zimmer glossary defined this concept:

> NONCONFORMANCE: A deficiency in characteristic, documentation or procedure which renders the quality of an item unacceptable or indeterminate. Examples include: physical defects; test failures; incorrect or inadequate documentation or deviation from prescribed processing, inspection, or test procedures.

(Attachment 141A, at A-13, Attachment 141B, at 6.) Nonconformance reports are sent to the NRC. Both NRC and utility officials study the reports to learn trends in particular QA deficiencies. The breakdown of the Nonconformance reporting system at Zimmer illustrates the breakdown of the entire QA program.

159. It is significant that the overwhelming majority of QA violations discussed in previous paragraphs were identified on more informal substitute forms such as Corrective Action Requests, Surveillance Reports, Inspection Reports (supra., at), Punch Lists (Attachment 142.),

and frequently mere inter-office memoranda. The permanent Nonconformance reporting system at Zimmer has only identified a shadow of the QA violations. As a result, it circumvents normal oversight for the vast majority of necessary corrective action.

CG&E POLICY TO CIRCUMVENT NONCONFORMANCE REPORTS

160. As with the general QA program, CG&E has asserted control over the Nonconformance Report system from the beginning. In a July 6 to July 26, 1973 exchange of correspondence (Attachments 143-145), CG&E assumed veto power over Kaiser corrective action decisions to "rework" or "reject". As Mr. Schwiers explained,

> It shall remain KEI's responsibility to insert a recommended disposition, however, the final approval of this disposition will be assumed by CG&E. All other Non-conformance Reports covering "accept as is" or "repair" will still require a Material Review Board Disposition.

(Attachment 143, supra.) On November 5, 1976, Mr. Schwiers announced, "The (CG&E) Quality Assurance and Standards Section has assumed the responsibility for the control and distribution of Design Document Changes and Nonconforming Reports." (Attachment 146.)

161. An April 13, 1977 letter from Mr. Schwiers (Attachment 147) illustrates the relative roles of CG&E and Kaiser. Because of the "large number of Nonconformance Reports" on seismic (earthquake) clearance violations, CG&E issues a "special Nonconformance procedure" for those offenses. Mr. Schwiers clarified, "This is to be considered a temporary procedure and will remain in effect until rescinded by letter." Kaiser would still initiate and review the NR's. But CG&E controlled the corrective action: "Once the number is assigned and checked by KEI Quality Assurance, the NR is to be delivered to CG&E

Construction Engineering who will be responsible for 'Disposition Instructions'." CG&E also gutted the normal "Hold Work" tag for nonconforming items, by permitting work -- even hydrotests -- to proceed despite nonconformances. The new tag instead provided for S&L "expedited...expedient disposition to all Seismic Clearance NR's." (Id.)

162. CG&E's approach to NR's mirrored its entire QA program. Two premises -- Contruction Department control and restricting QA requirements to the legal minimums -- governed the program. To illustrate, in a January 17, 1977 letter Mr. Schwiers instructed Kaiser QA to do as Kaiser Construction Engineering wanted and "discontinue preparing Nonconformances" for traceability of certain items not required by ASME." (Attachment 148.)

163. The major CG&E premise for Nonconformance Reports -- from the early stages of construction until the present -- has been "the elimination of unnecessary Nonconformance Reports." (Attachment 149) Although the policy has always been presented as a way to concentrate on more significant NR's, in practice it translated into illegally severe restraints on the NR system. (See, e.g., Attachment A to NR IE Report 50-358/81-13, which contains an in-depth review of 26 NR's that were voided or overruled. Twenty-five of the 26 NR's were illegally overruled or removed from the system.) At best, CG&E has permitted NR's for such significant violations as work performed contrary to approved procedures. (See Attachment 83, supra.) Also See CG&E Audit #258 (Attachment 39A, supra., at 5.) which identifies 8 traceability deficiencies in the drywell structural steel. Lead auditor P.G. Davies recommends to Kaiser that:

> We would like Henry J. Kaiser to provide corrective action to the deficiencies to assure that deficiencies of the type identified in this audit will all be identified and corrected or documented on NR's... (emphasis added)

In short, he institutionalizes an option to the NR process.

164. CG&E should not have been surprised at the results of the NRC investigation. In an August 21, 1979 letter Mr. Schwiers warned, "The continuing lack of credibility to the Nonconformance Reporting and closing cannot be tolerated." (Attachment 150.)

165. Mr. Schwiers' rhetoric was not enforced, as the NRC found last November. But even the fine and report have not changed the policy. In fact, it was reinforced definitively in May 1982. A Kaiser Construction Bulletin (Attachment 151) informed all employees of an ongoing project: "The major thrust of this effort has been to provide alternate means of documenting and resolving deficiencies without using the NR process. This will allow more emphasis to be placed on properly identifying and correcting actual nonconforming conditions." A May 24, 1982 Kaiser "Analysis Report" to the owners (Attachment 152) queried, "WHY IS THERE A BOTTLENECK IN THE NR SYSTEM?" (capitals in original.) Under "Areas to Consider" for the answer, the report offered one topic -- "Fewer NR's." It went on to list seven joint Kaiser/CG&E approaches to reduce NR's, which will be specifically discussed below. In each case, however, the approaches reflected the same type of practices that led to last November's fine -- less formal substitutes for Nonconformance Reports and specific "corrective action" against QC inspectors who write too many NR's. The May 24 report strongly suggests that history is repeating itself at Zimmer -- again.

INFERIOR SUBSTITUTES FOR NONCONFORMANCE REPORTS

166. There have been a variety of NR substitutes used to report nonconforming conditions. Examples of the substitutes include --

1) memoranda to initially report nonconforming items found during inspections of the control, computer and Diesel Generator room electrical grids and conduits. The inspections led to rejection rates such as 52 of 63 conduits in Diesel Generator Room 1A, and 47 of 60 conduits on the 593-foot elevation of the Reactor. (Atachments 152A-C);

2) letters to document the failure to conduct mandatory QC activities, such as Nondestructive Examinations of certain main steam lines (Attachment 152D);

3) "as-built" drawings to document unapprcved construction work (Attachment 152E);

4) Surveillance reports for certain inspections done after preoperational testing (Attachment 152F);

CG&E was aware before the November 1981 NRC report that Surveillance Reports were an improper substitute for NR's that had been "abused" and should be "discontinued." (Attachment 79, supra, at Exhibit 6.) The abuses included allowing violations to remain for two years without establishing tracking methods to prepare trends from the final resolution. (Attachment 92, supra.) Any doubts about the propriety of the SR substitute should be resolved by Mr. Jagger's December 9, 1981 findings:

> Evidence was obtained wherein items which were nonconformances as defined by the Kaiser Quality Assurance Manual were improperly listed on "Surveillance Reports" in lieu of issuance of nonconformance reports as required.

(Attachment 32, supra, at 3.)

167. An October 5, 1979 memorandum (Attachment 152G); introduced Corrective Action Requests ("CAR") as an NR substitute:

> Effective immediately a Corrective Action Request (C.A.R.) form will be implemented to obtain corrective action on procedural violations and the Non-conformance Report shall be used only for hardware deficiencies.

A July 22, 1981 Kaiser memorandum from Mr. Jones (Attachment 152H) noted that CAR's are "redundant of the nonconformance report and may cause confusion concerning the initiation of an NR or CAR." He noted that CAR's excluded procedural violations, despite the definitions in ANSI No. 45.2 and associated standards. He observed that one criterion for CAR's (repetitive condition) could shrink the NR procedure to "only non-repetitive conditions." Mr. Jones concluded, "If the nonconformance procedure does not control adverse conditions, there is no reason to assume that a redundant procedure will."

168. Unfortunately, even in the post-April 1981 "reform" period, CAR's continue to replace Nonconformance Reports. The internal May 24, 1982 report (Attachment 152, supra.) called for an expanded CAR program to "(r)educe NR's." The May 24 report also called for CAR's to replace NR's "on areas of avl's, tools, codes, etc." The intended "(r)esults"? "Reduce NR's." (Id.)

169. The most recent innovation to replace NR's is the In-Process Inspection Deficiency Record ("IIDR"). As the May 28 Construction Bulletin (Attachment 151, supra) revealed, IIDR's replace a major portion of the NR system: "The In-Process Inspection Deficiency Record should be used to document the correction of deficiencies identified during inspections up to and including final inspection." Unfortunately, the IIDR system gives construction decisive veto powers to quietly halt corrective action after QC inspections. The IIDR form itself fails to

include such basic information that it takes several acts of initiative to verify quality on an IIDR. More specifically, IIDR's are deficient to Nonconformance Reports in at least ten respects:

1) A Nonconformance Report identifies the cause of the problem.

2) NR's fully identify the nature of problems.

3) A Nonconformance Report cannot be closed out through a Design Document Change ("DDC").

4) An NR has instructions and a written justification for how to correct the problem.

5) A Nonconformance Report goes to the Material Review Board if the disposition is "repair," "accept-as-is", "rework" or "reject."

6) All Kaiser NR's must be distributed to CG&E at some point.

7) With an NR, a QC inspector can apply a "hold tag" to stop work on a nonconforming item that needs to be isolated.

8) An NR dispositioned "accept-as-is" must be supported by a Registered Professional Engineer in stress analysis is required by ASME.

9) An NR dealing with specified ASME items can only be cancelled with the approval of the Authorized Nuclear Inspector.

10) NR's are sent to the NRC for review.

(Attachment 79, supra, at 1-3, and related exhibits.) In short, IIDR's promise to institutionalize the abuses that led to last November's fine.

170. IIDR's have already been abused to replace NR's for work such as DDC's (which require engineering approval). (Attachment 153) and weld repairs. The April 1982 management audit (Attachment 51, supra) described the predictable results with respect to weld repairs:

> IIDR's...do not verify inspection for defect removal; and do not identify acceptance inspection procedure and revision used. It appears that more than three weld repairs are being accomplished without preparation of nonconformance reports. No approvals are required to accomplish weld repair by IIDR although QAE and Weld Engineer approvals are required for use of KEI-Weld-1A forms.

(Id.) The auditor, SAI, recommended that "HJK should discontinue the use of IIDR's for weld repairs and should identify all welds for which IIDR's have been used to document weld repairs." (Id.)

171. This is not to say that IIDR's are improper in all, or even in many context, but they should not be a substitute for legitimate nonconforming conditions, as has occurred at Zimmer. The April 1982 SAI audit put the phenomenon in perspective: "(T)he HJK procedural requirements and program controls for usage, documentation and disposition of IIDR's is not adequate." (Id.)

