GOVERNMENT ACCOUNTABILITY PROJECT
Institute for Policy Studies
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Streeter

July 22, 1981

PRINCIPAL STAFF			
DIR		E&IS	
D/B		PAO	
A/D		SLO	
DP&PI			
DE&TI			
DEP&OS		File	X

Mr. James Keppler
Director, Region III
Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Dear Mr. Keppler:

Thank you for this opportunity to assist in your investigation of the Zimmer nuclear power plant by submitting a list of components to be included in your upcoming independent tests of the plant. I realize that you are taking a relatively rare step by extending the investigation to include these tests, instead of the normal "walking tour and paperwork review" approach. Your initiative demonstrates that Mr. Applegate was right when he predicted that his charges represent only the tip of the iceberg of safety problems at Zimmer.

Please also excuse my delay in responding. GAP has had pressing deadlines on a series of cases, and Mr. Streator informed me last month that there would be a time lag before the tests began.

You may find it helpful to understand the background for these recommendations. When Mr. Streator invited GAP's assistance, I contacted all of the previous witnesses and groups who have helped our probe. I asked their assistance in making their criticisms specific enough so that you could conduct outside tests on individual components. I also asked that each source offer to pass along evidence from other workers who may be nervous about speaking with me directly.

I am pleased to report that your offer of working with GAP produced a surprising amount of new information. Many workers at Zimmer are reluctant to speak out because of cynicism and fear of retaliation. As one former Zimmer employee explained, the day he made disclosures to NRC inspectors he was relieved of all duties. He was fired within a few days. His sacrifice produced a "walk-through" by inspectors who did not appear to understand the technical nature of his charges. Nothing was accomplished, and the utility threatened to sue him after he was fired. Every public whistleblower at Zimmer has been attacked viciously by the utility at CG&E, so workers are afraid to talk. They responded to your creative initiative, however, and several new witnesses agreed to speak with your investigators on an anonymous basis.

JUL 21 1981

The witnesses provided the data to prepare a list of 28 parts of the plant that should be tested. In several instances, the information was still too general to identify specifics, so I contacted scientific and engineering experts to identify the most vulnerable components that the generalized allegations could be describing. The results follow with as much specific information as I received:

I. CONCRETE

1) Reinforcement bars and concrete in the lining of the plant's suppression pool.

2) Concrete and foundation for the cooling tower support structure, to test for sinking.

3) Quality of the concrete, specifically for three pours made during January and February, 1981, and generally through spot checks for post-1977 pours. The January and February, 1981 powers were approximately 300-400 yard jobs with holes 2 feet by 3 feet. Witnesses can describe where to locate the relevant records for the following problems --

a) The pours needed to be done within an hour after leaving the mixing plant to maintain acceptable strength. But due to transportation difficulties, it took up to four hours before the pours were completed.

b) Large quantities of water were added to concrete to stretch it and help it to flow due to hardening during the long time lags.

c) Due to leaky valves on the trucks in the January and February runs, still more water may have mixed with the concrete inadvertently.

d) The chutes were not clean on the trucks.

e) During a labor dispute the concrete company hired 48 new employees off the street, many whom were not experienced mixer-drivers. Some had never even driven a truck before. As a result, they might mistakenly mix an improper amount of water into the concrete, or obey an order not to record extra water added improperly.

f) The Kaiser inspector would only look at the first load and then leave the inspection ticket for one of the mixer-drivers to complete.

II. WELDS

4) Prefabricated welds on the Residue Heat system. The relevant witness will share more specifics with your inspectors.

5) Prefabricated welds on the large bore piping.

6) Welds done on the C level of the plant's suppression pool. The vertical and overhead welds are especially suspect. The source also discussed the failure to inspect these welds before they were grounded. He explained how unqualified welders who couldn't pass the tests were falsely certified on the basis of test coupons performed by others. He can identify specific welders and has drawings and photographs demonstrating how identification markings for welds were altered on test plates to accomplish the coupon-switching scheme.*

7) Prefabricated welds in the main steam relief system piping.

III. CONTAINMENT

8) Leak tightness of the wetwell/drywell vacuum breakers in the primary containment system. The vacuum breakers prevent fluid from getting into the drywell of the containment.

9) Downcomers that discharge water into the wetwell of the containment system.

10) Lining of the containment suppression pool for bowing of the plates and quality of the metal.

11) Vibrations around the suppression pool. There should be tests for pressure vessel pedestal acceleration to insure that pressure waves from the suppression pool do not lead

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* This source added a tip for future NRC investigators. He stated that whenever NRC inspectors entered the premises for unannounced inspections, the front guards would communicate that the NRC was in the plant. Hurried efforts followed to give the plant a shipshape appearance for the walking tour inspections.

to unsafe vibrations above the seismic design basis at Zimmer for vessel pedestal support. The tests can be conducted by mounting accelerometers during a test run and opening the safety relief valves to measure how the blowdown affects vibrations.

IV. ELECTRICAL SYSTEM

12) Sealants at the grids where electrical cables penetrate walls. The witness claimed that excessive cables have prevented proper installation of sealant at grids where cables penetrate the walls, resulting in damaged cables and installation.

13) Electrical penetration seals around conductor rods and nozzles for electrical power and instrumentation cables which breach the plant's containment. The significance is that inadequate epoxy sealant results in gross leakage paths and inadequate electrical insulation of the penetrations. As a result, the containment could be breached and control cables shorted out. Experts have described this flaw as the weak link in Mark II containment systems.

14) Power drawers at supervisory locations for the electrical system.

15) Vertical cable trays from the top of the plant down to the containment area. The trays should be tested for questionable manual welds and overloading. The witness, Mr. Ed Hofstadter, has a diagram to assist whomever conducts the tests.

V. CONTROL RODS, PUMPS AND VALVES

16) Environmental qualifications of heat exchangers to see if the tubes can withstand accident conditions.

17) Rod worth tests to check whether boron has been lost from control rods.

18) Safeguards against control rod drop accidents (where the rod becomes disconnected and remains stuck in the inserted position after the control rod drive is withdrawn). In particular, the inspectors should test whether Zimmer has Rod Sequence Control as a patch.

19) Control rod drive pump.

20) Primary recirculation pumps.

21) Environmental qualifications test under accident conditions for both valves and load minimizers on safety relief valves. These components control pressure vessel pedestal acceleration (see #11, supra), and stuck valves can lead to blowdowns into the suppression pool.

22) The Nash Condensor used on the Terry Turbine. Full tests should be conducted for core shifts that weaken its ability to withstand accidents. If the condensor cracks during the stress of an accident, the safe shutdown of the reactor would be threatened. The witness for this item, Mr. Vic Griffin, has drawings and photographs to illustrate the targets for the tests.

VI. PIPING

23) Feedwater spargers -- the large, heavy-walled pipes designed to distribute fluid uniformly through vessels.

24) Vessel safe ends and attachments to large and small bore piping systems.

VII. MISCELLANEOUS COMPONENTS

25) Plates on the seventh floor fuel pool, to test whether they are stainless steel or cheap carbon steel plates covered with a thin layer of stainless steel.

26) Steel plates, shapes, I-beams and channels purchased from outside vendors for critical areas. Tests should be conducted on parts that have been identified in Inspection Reports but not in NRC Nonconformance Reports. The witness, Mr. Vic Griffin, can tell NRC representatives how to locate the suspect components.

27) Seismic hangars in the spreader room, as well as redundant conduit systems on hangars.

28) Instrument panels at 570 foot elevation. The witness stated that the panels have inadequate drains, which should be checked. The panels themselves also should be tested and calibrated.

It is important to emphasize that this list is illustrative, rather than exhaustive, of the Zimmer components that should be tested. Witnesses told GAP that even more employees complain about safety defects at Zimmer than are willing to cooperate with your current investigation.

Further, the NRC inspection reports cited in GAP's May 11, 1981 petition identified numerous repeat noncompliances on safety components. Those items are particularly ripe for testing. It is hard to underestimate the potential extent of poor workmanship at Zimmer. For example, NRC inspectors recently have found the debris from a drinking session and in another case a sleeping worker, littering up the cable trays at the nuclear plant!

In light of this contruction sloppiness and your own preliminary oral confirmation for some of Mr. Applegate's original charges, I am disturbed at several aspects of the current investigation. Since you have told Mr. Applegate that the first NRC report on his charges may be released at the end of July, I am especially concerned that the groundrules we established in February will be respected.

First, several witnesses Mr. Applegate referred to you report that NRC investigators still have not contacted them. At the February meeting, you explicitly promised to meet with all witnesses referred by Mr. Applegate. In my opinion, the witnesses involved should be the starting point for your investigation, rather than apparently forgotten just a few weeks before release of your first report. For example, Mr. Vic Griffin was of invaluable assistance in helping to prepare this list and he can identify the records that will permit your investigators to expand greatly on GAP's suggestions. Mr. Tom Martin's detailed disclosures on problems with the control rods prophesized eventual Stop Work orders and Immediate Action letters this year. He remains willing to speak with the NRC. We at GAP do not understand why your team has overlooked these witnesses.

Second, your investigators reported to me that Mr. Aldredge, the President of Peabody Magnaflux, now claims that Mr. Applegate's literal transcription of their conversation is accurate. But Aldredge goes on to state that Applegate misunderstood. That explanation is hard to swallow, since Mr. Applegate did most of the talking and Aldredge responded, "Well, you're right." It is also hard to explain how Applegate could have misunderstood Aldredge's explanation why he couldn't admit the retaliatory dismissal publicly: "When you work for a closed industry, it is very tight. . .. I'll be off every major fabricator within 30 days. The computer all of a sudden won't have us in the bidding bank."

Further, your staff suggested that I reread the Aldredge transcript from the perspective that Applegate was a friendly Cincinnati Gas and Electric ("CG&E") representative contacting the leader of a company thrown off the job for poor work. Quite frankly, that suggestion raised questions whether your staff understood the context of the call. Mr. Applegate had long been released from CG&E's service when he called Aldredge. Mr. Applegate made it clear during the conversation that he was investigating the utility, not representing them.

The Aldredge tapes are a key aspect to Mr. Applegate's charges that the utility has covered up safety problems and even engaged in institutional retaliation against PM, the radiograph company which "blew the whistle" by doing its job and reporting x-ray results. The Aldredge transcript has been examined from every possible angle, but none of the twisting has been able to explain away the obvious: He agreed with Mr. Applegate's charges in private but could not admit to that position publicly due to fear of blackballing. If your staff disagrees with this conclusion, I urge you to consider my offer to jointly interview Mr. Aldredge with an NRC representative. I will be in Houston soon and could participate without expense to the NRC.

Finally, I was concerned that your staff was reassured that foul play may not have occurred in the PM trailer break-in, which they confirmed occurred. They explained that the PM trailer was broken into frequently, since it had the only toilet on that part of the construction site.

The explanation is considerably more shocking than the original charge. This explanation confirms that -- for want of an outdoor portable toilet -- there is virtually no security for key safety records. NRC reports have blasted the licensee (and PM indirectly) for x-ray discrepancies and missing radiographs. It is not surprising that the x-ray records were a mess, if workers frequently broke into the PM trailer "to go to the bathroom."

These criticisms and suggestions are offered in the spirit of cooperation you have observed throughout the renewed Zimmer investigation. Both GAP and Mr. Applegate wish that your reports will resolve the lingering mystery about safety problems at Zimmer, rather than sparking a new conflict about the NRC investigation. As a result, it is important to share these concerns with you <u>before</u> your reports begin to be released.

I tentatively plan to be in Chicago on Friday, July 24 and would be glad to meet with you or a representative. At that time, I can answer questions you may have on our list of suggested

components for testing, discuss the above concerns, and turn in the paperwork for my earlier trip to Chicago.

Sincerely,

Thomas Devine
Associate Director

/kmp

7/23/81

Dudey Thompson
Jim Sniezek

Jim Keppler asked that I send you a copy of this latest GAP letter for your information.

John Stratton

5/8/81

Tom Devine

I Called 9:35 am – He will get back by end of week w specifics.

Tom Devine called 6/3/81 – noon

Said he had developed information. I requested he send it to us. He will transmit by middle of next week. He said they had gone to a lot of effort to develop info and in the process, once workers knew there was going to be testing done, they received a lot of new information. He said he thought this was a good move.

I called Tom Devine 7/14/81 – 10:25 am
He was on another line. I asked operator that he call me back today.

Tom Devine returned my call @ 1:10 pm – 7/14/81
He has a list and is waiting for a typist to get to it. He said we should get it by next Monday.

J Henderson 6/18

ZIMMER

MAJOR ISSUES

Radiographs of shop welds - 187 of about 700 radiographs reviewed (about 27%) did not conform to ASME Code requirements. The quality of the radiographic image was not good enough to tell whether or not the welds contained unacceptable areas.

Structural beams - Structural beams had been installed without design drawings or material traceability records. It is not known whether they are adequate for the intended purpose or of acceptable material quality.

Material traceability - Other areas where material traceability has broken down are welding electrode control and small-bore piping material control.

Voiding of nonconformance reports - Many nonconformance reports, properly issued, were arbitrarily voided without valid supportive reasons.

ALLEGATIONS

Section 4 - 4 allegations made
- 3 valid
- 1 questionable

Section 5 (Applegate) - 19 allegations made
- 10 valid
  - 8 nits or no safety problem
  - 2 major issues
- 9 not valid or not safety issue

Section 6 - Allegations received during the investigation
- 3 all valid
- 2 safety, but not major

Section 5.12

The allegation appears to be correct, but the implication of wrong doing on the part of the licensee is clearly not confirmed. The event was promptly and properly identified and reported, consistent with NRC requirements.

Warnick

Section 5.13

Streeter

1. Par 5.13.2 - Is "2%" ~~measurement~~ maximum enrichment correct?
2. Page 6 - referenc to " channeled " should be explained.
3. Seems like overkill.

Section 5.14

Warnick

1. Overkill, but generally correct.
2. Par. 5.14.4 (page 19). The statement that "The NRC's independent verification program will assure (that) construction defects have been identified" is an overstatement.

   What is the basis for the statement that "there was evidence that drug use might have occurred"? In any case, with the qualifier "might have " what significance does this have?

Section 5.15

Should this be introduced by a disclaimer that the subject has no relevance to NRC safety responsibilities?

Jim Henderson 8/17/81

Section 4.1 should be written to emphasize that ~~im~~improper voiding of NRs continued after the situation was identified in IE inspection report No. 50-238/80-25. Examples of improper NR disposition prior to December, 1980 can be dispositioned as "yes, we are aware." Streeter

Continuing improper NR disposition should be the thrust of the investigation.

Section 4.2

Kaiser Instruction M-12 explicitly prohibits burning bolt holes for large bore pipe support hangers. The report talks all around the subject, but does not address the question of whether bolt holes were actually being burned (without subsequent reaming.) Warnick

The question of sample size is a ~~must~~ nit. If a support has 12 bolts, one would be an 8-1/3% sample (pretty big). Most supports should have fewer bolts.

Section 4.3

It appears that everyone is missing the real problem. Who, if anyone, has the ~~N~~-Type Code Authority action? What about the ANI and the Authorized Nuclear Inspection Agency? Didn't Marble Hill teach Region III anything? Warnick

NOTE: Diesel Generator starting air & fuel oil piping are not covered by Section III; Section III requirements may be invoked by contract, but ~~AMSE~~ ASME and the ANI will not be involved. D.G. Cooling water piping could be ASME III Class ND, but 1971 Edition had ~~no~~ few rules for ND. More typically, plants of this vintage would be using ASME B31.1 code, (no ANI)

I don't understand the discussion in Section 4.3.3.5 on page 7 about "An SIS Report." Warnick

Section 4.4

This seems like a whole lot of finger pointing, not very well dug out. It's hard to tell much without the specific statements. Streeter

It basically does nothing for me. Perhaps there was inspector intimidation and harassment.

The investigation (as reported) is not sufficient to support a citation, but if the charges are true (and it appears that they may be) there is a clear violation of Appendix B.

Section 5 (General)

The statement recurs "individual ____ provided a written statement attesting to the preceding information; however he requested that the statement not be attached to this report". Streeter

1. What use is the statement when so conditioned?
2. How can anyone accept the accuracy of the paraphrase in the report be accepted?

Section 5.1

With recommended changes, the section seems to support a conclusion that changes made are consistent with revised NRC safety requirements. Understandably changes involved added cost. Warnick

Section 5.2

This is a very confused text, but seems to describe a rather routine identification of a detail problem, and consequent design change - "A nit ". Overhill. Warnick

Section 5.3

A nit . More attention that it deserves.

Section 5.4

See 5.2

Section 5.5

Text needs editing. Have Collins review for technical accuracy.

Substantive - not a nit, but of relatively low significance. Is "Individual A" a credible witness?

Did the investigators properly explore the validity of allegations?

With an inspection history of non-conformances dating back to 1975, where was Region III?

I don't understand the relevance of the statement at the bottom of Page 11.

The findings on page 15 (Par 5.5.4) seem ambivalent.

5.6

The safety concern about argon gas exposure is real, as evidenced by documentation of several fatalities at nuclear power plants.

Streeter

NRC's prior deferral to OSHA strikes a sour note. Parlier's attitude (Par. 5.6.3, page 4) should not be accepted at face value.