172. Unfortunately, the trend is once again in the opposite direction. The May 24 Report called for an expanded IIDR program, as well as deficiency lists for non-hardware programs in order to "(r)educe NR's." (Attachment 152, supra.) A June 2, 1982 revision of Field Procedure ZAPO-5 helped implement the May 24 Report. (Attachment 79, supra.) As Mr. Jones informed the Commissioners on June 16, 1982, the relative impact of IIDR's on the Nonconformance system has been summarized in June 1982 training classes as "Good-bye NR's." To illustrate the scope and informality of the IIDR system, two examples with control numbers 5144 (Attachment 154) and 5222 (Attachment 155) are enclosed.

173. Once a Nonconformance Report is written, it faces a gauntlet of internal approvals and potential techniques to dispose of it without

corrective action. (See, Attachment 43, supra at 12.) A common technique for engineering deficiencies has been to change the design retroactively to permit the violation through Design Document Changes. As usual, this has been a traditional CG&E practice, before and after NRC reforms. In a July 10, 1973 letter (Attachment 156), CG&E's A.E. Rothenberg returned an NR without action, because a DDC left it "no longer applicable." Four of eight deficiencies identified in a November 28, 1979 audit (Attachment 39A, supra) were dealt with by DDC's issued to correct nonconforming conditions.

174. Although the early 1981 NRC reforms supposedly stopped the abuse of DDC's (See, e.g., NRC IE Reports No. 50-358/80-05 and 50-358/80-25), the practice continues. IIDR's, the NR substitute, are being dispositioned through DDC's. (Attachment 79, supra.)

UNCONTROLLED RESPONSES

175. The tradition of informal repairs manifests itself with Nonconformance reports as well. In this context the abuse has been to violate the "hold tag" that stops construction activity until the proper corrective action is determined. Mr. Reiter's first affidavit pointed out that for over a year hold tags were ignored routinely. (Attachment 16, supra at 11.) Mr.Nichols explained that based on his own experience the problem continued to exist after the IAL. (Attachment 38, supra, at 5.)

VOIDING THE NONCONFORMANCE REPORT

176. The November RIII report found that one improper technique for dispositioning NR's was to "void" them. While the NRC reported that 25 out of 26 examples were improper, it did not reveal how common "voiding" was at Zimmer. Three pages from a 1980-81 Kaiser nonconformance log (Attachment 157) are educational. Twenty out of 39 NR's were voided.

Another was replaced with an Inspection Report. The voided NR's covered structural steel that had bypassed QA, seismic violations for bolts, numerous welding deficiencies, incomplete weld repairs, undersized welds, hilti bolt violations on hangers and holes left open after field work. In two instances, the voided NR's were consolidated with other Nonconformance Reports. In other cases, the log notes the NR was replaced with a CAR, the NR was rewritten or written in error, or just not issued, or else the log does not offer any additional explanation.

177. The November RIII report noted one particularly ominous method to dispose of NR's: void them as "Not Issued." (IE Report No. 50-358/81-13, Att.A.) Under this technique, the NR is returned to the original QC inspector without being formally rejected. It is like it was never issued. Since there is no record of the NR, there is no chance to review the decision to void it. In light of the NRC findings that NR's were voided improperly in 25 out of 26 cases examined, these "lost" NR's are indeed chilling.

178. The NRC has not publicly identified or quantified the full scope of NR's voided as "Not Issued" and then lost. Mr. Jagger's December 9, 1981 letter refers to "(v)arious nonconformance reports which had been issued NR numbers (but) had not been filed or retained in the Site Documentation Center as required." (Attachment 32, supra, at 3.) The public still does not know the scope of the "various" NR's that vanished from the system. Five examples are enclosed, however, as Attachments 158A-G. The censored nonconformances included welding deficiencies, incorrect clearances between u-bolts and pipes that restrain pipe movement, holes for bolts that have elongated from 5/16" to 1/2",

and angle corners not tied into the welds, In short, the QA program at Zimmer rejected an unknown number of this type of deficiency without explanation.

179. In other instances, records were maintained for improperly-voided NR's. For example, a January 5, 1981 CG&E audit (Attachment 150) reviewed 160 out of 500 voided NR's. Despite CG&E's later public denials of impropriety, the internal audit found that in violation of the Kaiser QA Manual, the second-largest category was:

> those reports which were voided because the condition described was brought into conformance by a change in requirements. Examples are NR's E-2461 (1/23/80), E-2502 (2/13/80), E-2508 (2/12/80), E-2378 12/28/79), E-2431 (1/8/80), all of which were voided after DDC -M4806 was written on 2/18/80. Also E-2480 which details a drawing error, is voided on the basis of a note which acknowledges an error, but is voided without a description of the corrective action taken with regard to that error. E-2474, 2476 and 2477 are voided when drawings (PSK's) are corrected.

(Id.)

180. Sometimes the NR's remained partially intact. As Mr. Jagger reported on December 9, 1981, "The obliteration of entries by Q.C. Inspectors on nonconformance reports is an apparent violation of ASME Section III Division Code requirements. Paragraphs NCA-4134.10 and NCA-4134.15." (Attachment 32, supra, at 3.)

INEFFECTIVE CORRECTIVE ACTION

181. Nonconformance Reports can be thwarted through proper channels, when improper judgement is exercised. To illustrate, the May 12 report from the ASME survey team (Attachment 37, supra) examined an NR that had been dispositioned "Accept-As-Is." That essentially means that

nothing needs to be done. The NR had involved vendor-purchased piping that circumvented QA controls. The survey team concluded, "It is the opinion of the National Board Audit Team that disposition 'Accept As Is' documented NR No. E3633 R1 appears invalid based on the above-listed apparent non-conformance with Section III requirements." (Attachment 37, supra, at 10.)

182. Following up to verify proper corrective action is the bottomline for the NR system. It is not surprising that corrective action has been narrow and superficial for NR's that survive the gauntlet of Zimmer's QA program. CG&E has long been aware of inadequate corrective action for NR's. An October 18, 1976 CG&E letter (Attachment 160) warned,

> A survey indicated that of the last 12 to 15 Nonconformance Reports which had been closed out, most of the corrective action indicated an isolated case or lack of training of various personnel. One important element of a Nonconformance Report is the corrective action and its implementation. The purpose of this, as you know, is to avoid re-occurence of breakdowns in work procedures which may affect quality. If the NRC reviews our Nonconformance Reports and detects a trend concerning a lack of attention to corrective action, I am sure we will receive a citation and possibly the confidence in our Quality Assurance Program could be jeopardized.

(Id.)

183. The problem persisted, however. The minutes of a joint February 17, 1977 CG&E/KEI QA Meeting (Attachment 22B, supra) reported:

> It was emphasized that the corrective action listed on Nonconformances should reflect some action to assure that similar nonconformances would not occur. Isolated cases, removal of personnel and indications of lack of training are not to be completely accepted as a means of assuring that reoccurring nonconforming

> conditions had been eliminated. A statement that lack of training exists reflects on the Quality Assurance and Construction Program and indicates that additional training is required.

(Id.)

184. The trend of inadequate corrective action continued in 1978. In an April 20, 1978 letter (Attachment 161), Mr. Schwiers complained that NR's still were not adequately addressing the "Cause" and "Corrective Action" responses:

> During a recent Management Audit, it was discovered that Nonconformance Reports were being processed and approved with incomplete or missing information in the "Cause" and "Corrective Action" fields. The corrective action commitment made to Cincinnati Gas & Electric Company's management was that an audit of the Nonconformance Report files would be made and those which had incomplete information would be completed. Statements such as N/A, see above or isolated case, are not acceptable statements.

185. A 1979 CG&E memorandum (Attachment 162) noted that 10% of Kaiser NR's did "not state whether or not the corrective action taken for the NR's listed has been effective; no trend given. These NR's account for 10% of those analysed in audit." The memorandum also noted that in some cases the corrective action involved welder qualification records, when the problems "have nothing to do with welding." The irrelevant corrective action involved issues such as reinforcement bar nicks in the suppression pool; overpressurization during hydrotest; and a valve that leaked during the hydrostatic testing. CG&E recognized that in 23% of the cases, the cause of the corrective action could be tied to improper training, the effect of another tradition of QA failure. (Id.; supra, at 2.) The significance of the Corrective Action breakdown

is what made inevitable last November's NRC findings of a total QA breakdown. The Nonconformance system fails if it identifies but does not correct violations. In the end the Corrective Action breakdown means that the disposition for all NR's should be reviewed by an organization that was not responsible for the original, erroneous judgments.

186. The result of the NR breakdown is that required proof of quality is not available for final acceptance. (Attachment 163.) Instead of proof, repairs are accomplished informally. Mr. Reiter explained that failure to respect "hold tags" -- which stop work until the proper corrective action for NR's is determined -- was routine during the late 1970s:

> For around a year, after late 1978, hold tags were generally not used in practice at Zimmer. The omission was so routine, that I failed to issue around 100 when I wrote NRs. I did not apply hold tags in those cases because no one had ever told me to, although I later learned the tags are required.

(Attachment 16, supra, at 11.) Informal repairs inherently preclude documented corrective action; they represent a construction program out of control. As an August 27, 1981 CG&E memorandum recognized, changes not approved by the vendor could not only threaten the warranty of certain valves, but "could result in failure of the valve to open or close." (Attachment 107, supra.)

IMPACT OF THE NR BREAKDOWN ON WELDING

187. The effect of the NR breakdown on welding raises questions about the actual condition of nearly all welds on-site. The May 4 minutes of a May 2, 1973 joint CG&E/Kaiser Construction Coordinating Meeting (Attachment 164) showed how the NR groundrules were rigged

from the start to avoid reporting informal weld repairs:

> Problems associated with making new cuts in pipe in order to repair welds from the inside were discussed. It was agreed that Sargent & Lundy approval needs to be obtained on a case-by-case basis and that approved DDC's will be required in advance. Kaiser Engineers indicated that they prefer making the (cut) only after three repairs have been attempted. Successful repairs will not be reported as non-conforming work.

(Id., at 2.)

188. The manifestations of this 1973 policy are still surfacing. Mr. Jagger's December 9, 1981 letter reported,

> The welds which had originally been stamped accepted by Q.C. on revision (1) were later cut-out. Acceptance of the replacement welds could not be verified, and it appeared that a breakdown had occurred in the documentation of identification and inspection portions of the Quality Assurance program.

(Attachment 32, supra, at 2.) A January 11, 1982 CAR, ironically, identified a system to circumvent NR's through informal weld repairs that could apply throughout Zimmer:

> In violation of the above requirements: Certain unacceptable conditions of weld joints (Piping) are cut and separated. Ends reprepared and re-welded under a new weld number. The nonconforming condition of original weld is not documented on an N.R. This process continues until the final weld is found acceptable and never addressed on an N.R. This problem is repetitive.

(Attachment 165.)

FDI'S AND FDDR'S: REPAIRS AND MODIFICATIONS TO GENERAL ELECTRIC COMPONENTS

189. The state of another traditional NR substitute at Zimmer, Field Dispositions Instruction ("FDI") and Field Deviation Disposition Requests ("FDDR"), further illustrates the comprehensive uncertainty of the quality of work. FDI's and FDDR's are General Electric substitutes

for Nonconformance Reports concerning design or equipment changes made at customers' sites, such as Zimmer. (Attachment 166) Kaiser site QA programs provide the quality verification for the field work. (Attachment 167)

190. Mr. Jones' congressional testimony described his unsuccessful efforts, along with another Kaiser employee, to establish a meaningful quality verification program in the face of construction department opposition. (Attachment 43, supra.) Another NR substitute, a December 23, 1981 CAR (Attachment 168) reveals the consequences of ignoring QA for repairs on GE purchases:

> Extensive work has been performed on the RT system pump while J.J. Kaiser has received no official notification of FDI 120 nor the work accomplished by CG&E GCD. The responsible CG&E Discipline Engineer required no hold/inspection points or documentation of this work.
>
> H.J. Kaiser, not aware of the work being performed, was unable to notify the ANI or assign inspection/ hold points, throughout the work process, assuring compliance with the ASME Code.

(Id.)

191. A December 21, 1981 report on a November 7-20, 1981 GE audit covered mechanical and electrical work. (Attachment 109 supra.) The findings reveal another glimpse of a total breakdown. To start with, Kaiser personnel warned that the GE auditors might have difficulty getting the records from CG&E. The GE auditors reported, "This proved to be the case as only eight mechanical Work Pages were delivered late on the 19th (of November) and no electrical documentation was made available." (Id., at 1.) The accompanying field report (Id., at 81-1-1)

concluded, inter alia, that Kaiser QA "does not review or verify completion of modifications"; "(work) packages are not retrievable as non-conformance corrections (i.e. FDDR) but is [sic] integrated with S&L drawings"; and "[w]ork standards required by FDI or FDDR are not used in determining acceptability of completion."

192. The FDI/FDDR deficiencies concern some of the most significant safety-related valves and pumps on-site. It is hard to understand how quality verification could be short-circuited after an FDI that warns that a flaw "will probably expedite seal and bearing failure if the pumps are allowed to operate with this condition." (November 12, 1980 FDI enclosed as part of Attachment 109, supra.)

CONTINUED DETERIORATION OF THE NR PROCESS

193. Unfortunately, it is clear from recent developments that Kaiser and CG&E are not going to reverse the trend of an inadequate NR program. Rather, the plan is to formalize a token role for Nonconformance Reports. The May 24 Report announced a plan to revise ZAPO-5 to "[a]llow invalidation of NR's " through "NR Cont[rol] #, cancellation, etc." (Attachment 152, supra.) Not surprisingly, that is just what happened. On June 2, 1982 ZAPO-5 procedure was amended. Reports are now "Draft NR's" until approved by Quality Engineering. There are four levels of review with authority to override the NR, with authority able to be delegated freely. ZAPO-5 further guts the independence of QC inspectors and their ability to stop challenged work through hold tags. During dispute over disposition, work can continue unless specifically prohibited by the QA Manager.[5] Finally, there are no time limits to resolve disputes. (See, ZAPO-5, Rev. 1, enclosed as

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[5] Curiously, according to the May 24 Report, an individual with initials "WAH" was involved with the plan to invalidate NR's through ZAPO-5 revisions. Mr. Walter A. Hedzick is the Kaiser QA Manager. (Attachment 152, supra.)

Exhibit 2 to Attachment 79, supra.) The continuing circumvention of the NR system is more than another example of history repeating itself. It means the quality of the work remains largely a mystery; and there is no confidence that properly identified problems have been corrected.

F. Retaliation Against Quality Assurance and Quality Control Personnel Who Attempt to Diligently Perform Their Responsibilities or Report Violations to the NRC

194. Retaliation against QA/QC personnel is one of the most serious offenses possible under the Atomic Energy Act. Since they write the QA procedures and serve as the first-hand factfinders for the quality of nuclear plants, these individuals are the primary guardians of public safety at Zimmer and any other plant. Numerous laws are violated when QA/QC personnel suffer retaliation for trying to do their jobs. 10 CFR 50, Appendix B, Criterion I states, in part, "The persons...performing quality assurance functions shall have sufficent...organizational freedom to identify quality problems...including sufficient independence from cost and schedule." $50,000 of the $200,000 fine against CG&E last fall was for violations of this criterion. (NRC IE Report No. 50-358/81-13, at §§ 4.4.4., 6.1.3.) Further, after the Three Mile Island accident, Congress amended the statutes to address this issue. The problem is so serious that Congress added criminal penalties for harassment of QC inspectors. As Congressman Moffett (D-Conn.) stated at December 14, 1981 hearings:

> (T)he Congress also added new criminal penalties for harassment, intimidation or assault of quality control inspectors. Such harassment, as this Subcommittee has already found through previous investigations and as the NRC has now admitted in its own investigation, are precisely the sort of actions that occurred at the Zimmer site near Cincinnati.

> These new criminal penalties were not placed in the Atomic Energy Act as window-dressing. The Congress provided for criminal penalties for utility failures to obey NRC safety rules for a very important reason: The public health can be endangered by nuclear crimes just as surely as it can be by street crimes.

(Attachment 1, supra, at 6-7) Finally, in Section 210 of the Energy Reorganization Act of 1974, 42 U.S.C.5851, as amended, Congress reaffirmed its prohibition against reprisals and provided an administrative remedy for any employee who faces retaliation for a disclosure that could lead to an NRC investigation. Recently-adopted regulations (47 Fed. Reg. 30452, July 14, 1982) permit "[d]enial, revocation, or suspension of the license" (10 CFR Part 19, §30.7(c)(1)) for violations.

GAG ORDERS

195. Over the years CG&E and Kaiser management have established a policy not to permit employees free access to the NRC. These policies are the private equivalent of unconstitutional government "prior restraint", Bernard v. Gulf Oil Co., 619 f.2d 459(Fifth Cir. 1980) also known as "gag orders". They establish the motives and groundwork for later reprisals. To illustrate, the minutes of a joint February 17, 1977 CG&E/Kaiser QA Meeting reported:

> It was emphasized that an agreement be presented by CG&E and KEI during NRC inspections. Disagreements should be resolved after the inspection completion. CG&E emphasized that it was their intention to be present during all discussions with NRC inspectors when possible.

(Attachment 22B, supra, at 3.) Depending on the issues and evidence involved in the public agreement and private disagreement

distinction, CG&E could have been imposing a policy to withhold evidence.

196. The written policy persisted at least through October 5, 1981, when Kaiser's "post-reform" site manager Mark Albertin issued the following directive to "(a)ll H.J.K. Department Managers Zimmmer Project":

> Due to the continued confusion with H.J.K. personnel responding to requests from the N.R.C., all future requests for interviews, information, etc. are to be coordinated through C.G.&E. Manager of Quality Assurance of Generation Construction. A written or verbal directive will then be given to the Department Managers to make the requested personnel or information available to the N.R.C.

(Attachment 169.)

197. Those who violate this policy pay the price. For example, until May 3, 1982 Mr. Jones was a Senior QA Analyst and reported directly to the Kaiser QA Manager. After Kaiser management erroneously suspected Jones of sending the Nolder Report on the vendor QA breakdown (Attachment 43, supra.) to the NRC, however, he was stripped of his duties and relegated to Documentation Review Clerk. (Attachment 27, supra, at 9-10). Mr. Jones' de facto demotion was well known within the plant. (See, Attachment 23, supra, at 1) Mr. Nichols volunteered Jones' fate to help demonstrate that "(r)etaliation for disclosure of safety problems...has been a way of life at Zimmer. No one is safe after engaging in dissent at the plant." (Attachment 22, supra, at 6.)

198. Mr. Rex Baker's case is another example of retaliation. Mr. Baker recalled tnat he was the Inspection Supervisor in charge of all QC inspectors on-site for Kaiser, until he spoke freely with the NRC during last year's NRC investigation. Mr. Baker discussed the problems of improperly voided NR's, among other topics. Almost immediately,

he was reassigned to a supervisory job "as a practical matter with little or no supervisory responsibilities." The day after Mr. Baker spoke with the NRC, CG&E official Robert Ehas spoke derogatorily about the meeting: "They don't need him -- he went there yesterday and spilled his guts to them (NRC)" Soon after Mr. Baker was reassigned, Kaiser Site Construction Manager Robert Marshall introduced him to the corporate president as follows: "Here's Rex Baker, the source of all my problems." (Id.)

199. Traditionally, it has also been dangerous to work within the QA program at Zimmer. Embarrassing memos were particularly frowned upon. As Mr. Jones testified, in February 1981 he wrote an inter-office memorandum to Mr. Rex Baker identifying problems with certification and quality of inspection personnel that could require reinspection of their work. Mr. Gittings warned Jones that he was not hired to write memos and would find himself on Route 52 (which runs outside the plant) if he wrote another one. (Attachment 43, supra, at 2.)

200. It is still dangerous to write memoranda at Zimmer, even in the "post-reform" era. For instance, on numerous occasions during late 1981 Mr. Norm Vitale, Manager of Quality Engineering, has ordered employees to stop writing memoranda that have been included in this petition. (Attachment 140, supra.) Just a few weeks after the NRC Report was released last November, Mr. Nichols reported severe deficiencies in the drywell. He found that there was no transition of thickness for butt welds, and the corners of beams were defective. Kaiser management told him to throw his findings in the trash can. When Mr. Nichols persisted, he was forced out of his job through an

unacceptable transfer. (Attachment 38, supra, at 6.) In the spring of 1982, a Kaiser auditor submitted a memorandum concerning NES deficiencies so severe that action might be required as a significant event under 10 CFR 50.55(e). Kaiser's current QA manager told the auditor not to write any similar memoranda, because they are embarassing. When the auditor persisted in verbally defending his findings, he was removed from the audit group. Similarly, Mr. Jones was removed from the audit group after verbally protesting a gag order on written memoranda, observations, or recommendations by auditors. (Attachment 43, supra, at 8-10.)