5.7

Allegations talk about 1977 time frame. Data appears to talk to 1979. Is this a typo? Move statement (2nd par. Sec. 5.7.4,) to 5.7.1~~4~~.

Warnick

5.8

Check validity of statements in paragraph 5.8.2.

Section 5.8.3.2 (2nd par.)

What was Individual B's involvement at Zimmer?

Streeter

Section 5.8.3.5 (pg 6)

I din't understand reference to "Schedule 844" "3-1/2 inch wall thickness with welds 1-1/2" wide".

Warnick

I don't understand the reference to "radiographing . . . thorugh laminations".

Section 5.8.3.10 (pag. 13) 2nd par.

"Whose inspectors"?

Need more descriptive text on "onion skin" sketch technique.

Warnick

NOTE: Lack of proper shimming of penetrameters raises serious questions on the quality of the resultant radiographs to show whether welds are truly good or bad.

Detail in Table 5.10 seems to be overkill.

Section 5.9

Par. 5.9.2 For "goodness" sake tell what report 50-358/78-19 contained.

If this is a repeat of a previous allegation does it refer to things that appeared in 1978 or later? There is a difference. Where does the reference to RIV (on page 6) come from? What significance is there to the concluding statement in par. 5.9.3 (page 5)? What does the conclusionary statement in par. 5.9.4 mean?

Section 5.10

The significance of the identified non-conformances is not clear.

Section 5.10

Although the language of the allegation is not too clear, it appears that the problems alleged (and apparently confirmed) do not represent a significant safety concern. Thes should be more directly addressed.

Section 5.16

The introduct~~ion~~ory paragraph to 5.16.2 does not appear relevant.

Streeter

The coy references to "Individual A" etc., lend nothing but confusion to the report. This section leaves me confused.

It would help to provide a summary analysis of the results of the various interviews.

Sections 5.17, 5.18

Wsm

Gives me no problems except that par. 5.17 & 5.18/5 should include "or safety significance".

Section 5.19

Section 5.19.4 - The conclusionary sentence "will enable this determination to be made" is too positive.

Section 6.1 should tie back to and be consistent with Section 4.4. This may be overkill. Perhaps signficant substance of Sec. 6.1 should be included in 4.4 and simple reference be made to 4.4. (NOT the other way around.)

Section 6.2

This should not scramble ASME & AWS requirements. There may be a grey area as to whether either ASME or AWS has legal jurisdiction.

My position is that in the time frame of the 1971 Code Edition, ASME neither

(cont. on next)

section.

In my opinion, AWS does not specifically lay claim to jurisdiction either but in practice, the criteria and requirements of AWS D1.1 were generally invoked by designers. In the absence of any other specifically identified requirements it is reasonable to assume that AWS D1.1 governs.

The text of this section does appear to be incomplete.

Section 7

This jumps around too much to understand, in its partial state. It appears to need an introduction which describes what the section is about.

Section 8

The text needs editing.

Section 10

It should be clearer that these are interim, rather than final findings and proposed corrective actions.

Section 10 makes me think that all the "interim" "working level" meetings are designed to help the licensee respond in a manner that RIII can find acceptable "whether or not the responses represent a valid corrective action"

This is a totally subjective opinion.

Section 11

It is not clear whether all the commitments described in Section 11 are being honored, but there is some evidence that they are not.

Warnick

1. HEAT NUMBERS FOR WELD ROD AND PIPING

A. Discuss with Maura, Gwyn

B. Discuss with Oltz.

1. How system was supposed to work.

2. What procedure covered actions to be taken.

3. What went wrong.

4. How corrections were made.

5. Were heat numbers placed on pipes or just documents ("corrections").

C. Review difference between ISK and PSK documents.

D. Interview Reiter.

1. How were heat numbers he placed determined (generic).

2. Who would be contacted to gather the information.

3. What documents would be utilized.

4. Specifics on RHR 4-in pup piece (who, what, why, when, where,how).

E. Review Reiter personnel file.

F. Obtain information on material certification in file for RHR pup piece.

1. When pipe was received on site.

2. When pipe was issued from warehouse.

3. When pipe was cut.

G. Inspect pup piece.

H. To be determined. (Further actions).

2. LP TEST REPORT FALSIFICATION

A. Review LP test documentation procedure.

B. Review LP test documentation.

C. Review personnel file for inspector in question.

D. Trace and interview inspector via telephone(?). (if possible).

E. Interview inspectors presently performing LP tests.

F. RE-contact alleger as necessary to discuss information developed.

3. RPV "PUNCH LIST" DISCREPANCIES

a. Obtain RPV punch list, review, re-contact alleger, further work as appropriate.

ROUTING AND TRANSMITTAL SLIP

Date 4/27

TO: (Name, office symbol, room number, building, Agency/Post)	Initials	Date
1. Hirshman		
2. Novelnio		
3. Strutz		
4.		
5.		

	Action		File		Note and Return
	Approval		For Clearance		Per Conversation
	As Requested		For Correction		Prepare Reply
	Circulate		For Your Information		See Me
X	Comment		Investigate		Signature
	Coordination		Justify		

REMARKS

Pls review and comment before I make this final. May I have your comments by 4/24 please.

DO NOT use this form as a RECORD of approvals, concurrences, disposals, clearances, and similar actions

FROM: (Name, org. symbol, Agency/Post)	Room No.—Bldg.
Bert	Phone No.

5041-102

OPTIONAL FORM 41 (Rev. 7-76)
Prescribed by GSA
FPMR (41 CFR) 101-11.206

☆U.S. GPO: 1976—261-647/2328

MEMORANDUM FOR: J. F. Streeter, Acting Director, Enforcement and Investigation Staff
R. .. Heishman, Acting Director, Division of Resident and Pro'ect Inspection

FROM: A. Bert Davis, Deputy Director

SUBJECT: INDEPENDENT VERIFICATIONS TO SUPPORT ZIMMER INVESTIGATION

This memorandum establishes the independent verifications program which RIII will perform to support the Zimmer Investigation. If future investigation findings indicate that the information given below should be modified, please discuss it with me. This program is as follows:

1. The licensee is committed to visually inspect structural beam welds performed by Bristol Corporation. RIII inspectors will visually inspect a sample of the welds. Sample size will be sufficient to satisfy the criteria of 95% reliability with a 95% confidence factor. This independent verification will address the question of inadequate structural beam welds.

2. To provide confidence that field and shop welds are satisfactory a sample will be verified. Sample size will be sufficient to satisfy the criteria of 95% reliability with a 95% confidence factor based on the total of field plus shop welds. Verification will include making an "onion skin" tracing of each weld's radiograph, comparing this tracing with the installed weld, assuring radiograph quality is satisfactory, and assuring all weld records are satisfactory. This independent verification will address the questions of whether weld quality was adversely affected by site activities such as drinking. It will also partially address whether weld records are reliable.

3. Equipment from the RI NDE Van will be reviewed to determine if it can reliably identify material composition. If it can, the equipment will be used to independently verify material traceability findings made by the licensee in structural steel and piping materials and welds. You will define the scope of this verification effort and submit it to the Director's Office for concurrence.

4. We will rely on the licensee to determine proper fit up of socket welds. RIII inspectors will directly observe in the field a sample of the licensee's fit up determinations. You will define the scope of these field verifications and submit it to the Director's Office for concurrence.

5. The above verifications will not be performed until after the licensee has completed his work and verifications in these areas. This will assure we are looking at the licensee's final product.

If you have any questions, I am available to discuss them.

A. Bert Davis
Deputy Director

Various drafts of letter to licensee that was sent 11/24/81, of Notice of Violation, and of proposed imposition of civil penalty. Also intermingled are some markups ~~of~~ and notes relating to changes in 81-13.

JES

Streeter

✓ 1. The [illegible] to review and study [illegible] and compare [illegible] to statement

a. Factually correct — 4.1 [illegible]
b. Tone correct — 4.3
4.4
5.15-.15

✓ 2. Review 4.1 thru 5.8 for consistency with stat[illegible]

RFW	JF	JS
4.1-4.4	5.1-5.4	5.5-5.8

✓ * 3. Decide whether or not to use identifiers rather than names of those accused of wrongdoing.

No ✓ 4. Are we going to interview Gittings, Marshall, Sur[illegible], Olt[illegible], Schoo[illegible], Lamain?

* 5. Revise report to and tal[illegible] to agree with M[illegible]

* ✓ 6. Review to be sure findings and conclusions are in agreement with items of noncompliance

✓ * 7. Reconcile RIII writeup with North Anna write up.

✓ * 8. May 20 interview of Ricky Cantrell by OI[illegible] & [illegible]

✓ * 9. Incorporate Commission comments on deleted [illegible]

✓ * 10. " " " " driving [illegible]

✓ 4.1.4.2.1 - Page 19
1st line of 3rd P - Donovan

✓ 4.2.2.3 - Page 44
1st line of 3rd P - unresolved

✓ 4.3.3.6.3 - Page 48
6th line ~~for~~ of

✓ 4.3.3.7.1.6 - Page 50
3rd line ~~to~~ of

✓ 5.13.2 - Page 112
line 11 - Channelled ← unit be clear to layman

✓ 5.13.3.3 - Page 114
5th P - line 1 typewriter

✓ Table 6.2-1 - Pages 153 & 154
Scratch (1)
(2)
(3)
(4)
(5)
(6)
(7)
from "System or Component" column

✓ 6.2.~~3~~2 } Page 156
6.2.~~4~~

transfer in-process nonconformances identified on Surveillance Reports to Nonconformance Reports in 30 days).

7.0 Independent NRC Inspection Findings

During the course of the investigation, RIII inspectors performed independent inspections of various plant areas during allegation reviews. In those areas where deficient conditions were observed, further inspection undertaken to determine the extent of the deficient conditions.

7.1 Control of Structural Steel Beams and Beam Welds

During the investigation of the allegations addressed in Sections 4 and 5, the RIII inspector identified a beam with an unacceptable weld and two beams that were only tack welded into place. Therefore, the RIII inspector decided to make a more in-depth inspection and review the controls of structural beams and beam welds. The inspections and reviews included visual examinations of approximately twenty-five structural steel beams in the blue switchgear and cable spreading rooms, and reviews of related documentation.

7.1.1 Beams Observed in Blue Switchgear Room

The area observed in the blue switchgear room (elevation 546 ft) was 8 ft 3 in. west of workline G, 16 ft 6 in. east of workline H and between columns 22 and 54 of S&L drawing No. S-546, Revision AB.

The following six discrepancies were identified:

1. A W8 x 17 beam (8 ft 3 in. long), positioned east to west and located 1 ft 9 in. south of column 24 and 10 in. below elevation 546 ft, was not specified on any pertinent design drawing. The beam appeared to be permanently installed and traceability of the beam heat number was not maintained. After extensive and unsuccessful efforts by QA personnel, construction personnel were requested to identify any document that would control the unspecified beam. Construction personnel provided Design Document Change (DDC) No. S-2050, dated May 29, 1980, containing only the signatures of two site construction engineers, who were identifying some of the additional W8 x 17 beams in the area covered by S&L drawing No. S-546. The DDC had no S&L architectural engineering signatures of approval as of March 27, 1981. The DDC did not identify any specific beams.

   The licensee identified S&L drawing E-189, Sheet 3, Revision H, Note No. 17, which allows W8 x 17 beams to be installed and then be submitted on a DDC for S&L approval.

2. A W8 x 17 beam (6 ft 3 in. long), positioned north to south and located 13 ft 8 in. west of workline G and 1 in. below elevation 546 ft, was not specified on any pertinent design drawing, was not documented on any QC record, and had unacceptable welds.

3. A W8 x 17 beam (5 ft 5 in. long), positioned east to west and located 8 ft 10 in. south of column 24 and 1 in. below elevation 546 ft, was not specified on any pertinent design drawing, was not documented on any QC record, and had unacceptable welds.

4. A W8 x 17 beam (2 ft 8 in. long), positioned north to south and located 9 ft 6 in. west of workline G and attached to the beam addressed in paragraph 7.1.1.3 and extending north, was not specified on any pertinent design drawing and was not documented on any QC record.

5. Two W8 x 17 beams (8 ft 3 in. long), positioned east to west, with one located 5 ft 3 3/8 in. and the other located 9 ft 7 7/8 in. south of column 24, were only tack welded in place. They displayed no identification or heat numbers and were not documented on any QC record which indicated in-process weld inspections were not performed. The beams were identified on DDC-2087, which was incorporated into S&L drawing No. S-546, Revision AB. DDCs and S&L drawings by themselves do not assure QC verification. 5 ?

6. Re-entrant corners on several W8 x 17 beams had notches instead of the 1/2 in. minimum radius required by the American Institute of Steel Construction (AISC), seventh edition (1969), page 4.113. The locations of these unacceptable beam corners are shown in Figure 7.1 of this section and are noted by (7) in Figure 7.1. Missing

The location of the above discrepancies, additional unacceptable welds, unacceptable re-entrant corners, and nontraceable beams are shown in Figure 7.1 of this section.

The welds identified in the preceding paragraphs as unacceptable do not comply with the requirements of the AWS D1.1-1972 Code for one or more of the following reasons: slag was not removed; weld profiles had excessive convexity or concavity, blowholes, porosity and/or undercut.

7.1.2 Beams Observed in Cable Spreading Rooms

The inspectors identified the following discrepancies in the cable spreading rooms:

1. A W12 X14 beam No. F2500/8-66B4 had a weld that was incomplete. This beam was directly above cable tray hanger No. 4HV8FEC231, which was attached. The beam was located approximately 11 ft south of the north wall at the stairwell.

2. The traceability of the heat numbers was not maintained for two W8 x 17 beams, located south of and parallel to beam No. F2500/8-66B4 (above).

   The first beam was located immediately adjacent to beam F2500/8-66B4. The second beam was the fourth beam south of beam F2500/8-66B4. The first beam was installed flush to the ceiling of the cable spreading room. S&L drawing No. S-546, Revision AB, specifies the first beam to be installed 1 in. below the ceiling.

3. A weld on the 5 in. channel beam that was supporting HVAC hanger No. 2071 had irregular weld profile, excessive undercut, porosity, and craters that were not filled. The channel beam was located 2 ft north and 1 ft west of the cable tray hanger No. 13H2FEC008. The Waldinger, Young and Bertke (W-Y and B) Inspection Report, dated February 19, 1980, indicated that the weld was acceptable.

4. Two W8 x 17 beams, located in the northeast corner (north of WL-16 and east of WL-K), were only tack-welded into place. The beams were specified on DDC No. E-3834 dated October 20, 1978. DDC E-3834, which affected eight drawings, was posted on, but had not been incorporated into, S&L drawing No. S-546, Revision AB, dated October 22, 1980.

   Heat No. 72161 (purchase order No. 31134) was marked on the southern beam. The traceability of the heat number of the northern beam was not maintained.

   The beams were not identified on any QA inspection record, which would have indicated their status. In-process inspections were not performed on the tack welds.

   [INSPECTOR NOTE: Some of the welds inspected by the RIII inspectors were painted. Therefore, the inspections were for relatively large deficiencies.]

7.1.3 Installation Deficiencies

1. For the beams identified on DDCs and addressed in paragraphs 7.1.1, items 1 and 5, and 7.1.2, item 4 above, no measures existed that would identify to QA the installations and work that was done by construction before the DDC was incorporated into the drawings. Thus, no measures existed to assure that all of the required QA inspections related to DDCs (e.g., welder qualification, proper filler metal, traceability of materials, etc.) would be performed. This condition was previously identified in IE Report Item No. 358/80-15-04. The corrective actions taken, which had not yet been reviewed by the NRC, with regard to Item No. 358/80-15-04 did not include the DDCs written prior to the implementation of those corrective actions and did not include the DDCs that are and have been implemented prior to receiving the S&L approvals. This item is unresolved pending the complete resolution of IE Item No. 358/80-15-04 (358/81-13-63).

2. Failure to control unacceptable welds (addressed in Sections 7.1.1 and 7.1.2), the five beams with unacceptable re-entrant corners, and the four beams that were installed and not identified as a requirement on any design document is contrary to 10 CFR 50, Appendix B, Criterion XVI and the Wm. H. Zimmer QA Manual, Section 15.2.2 (50-358/81-13-03).

3. Failure to maintain the traceability of the nine structural beams, addressed in Section 7.1.1 and 7.1.2, is contrary to 10 CFR 50, Appendix B, Criterion VIII, and the Wm. H. Zimmer QA Manual, Section 8.2, (50-358/81-13-04).

Pick up changes on pages 19, 20, 21, 27, 42, 44, 48

of an applied "hold" tag. The NR states "Hold tag was applied while Wall Plate 10D was in process of being tensioned. Once hold tag was applied tensioning was continued until tensioning was completed."

4.1.4.2 Investigation

4.1.4.2.1 Interview of Walter Dumford

a washer on a bolt on an embedment wall plate in the

On February 11, 1981, Walter C. Dumford, Kaiser QC Inspector, was interviewed by NRC. He stated that on February 3, 1981, he was inspecting suppression pool. ~~wall plates and~~ He said another inspector had noticed that ~~a~~ the bolt ~~on a plate~~ was not perpendicular to the plate. Dumford ~~He~~ said construction personnel were preparing to tension the plate when he told them he was going to place a hold tag on it, to which ~~they~~ one responded "Let's see him try ~~and~~ stop me ~~it~~."