201. Management's unwillingness to accept criticism extended beyond memoranda. It has covered any effort to document or correct deficiencies. To illustrate, Mr. Deerwester's February 26, 1982 memorandum (Attachment 169A, supra) also listed the management reaction to his memoranda, letters, Nonconformance Reports, Inspection Reports, Surveillance Reports, Document Deficiency Notices, Corrective Action Requests, Requests for Information, and other reports: "[O]n 10-14-81; 8:30; [sic]...it was decided that my actions were creating delays in the processing of incoming items, and that communications with CG&E could be improved by removing me from this position."

202. Retaliation has extended to institutions, as well as individuals. For instance, CG&E claims that it terminated the Peabody Mangnflux, Inc. ("PM") from Nondestructive Examinations contract because of obsolete equipment and poor performance, such as exposure of construction personnel to X-rays. CG&E said that these problems led

to unacceptable construction delays. The utility denied that PM was fired for rejecting too many welds. (NRC IE Report No. 50-358/81-13, at § 5.16.) In fact, the radiographers had difficulties with radiation exposure, because CG&E would not approve the overtime to shoot X-rays during off-hours and construction personnel did not respect warnings and roped-off areas. (Attachment 171.) In short, CG&E's financial shortcuts and construction's failure to respect QA activities contributed significantly to the problems for which PM was made the scapegoat.

203. CG&E replaced PM with Nuclear Engineering Services, Inc. ("NES"). NES' performance should remove any questions whether PM was truly removed for poor performance. On April 3, 1980, within two weeks of NES' arrival, Kaiser QA officials reported lack of communication, poor productivity and failure to honor promises to supply radiographs on schedule. (Attachment 172.) In an April 11, 1980 memorandum (Attachment 173), Mr. Schwiers directed the QA Department to relinquish all responsibility for the NES contract and requested the Construction Department to "assume responsibility for the administration of this contract." As seen above, when QA auditors later found deficiencies so severe that a 50.55(e) report might be required, the findings were quashed and the lead auditor transferred. (Supra, at 87).

204. The fate of Butler Services, Inc. illustrates combined institutional and personal retaliation. In late 1980 Butler was hired to reinspect the welds on hangers which had previously been rejected and repaired. Butler personnel were not satisfied and rejected 95% of the welds during reinspections. In December 1980 the firm's contract was terminated. CG&E had Kaiser replace Butler and offered positions

to all Butler employees. The Butler employees who had written NR's received offers of new jobs with cuts in pay and responsibility. The employees who hadn't found any significant problems received raises and de facto promotions. (NRC IE Report No. 50-358/81-13, Exhibits 36-39 .) Mr. Reiter reported that the Butler contract personnel had been "highly trained and independent. They were aware that Kaiser and CG&E employees were not their superiors, which is how it should be." (Attachment 16, supra., at 14.) That appears to have been their downfall. As Kaiser QA Manager Gittings later recalled, the reasons for Butler's removal included "cutting costs, eliminating 'over-inspecting' and the Butler inspectors had 'no loyalty' to Kaiser." (Attachment 174, at 4.)

PHYSICAL HARASSMENT AND INTIMIDATION

205. Last November's IE Report listed numerous examples where QC personnel were physically harassed or intimidated, including water dousing, a high pressure fire hosing, searches and bodily harm. (NRC IE Report, ¶ 6.13.) Unfortunately, physical harassment is not a historical phenomenon at Zimmer, either for current or former employees. For instance, on May 28, 1982 the NRC reported (Attachment 175) that three contractors and utility personnel were doused with dirty water. "According to preliminary information, a bucket of water and possibly urine was dumped on the inspectors while they were standing at a desk in the reactor building. The bucket was apparently tipped by someone pulling a long rope." NRC official Dorwin Hunter informed the press that allegations of harassment have continued since last

November. He reported that the continued physical retaliation is "a big problem. It's out of hand." (A May 29, 1982 Cincinnati Enquirer news article is enclosed as Attachment 176.

206. Nor are ex-Zimmer employees necessarily safe when they continue to speak out. In a June 29, 1982 affidavit (Attachment 177), Mr. Thomas Applegate -- the former CG&E-employed private detective turned whistleblower -- reported that he has continued to suffer harassing phone calls almost every week for the last 2-1/2 years. He stated that the telephone company informed Mr. Applegate that the calls appeared to be the work of professionals. Mr. Applegate further reported that on February 21, 1982 he was followed and harassed by two cars, at least one of which had a license plate traceable to a holding company for Columbus & Southern Ohio Electric, a partial owner of Zimmer.

207. Mr. Applegate's allegations are not unique. Other witnesses have contacted counsel directly or indirectly to report threats of physical harm. One witness reported that he failed to make an appointment to sign an affidavit because he was being followed. He reported his further concern that members of his family had been followed.

208. There is no reliable basis to conclude that CG&E and Kaiser management have learned their lesson. The May 24, 1982 report (Attachment 152, supra) is both revealing and chilling. Item three in the "NR Action Plan" calls for "Heart-to-Heart" talks by "WAH" and "HRS"[6] The planned results? -- "Fewer NR's generated."

The last item in the Action Plan is the most chilling. It

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[6] The initials presumably refer to CG&E and Kaiser QA Managers Harlan R. Sager and Walter A. Hedzick, resp

illustrates why CG&E and Kaiser are not fit to administer the Zimmer QA program. This item identifies "habitual NR writers and deficiency generators" as a known problem. The proposed response is to "develop trending on deficiency generators" by June 15, 1982. The planned results? -- "Identify individuals for corrective action." Again, the initials "HRS" and "WAH" figure prominently. Based on the NR Action Plan, it appears that the traditional CG&E/Kaiser management philsophy remains deeply imbedded: those who identify problems are the problem, and one which must be corrected. Under this premise, retaliation is inevitable.

209. In fact, the personnel reprisals have continued. To illustrate, CG&E officials responded to Mr. Jones' disclosures by rewriting his professional history at Zimmer. Although Mr. Jones had conducted audits, taught auditing classes, responded to NRC reports, wrote QA procedures and had full access to Kaiser/CG&E records, on June 15 CG&E Vice President Borgmann testified under oath before the Ohio Public Utilities Commission that Mr. Jones had "some kind of document review clerical type job" and was "not per se" in a position to review quality assurance matters." (Attachment 178).

After Mr. Jones publicly testified, employees who expressed support for him on-site or openly fraternized with him were laid off (Attachment 179) or subjected to charges of petty misconduct (Attachment 180). On July 24, 1982 Mr. Jones was laid off from his new position of Document Review Clerk, within weeks after his training and certification program had been completed.

210. On July 21,1982, the Atomic Safety and Licensing Board granted Intervenor's July 8, 1982 Motion for Protective Order (Attachment 181) at Zimmer, based on an abbreviated summary of the retaliation concerns discussed above. This Protective Order protected the identities of current Zimmer employees whose affidavits are relevant for licensing hearings at Zimmer. The Board granted this Motion only after a legal finding that Intervenor had established "good cause" that reprisals would occur absent confidentiality. The "good cause" standard is met "...where revealing the name of an informant or proposed witness or member, in response to discovery or other NRC requests, would occasion harm to or reprisal against such person..." Houston Lighting and Power Company (South Texas Project, Units 1 and 2), LBP-80-11. 11 NRC 477, 480 (1980).

211. The ultimate significance of continued physical and personal reprisals at Zimmer is to rob the QA program of legitimacy. It is difficult to have confidence in QC inspection results, for example, when reporting a significant or costly defect could be a career decision. As Mr. Hunter pointed out, "When you have harassment of quality assurance and quality control people, that's the way you produce a lemon." (Attachment 182,)

G. Inherent and Empirical Failure of the Quality Confirmation Program as the Final Solution to the Zimmer Quality Assurance Breakdown

212. The Quality Confirmation Program ("QCP") is the principal solution that arose from the April 8, 1981 Immediate Action Letter. A major premise of the Commission's reversal of the ASLB was that public

hearings on the QA breakdown are unnecessary in light of the QCP. Unfortunately, the Quality Confirmation Program has not worked in fact. Its scope is inadequate; its time deadlines unrealistic; and its structure inherently flawed. Indeed, CG&E's monthly status reports are so inconsistent that they raise more questions than they answer about the quality of work at Zimmer. In short, while the QCP is an extraordinary remedy, it pales in comparison to the comprehensive quality assurance breakdown at Zimmer. Most significant, at best the massive QA staff increases mandated by the IAL are producing more internal reports. But the increased bureaucracy and paperwork have not created an effective QA program. Instead, the traditional approach at Zimmer is being applied in a broader context.

EMPIRICAL FAILURE

213. Empirically, the Immediate Action Letter and the QCP have not stopped QA violations, and repeated violations. 101 instances of issues raised in this petition have arisen since April 8, 1981. Indeed, despite CG&E's public praise for the QCP, its internal reports admit that the inspectors are still not finding the flaws; are writing up Nonconformance Reports so poorly that the results from over 1600 had to be thrown out; and are providing evidence of a continuing management breakdown. Indeed, on November 4, 1981 two employees of the outside auditor SAI who were working directly for CG&E as the Lead Electrical Supervisor and as QCP Inspector, respectively, contacted the NRC. The NRC memorandum (Attachment 1981) summarized their by-now familiar concerns as follows: 1) lack of response to NCR and CAR originators;

2) inadequate QCP due to unqualified management; 3) inadequate document control; 4) QC inspectors trained to outdated procedures; 5) construction personnel serving as QC inspectors for CG&E; 6) and uncontrolled Construction Inspection Plans.

214. The QCP is compromised by CG&E's unrealistic timetable for starting operations. For instance, at the June 10, 1982 congressional hearing, CG&E officials estimated the QCP would be finished by December 1982. NRC witnesses had to point out that the time frame did not take into account the time required for necessary repairs.

215. Structural flaws inherently compromise the QCP as the last work at Zimmer. Initially, the premise of the program is a piecemeal -- rather than comprehensive -- investigation. While NRC officials stated at the June 10 congressional hearings that the QCP is "dynamic", Region III Administrator James Keppler admitted that the issues and investigative scope were established by the findings in last November's IE Report No. 50-358/81-13. (April 20, 1982 telephone conversation between Mr. Keppler and Thomas Devine.)