Dumford said he left the area to discuss the matter with his supervisor, Dennis Donovan, who told him to initiate an NR for the nonconforming bolt and to place a hold tag to preclude tensioning of the plate. He said he returned to the suppression pool, placed a hold tag on the plate, and construction personnel ceased tensioning the plate. He said, however, as he left the area, he heard the tensioning machine reactivate and observed that the tensioning crew had ignored his hold tag.

Dumford stated he advised Donovan of the occurrence and Donovin told him to write an NR documenting continuation of tensioning after a hold tag had been applied. Dumford called the NR Controller, was issued CN-5412, and documented the violation of the hold tag. He said that a few days later he was called into the Kaiser QA Manager's office and was told by the QA Manager, Phillip Gittings, that the NR should not have been written since it was "a software (procedural) problem and not a hardware problem." He said Gittings then said, "I'm going to void this NR because we do not need this kind of paperwork floating around because this is the kind of stuff that causes investigations." Dumford stated that Rex Baker and Dennis Donovan, who were also present at the meeting, disagreed with Gittings conclusion and advised Gittings that they felt it was a valid NR.

Dumford indicated that Dennis Donovan called the NR clerk ~~a few days~~ later and was told CN-5412 had been reassigned to another NR (the original report had not been entered into the NR system). Dumford provided a copy of the original NR CN-5412, which is included as Exhibit 3.

Dumford said this incident was an ~~typical~~ example of the ~~Kaiser~~ QA upper management not supporting ~~the~~ QA ~~program on site~~ and being overtly influenced by construction. ~~considerations. Dumford stated that, in his opinion, the Kaiser QA Manager was influenced by construction~~ and QA was not independent at Zimmer.

On February 11, 1981, Dumford provided a written sworn statement attesting to the preceding information, a copy of which is included as Exhibit 4.

4.1.4.2.2 Interview of Dennis Donovan

On February 13, 1981, Dennis Donovan, Kaiser QC Inspector, was interviewed by NRC. He stated that on February 3, 1981, Walter C. Dumford contacted him

a Surveillance Report had been written which called for the issuance of

tracking the reports for those plates, and asked him about the Surveillance Rep

about a Surveillance Report written against ~~tensioning of~~ a bolt ~~s~~ on ~~a~~ the suppression pool line plate. ~~without QA coverage.~~ Donovan said he called Ken Shinkle, the QA Engineer responsible for ~~the suppression pool area~~, ~~and advised him of the incident.~~ He said Shinkle told him ~~to write~~ an NR. Donovan stated he wrote the NR and instructed Dumford to place a hold tag on as correct the plate. Donovan said Dumford later returned to the trailer and told him that he had placed a hold tag on the plate, but craft personnel had ignored the tag and continued tensioning the plate. Donovan said he told Dumford to write a second NR against the continuation of work after a hold tag had been applied. Donovan stated he initialed the second report and called the NR clerk who assigned it CN 5412. The NR was forwarded directly to Inspection Supervisor Rex Baker for review.

Donovan said that on February 4, 1981, he, Baker, and Dumford were called into Phillip Gittings' office and Baker gave the original copy of the NR to Gittings. Donovan related that Gittings said, "This report is going to be voided because this is the kind of thing that starts investigations." Donovan said that Gittings commented that inspectors should only write NRs against hardware problems and not against software problems, and ignoring a hold tag was a procedural (software) violation.

Donovan said he and Dumford explained that construction had ignored the hold tag, to which Gittings replied, "If I was in their position I would have done the same thing." Donovan said he responded that a hold tag was the strongest QA control mechanism on site and, if one was ignored, an NR should be written. Donovan said he and Baker told Gittings they disagreed with him and the meeting ended.

Donovan said that a few days later he called the NR controller concerning the disposition of CN-5412 and found that the number had been reissued to another NR. Donovan indicated that in his opinion, ~~this was an example of Kaiser~~ QA management, not supporting the inspection program at Zimmer.

MORE

On February 13, 1981, Dennis Donovan provided a written sworn statement ~~attesting to the preceding information~~, a copy of which is included as Exhibit 5.

4.1.4.2.3 Interview of Kenneth Shinkle

On February 18, 1981, Kenneth Shinkle, Kaiser QA Engineer, was interviewed by NRC. He stated that on February 2, 1981 he received a telephone call from Dennis Donovan regarding a bent bolt on a suppression pool plate. Shinkle stated he told Donovan this should be documented on an NR and a hold tag should be placed on the plate to prevent tensioning. Shinkle stated he later that learned an NR was written and Walter C. Dumford had affixed a hold tag to the plate. Construction personnel subsequently ignored the tag. Shinkle said he also learned that a second NR was written by Dumford for violation of the hold tag which he initialed and forwarded to Rex Baker, Inspection Supervisor.

Shinkle stated he later that learned Phillip Gittings, after discussions with Dumford, Donovan, and Baker, did not enter the NR into the system. Shinkle said the report had been assigned a CN and the inspectors' supervisor had concurred it was a valid NR. Nevertheless, Gittings told Shinkle it was not going to be processed because "The whole thing has been blown out of proportion."

Shinkle stated in his opinion that Kaiser management does not support the QC program at Zimmer, construction dominates activity at the site, and QA is not independent of construction influence.

On February 18, 1981, Kenneth Shinkle provided a written sworn statement attesting to the preceding information, a copy of which is included as Exhibit 6.

4.1.4.2.4 Interview of Rex Baker

On March 3, 1981, Rex Baker, Kaiser Inspection Supervisor, was interviewed by NRC. He stated that in early February 1981 he attended a meeting in Gittings' office with Dennis Donovan and Walter C. Dumford. He stated that during this meeting Dumford said construction had continued to tension a suppression pool plate after he had placed a hold tag on it. Baker stated he agreed Dumford was correct in writing the NR for the hold tag violation. He said Gittings disagreed and stated in his opinion construction was right to continue tensioning the plate after a hold tag had been affixed to it. Baker stated he did not know the disposition of the NR and that it was in Gittings' possession the last time he saw it.

4.1.4.2.5 Record Reviews

On February 11, 1981, the NR Log was reviewed. The log indicated CN-5412 (E-2996, Revision 1) was written on February 2, 1981, for welds having lack of penetration. This entry does not reflect that CN-5412 had been assigned to another report written by inspector Dumford on February 3, 1981, for violation of a hold tag. The Equipment Name or Process Entry column in the NR Log and the Specification column showed evidence that "white-out" was used to cover previous entries in the log. A copy of the NR Log page and NR E-2996, Revision 1, ~~is~~ are included as Exhibit 7.

Exhibit 28 related? (see page 34)

4.1.4.3 Findings and Conclusions

Based on record reviews and interviews of personnel, it was established that CN-5412 was not entered into the Kaiser nonconformance reporting system.

4.1.5 Disposition of Nonconformance Report E-5108

4.1.5.1 Background Information

On May 19, 1980, NR E-5108 was issued identifying a 4-in.-long pipe piece installed per DDC M-1108 in the residual heat removal (RHR) system for which material traceability could not be established. The NR also reports that Weld 80 located near this pipe piece was inside of a wall penetration (M-13), in violation of licensee specifications. The NR was stamped "void"

other NRs) for the voiding was not fully implemented. It was also established that vendor welds were omitted from the NR without engineering justification.

4.1.9 Disposition of Nonconformance Report E-2836

4.1.9.1 Background Information

On June 22, 1980, NR E-2836 was written by Inspection Supervisor Rex Baker after an audit by Nuclear Energy Services, Inc., indicated there was no final weld radiograph for Weld WS737 (service water system). There was a comment in the "Description of Nonconformance" section of the NR stating that the only radiograph available was an "information shot of the root layer" of the weld ~~[now buried underground]~~. The NR was dispositioned "accept as is" on October 24, 1980, because the weld data form (KEI-1) reported that the final weld had been radiographed and accepted by Kaiser personnel on April 5, 1976. This form indicated review and approval of the final radiograph by the Authorized Nuclear Inspector (ANI) on April 15, 1976. The "accept as is" disposition of NR E-2836 was initially rejected by the ANI on November 7, 1980; however, he approved the disposition on November 11, 1980, based on the KEI-1 form entry showing that a final review of the film was performed by the ANI. The NR E-2836 was voided on November 10, 1980, with a comment "see Revision 1 for new disposition." There is a comment on the original NR which says "Void stamp in error - Rev. 1 cancelled when ANI accepted disposition on 11/11/80." NR E-2836, Revision 1, shows the same nonconforming item with the disposition to "accept as is" and the NR is signed by the appropriate members of the Material Review Board. Both the original NR and Revision 1 were closed on November 13, 1980. Copies of NR E-2836 and E-2836, Revision 1, are included as Exhibit 20.

4.1.9.2 Investigation

4.1.9.2.1 Interview of Rex Baker

On June 4, 1981, Rex Baker, Kaiser Inspection Supervisor, was interviewed by NRC. He stated that on October 22, 1980, he initiated NR E-2836 after an audit found that there was no radiograph of completed Weld WS737. Baker stated he forwarded the NR to Arch Lanham, Kaiser Construction Department, who dispositioned the NR as "accept as is" based on an entry on the weld data form. The form indicates a final radiograph of this weld was performed on April 5, 1976, and was accepted by both a Kaiser welding engineer and the ANI on April 15, 1976. Baker said the NR was returned to him and he told Lanham the disposition of "accept as is" was contrary to ASME Code requirements because there was no final radiograph of the weld. Baker said he told Lanham that an entry in a KEI-1 form was insufficient evidence that the weld had been radiographed.

Baker stated he is a qualified Level III Radiographer and that he had previously reviewed the Kaiser radiographic report and the accompanying film dated April 17, 1976. He said he told Lanham the film was an "information shot" of the root layer pass and not a radiograph of the final weld. Baker said Lanham indicated the disposition was correct because the radiograph review block on the KEI-1 form was checked and if QA did not have the film he could care less.

4.1.18.2.6 Record Reviews

On June 6, 1981, Regina Rudd, Kaiser NR Controller, was contacted and asked to retrieve NRs CN-5476, CN-5477, and CN-5479 from the Kaiser Site Document Control Center. Rudd stated that she conducted a search of the open, closed, and voided nonconformance report files and could not locate the nonconformance reports assigned these numbers. Rudd provided a copy of the NR Log page reflecting that on February 27, 1981, NRs CN-5476, CN-5477, and CN-5479 were voided with a comment "Void-NR not issued." A copy of the NR Log page is included as Exhibit 33.

4.1.18.3 Findings and Conclusions

Based on record reviews and interviews of personnel it was established the NRs CN-5476, CN-5477 and CN-5479 were not entered into the Kaiser nonconformance reporting system.

4.1.19 Summary Findings and Conclusions

All of the allegations made by the QC inspectors were found to be correct. It was found there were widespread irregularities in the system. Kaiser procedures permit voiding of a NR only if the NR was "written in error, duplicated, or the nonconforming conditions has been corrected...by construction." A computerized listing provided in July 1980 indicated that 1,031 NRs were voided, between January 1 and March 31, 1981, including those that were actually superseded rather than voided. Some were voided by the QA Manager, some by the QA Engineer-Records, and some by a clerk. A chronological breakdown of the number of voided NRs per month is included as Exhibit 34. The dispositions of a selected group of about 20 reports, either voided or alleged not to be in the reporting system, were reviewed and it was found that in 15 cases the NRs were either voided improperly, improperly dispositioned, closed in error, or the disposition was not fully implemented. In several cases, the justification used for voiding the NR was erroneous (e.g., it was found the QA Manager was voiding NRs which were not written in error). In some cases, the NRs had been reviewed by a Construction Engineer and "rework" was ordered, yet the NR was later "voided." It was found that some of this activity occurred after an NRC inspection on December 2-3, 1980, in which the licensee and the Kaiser QA Manager were told that this activity was contrary to NRC requirements. It was also established that, following the NRC inspection, the Kaiser QA Manager had on three occasions not entered NRs (CN-4309, NRC-0001, CN-5412) into the Kaiser nonconformance reporting system.

This investigation also disclosed that an NR was improperly dispositioned as "accept as is" when "rework" was appropriate. In one case (NR E-2836), the "accept as is" disposition was contrary to ASME Code requirements.

NRs that identified multiple nonconforming conditions were voided improperly with a comment that the NR was being "revised" or that "each deficiency would be issued on a separate NR" or items would be "reinspected." It was determined that nonconforming items were not reissued on separate NRs and were not reinspected as stated on the NR at the time of voiding. It was also found that during "revisions" some nonconforming items were removed from NRs without justification.

The procedure requires inspection of the baseplate bolt hole location, bolt hole sizes, tolerances, eccentricity, and location of baseplate based on a single sample per plate. The CG&E QA Manager indicated in a telephone conversation that all bolt holes were being inspected and that the procedure was being revised to require inspection of all bolt holes. The licensee's past inspection program for examining bolt holes was consistent with the sample size used in IE Bulletin 79-02, "Pipe Support Base Plate Designs Using Concrete Expansion Anchor Bolts."

4.2.2.2 FSAR Requirements

The Zimmer FSAR, Table 3.8.2, commits to ANSI N45.2.5-1972 (Draft), "Supplementary Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants." Paragraph 5.3 of ANSI N45.2.5 states, in part, that burning of bolt holes is not permitted.

4.2.2.3 Licensee Position

During a telephone conversation on July 23, 1981, the licensee stated that the materials affected by Instruction M-12 were not structural steel as defined by the American Institute of Steel Construction (AISC) Manual, Seventh Edition. Therefore, the licensee's position was that the requirement not permitting burning of bolt holes does not apply.

See IE 79-14

In a subsequent telephone conversation the CG&E QA Manager indicated that NRC appeared to be taking the no-burning requirement out of context. He indicated the paragraph containing the no-burning requirement refers to the condition of contact surfaces of friction types of connections, bolt hole alignment, and the correction of fabrication errors.

This is an unresolved item and will be reviewed during a subsequent inspection (50-358/81-13-).

4.2.4 Findings and Conclusions

The acceptability of torch cutting bolt holes (the applicability of ANSI Standard N 45.2.5 prohibiting burning of bolt holes) is unresolved and will be reviewed during a subsequent inspection. The licensee's past inspection program for examining bolt holes was consistent with IE Bulletin 79-02, "Pipe Support Base Plant Designs Using Concrete Expansion Anchor Bolts." The licensee is currently inspecting all bolt holes.

4.2.5 Items of Noncompliance

No items of noncompliance were identified.

4.3 ASME Code Data Package Discrepancies

4.3.1 Allegation

It was alleged that during system turnover, Quality Assurance Engineers, (QAEs) Wood and David Fox were reviewing documentation in ASME Code Data

An SIS Report dated November 14, 1979, authored by the Authorized Nuclear Inspector (ANI) (Hartford Steam Boiler Inspection and Insurance Company) and the H. J. Kaiser response letter dated December 4, 1979, which responded to the audit, said an agreement was made that 20 of the unverified socket welds would be selected at random to be radiographed to verify proper fitup. One of the 39 welds identified on Surveillance Report Nos. 2367, 2370, 2380, and 2412 was chosen to be radiographed. No engineering justification was given to allow acceptance of all of the socket welds based on the sample of the 20 that were radiographed.

A second SIS Report from the ANI dated February 11, 1981 reported that additional welds were made after December 4, 1979 without verification of fitup. The ANI indicated that all the welds, for which the fitup was not verified after December 4, 1979, should be radiographed.

The Region III inspector found no engineering justification for acceptance of the 400 questioned socket welds based on a radiographic examination of only 20 of the socket welds. The licensee had not implemented in-process inspections to verify proper socket weld fitups during subsequent inspections. This reflects the licensee took inadequate corrective action.

2. Data packages for the diesel generator system indicated that there was final visual inspection of all applicable welds.

3. A review of KEI-1 forms (weld data records) indicated that personnel had transferred information written on KEI-2 forms (weld rod issue slips) to KEI-1 forms in order to justify weld rod traceability, date of welding, and welder qualifications for 24 welds. The KEI-2 form is a construction document used by the welders to obtain weld rods from the weld rod issue point. There is no QC significance for the KEI-2 form, yet QC inspectors and document reviewers were allowed to transfer weld rod heat numbers entered on the KEI-2 form by the storage personnel to the KEI-1 form (QC weld record). This can only be done at the time and place of the weld activity. Therefore, any information transferred from the KEI-2 form to any QC document after the time of or away from the weld activity would not be creditable QC verification.

In addition, Region III inspectors noted a considerable number of discrepancies between the weld data records (KEI-1 forms) and the weld rod issue forms (KEI-2 forms). The records showed discrepancies between the heat numbers for the weld rod used, identification of the welder performing the particular weld, and dates the welds were made. It was found that document reviewers were resolving these discrepancies by altering KEI-1 forms to match the KEI-2 forms. In effect, the QC records, which supposedly provide independent verification, were being changed to conform with Construction Department records. Alterations appeared to be arbitrary in that some of the documentation for welds within a certain line changed, but no changes were made for other welds of identical circumstances. The following are examples of the altered records:

1. CN-5412 (CR 2886) RW P.1
Hold tag on plate 10D was violated
Bolt not perpendicular - Suppression Rod bolt
CN-5412 reissued

2. E-5108 Barrett P.1
4" long pipe piece, DDC M-1108 in EWR - no material traceability
? Weld 80 inside of a wall penetration (M-13) (in violation of

3. CN-4309 ~~Key~~ RW P.
Deficient weld fitup - separated more than 3/16"
Never entered into system

4. CN's 4955-4959, 4930, 4931 (7 NRs) RW P.1
Weld deficiencies on pipe supports in D/G Rm A.
Welds have been repaired?

5. E-2466 Daniels P.2
124 pipe hangers & associated deficiencies

6. E-2836 RW, TPG, GG ✓P.21
No final radiograph for Weld WS737
Radiograph for root pass only
Weld not buried

7. E-1777 RW P.29
Socket Weld on pipe ~~support hanger~~ w/o QA documentation
No weld red issue slip for Weld 195A2

8. CN-5122 (SK 2900) Barrett P. 3
Flexible outer coating of conduit in Cont. Bldg splitting

(9)* E-2233 & E-2237 ~~Key~~ RW P. 3
Weld WS 62 GP lacked fitup insp, welder qual, & material traceability documentation.
Same for another weld

(10) NRC - 0001 (No KEI number) RW P. 3a
Nonconforming welds on drywell steel in pri cont.
Electrode weave exceeding 3/4"

(11) E-1661 & E-1662 RW P. 3
Nonconforming welds on pipe support hangers in the drywell pneumatic system

(12) E-2996 RW, TPG, GG, PAB ✓ P. 3
T-Quencher 007 - not ultrasonically tested

13. CN-4389 Barrett P. 3
Nonconforming electrical cable, trays, & hangers in Aux Bldg

(14) E-2191 RW, TPG, GG ✓ P. 3
Consumable insert in weld WR-523 not traceable

15. CN-5476, 5477, 5479 P. 3
Nonconforming conditions on drywell steel in Pri Cont.
Welds 63, 58, & 3 not given NDE & lacked QA documentation
Welds were cut out and rewelded.

To Do — 8/27/81

1. 6 pipe welds
   - Done identified
   - Done radiographed
   - Done boat samples
2. 6 pipes
   - Done identified
   - Done cut out
3. 6 socket welds
   - Done identified
   - Done radiographed
4. Nonconformance Reports from Section 4.1

Done	4.1.4	Key, RFW, Pat	No	Not a hardware problem.
Done	4.1.5	PAB	(indeterminate)	Traceability not on pipe
Done	4.1.6	Key, RFW, Pat	No	Corrected by licensee.
Done	4.1.7	Daniels	?	No problems. Licensee has corrected problem.
→ Done	4.1.8	Daniels	Have	4 Hardware problems
Done	4.1.9	George, RFW, Pat	(indeterminate)	No apparent visual defects. Not yet dispositioned. Final radiograph or weld not made
Done	4.1.10	Pat	(indeterminate)	Socket weld on small bore pipe cycle down.
Done	4.1.11	Barrett	No	Still exists. Little to no safety significance.
Done	4.1.12	Pat	No	Sample plug weld.
Done	4.1.13	Key, RFW, Pat	No	Not corrected. Weld looks good. No hardware problem.
Done	4.1.14	Daniels	No	
Done	4.1.15	George, RFW, Pat	No	Accepted as is. Welds look good.
Done	4.1.16	Barrett	No	No safety significance
Done	4.1.17	George, RFW, Pat	(indeterminate)	Still exists. Weld looks good
Done	4.1.18	Barrett	Have	Welds cut out (after NDE showed welds were defective) and re welded.

To Do — 8/27/81

1. 6 pipe welds
   - Done identified
   - Done radiographed
   - Done cut samples
2. 6 pipes
   - Done identified
   - Done cut out
3. 6 socket welds
   - Done identified
   - Done radiographed
4. Nonconformance Reports from Section 4.1

Done	4.1.4	Key, RFW, Pat	No	Not a hardware problem.
[illegible]	4.1.5	VAB	(indeterminate)	Traceability not on pipe
Done	4.1.6	Key, RFW, Pat	No	Corrected by licensee.
Done	4.1.7	Daniels	Have	No problems. Licensee has corrected problem.
→ Done	4.1.8	Daniels	Have	Hardware problem
Done	4.1.9	George, RFW, Pat	(indeterminate)	No apparent visual defects. Not yet dispositioned. Final radiograph or weld not made
Done	4.1.10	Pat	(indeterminate)	Socket weld on small bore pipe cyb [illegible]
Done	4.1.11	Barrett	No	Still exists. Little to no safety significance
Done	4.1.12	Pat	No	[illegible]
Done	4.1.13	Key, RFW, Pat	No	Not corrected. [illegible]
Done	4.1.14	Daniels	No	
Done	4.1.15	George, RFW, Pat	No	Accepted as is. Welds look good.
Done	4.1.16	Barrett	No	No safety significance
Done	4.1.17	George, RFW, Pat	(indeterminate)	Still exists. Weld looks good
Done	4.1.18	Barrett	[illegible]	Welds cut out [illegible] required.

U.S. NUCLEAR REGULATORY COMMISSION
REGION III
OUTGOING TRANSMISSION SERVICE REQUEST

Date 3-26-81 Number of Pages 1

To (Name): R. F. Heishman

From: P. A. Barrett AT ZIMMER

Description Preliminary list of Zimmer investigation findings - more details to follow.

E/W Towers

H Street

MMBB

Phillips

Silver Springs (Willste)

Landow

Region I

Region II

Region IV

Region V

Resident at

Other (Designate - include fax number.) R III

FOR D/C USE

Rapifax

3M EXT #

FTS

Commercial

Time Started 1520

Time Completed

Trans. Time (Actual Min.)

Operator

PAB 3/26/81

FEBRUARY 1981

1. XV Bad welds - Bristol/KEI - BED WELDS - BRISTOL/KEI
2. II Bristol QA program not independent - BRISTOL QA Program - NOT INDEPENDANT
3. VIII Bristol/KEI Traceability - Bristol/KEI
4. V KEI 30 day SR - 30 day SR
5. IX KEI - painted welds - PAINTED WELDS
6. V Kellogg/KEI Radiography - Radiography
7. XV KEI Void NRs - Void NR's
8. III S&L Cable separation - CABLE SEPARATION
9. X KEI Cable separation - CABLE SEPARATION
10. III S&L Cable tray loading - CABLE TRAY LOADING
11. XVI CG&E Inadequate Corrective Action - CG&E Audits of S&L calculations
INADEQUATE CORRECTIVE ACTION - CG&E AUDITS - S&L CALCULATIONS
12. XVIII CG&E No Audits of S&L NR.
NO AUDITS OF S&L NR.
13. III KEI KEI-1 deletions
deletions
14. X KEI Socket weld fit up - SOCKET Weld (and trap?)
15. XV KEI Beams installed/not designed - I BEAMS INSTALLED/NOT DESIGNED
16. X KEI KEI-2 being used - KEI 2 Being USED
17. VI S&L DCC document control - DCC DOCUMENT CONTROL
18. III S&L FSAR deviation in weld criteria - FSAR DEVIATION IN WELD

XV - III	II - 1
II - 1	III - 4
VIII - 1	V - 2
V - 1	VI - 1
IX - 1	VIII - 1
III - 1 1 1	IX - 1
X - 1 1	X - 3
XVI - 1	XV - 3
XVIII - 1	XVI - 1
VI - 1	XVIII - 1
	18

1.	XV.	Bed Welds - Bristol/KEI
2.	II.	Bristol QA Program Not Independent
3.	VIII.	Bristol/KEI traceability
4.	V.	KEI 30-day SR
5.	IX.	KEI - painted welds
6.	V.	Kellogg/KEI - Radiography
7.	XV.	KEI - void NRs
8.	III.	Cable Separation
9.	X.	Cable Separation
10.	III.	S&L Cable Tray Loading
11.	XVI.	CG&E Inadequate Corrective Action - CG&E Audits - S&L Calculations
12.	XVIII.	CG&E No audits of S&L NR.
13.	III.	KEI - KEI-1 deletions
14.	X.	KEI - Socket weld & (trap?)
15.	XV.	KEI - I Beams Installed/Not designed
16.	X.	KEI - KEI-2 being used
17.	VI.	S&L - DOC document control
18.	III.	S&L FSAR deviation in weld ?

U.S. NUCLEAR REGULATORY COMMISSION
REGION III
OUTGOING TRANSMISSION SERVICE REQUEST

RUSH TO R.F. HEISHMAN ASAP

Date 3/27/81 Number of Pages 12 (including cover sheet)

To (Name): Robert Heishman

From: Tom Daniels / Robert Warnick / Paul Barrett

Description Areas of concern in Wm. H. Zimmer Investigation

E/W Towers

H Street

NNBB

Phillips

Silver Springs (Willste)

Landow

Region I

Region II

Region III ✓

Region IV

Region V

Resident at

Other (Designate - include fax number.)

FOR D/C USE

RapiTax

3M EXT #

FTS

Commercial

Time Started

Time Completed

Trans. Time (Actual Min.)

Operator

FEBRUARY 1981

AREAS OF CONCERNS FOR WHZ INVESTIGATION

1. BAD STRUCTURAL BEAM WELDS - NOT CONTROLLED
(WB BEAMS IN CABLE SPREADING ROOM, AND BEAMS IN the BLUE SWGR ROOM.)
WELDS DISPLAYED UNDERCUT, IRREGULAR WELD PROFILE, GROSS POROSITY.

Contrary to App. B, Criterion XV (Nonconforming Material)

Several WB X 17 BEAMS located in the Blue SWGR ROOM had RE-ENTRANT CORNERS w/ NOTCHES AND NOT RADII AS REQUIRED BY AISC.

BEAMS ARE TACK-WELDED AND NOT CONTROLLED

2. LACK OF AN ADEQUATE QA Program by BRISTOL Co. - RESULTED IN SOME OF the BAD STRUCTURAL WELDS.

The QA Program required ONLY INSPECTION by a NON QC person.

CONTRARY to APPENDIX B, CRITERION II (The QA PROGRAM SHALL PROVIDE CONTROL OVER ACTIVITIES affecting the quality of the identified structures ... to AN EXTENT CONSISTENT with their IMPORTANCE.)

3. <u>Lack of Traceability of Material</u>

a) Traceability of Heat Numbers in structural beams has not been maintained.

b) Several hundred feet of beams has been ~~receiving~~ received from an unapproved vendor and can not be accounted for as to where installed or other disposition.

c) Traceability of Heat Numbers on small Bore piping for the Diesel Generators.

d) No records exist to show that some of the installed pipe is acceptable. The heat numbers do not appear on the H.J. Kaiser list of acceptable heat numbers.

e) Weld rod heat numbers, because heat numbers are being transfered to the KEI-1 Form from KEI-2's by individuals other than the QC Inspector who inspected the weld.

Contrary to 10CFR50, Appendix B, Criterion VIII.

4. Surveillance reports not being converted to Nonconformance Reports in 30 days.

Cable tray foot connections have not been inspected and are covered with Fireproofing material.

Contrary to 10CFR50, Appendix B, Criterion V, (Failure to follow procedures)

5. Structural welds inspected after painting. (Cable tray hangers in the Cable Spreading Room and throughout the plant.)

Contrary to 10CFR50, Appendix B, Criterion IX, (Control of special processes) and A.W.S. D1.1 - 1972.

6. Radiograph Technique was inadequate on 25% of the prefab welds that NRC Inspector reviewed. (≈180 of 600). The penetrometers were not adequately shimmed.

6. (Cont) Contrary to 10CFR50, Appendix B, Criterion V, Failure to follow procedure; ASME B & PV Code, Section III, Appendix IX; and Kellogg Procedure ES-414.

7. <u>NR's (Nonconformance Reports) are being voided improperly.</u>

- Contrary to 10CFR50, Appendix B, Criterion XV (Control of Nonconforming Material)

8. <u>Design [redacted] violation which is contrary to FSAR.</u>

A 6 inch green cable tray [redacted] was designed and installed inside a white tray. The green tray includes green Class 1E cables and the white tray contains Blue/white and yellow/white [redacted] associated cables.

Contrary to 10CFR50, Appendix B, Criterion III (Design Control)
[Measures shall assure the design bases are correctly translated into specs, dwgs, etc..]

9. <u>LACK OF INSPECTION CONTROL TO VERIFY CABLE SEPARATION.</u>

a) From the end tray points up to the CONTROL PANELS. Two blue cables in the cable spreading room have been pulled into a green tray section leading up to the CONTROL ROOM.

b) Yellow/white cable coming out of conduit and suspended approximately 6 inches above the cables in a blue tray. (In cable spreading room)

c) In the instrument and relay room a nonsafety related white cable # DC 258 (ALSO LABELED #DC257) has been misrouted into yellow tray # 1040B.

d) Tray loading and cable separation concerns.

Contrary to 10CFR50, Appendix B, Criterion X, (Lack of inspection program)

10. S&L Cable Tray Loading Design Control

a) Lack of controls to require design verifications calculations to be performed for Thermal loading of power sleeves and dead weight loading of all trays. (Power, Control and Instrument)

b) Lack of controls for deviations from the FSAR. S&L did deviate from the tray loading design bases.

c) Lack of internal controls to document design deviations when identified by engineers.

Contrary to 10CFR50, Appendix B, Criterion III (Design Control)

S&L Unresolved Items

a) Calculation will be done in the near future for dead weight loading for all trays over a D.I. of 1.25 and Thermal loading of all power raceway over a D.I. of 1.25.

b) Cables in trays containing more than 2 inch depth, will be re-evaluated for ampacity.

c) S&L will provide justification for the determining limit of D.I. = 1.25 for both thermal and dead weight calculations.

d) At least 30 identified and controlled tray points exceed the FSAR Tray fill limits of 50%. This item is unresolved pending resolution.

II. Inadequate Corrective Actions

a) Inadequate Corrective action taken by CG&E in regards to repetitive problem concerning design calculations and verifications not being performed by S&L. The problems were identified in 5 different CG&E Audits.

b) the RIII Inspector identified the lack of requirements to perform design calculations for tray loading during this investigation.

Contrary to 10CFR50, Appendix B, Criterion XVI (Inadequate Corrective Actions)

12. CG&E has not performed ANY audits to verify compliance with and the effectiveness of the S&L Nonconformance Program.

Contrary to 10CFR50, Appendix B, Criterion XVIII (Audits)

13. Weld inspection criteria has been deleted from the KEI-1 form from ≈ 7/80 - 7/81.

Contrary to 10CFR50, Appendix B, Criterion III. (Design Control); and AWS D1.1-1972 and ASME B&PV Code, Section III.

14. Socket weld fit-up has not been verified on numerous small bore pipes.

Contrary to 10CFR50, Appendix B, Criterion V. (Inadequate Inspection)

15. Structural beams have been installed which are not required on any design documents. These beams were not controlled.

Contrary to 10CFR50, Appendix B, Criterion XV, Measures shall be established to control material, parts, or components which do not conform to requirements. (Design)

16. The KEI-2 (Rod Issue Slip) is being used as justification for QC inspection and verifications. The KEI-2 is not a QC document and neither requires or has QC signatures. Contains the welder's, welder's foreman, and rod issuer's signature.

Contrary to 10CFR50, Appendix B, Criterion X. (Inspection shall be performed by individuals other than those who perform the activities being inspected.)

For a clerk to transfer information from the KEI-2 to the KEI-1 form is <u>wrong</u>.

Weld rod slips (KEI-2) indicate more than one welder on a particular weld, however welder symbols stamped near weld and KEI-1 weld

16. (CONT) data records show only one welder worked on the weld.
Thus doubts are raised about the accuracy of the records.

17. <u>Design Document Changes are not being controlled.</u>

a) The KEI Configuration Control Center does not know the status of DDC's written prior to late 1980, which apply to Waldinger-Young and Bertke. (The HVAC Contractor) For example, DDC-WYB-567.

The problem is apparently caused when a DDC is written against one document and later changes are made to one or more other documents (drawings) not referenced by the original DDC.

b) This problem appears to also exsist in some structural, mechanical, and electrical DDC's.

Contrary to 10CFR50, Appendix B, Criterion VI (Document Control)

18. H.J.Kaiser Procedure SPPM 4.6, rev. 8 AND S&L Specification H-2173, supplement 7, (Standard EB-117 for cable tray hanger welds) takes exception to A.W.S. D1.1-1972 inspection acceptance criteria for undercut. The FSAR does NOT stipulate these exceptions.

Contrary to 10CFR50, Appendix B, Criterion III (Design Control)

Docket No. 50-358
Construction Permit No. CPPR-88
EA 82-12

Cincinnati Gas and Electric Company
ATTN: Mr. W. H. Dickhoner
President
139 East 4th Street
Cincinnati, OH 45201

Gentlemen:

This refers to the investigation conducted by Region III during the period January 12 to October 9, 1981, of construction activities at the Wm. H. Zimmer Nuclear Power Station. The details of that investigation are described in Region III investigation report No. 50-358/81-13. The violations described in Appendix A to this letter are cross-referenced to that report in accordance with Appendix E to this letter.