216. In fact, that explanation was optimistic. On June 8, 1981 CG&E's W.D. Waymire sent to RIII a June 3, 1981 draft of the QCP program. (Attachment 184A.) The draft represented CG&E's write-up of agreements reached with the NRC on June 2, along with CG&E's "hand-written changes made June 6, 1981," according to Mr. Waymire. According to the Introduction, the June 3 draft QCP was in response to "eighteen inspection report items identified by NRC/III on March 27, 1981." In other words, the initial QCP was a response to the first 18 preliminary findings after the first three months of an investigation that was not even complete enough for an "interim"

report until November 1981.

217. Theoretically, the QCP should have adjusted and expanded "dynamically" during the summer of 1981. That is when the NRC criminal investigation revealed the long-term nature of the QA breakdown, as well as the role of top-level CG&E/Kaiser construction management in the most basic issues underlying the collapse. (See, e.g., the July 9, 1981 interview with Mr. William Schwiers, enclosed as Exhibit 52 to the NRC IE Report No. 50-358/81-13; and Attachment 2.) Instead, the major change between the June 3 QCP draft and the final August 2] version (IE Report No. 50-358/81-13, Exhibit 17) was to accept the proposed June 6 modifications, such as limiting the scope of 100% reinspection projects to "accessible" items unless CG&E could "justify less". (Compare Exhibit 17, id., with Attachment 184A.) The "dynamism" at the birth of the QCP was to reduce the number of pieces in a piecemeal approach. This happened at the same time NRC investigations were uncovering dramatic new evidence of the true extent and causes behind the QC breakdown.

218. The QCP does not even purport to address the causes of the QA breakdown at Zimmer. Its sole function is to "confirm" the quality of completed work. The title of the program belies a fatal flaw. CG&E's own internal assessments have recognized since 1973 that corrective action is not adequate unless the causes are identified and addressed. (See p. 54, and Attachment 111, supra.) Unfortunately, CG&E did not respect this premise over the years. Neither does the QCP.

219. The QCP does not provide a unique, independent internal

structure. As demonstrated at the June 10 hearings and the June 16 briefing, the QCP inspectors who write NR's still funnel them through personnel from the existing system -- including Kaiser management. As a result, the new QCP staff is little better than a massive team of research assistants. They do not have the organizational freedom to enforce their decisions.

220. The QCP as presented on August 21 does not disclose or justify the objective standards used to evaluate reports presented by the QCP staff. As will be seen (infra, at 98-99) what's good enough for decisionmakers within Kaiser and CG&E managements may not be good enough for other authorities.

221. The QCP is still basically a paperwork review. As Mr. Keppler explained at a June 29, 1982 public meeting, the QCP will not require inspections for QA records that have "pedigrees." In other words, there will be no inspections unless the paperwork reveals a problem. It is hard to imagine what kind of new "pedigree" could be developed for the mutant strain of QA records at Zimmer. $50,000 of the $200,000 fine in last November's IE Report No. 50-358/81-13 was for false records.

222. The most conservative assessment of the report is that the paperwork is a mess. But under the QCP, this same paperwork is the controlling factor to determine what should be reinspected. In short, the QCP "reform" exacerbates, instead of correcting, the effects of suspect paperwork.

223. The QCP may be too late to obtain answers to some questions that cannot be ignored. For instance, the utility may lose the warranty

if it breaks the seal to check the quality of vendor components already assembled. (Supra, at 35 .) Similarly, the vendors may no longer have records available to demonstrate they had a reliable QA program up to eight years ago, which CG&E failed to verify at the time. The cumulative effects could involve up to 42,000 purchase orders over the last decade. (Supra, at 25). It is hard to imagine how the QCP can establish traceability with confidence for now-essential beams originally purchased as non-essential from a junkyard that buys and sells scrap metal (supra, at 29); or for pipes that were cut up years ago and scattered throughout the plant (supra, at 21-2)'. The QCP has not even identified the number of missing NR's (supra, at 75), let alone propose a piecemeal way to identify problems first disclosed on documents now irretrievably lost.

QCP's CONFLICTS OF INTEREST

224. Most significantly, the QCP relies on decisionmakers who have a built-in conflict of interest. As Mr. Hunter explained at the July 29 meeting, it is CG&E management that primarily decides which documents have a "pedigree". The NRC Staff cannot second-guess the thousands of CG&E value judgments except on a token basis. But every paperwork pedigree that CG&E denies -- and every inspection or subject repair that it approves -- represents costly delays. The financial impact could range up to $15 million per month according to CG&E's own figures. (See July 13, 1982 Cincinnati Post article, enclosed as Attachment 184B.)

225. Every QCP-imposed repair also confirms the ill-effects of CG&E's own deficient leadership over the last decade (infra, at §IVd.) and refutes its own rosey public reassurances that nothing ever has been significantly wrong at Zimmer. (Infra, at §IVg-h.) From a policy perspective

it is naive to establish a "final solution" that relies on management to admit the full consequences of its own mismanagement.

SUSPECT JUDGMENT

226. The CG&E-prepared QCP monthly status reports describe general trends. They rarely define specific QCP management decisions, nor the basis for them. Nevertheless, several available examples cast doubt on the soundness of CG&E's other subjective judgments. For instance; several CG&E policy conclusions in the QCP contradict NRC policies expressed in IE Report No. 50-358/81-13. To illustrate, Attachment A to last November's NRC Report summarizes Kaiser QC inspections and S&L Engineers' opinions that S&L improperly waived Nondestructive Examinations on certain welds in the primary containment. The explanation for the waiver was "ease of construction." Visual inspection later revealed the welds to be of poor quality. (NRC IE Rep. No. 50-358/81-13, Attachment A, at 25-27). In response to an allegation raised by GAP, the November report also cited six noncompliances based on S&L violations relating to electrical cable trays. The report concluded, "This allegation raises concerns of potential safety importance that cannot be assessed without further inspections and evaluations by the NRC...These items have generic applicability to plants designed by S&L and are being forwarded to NRC Region III, Vendor Inspection Branch, followup." (Id., at 83-4). By contrast, the QCP has given a clean bill of health for all S&L engineering decisions: "No problems have been found with the quality of S&L work. Their system has been made more formal. Report will be written." (Attachment 100, supra, Task VIII.)

227. At the June 10 Congressional hearing CG&E and the NRC also clashed over the significance of QCP findings on structural steel welding. Mr. Keppler rejected CG&E's subjective evaluation that structural steel welding deficiencies

were insignificant and cosmetic.

228. In at least one instance, the QCP authorities have been overruled both by the NRC and the ASME survey team. In effect, through a "code inquiry" CG&E appealed to ASME whether up to 18,079 radiographs, most with inadequate shimming, could be accepted since "most radiographs meet other requirements for quality and sensitivity." (Attachment 100, supra, at 10.) Apparently confident of the answer, CG&E's April 30 QCP status report estimated that the shimming "task is approximately 95% complete. " (Id.) The QCP team spoke too soon. Mr. Jagger's May 12 letter tersely rejected CG&E's position: "The National Board Audit Team is of the opinion that this [CG&E 'conformation' program] ... will not satisfy the requirements of the Code, Appendix IX, Paragraphs IX-3334.4 and IX-3334.4. Further, all radiographs not meeting code requirements are unacceptable." (Attachment 37, supra, at 12.)

229. A detailed task-by-task review of QCP status reports leads to two alternative findings: (1) the results disclosed in the reports do not address all specific concerns supposedly covered by the QCP task; or (2) where the issues are confronted, the successive QCP status reports can't keep their confirmations straight. In addition to the April 30 status report (Attachment 100, supra), reports current to January 29, 1982 (Attachment 185); Febrary 5, 1982 (Attachment 186); March 9, 1982 (Attachment 187); April 2, 1982 (Attachment 188); and May 31, 1982 (Attachment 189) are enclosed.

230. Task I addresses "structural steel." None of the QCP status reports specifically discusses three identified "concerns" --"some welds were painted prior to inspection"; "some beams installed but not shown on design drawings"; and "heat number traceability but not shown on design drawings."

231. The status reports address welding issues in detail. Unfortunately, the progress reports offer inconsistent data. As of March 9, 1982 the QCP report disclosed "1046 Nonconformance reports have been written identifying 4261 [welding] deficiencies," including "slag, porosity, undercut, improper weld size and peening." The March 9 status report also confirmed the quality of the NR's prepared by the inspectors:

> IV. Evaluation of QCP inspectors by AWS certified weld inspectors indicates inspectors are propersly describing the conditions of weld. In some cases, the QCP inspector reported deficiencies that were marginal (judgement call) or that could not be found by the evaluating inspector.

(Attachment 187, supra, Task I.) CG&E estimated that the task was 72% complete and should be finished by June 4, 1982. (Id.) The April 2 QCP report added another 439 NR's for welding deficiencies but added, "IV. Due to preliminary NR review data, Task I inspections were stopped 4/8/82. V. Procedures (19-QA-06 and 19-QA-08) are being revised to include new and clarified inspection criteria." (Attachment 188, supra, Task I.) The April 30 report put all 1,685 NR's, involving 7,170 deficiencies, "on hold for reinspection." The Task I QCP inspectors all went (were sent) for additional training. This is curious, since less than two months earlier AWS-certified weld inspectors had approved both the accuracy and form of the first 1,046 NR's on 426] welds. NR's were included in the 1,685 NR's on the 7,170 welds, which were all placed on hold.

232. The disclosures for Task II -- "weld quality" -- also are incomplete and inconsistent. To illustrate, the February 5 QCP report is the last to mention mandatory American Welding Society inspection criteria for welder qualifications or filler material that were deleted. (Attachment 186, supra.)

233. Task II reports have been reliably inconsistent. For the piping weld records review, the QCP reports first began taking credit on March 9 for a list of large bore welds for review. As the March 9 report explained, "This will define scope and facilitate finding the inspection records." In the April 2 QCP status report they added a list of about 29,000 small bore welds which had been identified for review. On February 5, however -- before the QCP reports discussed efforts to compile lists that would define the scope of the project -- the QCP report claimed, "Approximately 45% of the piping weld records have been reviewed." Conversely, the May 31 report -- issued just after the list of 29,000+ welding records had been compiled -- did not mention review of pipe welding records. (Attachments 186-189, supra, Task II.)