The investigation was initiated as a result of allegations made to the NRC by a Quality Control Inspector who formerly worked at the Zimmer site and by the Government Accountability Project of the Institute for Policy Studies (a non-governmental agency) on behalf of Mr. Thomas Applegate. The results of the continuing investigation reveal a widespread breakdown of your quality assurance program as evidenced by numerous examples of noncompliance with twelve of the eighteen different criteria for a quality assurance program as set forth in 10 CFR 50, Appendix B. The cause of the breakdown was your failure to exercise adequate oversight and control of your principal contractors to whom you had delegated the work of establishing and executing quality assurance programs. You thereby failed to fulfill your vital responsibility as described in Criterion I of 10 CFR 50, Appendix B, to assure the execution of a quality assurance program. The potential safety concern of your quality assurance program breakdown was discussed during an enforcement conference at our Region III office in Glen Ellyn, Illinois, on August 5, 1981, attended by you and members of your staff and the NRC Region III staff.

Two of the violations (Items A and B of Appendix A of this letter) are of particular concern to us because of the very essential role they play in the execution of an effective quality assurance program. These two violations relate to false records and to harassment/intimidation of quality control inspectors.

With regard to false records, the examples we identified raise serious questions as to the accuracy of quality records at the site. Our concern in this area served as a major factor in requiring the conduct of a confirmation program to be completed by you to furnish evidence of plant quality.

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Because the NRC inspection program is a sampling program, the importance of accurate quality records cannot be overemphasized. Accordingly, we have addressed this matter as a separate violation and assessed a separate civil penalty for it.

With regard to harassment/intimidation of quality control inspectors, we have also addressed this matter as a separate violation and assessed a separate civil penalty for it. We determined that your construction contractor took some action to stop the water dousing of quality control inspectors; however, those actions did not stop the activity. Harassment/intimidation of quality control inspectors is clearly a barrier to effective implementation of a quality assurance program and results in loss of the organizational independence described in Criterion I of 10 CFR 50, Appendix B. The importance of this matter is reflected in the recent amendment (Public Law 96-295, June 30, 1980) to the Atomic Energy Act of 1954, which added Section 235 relating to protection of nuclear inspectors such as your quality control inspectors.

The impact of the identified quality assurance deficiencies on the actual construction has yet to be determined. Limited independent measurements were performed by the NRC in selected areas of concern in an attempt to characterize the actual safety significance of these deficiencies. Although a few problems requiring corrective action were identified (i.e., four unacceptably installed pipe hangers), the majority of the NRC independent measurements did not disclose hardware problems. However, recognizing that significant construction deficiencies could have resulted from the quality assurance problems identified during this investigation, the NRC has required the establishment of a comprehensive quality confirmation program to determine the quality of plant systems important to nuclear safety. The NRC will confirm the adequacy of the program and may make additional independent verifications. Deficiencies identified by these programs will require resolution prior to issuance of an Operating License.

Notwithstanding the fact that serious construction deficiencies have not been identified, in order to emphasize the need for licensees to have complete and accurate records, to maintain a work atmosphere where quality assurance personnel are not harassed or intimidated, and to assure implementation of an effective quality assurance program which identifies and corrects construction deficiencies, we propose to impose civil penalties in the cumulative amount of Two Hundred Thousand Dollars for the matters in the Notice of Violation. We expect that this penalty will result in an adequate deterrent against future similar violations by you and other licensees of plants under construction.

Some of the examples in the Notice of Violation occurred subsequent to the issuance of the revised enforcement policy and some prior to that time. In arriving at the amount of the proposed civil penalties we have exercised discretion, considered changes in the enforcement policy and considered the amount of the civil penalties that have been issued to licensees of other plants under construction as well as the number of examples found of each violation and when they occurred. We have for convenience and clarity categorized the items in the Notice of Violation at the Severity Levels described in accordance with the Interim Enforcement Policy published in the Federal Register, 45 FR 66754 (October 7, 1980).

The results of this investigation and our review of your 10 CFR 50, Appendix B, noncompliance history reveal an additional matter which is of significant concern to us. This matter concerns inadequate corrective actions. The results of our normal inspection program for the construction and testing of Zimmer indicate you were found in noncompliance forty-four times since December 1979 with thirteen of the eighteen different criteria of Appendix B to 10 CFR 50. During our Systematic Assessment of Licensee Performance review on December 16, 1980, we expressed concern with your relatively poor performance in this area. This poor history of compliance with 10 CFR 50, Appendix B, when considered with the recent findings of the investigation indicates that your corrective actions only addressed individual problems and not underlying programmatic causal factors. Consequently, we request that you review your history of noncompliance with 10 CFR 50, Appendix B, for the past two years and in your response to this letter provide those steps you have taken to address and correct the underlying programmatic causal factors related to the noncompliances.

You are required to respond to the Notice of Violation and in preparing your response you should follow the instructions in Appendix A. You should give particular attention to those actions designed to assure continuing compliance with NRC requirements. Your written reply to this letter and the results of future inspections will be considered in determining whether further enforcement action is appropriate.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosure will be placed in the NRC Public Document Room.

The responses directed by this letter and the enclosed Appendix A are not subject to the clearance procedures of the Office of Management and Budget as required by the Paperwork Reduction Act of 1980, PL 96-511.

Sincerely,

Richard C. DeYoung, Director
Office of Inspection and Enforcement

Enclosures:
1. Appendix A - Notice of Violation and Proposed Imposition of Civil Penalties
2. Appendix B - Cross References: Noncompliances to Report Details

cc:
See next page

cc w/encl:
E. A. Borgmann, Senior Vice President,
Engineering Services and Electric Production
J. R. Schott, Plant Superintendent
DMB/Document Control Desk (RIDS)
Resident Inspector, RIII
Harold W. Kohn, Power Siting Commission
Citizens Against a Radioactive Environment
Helen W. Evans, State of Ohio
Thomas Applegate
Louis Clark, Director, GAP
Institute for Policy Studies

Appendix A

NOTICE OF VIOLATION
AND
PROPOSED IMPOSITION OF CIVIL PENALTIES

Cincinnati Gas and Electric Company
Wm. H. Zimmer Nuclear Power Station

Docket No. 50-358
Construction Permit No. CPPR-88
EA 82-12

As a result of the investigation conducted at the Wm. H. Zimmer Nuclear Power Station in Moscow, Ohio, on January 12 - October 9, 1981, the violations listed below with multiple examples were identified. The numerous examples of the violations demonstrate your failure to exercise adequate oversight and control of your principal contractors, to whom you had delegated the work of establishing and executing quality assurance programs, and thereby fulfill your responsibility of assuring the effective execution of a quality assurance program. Your failure manifested itself in a widespread breakdown in the implementation of your quality assurance program and caused the NRC to require an extensive quality confirmation program to provide confidence that safety-related structures, systems, and components will perform satisfactorily in service. Included in the breakdown were findings we consider to be particularly disturbing relating to false records and harassment and intimidation of quality control inspectors.

Because of the significance of not having complete and accurate records, not maintaining a work atmosphere where quality assurance personnel are not harassed or intimidated, and not assuring implementation of an effective quality assurance program which identifies and corrects construction deficiencies, and in accordance with the Interim Enforcement Policy, 45 FR 66754 (October 7, 1980), the Nuclear Regulatory Commission proposes to impose civil penalties pursuant to Section 234 of the Atomic Energy Act of 1954, as amended, ("Act"), 42 U.S.C. 2282, and 10 CFR 2.205 in the amounts set forth for the violations listed below.

A. 10 CFR 50, Appendix B, Criterion XVII states, in part, "Sufficient records shall be maintained to furnish evidence of activities affecting quality."

Contrary to the above, records were identified that did not furnish evidence of activities affecting quality in that they were false. Examples of false records are as follows:

1. Isometric drawings, weld inspection records, or other records did not furnish evidence of the actual piping components installed in the 11 pipelines in the diesel generator cooling water, starting air and fuel oil systems, in that the heat numbers recorded on the drawings or weld inspection records did not match the heat numbers or color coding marked on the respective components. The 11 pipelines were:

1DG28AB1	1DGC5AA3/4	1DG28AE1
1DG27AB1	1DGF6AA1/2	1DG25AC2
1DG01AB1	1DGC5BA3/4	1DG11AA3
1DGF2AA1/2	1DGF6BA1/2	

2. The Kaiser Nonconformance Reporting Log did not reflect all reports initiated as evidenced by the following:

   a. The original entry for a report (CN-4309) initiated by a QC Inspector on January 7, 1981, relating to deficient weld fit-up was obliterated by the use of white correction fluid and there was no other record of this report in the Noncompliance Report (NR) system.

   b. The original entry for a report (CN-5412) initiated by a QC Inspector on February 3, 1981, and relating to violation of a hold tag was obliterated by the use of white correction fluid and there was no other record of this report in the NR system.

   c. A report (NRC-0001) initiated by a QC Inspector on February 11, 1981, relating to excessive weld weave was not assigned a number and there was no other record of this report in the NR system.

3. Written statements as to planned actions which were made to justify voiding reports E-1661 (voided 11/11/80), E-1662 (voided 11/11/80), and E-2466 (voided 6/30/80) were not taken.

4. Written statements relating to the availability of records which were made to justify voiding reports E-1777 (voided 4/30/79) and E-5108 (voided 6/20/80) were false.

5. Reports CN-5476, CN-5477, and CN-5479 were knowingly improperly voided (2/27/81) and copies deleted from the NR system at the direction of the Kaiser QA Manager.

This is a Severity Level III violation (Supplement II). (Civil Penalty - $50,000).

B. 10 CFR 50, Appendix B, Criterion I states, in part, "The persons... performing quality assurance functions shall have sufficient...organizational freedom to identify quality problems...including sufficient independence from cost and schedule."

The Wm. H. Zimmer QA Manual, Section 1.2.3 describes QC Inspectors as members of QAD (Quality Assurance Division) and Section 1.2.4 states, in part, "QAD has been assigned sufficient...organizational freedom to identify quality problems..."

Contrary to the above, QC Inspectors did not have sufficient freedom to identify quality problems and were not sufficiently independent from cost and schedule. The results of interviews indicate that some QC Inspectors were: (a) harassed by construction workers and supervisors; (b) not always supported by QC management; and (c) intimidated. The following are examples of insufficient freedom of QC Inspectors, including insufficient freedom from cost and schedule, which occurred between Summer 1978 and March 11, 1981:

1. Five QC Inspectors interviewed executed signed sworn statements wherein they claimed they were doused with water (while engaged in the performance of inspection duties) by construction personnel. Two other QC Inspectors made similar statements.

2. A QC Inspection supervisor claimed that over his objections qualified QC Inspectors who were doing thorough jobs were reassigned by QC management because of complaints by construction personnel.

3. Two QC Inspectors executed signed sworn statements wherein they claimed they had been harassed by being searched for alcohol by security personnel at the request of construction supervisory personnel. One other QC Inspector made a similar statement.

4. A QC Inspector executed a signed sworn statement wherein he claimed the QA Manager had threatened to fire him after construction personnel complained he had used a magnifying glass to visually inspect a weld when in fact he was using a mirror and either device was an acceptable tool.

5. A QC Inspector executed a signed sworn statement wherein he claimed he was struck by a stream of water from a fire extinguisher while performing an inspection.

6. A QC Inspector executed a signed sworn statement wherein he claimed he was threatened with bodily harm by a construction person if he did not pass a weld.

7. A Lead QC Inspector executed a signed sworn statement wherein he claimed:

   a. He was accused by the QA Manager for holding up a concrete pour when in fact the delay was caused by the concrete trucks being late.

   b. Construction management frequently approached QC Inspectors and challenged their inspection findings and questioned their judgement.

c. The QA Manager said things like, "our job here is to accept, not reject, and we are here to get this plant built."

8. A Lead QC Inspector executed a signed sworn statement wherein he claimed he was relieved of his inspection duties because he continued to submit legitimate nonconformance reports over construction management objections for deficient welds on pipe support hangers. He also stated that QA management had previously told QC Inspectors to not write anything to make Kaiser look bad.

9. A QC Inspector executed a signed sworn statement wherein he claimed he was told by QA management to accept inspected items that were unacceptable.

This is a Severity Level III violation (Supplement II). (Civil Penalty - $50,000).

C. 10 CFR 50, Appendix B, Criterion II requires holders of construction permits for nuclear power plants to document, by written policies, procedures, or instructions, a quality assurance program which complies with the requirements of Appendix B for all activities affecting the quality of safety-related structures, systems, and components and to implement that program in accordance with those documents.

Contrary to the above, Cincinnati Gas and Electric Company and its contractors did not adequately document and implement a quality assurance program to comply with the requirements of Appendix B as evidenced by the following examples:

1. 10 CFR 50, Appendix B, Criterion XV states, in part, "Nonconforming items shall be reviewed and accepted, rejected, repaired or reworked in accordance with documented procedures."

Kaiser Procedure QACMI G-4, "Nonconforming Material Control," provides detailed instructions for the review and disposition of reports (Nonconformance Reports) of nonconforming items. Contrary to the provisions of QACMI G-4, the sample of NRs reviewed indicate significant deficiencies with the nonconformance reporting system in the areas of voiding of reports, not entering reports into the system, improper dispositioning of reports, and incomplete report files. The deficiencies identified were as follows:

a. Three NRs related to documentation deficiencies had been improperly voided in that records used to justify the voiding did not provide evidence necessary for proper voiding. (NR-E-2191 voided 2/22/80, NR-E-2233 voided 1/24/80, NR-E-2237 voided 12/19/79)

b. One NR related to nondestructive examination of a T-quencher weld had been erroneously closed (not voided) by administrative error. (NR-E-2996 closed 3/17/81)

c. Two NRs related to nondestructive examinations of service water system welds had been incorrectly dispositioned (not voided). (NR-E-2836 closed 11/13/80, NR-E-2596 closed 4/16/80)

d. Five reports had been voided by personnel other than the QA Manager. (CN-5122 voided 1/2/81, CN-5476 voided 2/27/81, CN-5477 voided 2/27/81, CN-5479 voided 2/27/81, CN-4389 voided 12/12/80)

e. In one case during revisions of the report some nonconforming items were removed from a NR without adequate justification. (NR-E-2466 voided 6/30/80)

f. The following nine reports had not been issued NR numbers and/or copies of the reports had not been retained in the Site Document Center:

CN-4389	CN-4957
CN-4930	CN-4958
CN-4931	CN-4959
CN-4955	CN-5122
CN-4956	

2. 10 CFR 50, Appendix B, Criterion XVI states, in part, "Measures shall be established to assure that conditions adverse to quality, such as... deviations... and nonconformance are promptly identified and corrected."

The Wm. H. Zimmer QA Manual, Section 15.2.2 states, "HJK is responsible for identifying and reporting nonconformances in receiving inspection, construction, or testing activities which are delegated to HJK Quality Assurance Procedures to assure that nonconforming items are conspicuously marked to prevent their inadvertent use or installation."

AWS Code D1.1-1972, Section 3 and 8.1.5 define requirements for weld quality and address slag, weld profiles, blowholes, porosity, and undercut.

AISC, Seventh Edition (1969), Page 4.113 requires 1/2 inch minimum radius for re-entrant corners.

Contrary to the above, the following nonconforming conditions were not identified and corrected:

a. Based on an inspection of the 25 structural hanger support beams described in Item C.4 below:

(1) Several welds on nine beams did not conform with AWS D1.1-1972 requirements in that they contained unacceptable slag, weld profiles, blowholes, porosity, and/or undercut.

(2) Five beams did not conform with AISC requirements in that the re-entrant corners were notched, creating potential stress risers, instead of being rounded with required radii.

(3) Four beams, two of which had unacceptable welds as described in Item C.2.a.(1) above, did not conform with design documents in that they were not specified on any design document.

b. Based on an inspection of about 100 cable tray hangers in the Cable Spreading Room, four did not conform with AWS D1.1 1972 requirements in that the welds contained unacceptable slag, weld profiles, blowholes, porosity, and/or undercut.

3. 10 CFR 50, Appendix B, Criterion XVI states, in part, "Measures shall be established to assure that conditions adverse to quality, such as...deviations...and nonconformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition."

The Wm. H. Zimmer QA Manual, Section 16.5 states, in part, "Vendors, contractors, and subcontractors are required to determine cause and corrective action to prevent recurrence of errors which could result in significant conditions adverse to quality."

ASME Code, Section III-1971 Edition, Article NB-3661.5(b) states, in part, "...a gap of approximately 1/16 in. shall be provided between the end of the pipe and the bottom of the socket before welding."

ASME Code, Section III-1971 Edition , Winter 1972 Addenda, Articles NA-4130(a), NA-4420, NA-4510, NA-4442.1, NB-4122, NA-4451, NB-4230, and NB-3661.5(b) require, in part, in-process inspections for pipe fitup, weld procedure, weld filler metal traceability, and welder qualifications...

Contrary to the above, the NRC inspectors identified the following nonconforming conditions that had not been corrected and action had not been taken to preclude their repetition:

a. Licensee records indicate that the socket engagement (fitup) for more than 439 socket welds was not verified in accordance with ASME Code, Section III-1971 Edition, Article NB-3661.5(b) and the condition was not corrected in that the corrective action was not commensurate with the ASME Code. The welds date back to 1979.

b. Licensee records indicate that the in-process inspections for more than 22 welds in the diesel generator cooling water, starting air, and fuel oil piping systems were not performed by Kaiser in accordance with ASME Code, Section III-1971 Edition, Article NB-3661.5(b), et al., and the condition was not corrected in that the corrective action was not commensurate with the ASME Code. The welds date back to 1978.

c. Five licensee QA audits (audit performed 8/8-9/74 - no number, and Audit Nos. 78/07, 78/09, 78/10, 80/04) of Sargent & Lundy identified repetitive problems concerning S&L not performing certain design calculations, reviews, and verifications and action was not taken to preclude repetition.