234. Task II also included "welder qualifications" as a concern. To illustrate the inconsistencies, an April 30 QCP report identified 165 NR's, 15 of which had been dispositioned. The May 31 report identified 273 NR's, of which 11 had been dispositioned. (Attachments 100 and 189, supra, Task II.)

235. For issues that were faced and discussed without contradiction, the judgments again are suspect. For instance, Task II refers to "some heat numbers" that have been "whited out" on KE-1 forms for weld rods. The status reports consistently pledged that "deficiencies will be resolved during large bore and small bore piping walkdowns." (Attachments 100, 185-189, supra.) But weld rods are transformed into molten metal during the welding process. As Mr. Reiter pointed out, it is not possible to read the weld rod number by looking during a walkdown, when the number has already disappeared through welding.

236. The QCP effort on heat numbers, Task III, suffers from the same inconsistency flaws as Task II -- the generation of conclusions such as NR's before establishing a reliable data base; as well as inconsistent, if not impossible, statistical tallies. The January 29, 1982 status report pledged,

"Nonconformance reports will be written after heat number log has been verified (estimated completion 2/1/82)." (Emphasis added.) (Attachment 185, supra, Task III.) This commitment was not honored. The subject of heat number records verification next arose in the March 9 report. Through May 31 it was referred to as an ongoing activity, without reference to the log. Meanwhile, the reports disclosed, "Nonconformance reports are being processed." Despite the increasing scope of review, the QCP consistently found missing heat numbers at a 20% rate. (Attachments 100, 185-189, supra, Task III.)

237. Again the statistics did not match. To illustrate, the March 9 status report claimed "over 1900 drawings have been reviewed to date out of a total of 2615." The April 2 report said that 73 more drawings were reviewed in March. Somehow, the authors added "over 1900 plus 73 and answered " er 2474" in the April 2 report. The inconsistencies went in both directions. From April 30 to May 31, the status report figures on reviewed drawings shrank from 2488 to 2354, a net negative 134. A similar Task II inconsistency involves review of purchase order ("P.O.") documents. The April 30 report credited QCP 3206 PO reviews. The May 31 report disclosed that 669 more purchase order reviews had been completed that month, for a total of 4788. CG&E had somehow added an additional 913 welds to the total. (Attachments 100, 185-189, supra, Task III.)

238. Task VII, "Nonconformances, " illustrates another case of work to unapproved procedures. The January 29 report stated that procedures for punchlist review procedures were out for comments. Simultaneously, the report disclosed that the "punchlist review is 5% complete...."

(Attachment 185, supra, Task VII.) This could indicate that the QCP again is confirming and reaffirming bad habits through uncontrolled repairs.

239. Task VII further illustrates the inadequate scope of the QCP. In this instance, it even avoided a key issue that was included in the November 1981 report -- NR's that are missing because they were voided as "not issued" or otherwise simply returned to the inspector and kept out of the formal records system. The status reports offer various statistics for voided NR's, but there is no attempt to quantify the number of missing NR's. Instead, the reports make oblique references that "letters to inspectors requesting information on potential nonconformance not previously entered into the system is [sic] being issued." This may be another uncontrolled effort. The reports do not disclose how many letters have been sent out, or whether they were sent with postal service proof of mailing or guarantees of receipt. Mr. Reiter, for example, has been a highly visible, accessible former employee who reports that he wrote NR's not entered into the system. Mr. Reiter also reports, however, that he never received a letter from CG&E inquiring into missing NR's. (Attachment 23, supra, at 6.)

240. The progress reports for some tasks were so vague as to be nearly meaningless. To illustrate, Task X concerned subcontractor QA programs in general and Bristol Steel in particular. At best the status reports have revealed that "many audits were deficient, without specific quantification." Otherwise, the reports do not disclose any results. Through May 31, the disclosures solely concern the methodology. There should be some discussion of results, since the May 31 report claimed the task was 53% complete. Despite the scope of the vendor QA breakdown, there is no discussion of nonconformances or any other corrective action. (Attachments 100, 185-189, supra, Task X.)

HARDWARE BREAKDOWN MIRRORS QA BREAKDOWN

241. Due to the flaws discussed above, it is unrealistic to expect the QCP to reveal more than a small portion of the hardware effects from the QA breakdown. But even what CG&E has admitted obliterates all previous reassurances that the QA problem was a mere paperwork snafu. On July 15 the Commission provided more specific QCP results to Congressman Udall. (Attachment 190.) Out of 259 cable tray connections inspected, there were 253 with nonconforming conditions. In the drywell steel 93 out of 161 beams inspected to date had nonconforming welds. There were 369 welding deficiencies. In the gallery steel, 39 beams out of 106 inspected were nonconforming, with 126 deficiencies on 1200 welds. There were problems with the control room structural steel welds also, with nonconformances on 150 beams out of 200 inspected, and 1835 deficient welds out of approximately 2500 inspected. In short, the July 15 letter confirms that the QA breakdown has led to a wide-ranging hardware breakdown.

CG&E DOWNPLAYS RESULTS

242. Apparently the findings are not significant to CG&E. A June 1982 "Open Letter to all Employees" from CG&E President Dickhoner stated that the QCP "is now 66% complete, and I am pleased to report that to date no serious safety problems have been found." The letter was printed in the June 1982 edition of CG&E's appropriately titled "OK News." (Attachment 191.) Mr. Dickhoner's letter mirrored CG&E's position at the June 10 congressional hearings and the June 16 NRC briefing. It was repeated in a July 27, 1982 news article (Attachment 192) which quoted CG&E Vice President Earl Bormann as follows:

> Personally, I think there is very little wrong with the place. As I've said before, I'll move in next door to that plant right now if they wanted to complete it at its present state. I have personally no doubt about the

> quality of the workmanship, but what we are getting into is really validation through documentation of what was done up there. To a certain extent, I think we are getting a somewhat clouded picture of actual work versus a paper system which documented the work.

(Id., at 6A.) The determined CG&E position to "see no evil" raises serious questions about its definition of "serious safety problems." Moreover, it raises a cloud over all QA judgments by CG&E top management. With respect to hardware deficiencies at Zimmer, CG&E's tired "party line" no longer bears touch with reality.

H. CG&E Failure to Achieve the Necessary Character and Competence to Operate a Nuclear Power Plant

243. At the June 10, 1982 congressional hearings, Mr. Jones stated, "No system is better than the commitment of its decisionmakers. Regardless of the public statements, there is no commitment to Quality Assurance at Zimmer." (Attachment 43, supra, at 14.) That statement explains the sustained breakdown of the Zimmer QA program, both before and after the April 8, 1981 Immediate Action Letter. Lack of corporate character and competence, through omission or commission, generally is sufficient basis to deny an operating license. Houston Lighting and Power Company (South Texas Project, Units 1 & 2), CCI-80-32, 12 NRC 281 (1980). At Zimmer the issue is decisive for the ongoing construction and corrective action. CG&E has extraordinary responsibilities under the QCP to assess the damage from its own decade-long failure.

CG&E/KAISER QUALITY ASSURANCE PHILOSOPHY

244. The hard decisions in the Quality Confirmation Program could be expensive as well as time-consuming. As Mr. Hunter explained with respect to piping traceability in a June 7 briefing of the Commissioners, "If they do not know, we assume they will take it out and replace it with known pipe."

(Attachment 193.) Unfortunately, the available evidence suggests that neither CG&E nor its contractor Kaiser have learned their lesson. To illustrate, effective July 6, 1981 Mr. Mark Albertin was appointed Project Manager for Zimmer. (Attachment 194.) He replaced Mr. Robert Marshall, whose record and actions underlied the Immediate Action Letter and last November's $200,000 fine. Mr. Albertin quickly tipped his hand. On June 10 Mr. Jones testified, "As the new site manager told us when he arrived; his objective was to return to the pre-April 1981 mode when we had everything going for us and we were building one of the cheapest plants in the country." (Attachment 43, supra, emphasis added.) In short, Mr. Albertin did not announce a new commitment to upgrade QA. The "new" Kaiser and the "old" Kaiser were the same at heart.

245. CG&E's "pre-reform" and "post-reform" philosophies have not changed, either. In 1971-75, Messrs. Borgmann, Dickhoner, Pandorf and Schwiers instituted the basic CG&E approach to QA -- do as little as possible. (Supra, at 38-39.) As Mr. Borgmann wrote on January 15, 1975, in response to a request for more Kaiser QA personnel:

> ...My intent is to get you and your field management to impress upon everyone connected with this job that there is a finite limit to our financial resources and the faster they are dwindled away, the more likely it becomes that this and future nuclear projects are in danger of falling by the wayside.
>
> It is dangerous for us to tamper with the constructor's responsibility by trying to assess and decide the proper level of his manpower. However, the level of expenditures attained to date on this project makes it mandatory to tighten the control reins, hopefully without jeopardizing your efforts.

(Attachment 86, supra, at 2-3.)

246. History has shown that Mr. Borgmann was penny-wise and pound foolish. But there is no evidence that CG&E's commitment has changed. For instance, a June 9, 1982 news article (Attachment 195 A) reported CG&E President

Dickhoner's current position on independent quality verification of vendors, one of the most fundamental early mistakes:

> Dickhoner was particularly incensed about charges that CG&E acted improperly when it refused to allow Kaiser to make independent inspections of material suppliers approved by CG&E....
>
> "They were traipsing all over the country on junkets that weren't required. They've got qualified nuclear inspectors in these shops. What good would it have done other than to run up the cost to send another inspector?"

247. At the June 16 NRC briefing Mr. Borgmann still believed in the early decisions to deny QA staffing to Kaiser. He said the problem was that staff requests had to be justified; that Kaiser had to show the people would be busy. Of course, there was a decade's worth of QA work to have kept them busy -- all the mandatory inspections that were missed, and the corrective action that was circumvented. In a June 22 speech to Kaiser employees (Attachment 195) Mr. Borgmann again refused to take the QA breakdown seriously, except as a political and public relations problem. He blamed Zimmer's miseries principally on well-organized, well-funded manipulations of Congress, the media and the Nuclear Regulatory Commission by the Government Accountability Project, counsel for intervenors.*/ Borgmann refused to concede any serious QA problems at Zimmer, dismissing them all as "paperwork" deficiencies. In short, the only true commitment CG&E management has demonstrated is to deny any previous mistakes, deny there is a serious problem beyond public relations, and attack the motives of outside groups worried about the effects of CG&E's policies. Creating diversions and scapegoats will not make Zimmer safe. CG&E

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*/ GAP has a three-person full-time staff and an annual budget of approximately $80,000.

should be disqualified from the QCP on the basis of its current position, even if offered in good faith. The extraordinary responsibility requires an extraordinary commitment to quality assurance. That commitment does not exist in CG&E top management.