4. 10 CFR 50, Appendix B, Criterion VIII states, in part, "Measures shall be established for the identification and control of materials... These measures shall assure that identification of the item is maintained..."

The Wm. H. Zimmer QA Manual, Section 8.2 states, in part, "H. J. Kaiser Company procedures provide that within the H. J. Kaiser Company jurisdiction the identification of items will be maintained by the method specified on the drawings, such as heat number, part number, serial number, or other appropriate means. This identification may be on the item or on records traceable to the item. The identification is maintained throughout fabrication, erection, and installation. The identification is maintained and usable in the operation and maintenance program."

Contrary to the above, based on an inspection by NRC inspectors in March 1981 of approximately 25 structural hanger support beams located in the Blue Switchgear Room and the Cable Spreading Room, the identification of the material in nine of those beams was not maintained to enable verification of quality.

5. 10 CFR 50, Appendix B, Criterion III states, in part, "Measures shall be established to assure that applicable regulatory requirements and the design basis...are translated into...drawings..."

The Wm. H. Zimmer FSAR, Section 8, provides the design basis for electrical cable separation that includes the following:

Associated cables (Green/White, Blue/White, and Yellow/White) from more than one Division cannot be routed in the same raceway. (FSAR Paragraph 8.3.1.13.2)

Vertical separation of three feet or more must be maintained between cables from different Divisions. (FSAR Paragraph 8.3.1.11.2.1.d)

Instrument (low-level signal) cables cannot be routed in the same raceway with power and control cables. (FSAR Paragraph 8.3.1.12.1.3)

The Wm. H. Zimmer QA Manual, Section 3.3.2. states, "Composite... drawings are prepared, translating the design concepts into layouts of structures, systems, and components necessary for the construction of the plant."

Contrary to the above, as of March 1981, the FSAR design basis for electrical cable separation had not been translated into drawings and this resulted in the following cable installation deficiencies in the Cable Spreading Room:

a. Associated Cable (Yellow/White) No. RE053 for Division 1 was routed in the same raceway (two-inch conduit and Class IE Sleeve No. 79) as Associated Cable (Blue/White) No. RE058 for Division 2. Also, Associated Cable No. RE053 was routed so that in places there was only a vertical separation of four inches between it and cables in Blue Tray No. 2072C for Division 2.

b. Instrument Cable (Green) No. WS714 and others for Division 3 were routed in the same raceway (Tray No. 4638B) as Associated Control Cables (Yellow/White and Blue/White) for Divisions 1 and 2. This deficiency was due, in part, to a design which specified the installation of a Green Instrument Tray (No. 3029K) inside a White Control Tray (No. 4638B).

c. Many Associated Cables from all three Divisions were routed in the same raceway (White Tray No. 4080K) including Cable (Blue/White) No. TI192, Cable (Yellow/White) No. RR781, and Cable (Green/White) No. TI816.

d. Associated Cables (Yellow/White) No. TI942 and No. TI943 for Division 1 were routed in the same raceway (White Tray Riser No. RK4627) as Associated Cables (Blue/White) No. TI808 and No. TI760 for Division 2.

e. Many Associated Cables (Yellow/White) for Division 1 were routed in the same raceway (White Tray Riser No. 4139) as Associated Cables (Blue/White) for Division 2.

6. 10 CFR 50, Appendix B, Criterion III states, in part, "Design control measures shall be applied to...the delineation of acceptance criteria for inspections and tests."

   The Wm. H. Zimmer QA Manual, Section 3.13.1 states, in part, "Design control measures also apply to delineation of acceptable criteria for inspections and tests."

   Weld acceptance criteria are required by the ASME Code, Section III-1971 Edition and the AWS D1.1-1972 Code.

   Contrary to the above:

   a. The weld acceptance criteria used by H. J. Kaiser Company from July 1980 to January 1981 were not applied to weld inspections during that period in that the weld acceptance criteria for such items as the drywell support steel were deleted.

   b. The acceptance criteria for Weld 55H (isometric drawing PSK-1WS-32) performed on Service Water System Line No. 1WS17A18 by H. J. Kaiser Company in November 1979 were not applied in that they were designated as not applicable.

7. 10 CFR 50, Appendix B, Criterion XI states, in part, "Test results shall be evaluated to assure that test requirements have been satisfied."

   The Wm. H. Zimmer QA Manual, Section 11.1 states, in part, "Test programs to assure that essential components, systems, and structures will perform satisfactorily in service are planned and performed in accordance with written procedures and instructions at vendor shops and at the construction site."

   ASME Section III-1971 Edition, Winter 1972 Addenda, Appendix IX, Paragraph IX-3334.4 states, in part, "The shim thickness shall be selected so that the total thickness being radiographed under the penetrameter is the same as the total weld thickness..."

   M. W. Kellogg Co. (pipe manufacturer and agency performing the prefabricated pipe weld radiography in question) Radiographic Procedure No. ES-414, dated September 26, 1972, Paragraph 4.1.8, states, "Wherever required, shims shall be used to produce a total thickness under the penetrameter equal to the nominal thickness of the base metal plus the height of the crown or reinforcement."

   Contrary to the above, the licensee's review of 187 radiographs did not assure that test requirements were satisfied in that the licensee failed to detect that the penetrameter shimming was insufficient to satisfy the requirements of M. W. Kellogg Procedure

No. ES-414 or the ASME Code. This deficiency was identified during the NRC review of approximately 800 radiographs involving 206 prefabricated pipe welds in such systems as main team, feedwater, and diesel generator support systems.

8. 10 CFR 50, Appendix B, Criterion III states, in part, "These measures [design control] shall include provisions to assure that appropriate quality standards are specified and included in design documents and that deviations from such standards are controlled...The design control measures shall provide for verifying or checking the adequacy of design."

   The Wm. H. Zimmer QA Manual, Section 3.4 states, in part, "Design reviews are conducted to assure that the appropriate quality standards are specified and included in design documents."

   The Wm. H. Zimmer QA Manual, Section 3.6 states, "Measures are established to assure that any deviations from the applicable standards are controlled."

   The Wm. H. Zimmer QA Manual, Section 3.11.2 states, in part, "At S&L, design verification reviews are performed...."

   The Wm. H. Zimmer FSAR Section 8.3.3.1.1 states that cable ampacity is based on IPCEA Publication No. P-46-426. An additional limitation on cable ampacity as stated in Section 8.3.3.1.3 is that "the summation of the cross-sectional areas of the cables shall not exceed 50% of the tray usable cross-sectional area or two layers of cables, whichever is larger, but not to exceed 60% of the cross-sectional area in any case."

   AWS D1.1-1972 Code, Section 3.6.4, states, "For building and tubular structures, undercut shall be no more than 0.01 inch deep when its direction is transverse to primary tensile stress in the part that is undercut, nor more than 1/32 inch for all other situations."

   Contrary to the above:

   a. As of March 1981, design control measures had not been established to assure that deviations from design conditions (quality standards) identified by Sargent & Lundy engineers were controlled. For example, Sargent & Lundy noted on a calculation sheet dated December 27, 1979, that the design thermal loading for two power cables (VC016 and VC073) in Yellow Tray No. 1057A would allow the cables to be thermally overloaded and no program existed to control those design deviations.

b. As of March 1981, design control measures had not been established by Sargent & Lundy to provide for verifying or checking the adequacy of the design for the thermal loading of power cable sleeves and the physical weight loading of cable trays.

c. As of March 1981, the cable ampacity design by Sargent & Lundy was not based on IPCEA P-46-426 and the FSAR limit on cross-sectional area.

d. As of March 1981, the design allowable undercut on cable tray hanger welds was not based on AWS D1.1-1972 Code (appropriate quality standard). The design undercut was instead based on Sargent & Lundy Specification H-2713, Supplement 7, Sargent & Lundy Standard EB-117, and H. J. Kaiser Procedure SPPM No. 4.6, "Visual Examination," Revision 8, Paragraph 5.2.9, allowed up to 1/16 inch undercut.

9. 10 CFR 50, Appendix B, Criterion X states, in part, "A program for inspection of activities affecting quality shall be established and executed by or for the organization performing the activity to verify conformance with the documented instructions, procedures, and drawings for accomplishing the activity."

The Wm. H. Zimmer QA Manual, Section 10.1.2 states, in part, "Inspections are performed in accordance with written procedures which include requirements for check lists and other appropriate documentation of the inspections and tests performed."

AWS D1.1-1972 Code, Section 3.10.1, requires work to be completed and accepted before painting.

Contrary to the above:

a. As of March 1981, a QC inspection program had not been established to require verification of separation of electrical cables routed from the Cable Spreading Room to the Control Room. An example of a nonconforming condition that should have been identified by such a program was Blue Cables RI103 and CM111 that had been routed into Tray Riser (Green) No. 3025A, which extended from Tray (Blue) No. 2077A in the Cable Spreading Room to the Control Room.

b. The programs established for in-process and final inspections of welds on 180 cable tray hangers located in the Cable Spreading Room were not executed as required in the AWS D1.1-1972 Code. Specifically, the final weld inspections were made after the welds were painted (Galvanox).

10. 10 CFR 50, Appendix B, Criterion V states, in part, "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings."

    The Wm. H. Zimmer QA Manual, Section 5.1 states, "Construction, fabrication, and manufacturing activities which affect the quality of the facility are accomplished in accordance with written instructions, procedures, and drawings which prescribe acceptable methods of carrying out those activities."

    The Wm. H. Zimmer QA Manual, Section 3.12 states, in part, "Design changes...including field changes, are subject to design change control measures commensurate with those applied to the original design."

    Contrary to the above:

    a. Kaiser Procedure QACMI G-14, "Surveillance Reports," (SR) was not appropriate to the circumstances in that it allowed in-process nonconformances which constitute field changes to be dispositioned within 30 days without being subjected to design control measures commensurate with those applied to the original design. Examples of nonconformances so dispositioned were identified in SRs F-2899, F-2903, and F-2914.

    b. Kaiser Procedure QACMI G-14 was not followed in that SRs F-2909, F-3070, F-3071, F-3072, F-3073, F-3074, F-3075, F-3076, F-3083, and F-7019 were not dispositioned within 30 days and were not transferred to Nonconformance Reports as required by Paragraph 5 of QACMI G-14.

11. 10 CFR 50, Appendix B, Criterion VII states, in part, "The effectiveness of the control of quality by contractors and subcontractors shall be assessed by the applicant or designee...."

    The Wm. H. Zimmer QA Manual, Section 7.3.1 states, in part, "As part of the vendor selection process, S&L makes an independent evaluation of the bidders' QA programs as a part of their total bid evaluation."

    Contrary to the above, as of March 1981, neither the licensee nor designee (Sargent & Lundy) had assessed the effectiveness of the control of quality by vendors who had supplied structural beams. Specifically, evaluations of the vendor (U.S. Steel Supply, PBI Steel Exchange, and Frank Adams Company) quality assurance programs for control of mill certifications and structural beams were not performed.

12. 10 CFR 50, Appendix B, Criterion XVII states, in part, "Sufficient records shall be maintained to furnish evidence of activities affecting quality. The records shall include...monitoring of work performance, and...include closely-related data such as qualifications of personnel, procedures, and equipment."

    The Wm. H. Zimmer QA Manual, Section 17.1.4 states, in part, "Documentation of all performance surveillance includes personnel identification and qualification, procedure, type observation, date of performance, person or organization monitored, results and corrective action if required."

    Contrary to the above, the Bristol Steel and Iron Works Quality Control Steel Erection Report, which was a generic form for monitoring in-process steel erection, did not identify closely related data such as weld procedure numbers, types of welding material, welder identification, and specific welds inspected.

13. 10 CFR 50, Appendix B, Criterion XVIII states, in part, "A comprehensive system of planned and periodic audits shall be carried out to verify compliance with all aspects of the quality assurance program and to determine the effectiveness of the program."

    The Wm. H. Zimmer QA Manual, Section 18.1 states, in part, "QA Division conducts a comprehensive system of planned and periodic audits of S&L, HJK...to verify compliance with all aspects of the quality assurance program."

    Contrary to the above, during the past 9 years the licensee's QA Division did not perform an audit of the Sargent & Lundy nonconformance program.

This is a Severity Level II violation (Supplement II). (Civil Penalty - $100,000).

Pursuant to the provisions of 10 CFR 2.201, Cincinnati Gas and Electric Company is hereby required to submit to this office within 30 days of the date of this Notice a written statement or explanation, including for each alleged violation: (1) admission or denial; (2) the reasons for the violation if admitted; (3) the corrective steps which have been taken and the results achieved; (4) the corrective steps which will be taken to avoid further violations; and (5) the date when full compliance will be achieved. Any statement or explanation may incorporate by specific reference (e.g., giving page and paragraph numbers) the provisions of your quality confirmation program and your actions in response to our Immediate Action Letter of April 8, 1981. Consideration may be given to extending the response time for good cause shown. Under the authority of Section 182 of the Act, 42 U.S.C. 2232, this response shall be submitted under oath or affirmation.

Within the same time as provided for the response required above under 10 CFR 2.201, Cincinnati Gas and Electric Company may pay the civil penalties in the cumulative amount of Two Hundred Thousand Dollars or may protest imposition of the civil penalties in whole or in part by a written answer. Should Cincinnati Gas and Electric Company fail to answer within the time specified, this office will issue an Order imposing the civil penalties in the amount proposed above. Should Cincinnati Gas and Electric Company elect to file an answer in accordance with 10 CFR 2.205 protesting the civil penalties, such answer may: (1) deny the violations listed in this Notice in whole or in part; (2) demonstrate extenuating circumstances; (3) show error in this Notice; or (4) show other reasons why the penalties should not be imposed. In addition to protesting the civil penalties in whole or in part, such answer may request remission or mitigation of the penalties. Any answer in accordance with 10 CFR 2.205 should be set forth separately from the statement or explanation in reply pursuant to 10 CFR 2.201, but may incorporate by specific reference (e.g., giving page and paragraph numbers) to avoid repetition. Cincinnati Gas and Electric Company's attention is directed to the other provisions of 10 CFR 2.205, regarding the procedure for imposing civil penalties.

Upon failure to pay any civil penalties due, which have been subsequently determined in accordance with the applicable provisions of 10 CFR 2.205, this matter may be referred to the Attorney General, and the penalties, unless compromised, remitted, or mitigated, may be collected by civil action pursuant to Section 234c of the Act, 42 U.S.C. 2282.

FOR THE NUCLEAR REGULATORY COMMISSION

Richard C. DeYoung, Director
Office of Inspection and Enforcement

Dated at Bethesda, Maryland
this day of November 1981

Appendix B

The results of this investigation and our review of your 10 CFR 50, Appendix B, noncompliance history reveal an additional matter which is of significant concern to us. This matter concerns inadequate corrective actions. The results of our normal inspection program for the construction and testing of Zimmer indicate you were found in noncompliance forty-four times since December 1979 with thirteen of the eighteen different criteria of Appendix B to 10 CFR 50. During our Systematic Assessment of Licensee Performance review on December 16, 1980, we expressed concern with your relatively poor performance in this area. This poor history of compliance with 10 CFR 50, Appendix B, when considered with the recent findings of the investigation indicates that your corrective actions only addressed individual problems and not underlying programmatic causal factors. Consequently, we request that you review your history of noncompliance with 10 CFR 50, Appendix B, for the past two years and in your response to this letter provide those steps you have taken to address and correct the underlying programmatic causal factors related to the noncompliances.

You are required to respond to the Notice of Violation and in preparing your response you should follow the instructions in Appendix A. You should give particular attention to those actions designed to assure continuing compliance with NRC requirements. Your written reply to this letter and the results of future inspections will be considered in determining whether further enforcement action is appropriate.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosure will be placed in the NRC Public Document Room.

The responses directed by this letter and the enclosed Appendix A are not subject to the clearance procedures of the Office of Management and Budget as required by the Paperwork Reduction Act of 1980, PL 96-511.

Sincerely,

Richard C. DeYoung, Director
Office of Inspection and Enforcement

Enclosures:
1. Appendix A - Notice of Violation and Proposed Imposition of Civil Penalties
2. Appendix B - Cross References: Noncompliances to Report Details

cc:
See next page

WPU:JD	EI:IE	EI:IE	ELD	D:EI:IE	D:IE
11/16/81	GBarber	RWessman	JLieberman	DThompson	RCDeYoung
5520	11/ /81	11/ /81	11/ /81	11/ /81	11/ /81

Docket No. 50-358
Construction Permit No. CPPR-88
EA 82-12

Cincinnati Gas and Electric Company
ATTN: Mr. W. H. Dickhoner
President
139 East 4th Street
Cincinnati, OH 45201

Gentlemen:

This refers to the investigation conducted by Region III during the period January 12 to October 9, 1981, of construction activities at the Wm. H. Zimmer Nuclear Power Station. The details of that investigation are described in Region III investigation report No. 50-358/81-13. The violations described in Appendix A to this letter are cross-referenced to that report in accordance with Appendix B to this letter.

The investigation was initiated as a result of allegations made to the NRC by a Quality Control Inspector who formerly worked at the Zimmer site and by the Government Accountability Project of the Institute for Policy Studies (a non-governmental agency) on behalf of Mr. Thomas Applegate. The results of the continuing investigation reveal a widespread breakdown of your quality assurance program as evidenced by numerous examples of noncompliance with twelve of the eighteen different criteria for a quality assurance program as set forth in 10 CFR 50, Appendix B. The cause of the breakdown was your failure to exercise adequate oversight and control of your principal contractors to whom you had delegated the work of establishing and executing quality assurance programs. You thereby failed to fulfill your vital responsibility as described in Criterion I of 10 CFR 50, Appendix B, to assure the execution of a quality assurance program. The potential safety concern of your quality assurance program breakdown was discussed during an enforcement conference at our Region III office in Glen Ellyn, Illinois, on August 5, 1981, attended by you and members of your staff and the NRC Region III staff.

Two of the violations (Items A and B of Appendix A of this letter) are of particular concern to us because of the very essential role they play in the execution of an effective quality assurance program. These two violations relate to false records and to harassment/intimidation of quality control inspectors.

With regard to false records, the examples we identified raise serious questions as to the accuracy of quality records at the site. Our concern in this area served as a major factor in requiring the conduct of a confirmation program to be completed by you to furnish evidence of plant quality.

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

cc w/encl:
E. A. Borgmann, Senior Vice President,
Engineering Services and Electric Production
J. R. Schott, Plant Superintendent
DMB/Document Control Desk (RIDS)
Resident Inspector, RIII
Harold W. Kohn, Power Siting Commission
Citizens Against a Radioactive Environment
Helen W. Evans, State of Ohio
Thomas Applegate
Louis Clark, Director, GAP
Institute for Policy Studies

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JLieberman, ELD
JCummings, OIA
JCrooks, AEOD
Director, EI Staff, RI, RII, RIII, RIV, RV
RWessman, IE
TWBrockett, IE
IE Files
Central Files
CP Book
CON
EI Reading File
EDO Reading File

10/15

Called Devine 2:35 pm – he wasn't in – talked to Louis Clark. Said I would be out tomorrow but would call Mon or Tues of next wk if Devine doesn't return my call today.

CSS

10/15

Devine called ~5:00 pm – told him we would consider his input but didn't know how we planned to get it. Read him PP of draft report (Last PP of Section 5.0, p. 32).

CSS

and explained he did not have a magnifying glass with him when observed and that the tool Marshall had seen was a mirror. He also added that, even if he had been using a magnifying glass, both the AWS Code D1.1, Section 6.5.5, and Kaiser Procedure SPPM 4.6 ,(Revision 8 recognized and approved the use of a magnifying glass for weld inspection.

Individual I stated that he demanded Baker and Gittings document the reason for his proposed termination and he advised Baker he would consult with his attorney and fight the termination.

Individual I provided a sworn statement, a copy of which is included as Exhibit . X

4.4.3.6 Interview of Jesse Ruiz

On February 18 and 20, 1981, Jesse Ruiz, former Kaiser QC Inspector, was interviewed by NRC. He stated that QC Inspectors at Zimmer were being harrassed and intimidated by Kaiser construction personnel. Ruiz said that Individual I had been threatened with the loss of his job by Gerald Adams, KEI Structural Superintendent, if he did not accept an item inspected, and for allegedly using a magnifying glass to inspect a weld when he was actually using a mirror, a common weld inspection tool.

On February 20, 1981, Ruiz provided a sworn statement, a copy of which is included as Exhibit . X

4.4.4 Findings and Conclusions

A QC Inspector was threatened with dismissal by the QA Manager after the Construction Superintendent advised him (incorrectly) that the QC Inspector used a magnifying glass to visually inspect weld surfaces. The QC Inspector protested the planned dismissal and was not dismissed; however, he was re-assigned to another area of inspection.

4.4.5 Items of Noncompliance

No items of noncompliance were identified.

5. Applegate/GAP Allegations

On January 5, 1981, the Government Accountability Project (GAP) requested an investigation into the conduct of an earlier RIII investigation of concerns provided by Thomas Applegate. In addition to this request, they provided a list of nineteen allegations, some of which appeared to contain information known to NRC, and some of which were new information. A commitment was made to review the nineteen allegations even if they appeared to pertain to known situations.

To clarify the allegations, a meeting was held between Applegate, Thomas Devine (GAP representative), and RIII personnel on February 26, 1981. The meeting was recorded, and a transcript was produced.

Some of the allegations concern issues that do not fall under the jurisdiction of the NRC, and have been brought to the attention of the appropriate agencies for action as they consider appropriate. Other allegations were provided during this meeting and in correspondence from GAP, some of which are not addressed in this report but will be reviewed and documented in subsequent reports. A review of outstanding allegations indicates that their investigation [redacted] not change the conclusions reached in this report.

In a July 22, 1981, letter GAP provided RIII with additional information on allegations of improper construction. GAP subsequently offered to amplify and provide more specific information related to the matter in the letter. This information will be considered by RIII prior to completion of the RIII independent measurement activities.

5.1 Unsuitable Piping Installation

5.1.1 Allegation

"KEI knowingly installed and ripped out unsuitable main steam relief piping, at an estimated labor cost of $320,000."

5.1.2 Background Information

The Zimmer facility uses a General Electric boiling water reactor (BWR) Mark II containment system design, which includes a pressure suppression pool in the lower levels of the containment building. Based on actual Mark I operating experiences related to safety relief valve actuations and large-scale testing of the more recently designed Mark III containment design system, new suppression pool hydrodynamic loads associated with postulated loss-of-coolant accidents (LOCA) were identified that had not been explicitly considered in the original design of the Mark II containment system. These newly identified loads result from the dynamic effects of drywell air and steam being rapidly forced into the suppression pool during a postulated LOCA or safety relief valve actuation. When this possible problem was first identified, General Electric and NRC and its consultants performed an in-depth review of the General Electric Mark II containment system design. Utilities owning facilities that would use the Mark II containment system also formed an owners' group to share calculations, evaluations, and acceptable modifications to the Mark II containments.

The NRC effort in reviewing the new dynamic loads was divided into two programs: a short-term evaluation program for the lead plants (Zimmer, La Salle, Shoreham), and a long-term program for final detailed evaluation of the adequacy of modifications. The description of the NRC evaluation is available in NUREG-0487, "Mark II Containment Lead Plant Program Load Evaluation and Acceptance Criteria," published in November 1978.* This document indicates that the lead plants, those first to use the Mark II containment system, would be reviewed by NRC to determine the acceptability of modifications made in their design to accommodate the identified loads.

*These documents are available for inspection at NRC public document rooms or for purchase from the NRC/GPO sales program, Washington, DC 20555.

Two of the violations (Items A and B) are of particular concern to us because of the very essential role they play in the execution of an effective quality assurance program. These two violations relate to false records and to harassment/intimidation of quality control inspectors.

With regard to false records, the examples we identified raise serious questions as to the accuracy of all quality records at the site. Our concern in this area served as a major factor in requiring the conduct of a confirmation program to be completed by you to furnish evidence of plant quality. Because the NRC inspection program is a sampling program that relies heavily on licensee records, the importance of accurate records cannot be overemphasized. Accordingly we ~~chose to~~ have addressed this matter as a separate violation and assessed a substantial civil penalty for it.

With regard to harassment/intimidation of quality control inspectors, we have also addressed this matter as a separate violation and assessed a substantial civil penalty for it. Harassment/intimidation of quality control inspectors is clearly a barrier to effective implementation of a quality assurance program and results in ~~the~~ loss of the organizational independence described in Criterion I of Appendix B. The importance of ~~the NRC attached to~~ this matter is reflected in the recent amendment (Public Law 95-601) to the Atomic Energy Act of 1954 which added Section 235 relating to protection of employees against discrimination by licensees.

Cincinnati Gas and Electric

Company

ATTN: Mr. W. H. Dickhoner

President

139 East 4th Street

Cincinnati, OH 45201

Gentlemen:

This refers to the investigation conducted by Region III during the period January 12 to October 9, 1981, of construction activities at the Zimmer site. The investigation was initiated as a result of allegations made to the NRC by a Quality Control Inspector who formerly worked at the Zimmer site and by the Government Accountability Project of the Institute for Policy Studies (a non-governmental agency) on behalf of Mr. Thomas Applegate. The results of the continuing investigation reveal ~~indicate~~ a widespread breakdown of the implementation of your quality assurance program as evidenced by numerous examples of noncompliance with eleven ~~ten~~ of the eighteen different criteria for a quality assurance program as set forth in 10 CFR 50, Appendix B. ~~Included in the examples is one related to misrepresentative records which raises serious questions as to the accuracy of all quality records at the site and serves as a major factor in requiring the conduct of the Quality Confirmation Program to furnish evidence of plant quality.~~ The safety concern of your quality assurance program breakdown was discussed by you and members of your staff and the NRC Region III staff during an enforcement conference at our Region III office in Glen Ellyn, Illinois, on August 5, 1981, attended.

The cause of the breakdown was your failure to exercise adequate oversight and control of your principal contractors to whom you had delegated the work of establishing and executing quality assurance programs. You thereby failed to fulfill your ultimate responsibility to assure the ~~[illegible]~~ execution of a quality assurance program as described in Criterion I of Appendix B.

The impact of the identified quality assurance deficiencies on the actual construction has yet to be determined. Limited independent measurements were performed by the NRC in selected areas of concern in an attempt to characterize the actual safety significance of these deficiencies. Although a few problems requiring corrective action were identified (i.e., four unacceptably installed pipe hangers), the majority of the tests and examinations did not disclose hardware problems. Recognizing the significant quality assurance problems identified during this investigation, the NRC has required the establishment of a comprehensive Quality Confirmation Program to determine the quality of plant systems important to nuclear safety. The NRC will confirm the adequacy of the program and is making additional independent verifications. Deficiencies identified by these programs will require resolution prior to issuance of an Operating License.

Notwithstanding the fact that serious construction deficiencies have not been identified, in order to emphasize the significance NRC attaches to breakdowns of quality assurance programs such as the breakdown that occurred at Zimmer that have a high potential for serious construction deficiencies, we propose to impose a civil penalties in the cumulative amount of ~~One~~ Two Hundred and Fifty Thousand Dollars for the matters in the Notice of Violation. Some of the examples in the Notice of Violation occurred under the revised enforcement policy and some prior to that time.

No ¶

In this regard we have exercised discretion in arriving at the amount of the proposed civil penalties which is less than allowed by either the old or new enforcement policies or a combination of the two. In arriving at the amount of the proposed civil penalties we considered ~~the substantial financial impact resulting from the Quality Confirmation Program being conducted, the likely construction schedule impact of that program, and~~ the amount of the civil penalties that have been issued to licensees of other plants under construction and the changes in the enforcement policies. We believe our proposed amount ~~of the civil penalty~~ provides assurance that you will fully appreciate the significance of the violations and will result in an adequate deterrent against future similar violations by you and other licensees of plants under construction. We have for convenience and clarity categorized the items in the Notice of Violation at the Severity Levels described in accordance with the Interim Enforcement Policy published in the Federal Register, 45 FR 66754 (October 7, 1980).

The results of this investigation and our review of your 10 CFR 50, Appendix B, noncompliance history revealed ~~two~~ an additional matters which ~~are~~ is of significant concern to us. ~~The two include~~ related to inadequate corrective actions. ~~and harassment/intimidation of Quality Control Inspectors.~~

~~The first matter of concern to us is your 10 CFR 50, Appendix B, noncompliance history and lack of adequate corrective action.~~ No IP The results of our normal inspection program for the construction and testing of Zimmer indicate you were found in noncompliance forty-four times since December 1979 with thirteen of the eighteen different criteria of Appendix B. You will recall that we expressed concern with your relatively poor performance in this area during our Systematic Assessment of Licensee Performance review on December 16, 1980. This poor history of compliance with Appendix B when considered with the recent findings of the investigation indicates that your corrective actions really only addressed individual problems and not the underlying programmatic causal factors. Consequently, we request that you review your history of noncompliance with Appendix B for the past two years and in your response to this letter provide those steps you have taken to address and correct the underlying programmatic causal factors related to the noncompliances.

~~The second matter relates to harassment and intimidation of Quality Control Inspectors. The investigation revealed harassment and intimidation did occur; however, we were unable to establish that these activities resulted in loss of inspector independence as defined in Criterion I of 10 CFR 50, Appendix B. We determined that you and your contractors apparently did~~

not condone these activities that are clearly not conducive to effective implementation of your quality assurance program; however, corrective actions had not been effective in stopping them. Therefore, we request in your response to this letter that you include measures you have taken and intend to take to assure harassment and intimidation of Quality Control Inspectors by any means and by any persons is stopped.

You are required to respond to the Notice of Violation and in preparing your response you should follow the instructions in Appendix A. You should give particular attention to those actions designed to assure continuing compliance with NRC requirements. Your written reply to this letter and the results of future inspections will be considered in determining whether further enforcement action is appropriate.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosure will be placed in the NRC Public Document Room.

Sincerely,

Victor Stello, Jr., Director
Office of Inspection and Enforcement

Enclosure: Appendix A, Notice of Violation and Proposed Imposition of Civil Penalty and Appendix B, Cross References: Noncompliance to Report Details

cc w/encl:
E. A. Borgmann, Senior Vice President, Engineering Services and Electric Production
J. R. Schott, Plant Superintendent
DMB/Document Control Desk (RIDS)
Resident Inspector, RIII
Harold W. Kohn, Power Siting Commission
Citizens Against a Radioactive Environment
Helen W. Evans, State of Ohio

Appendix B

CROSS REFERENCES: NONCOMPLIANCE TO REPORT DETAILS

Noncompliance	Criterion	Report Section
A.1	XVII	4.3.3.7
A.2	~~XVII~~	4.1.3
~~A.3~~	~~XVII~~	
~~A.4~~	~~XVII~~	
B.1	XV	4.1.3 and Attachment A
B.2	XV	4.1.3 "
B.3	XV	4.1.3 "
B.4	XV	4.1.3 "
B.5	XV	4.1.3 "
~~C.1~~ C.2.a	XV	7.1.1, 7.1.2 and Figure 7.1
~~C.2~~ C.2.b	XV	5.10.3.2
~~D.1~~ C.3.a	XVI	4.3.3.6.1
~~D.2~~ C.3.b	XVI	4.3.3.6.3
~~D.3~~ C.3.c	XVI	7.3.3
~~E~~ C.4	VIII	7.1.1, 7.1.2 and Figure 7.1
~~E.1~~ C.5.a	III	7.2.2.1
~~E.2~~ C.5.b	III	7.2.2.2
~~E.3~~ C.5.c	III	7.2.2.4
~~E.4~~ C.5.d	III	7.2.2.4
~~E.5~~ C.5.e	III	7.2.2.4
~~G.1~~ C.6.a	III	6.2.1
~~G.2~~ C.6.b	III	6.2.1
~~H~~ C.7	XI	5.8.3.10
~~L.1~~ C.8.a	III	5.10.3.3.6
~~L.2~~ C.8.b	III	5.10.3.3.5
~~L.3~~ C.8.c	III	5.10.3.3.3.b
~~L.4~~ C.8.d	III	5.10.3.2
~~J.1~~ C.9.a	X	7.2.2.3
~~J.2~~ C.9.b	X	5.10.3.2
~~K.1~~ C.10.a	V	6.3.1
~~K.2~~ C.10.b	V	6.3.1
~~L~~ C.11	VII	7.1.4
~~M~~ C.12	XVII	7.1.5
~~N~~ C.13	XVIII	7.3.1

your failure to exercise adequate oversight and control of your principal contractors, to whom you had delegated the work of establishing and executing quality assurance programs, and thereby fulfill your responsibility of assuring the ~~proper~~ effective execution of ~~that~~ quality assurance program. Your failure manifested itself in

ZIMM/1C DRAFT 10/15/81

Appendix A

NOTICE OF VIOLATION

AND

PROPOSED IMPOSITION OF CIVIL PENALTIES

Included in the breakdown were findings we consider to be particularly disturbing relating to false records and harassment and intimidation of quality control inspectors.

Cincinnati Gas and Electric Company
Wm. H. Zimmer Nuclear Power Station

Docket No. 50-358
Construction Permit No. CPPR-88
EA No. 81-

As a result of the investigation conducted at the Wm. H. Zimmer Nuclear Power Station in Moscow, Ohio, on January 12 - October 9, 1981, the violations listed below with multiple examples ~~were~~ identified. The numerous examples of the violations demonstrate a widespread ~~deficiency~~ breakdown in the implementation of your quality assurance program and caused the NRC to require an extensive quality confirmation program to provide confidence that safety-related structures, systems, and components will perform satisfactorily in service. Because of the safety significance of the quality assurance program breakdown ~~that quality assurance program breakdown~~, in accordance with the Interim Enforcement Policy, 45 FR 66754 (October 7, 1980), the Nuclear Regulatory Commission proposes to impose ~~a~~ civil penalties pursuant to Section 234 of the Atomic Energy Act of 1954, as amended, ("Act"), 42 U.S.C. 2282, PL 96-295, and 10 CFR 2.205 in the amounts set forth for the violations listed below.