CG&E'S KNOWLEDGE AND CONTROL OF KAISER'S QA PROGRAM

248. There is serious question whether CG&E has acted in good faith. Last November, the major public justification to keep CG&E at the helm was the utility's claimed ignorance of Kaiser QA violations. If for ten years CG&E had been fully aware of the QA violations, it would have been untenable to put the utility in charge of the QA reform. Instead, Mr. Dickhoner attempted to publicly explain that the utility had not been on top of the QA program until very recently. In a November 26, 1981 news article (Attachment 196), he stated, "It became apparent that we had depended too much on our contractor." Mr. Dickhoner further amplified, "Our shortcoming is that we did not exercise sufficient control over the Quality Assurance program." Mt. Adams Outlook, "NRC Charges Quality Assurance Violations at Zimmer; Staff Proposes $200,000 Fine" (November 27, 1981, p. 1). Even at the June 10, 1982 congressional hearings and NRC briefing, CG&E officials maintained their ignorance of the Kaiser QA program. (Attachment 197.) In short, CG&E consistently has maintained that its only real failure was inadequate oversight of its contractor.

249. CG&E's "blissful ignorance" position is categorically false. Conceptually, since CG&E controlled the pursestrings, it would have been difficult not to notice that Kaiser's QA program was unnaturally limited. Second, the evidence proves the utility's intimate knowledge of the QA issues, beyond a reasonable doubt. 129 instances of the issues in this petition demonstrate CG&E knowledge of or participation in QA violations.

250. The Zimmer employee witnesses had little question about the issue. Mr. Yates observed:

> I do not understand how the NRC could have concluded that CG&E was unaware of Kaiser's quality control miseries. It would have been impossible. CG&E officials certainly had a visible presence at the plant. CG&E officials were in the office frequently. Further, the problems were too well-known to miss.

(Attachment 33, supra, at 3.) (See also, Attachment 16, supra, at 12-13, 15-16; Attachment 61, supra, at 1, 4-5.)

251. In a July 8, 1981 interview (Attachment 174, supra) with NRC investigators Albert Puglia, John Sinclair and James McCarten, Kaiser QA Manager Phillip Gittings illustrated the comprehensive nature of CG&E oversight: "Gittings...explained that Kaiser was 'doing the work for a very tough client (CG&E) and that any requisition for additional manpower or staffing for QA/QC had to go through the client.'" Gittings added that he had to report everything through Bill Schwiers, QA Manager for CG&E. (Id., at 3-4, emphasis added.)

252. Ignorant or not, on June 10 Mr. Borgmann told Congress (Attachment 197, supra) that CG&E--

> ...obviously should have had deeper involvement. We should have completely controlled the program. But to say the program was not carried out because we deliberately told Kaiser to short cut it or not carry it out is false.

On June 15, before the NRC Commissioners, Mr. Borgmann again denied that CG&E overruled Kaiser, at least on specific QA policies, if not on general staffing decisions. He referred to the Zimmer QA effort as "their" (Kaiser's) policy and denied interference.

253. These statements are absolutely wrong. 112 instances of the issues herein involve active CG&E participation in -- and direct control when necessary of -- the Zimmer QA program. While specific problems may have slipped past, for major policy decisions the problem at Zimmer is that CG&E

did control the quality assurance program. It overruled Kaiser on staffing; which construction activities to cover with quality assurance; when to conduct audits, surveys, and inspections; whether to even have an audit program; when to write up the findings and how, on which form; and similar decisions. (See pp. 18 - 82, supra.)

254. The evidence suggests that CG&E historically has maintained ultimate control over QA programs, to the point of firing Kaiser QA managers who fell out of favor. An affidavit from a former Kaiser Assistant Quality Control Manager (Attachment 76, supra) summarized the phenomenon:

> While employed at the Zimmer site, I worked for Bill Friedrich, the Quality Control Manager for Kaiser Engrs, Inc. Bill was replaced in November of 1976 at the request of William Schwiers of CG&E due to a disagreement he had with Schwiers over the operation of the Quality Control Program at Zimmer. Bill Friedrich kept no secrets on the reason for his replacement. Friedrich wanted to hire more inspectors, and wanted to conduct the Zimmer QA program according to Nuclear Standards. Friedrich had extensive experience in the Nuclear industry and was attempting to implement the KEI QA program and industry standards on site. Bill Schwiers was the CG&E QA and Stds. Engineer (i.e. Quality Mgr.) on site and did not want to hire the inspectors Bill requested. Schwiers did not have any previous nuclear experience and had an accounting background, was cost conscious and not committed to implementing KEI's QA Program at the Zimmer site. Schwiers did not back Friedrich's request for more inspectors on the site when work at the site was underway at a faster pace and more inspectors were needed to get the job done. Schwiers did not want to spend the money on inspectors, refused Friedrich's requests and eventually replaced Friedrich, or had Kaiser replace him on the site.

The affiant reported that Friedrich's replacement, Robert Turner, "ran into the same problem with Schwiers." (Id.)

255. Kaiser construction manager Robert Marshall and Phillip Gittings reportedly were identified in last November's report as officials responsible for the QA breakdown on specific issues. But in the July 8 interview

(Attachment 174, supra), Mr. Gittings illustrated the extent of CG&E's control. Gittings repeatedly denied being intimidated by Robert Marshall, the Kaiser site construction manager notorious for screaming, cursing and generally bullying QC inspectors. But Gittings did not hesitate to concede the authority of CG&E QA Manager William Schwiers:

> In fact, Gittings stated "my primary goal was to get along with him" [Schwiers]. Gittings added that Kaiser lost the previous QA Manager [Turner] becuase he was unable to get along with Schwiers. Gittings explained that there were numerous requests in the form of memoranda which were sent by Turner to CG&E asking for additional QC staffing which were turned down or denied by Schwiers.

(Attachment 174, supra, at 5.) The next day, on July 9, 1981, NRC investigators spoke with Mr. Schwiers, who indicated that he was acting on behalf of the general CG&E construction management team, all of whom reported to Mr. Borgmann. In short, the statement of key CG&E/Kaiser QA officials demosntrate that far from being uninformed and hesitant to intefere, CG&E ruled over the Zimmer QA program with an iron fist. Kaiser's job was to implement the utility policies.

256.. CG&E also has contended repeatedly that no one warned them about the effects of cost consciousness. At the June 16 NRC briefing, Mr. Borgmann stated that CG&E was unaware of problems before the fall of 1980, when the NRC raised issues in connection with a Systematic Appraisal of Licensee Performance ("SALP"). To illustrate, in a July 27, 1982 news article (Attachment 198), Mr. Borgmann contended, "Nobody ever came up at the top management of the company and said that this job can't be done or we're not going to meet the code if we don't get a number of people."

257. Again, Mr. Borgmann's statement was categorically false. As seen earlier, on October 14, 1974, Mr. Friedrich wrote to Mr. Borgmann that additional staff were "absolutely necessary" to meet the requirements of 10 CFR 50, Appendix B. He said that "it is becoming virtually impossible to continue

working in all the areas with the present staff." (Attachment 83, supra, emphasis added.) A digest of internal CG&E/Kaiser correspondence (Attachment 199) reveals the scope of the sometimes bitter debate between the two organizations over the scope and nature of the Zimmer QA program.

258. The NRC also tried to warn CG&E (and Mr. Borgmann), again to no avail. In his March 6, 1981 interview with Messrs. Gamble and Sinclair of the Commission's OIA, NRC official (and former Zimmer Project Manager) Terry Harpster recalled that during his 1977-79 tenure at Zimmer, he was concerned about severe problems such as lack of resources and experienced personnel. "Harpster said that he tried to resolve some of these problems informally, including going up through the licensee management chain to Vice President Earl Borgmann, but with no luck." (Attachment 81, supra.)

259. It is hard to believe that Mr. Borgmann truly forgot these warnings of illegality. In each case he either threatened or attempted to engage in reprisals against those who brought the bad news. Kaiser's warnings of the consequences of staff breakdowns led to the following veiled threat from Mr. Borgmann: "if Kaiser Engineers expects to remain a significant factor on this project, it will have to adapt to the situation now facing us of austerity and hard work." (Attachment 86, supra.) Mr. Harpster reported "that Borgmann was also putting the heat on him by, for example, sending a letter to Keppler. Harpster also understood that the Chairman of the licensee sent a letter to President Carter and others." The CG&E pressure even reached the point where Mr. Schwiers "called the regional NRC office to try to get some of the IE inspection reports changed." (Attachment 81, supra.) In sum, it is true that CG&E lacked the technical competence to adequately construct a nuclear plant for the first 97% of the job. But even more significant, Messrs. Dickhoner, Borgmann and their subordinates knew better, and they either ignored

or attempted to retaliate against those who tried to warn them.

INTOXICATION, CRIME AND VIOLENCE ON-SITE

260. Proposed NRC regulations recognize the significance of personal misconduct such as intoxication, theft or other criminal activities for plant safety. (Attachment 199a.) Last November's NRC report passed along observations that liquor, drugs, gambling, prostitution and petty theft were common occurrences at Zimmer. (IE Report 50-358/81-13, at §5.14). Counsel even submitted an affidavit to the ASLB that referred to a moonshine still on-site, as well as black markets, raffles for "hot" weapons, and a nationwide bookie operation that placed horse bets from the desk that guards the nuclear fuel. The abuse was so blatant, according to the affiant, that there was a $2.00 box and a $5.00 box on the guard's desk. (Attachment 200.) The Harpster interview illustrates rather dramatically how the phenomen can affect the quality of construction:

> Harpster said he tried to get the plant managers out to take tours of the plant. He said that one assistant plant manager said he was scared to tour the plant because of the convicted felons working out there. Harpster said that sometimes the licensee's own security force could not handle disturbances and they had to call the local sheriff's office. Harpster explained that there is some drinking of alcohol on all nuclear construction sites. However, the licensee at Zimmer did not have much control of things. Harpster said there were a lot of "tough guys" working at the plant and the situation got worse when they were drinking.

(Attachment 81, supra.)

INTENTIONAL FALSIFICATION

261. Intentional falsification of QA records is not only a criminal offense, it is valid grounds to deny an operating license. (Houston Power and Light, supra.) Last November's IE Report alluded to a case where

Mr. Terry Dakin's signature appeared in a Liquid Penetration Report, but the handwriting did not match his usual signature. (NRC IE Report No. 50-358/81-13, Exhibit 36.) Unfortunately, further investigation reveals that there may be many cases where evidence exists of intentional falsification. To illustrate, counsel has submitted to the NRC 21 examples of welder qualification records that demonstrated 11 possible techniques of intentional falsification. (Supra, at60 -61.) These examples may only be the tip of the iceberg; they cast doubt on all the quality assurance records.

262. Traditional practices on-site may have eased the way to mask deliberate falsification within generally sloppy records. For instance, in an April 5, 1979 memorandum (Attachment 201) Kaiser QA Manager R. E. Turner called for an end to the traditional practice of whiting-out changes on inspection records:

> Several instances have been noted where "white-out" has been used to accomplish changes to CIP's or other inspection records. This practice can lead to questionable authenticity of the final record. Effective this date, "white-out" shall not be used and changes shall be made by crossing out the item to be changed, date and initialing the cross out, and entering the correct information.

263. Another tradition that facilitated abuse was the practice of predating QA inspection documents. This practice may have been officially or informally permitted until September 8, 1981, when an internal CG&E memorandum (Attachment 202) disclosed--

> The attached copy of a speedmemo has (21) packages highlighted. These packages have been final inspected per M-12 by R. Freeman on 9-1-81. Mr. Freeman left site on 8-12-81. There is no other documented verification of when inspection was actually completed except date of M-12 check sheet.

(Emphasis in original.) The response in the same memorandum conceded, "DCK indicated that this has been a past practice in HJK to pre-date the inspection

report to insure that CG&E has two full days to reinspect. This is a bad practice which will be stopped." (Double emphasis in original.) This evidence suggests that intentional falsification may have occurred during the first five months after the Immediate Action Letter, which initiated the CG&E reinspection effort.

264. A noncooperative, defensive internal response to records reviews also suggests possibly suspect motives. For example, on December 7, 1981, a Kaiser QC inspector found that two weld rod forms were marked "void" and thrown in the trash, according to C.A.R. No. 037. (Attachment 50, supra.) One of the weld rod forms was destroyed, according to the inspector who "dug it out of the trash can at the rod issue station." Mr. Worley Puckett admitted that the rod slip had been attached and discarded, which "is a direct violation of SPPM 3.3 Rev. 9 which has no provision to 'void' an HJK weld 2 form and also states the form is to be retained." The C.A.R. concluded, Both rod slips show 100 rod each issued to craft, no rod returned. We have lost control of 200 weld rod." (Id.) On December 2, 1981, Puckett denied the same inspector access to HJK weld 2 forms, according to Kaiser C.A.R. No. 038. The inspector was following through on the previous day's Nonconformance report (and C.A.R.) about voided and destroyed weld rod slips. (Attachment 48, supra.) See, e.g., September 2, 1981 memorandum (Attachment 203) that reported another KE-1 form from Mr. Puckett's office that was "altered by writing in ink, 'VOID' on the Original." It would be chilling to learn that Mr. Puckett is still on-site and participating in current "reform" efforts such as the welder recertification program.

265. Traceability records for weld rods or heat numbers at Zimmer may in fact be as suspect as welder qualification and procedure records. For instance, a series of Kaiser and CG&E correspondence on CG&E field audit #285

(Attachments 39A-C, supra) showed that a nonconformance was "correct[ed]" by changing a heat number from 52470 to 524710 on the records. The unexplained handwritten change was made to a typed copy. In another instance, when a side plate was found to have conflicting heat numbers in item #14 of the audit, CG&E dispositioned the inconsistency with the following instruction: "Delete Item 14 entirely from the report." Kaiser followed the instruction. (Id.)

266. Mr. Reiter's May 13, 1982 affidavit also described six examples of possibly deliberate falsification or inaccurate traceability and design records. One case involved an NPP-1 form that supplies history and traceability data for piping spools. The records indicated that two piping "elbows" were installed in five different locations. Since two parts can only exist in two locations, Mr. Reiter suspected deliberate deception. (Attachment 16, supra, at 3.)

267. In another instance, on a Friday Mr. Reiter discovered a traceability gap when heat numbers were ground off certain flanges. He left his notes about the problem on his desk over the weekend. When he returned on Monday, Mr. Reiter saw that a new heat number, "BV7", had been punched into the flange. Unfortunately, the next heat number was in the wrong location and did not correspond to any existing code. The number did appear to match some symbols in Mr. Reiter's notes, however. (Id., at 3-4.)

268. A third case of potentially deliberate falsification discovered by Mr. Reiter involved the weekend addition of traceability markings with a white paint stick. At the same time, the relevant drawing was revised -- with welds relocated and identification marks rearranged -- in an attempt to reconcile a discrepancy on a nonconformance report Mr. Reiter had written. While the red-line changes were identical to the new white paint traceability

markings, they had no other basis in fact. (Id., at 5.)

269. A fourth case uncovered by Mr. Reiter occurred after he helped write an NR on piping that did not appear to have traceability. The piping was then ground down for minor repairs. Subsequently, orange and yellow markings were applied over the fresh grinding. The new markings were used in an attempt to resolve the Nonconformance report. Since the original traceability markings were later discovered, Mr. Reiter felt that the new markings represented deliberate falsification as the way to answer even a mistaken NR. (Id., at 6.) The example suggests that some deliberate falsification may have been in response to another factor: it is easier to respond to an NR by simply making up the answers, instead of doing the hard work to see if the report is valid.

270. The significance of the above 30 examples suggesting deliberate falsification goes beyond the issue of criminal intent. They cast a shadow over the whole "paperwork pedigree" premise of the Quality Confirmation Program. Intentionally falsified QA records are not a legitimate method to decide which work must be reinspected. These circumstances require 100% reinspection by a third party whose integrity is beyond question; not a paperwork review by the same organizations that may have tampered with the paperwork.

CG&E DECEPTION IN NRC FORUMS

271. As seen above, CG&E has made statements to the public and to Congress that are so inaccurate that they are difficult to accept as good faith errors. The NRC, and the Commissioners themselves, are not privileged in this respect. At the June 16, 1982 NRC briefing Mr. Borgmann again asserted

CG&E's lack of interference with the Kaiser QA effort, a position now thoroughly discredited. Similarly, Mr. Sylvia made six statements about In-Process Inspection Deficiency Records that did not square with available evidence. (Attachment 79, supra, at 5-7.)

272. These 1982 examples also reflect old practices. Mr. Harpster recalled a 1978 incident when he told CG&E plant manager James Schott that Schott's July 13, 1978 testimony to the NRC's Advisory Committee on Reactor Safety was inaccurate. Schott agreed and promised to inform the ACRS. But he didn't. Mr. Harpster even recalled that Mr. Schwiers used to call the Chicago Region III office to persuade the NRC to change inspection records. (Attachment 81, supra.)

273. Whether due to bad faith, ignorance or incompetence, CG&E's policies have been responsible for the QA breakdown, both before and after the Immediate Action Letter. That is not to deny that Kaiser implemented the policies. But the utility called the shots. Last summer's criminal investigation has been reopened, leading to the ironic result that the targets of the probe may be the same individuals responsible for the "final solution" to Zimmer's safety problems. Even if there has been no intentional misconduct, the utility's track record is one of failure. As the Harpster interview summarized, "Harpster felt that this licensee was 'in over its head.'" (Attachment 81, supra.) By any measure of "fitness," CG&E has not demonstrated the character and competence necessary to qualify for leadership of the Quality Confirmation Program.

V. REQUESTED REMEDY

274. As a result of the above analysis and evidence, MVPP requests that the Commission--

1) immediately suspend the construction permit at Zimmer;

2) replace the current Quality Confirmation Program with a comprehensive third-party reinspection program, with full authority to identify and impose corrective action on any nonconforming conditions; and

3) require an independent management audit of CG&E and KEI management, which would include recommendations whether to replace the permanent CG&E/KEI QA programs with independent structures administered by an outside organization.

275. On December 1, 1981, Chairman Palladino told the Atomic Industrial Forum:

> ...If the nuclear industry does not do its part, no amount of regulatory reform will save it from the consequences of its own failures to achieve the quality of construction and plant operations it must have for its own well-being and for the safety of the public it serves.
>
> Based on quality assurance failures that have recently come to light, I am not convinced that all of the industry has been doing its part.
>
> ...Some utilities and their contractors are well managed and adhere to high standards for construction and operation of their nuclear facilities, but some is not enough. The good performers cannot afford to let the poor performers jeopardize public safety and undermine public confidence in the industry.

(Attachment 204.) If the Chairman's speech represented more than mere rhetoric, the Commission should apply the proposed extraordinary sanctions to CG&E. Zimmer continues to set the pace as the worst plant in Region III and one of the five nationally with a systematic quality assurance breakdown. A June 19, 1982 news article (Attachment 205) quoted Commissioner Gilinsky: "In my experience, I don't believe we've run into one [plant] where the gaps in quality assurance are as large as we've got [at Zimmer]." Id., at 4A.) The

same article quoted Congressman Udall's opening statement from the June 10 hearings: "The bottom line here is that a massive quality assurance breakdown has occurred at Zimmer.... From day one, inspections were inadequate." (Id.) The ultimate significance of Zimmer may be to belie Chairman Palladino's rhetoric. Unless the Commission grants the requested remedy, Zimmer may be the plant that proves how badly a utility can abuse the Atomic Energy Act without losing control of the construction project.

VI. CONCLUSION

276. All parties agree that public confidence must be restored in the safety of the Zimmer plant. A reform program administered by CG&E cannot achieve that goal. Optimistic utility progress reports no longer are taken seriously. When CG&E is still unwilling to admit the necessity of spending money for QA staff, it is unlikely that it will be more willing to admit the necessity for potentially drastic expenditures to reinspect and rework major safety systems. Under these circumstances, the Quality Confirmation Program is unfair to the utility. No matter how thorough CG&E's effort, the cloud of public distrust will remain.

277. Region III has suggested the possible use of consultants to evaluate the QCP. The suggestion confirms the lack of credibility for the current program. But the solution is not to add another layer of bureaucratic oversight. The only viable solution is to substitute a legitimate structure for an illegitimate program. In this case, at a minimum legitimacy means places responsibility for comprehensive reinspection and correction action of all safety-related work with an independent organization free from conflicts of interest.