INSERT ON NEXT PAGE

C. 10 CFR 50, Appendix B, Criterion II requires holders of construction permits for nuclear powerplant to document, by written policies, procedures, or instructions, a quality assurance program which complies with the requirements of Appendix B for all activities affecting the quality of safety-related structures, systems, and components and to implement that program in accordance with those documents.

Contrary to the above, Cincinnati Gas and Electric Company and its contractors did not adequately document and implement a quality assurance program to comply with the requirements of Appendix B as evidenced by numerous examples of that noncompliance as follows:

A. 10 CFR 50, Appendix B, Criterion XVII states, in part, "Sufficient records shall be maintained to furnish evidence of activities affecting quality."

Contrary to the above, numerous examples of records were identified that did not furnish evidence of activities affecting quality in that they were false ~~misrepresentative~~. Examples of ~~misrepresentative~~ false records are as follows:

The Wm. H. Zimmer QA Manual, Section 1.2.3 describes QC Inspectors as members of QAD (Quality Assurance Division) and Section 1.2.4 states, in part, "QAD has been assigned sufficient ... organizational freedom to identify quality problems..."

Appendix A

B. 10 CFR 50, Appendix B, Criterion I states, in part, "The persons... performing quality assurance functions shall have sufficient... organizational freedom to identify quality problems... including sufficient independence from cost and schedule."

Contrary to the above, QC Inspectors did not have sufficient freedom to identify quality problems and were not sufficiently independent from cost and schedule. The results of interviews indicate that some QC Inspectors were: (a) harassed by construction workers and supervisors; (b) not always supported by QC management, and (c) intimidated. Although there was no evidence to suggest that these activities resulted in the acceptance by the inspectors of substandard conditions, they were not conducive to the effective implementation of an effective quality assurance program. ~~Examples~~ The following ~~that the findings~~ of insufficient freedom of QC Inspectors, including insufficient freedom from cost and schedule.

1. Five QC Inspectors interviewed executed signed sworn statements wherein they claimed they were doused with water (while engaged in the performance of inspection duties) by construction personnel.

2. A QC inspection supervisor claimed that over his objections qualified QC Inspectors who were doing thorough jobs were reassigned by QC management because of complaints by construction personnel. (In some cases, nonconformance reports initiated by these inspectors were improperly voided after the inspectors were reassigned.)

3. Three QC Inspectors executed signed sworn statements wherein they claimed they had been harassed by being searched by security personnel at the request of construction supervisory personnel.

4. A QC Inspector executed a signed sworn statement wherein he claimed the QA Manager had threatened to fire him after construction personnel complained he had used a magnifying glass to visually inspect a weld when in fact he was using a mirror and either device was an acceptable tool.

This is a Severity Level II violation (Supplement II). (Civil Penalty - $75,000)

This needs to be typed longhand

1. Isometric drawings or other records did not furnish evidence of the actual piping components installed in the 10 pipelines in the diesel generator cooling water, starting air and fuel oil systems, in that the heat numbers recorded on the drawings did not match the heat numbers marked on the respective components. The 10 pipelines were:

1DG28AB1	1DGC5AA3/4
1DG27AB1	1DGF6AA1/2
1DG01AB1	1DGC5BA3/4
1DGF2AA1/2	1DGF6BA1/2
1DG28AE1	1DG25AC2

2. The Kaiser Nonconformance Reporting Log did not reflect all reports initiated as evidenced by the following:

   a. The original entry for a report assigned the number CN-4309 relating to deficient weld fit-up was eliminated by whiting-out and there was no other record of this report in the NR system.

   b. The original entry for a report assigned the number CN-5412 relating to violation of a hold tag was eliminated by whiting-out and there was no other record of this report in the NR system.

   c. A report (NRC-0001) initiated by a QC Inspector on February 11, 1981, relating to excessive weld weave assigned a number and there was no other record of this report in the NR system.

3. Written statements as to planned actions were made to justify voiding reports E-1661, E-1662, and E-2466 and those actions were not taken.

INSERT NEW B

This is a Severity Level III violation (Supplement II).

INSERT C FROM P1

(Civil Penalty $50,000)

1. 10 CFR 50, Appendix B, Criterion XV states, in part, "Nonconforming items shall be reviewed and accepted, rejected, repaired or reworked in accordance with documented procedures."

Kaiser Procedure QACMI G-4, "Nonconforming Material Control," provides detailed instructions for the review and disposition of reports (Nonconformance Reports) of nonconforming items.

Contrary to the provisions of QACMI G-4, the sample of NRs reviewed indicate significant deficiencies with the nonconformance reporting system in the areas of voiding of reports, not entering reports into the system, improper dispositioning of reports, and incomplete report files. The deficiencies identified in the sample reviewed were as follows:

a. Five ~~Four~~ NRs related to documentation deficiencies had been improperly voided in that there was no adequate justification for the voiding. (NR-E-1777, NR-E-2191, NR-E-2233, NR-E-5108, NR-E-2237).
4/30/79 2/22/80 1/24/80 6/20/80 12/9/79

b. One NR related to nondestructive examination of a T-quencher weld had been erroneously closed (not voided) by administrative error. (NR-E-2996).
3/17/81

c. Four reports had been voided by personnel other than the QA Manager (CN-5122, CN-5476, CN-5477, CN-5479).
1/2/81 2/27/81 2/27/81 2/27/81

d. In one case during "revisions" some nonconforming items were removed from a NR without adequate justification. (NR-E-2466).
6/30/80

e. The following eleven reports had not been issued NR numbers and copies of the reports had not been retained in the Site Document Center:

CN-4930	CN-4958
CN-4931	CN-4959
CN-4955	CN-5122
CN-4956	CN-5476
CN-4957	CN-5477
	CN-5479

(The copies of the NRs reviewed by the investigator were provided by an alleger.

2. 10 CFR 50, Appendix B, Criterion XV states, in part, "Measures shall be established to control materials, parts, or components which do not conform to requirements in order to prevent their inadvertent use or installation."

The Wm. H. Zimmer QA Manual, Section 15.2.2 states, "HJK is responsible for identifying and reporting nonconformances in receiving inspection, construction, or testing activities which are delegated to HJK Quality Assurance Procedures to assure that nonconforming items are conspicuously marked to prevent their inadvertent use or installation.

AWS Code D1.1-1972, Section 3 and 8.1.5 define requirements for weld quality and address slag, weld profiles, blowholes, porosity, and undercut.

AISC, Seventh Edition (1969), Page 4.113 requires 1/2 inch minimum radius for re-entrant corners.

Contrary to the above:

a
1. Based on an inspection of the 25 structural hanger support beams described in Item 4 below,

   (1) Several welds on 9 beams did not conform with AWS D1.1-1972 requirements in that they contained unacceptable slag, weld profiles, blowholes, porosity, and/or undercut.

   (2) Five beams did not conform with AISC requirements in that the re-entrant corners were notched, creating potential stress risers, instead of being rounded with required radii.

   (3) Four beams, 2 of which had unacceptable welds as described in Item ~~C.1.a~~ C.2.a.(1) above, did not conform with design documents in that they were not specified on any design document.

b
2. Based on an inspection of about 100 cable tray hangers in the Cable Spreading Room, 4 did not conform with AWS D1.1-1972 requirements in that the welds contained unacceptable slag, weld profiles, blowholes, porosity, and/or undercut.

The nonconforming conditions were not controlled in that they were not conspicuously marked to prevent their inadvertent use.

3. 10 CFR 50, Appendix B, Criterion XVI states, in part, "Measures shall be established to assure that conditions adverse to quality, such as... deviations...and nonconformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition."

The Wm. H. Zimmer QA Manual, Section 16.5 states, in part, "Vendors, contractors, and subcontractors are required to determine cause and corrective action to prevent recurrence of errors which could result in significant conditions adverse to quality."

ASME Code, Section III-1971 Edition, Article NB-3661.5(b) states, in part, "...a gap of approximately 1/16 in. shall be provided between the end of the pipe and the bottom of the socket before welding."

ASME Code, Section III-1971 Edition , Winter 1972 Addenda, Articles NA-4130(a), NA-4420, NA-4510, NA-4442.1, NB-4122, NA-4451, NB-4230, and NB-3661.5(b) require, in part, in-process inspections for pipe fitup, weld procedure, weld filler metal traceability, and welder qualifications...

Contrary to the above, the NRC inspectors identified the following nonconforming conditions that had not been corrected and action had not been taken to preclude their repetition:

a
~~1~~. The licensee identified that the socket engagement (fitup) for more than 439 socket welds was not verified in accordance with ASME Code, Section III-1971 Edition, Article NB-3661.5(b) and the condition was not corrected in that the corrective action was not commensurate with the ASME Code. The welds dated back to 1979.

b
~~2~~. The licensee was aware that the in-process inspections for more than 22 welds in the Diesel Generator cooling water, starting air, and fuel oil piping systems were not performed by Kaiser in accordance with ASME Code, Section III-1971 Edition, Article NB-3661.5(b), et. al., and the condition was not corrected in that the corrective action was not commensurate with the ASME Code.

c
~~3~~. Five licensee QA audits (audit performed 8/8-9/74 - no number, and Audit Nos. 78/07, 78/09, 78/10, 80/04) of Sargent & Lundy identified repetitive problems concerning S&L not performing certain design calculations, reviews, and verifications and action was not taken to preclude repetition.

4
~~B~~. 10 CFR 50, Appendix B, Criterion VIII states, in part, "Measures shall be established for the identification and control of materials... These measures shall assure that identification of the item is maintained..."

The Wm. H. Zimmer QA Manual, Section 8.2 states, in part, "H. J. Kaiser Company procedures provide that within the H. J. Kaiser Company jurisdiction the identification of items will be maintained by the method specified on the drawings, such as heat number, part number, serial number, or other appropriate means. This identification may be on the item or on records traceable to the item. The identification is maintained throughout fabrication, erection, and installation. The identification is maintained and usable in the operation and maintenance program."

Contrary to the above, based on an inspection of approximately 25 hanger support beams located in the Blue Switchgear Room and the Cable Spreading Room, the identification of the material in 9 of those beams was not maintained to enable verification of quality.

The above examples raise questions about the adequacy of the quality of installed materials as well as the obvious paperwork deficiencies.

5
~~A~~. 10 CFR 50, Appendix B, Criterion III states, in part, "Measures shall be established to assure that applicable regulatory requirements and the design basis...are translated into...drawings..."

The Wm. H. Zimmer FSAR, Section 8, provides the design basis for electrical cable separation that includes the following:

Associated cables (Green/White, Blue/White, and Yellow/White) from more than one Division cannot be routed in the same raceway. (FSAR Paragraph 8.3.1.13.2)

Vertical separation of three feet or more must be maintained between cables from different Divisions. (FSAR Paragraph 8.3.1.11.2.1.d)

Instrument (low-level signal) cables cannot be routed in the same raceway with power and control cables. (FSAR Paragraph 8.3.1.12.1.3)

The Wm. H. Zimmer QA Manual, Section 3.3.2. states, "Composite...drawings are prepared, translating the design concepts into layouts of structures, systems, and components necessary for the construction of the plant."

Contrary to the above, as of March 1981, the FSAR design basis for electrical cable separation had not been translated into the drawings which governed the following cable installation deficiencies in the Cable Spreading Room:

a
1. Associated Cable (Yellow/White) No. RE053 for Division 1 was routed in the same raceway (two-inch conduit and Class IE Sleeve No. 79) as Associated Cable (Blue/White) No. RE058 for Division 2. Also, Associated Cable No. RE053 was routed so that in places there was only a vertical separation of four inches between it and cables in Blue Tray No. 2072C for Division 2.

b
2. Instrument Cable (Green) No. WS714 and others for Division 3 were routed in the same raceway (Tray No. 4638B) as Associated Control Cables (Yellow/White and Blue/White) for Divisions 1 and 2. This deficiency was due, in part, to a design which specified the installation of a Green Instrument Tray (No. 3029K) inside a White Control Tray (No. 4638B).

c
3. Many Associated Cables from all three Divisions were routed in the same raceway (White Tray No. 4080K) including Cable (Blue/White) No. TI192, Cable (Yellow/White) No. RR781, and Cable (Green/White) No. TI816.

d
4. Associated Cables (Yellow/White) No. TI942 and No. TI943 for Division 1 were routed in the same raceway (White Tray Riser No. RK4627) as Associated Cables (Blue/White) No. TI808 and No. TI760 for Division 2.

e
5. Many Associated Cables (Yellow/White) for Division 1 were routed in the same raceway (White Tray Riser No. 4139) as Associated Cables (Blue/White) for Division 2.

The above installation deficiencies were noted during brief tours of the Cable Spreading Room while pursuing other unrelated matters.

6 ~~8~~. 10 CFR 50, Appendix B, Criterion III states, in part, "Design control measures shall be applied to...the delineation of acceptance criteria for inspections and tests."

The Wm. H. Zimmer QA Manual, Section 3.13.1 states, in part, "Design control measures also apply to delineation of acceptable criteria for inspections and tests."

Weld acceptance criteria are required by the ASME Code, Section III-1971 Edition and AWS D1.1-1972 Code.

Contrary to the above:

a ~~1~~. The weld acceptance criteria used by H. J. Kaiser Company from July 1980 to January 1981 were not applied to weld inspections during that period in that the weld acceptance criteria for such items as the drywell support steel were deleted.

b ~~2~~. The acceptance criteria for Weld 55H (isometric drawing PSK-1WS-32) performed on Service Water System Line No. 1WS17A18 by H. J. Kaiser Company in November 1979 were not applied in that they were designated as not applicable.

7 ~~11~~. 10 CFR 50, Appendix B, Criterion XI states, in part, "Test procedures shall include provisions for assuring that all prerequisites for the given test have been met... Test results shall be evaluated to assure that test requirements have been satisfied."

The Wm. H. Zimmer QA Manual, Section 11.1 states, in part, "Test programs to assure that essential components, systems, and structures will perform satisfactorily in service are planned and performed in accordance with written procedures and instructions at vendor shops and at the construction site."

M. W. Kellogg Co. (pipe manufacturer and agency performing the prefabricated pipe weld radiography in question) Radiographic Procedure No. ES-414, dated September 26, 1972, Paragraph 4.1.8, states, "Wherever required, shims shall be used to produce a total thickness under the penetrameter equal to the nominal thickness of the base metal plus the height of the crown or reinforcement."

ASME Section III-1971 Edition, Winter 1972 Addenda, Appendix IX, Paragraph IX-3334.4 states, in part, "The shim thickness shall be selected so that the total thickness being radiographed under the penetrameter is the same as the total weld thickness..."

Contrary to the above, the NRC inspectors reviewed approximately 800 radiographs involving 206 welds and determined that 187 of the radiographs did not comply with the ASME Code in that there was insufficient shimming of the penetrameter. The radiographed welds were prefabricated pipe welds in such systems as feedwater, diesel generator support systems, and main steam.

B

I. 10 CFR 50, Appendix B, Criterion III states, in part, "These measures [design control] shall include provisions to assure that appropriate quality standards are specified and included in design documents and that deviations from such standards are controlled...The design control measures shall provide for verifying or checking the adequacy of design."

The Wm. H. Zimmer QA Manual, Section 3.4 states, in part, "Design reviews are conducted to assure that the appropriate quality standards are specified and included in design documents."

The Wm. H. Zimmer QA Manual, Section 3.6 states, "Measures are established to assure that any deviations from the applicable standards are controlled."

Wm. H. Zimmer QA Manual, Section 3.11.2 states, in part, "At S&L, design verification reviews are performed...."

The Wm. H. Zimmer FSAR states that cable ampacity is based on IPCEA Publication No. P-46-426. Also regarding cable ampacity, the FSAR states "the summation of the cross-sectional areas of the cables shall not exceed 50% of the tray usable cross-sectional area or two layers of cables, whichever is larger, but not to exceed 60% of the cross-sectional area in any case."

AWS D1.1-1972 Code, Section 3.6.4, states, "For building and tubular structures, undercut shall be no more than 0.01 inch deep when its direction is transverse to primary tensile stress in the part that is undercut, nor more than 1/32 inch for all other situations."

Contrary to the above:

a.

I. As of March 1981, design control measures had not been established to assure that deviations from design conditions (quality standards) identified by Sargent & Lundy engineers were controlled. For example, Sargent & Lundy noted on a calculation sheet dated December 27, 1979, that the design thermal loading for two power cables (VC016 and VC073) in Yellow Tray No. 1057A would allow the cables to be thermally overloaded and no program existed to control those design deviations.

b

II. As of March 1981, design control measures had not been established by Sargent & Lundy to provide for verifying or checking the adequacy of the design for the thermal loading of power cable sleeves and the physical weight loading of cable trays.

c
8. As of March 1981, the cable ampacity design by Sargent & Lundy was not based on IPCEA P-46-426 (appropriate quality standard). The cable ampacity was instead based on IEEE Paper 70TP557-PWR (1970), IPCEA P-54-440, and Sargent & Lundy Standard ESA-114a.

d
4. As of March 1981, the design allowable undercut on cable tray hanger welds was not based on AWS D1.1-1972 Code (appropriate quality standard). The design undercut was instead based on Sargent & Lundy Specification H-2713, Supplement 7, Sargent & Lundy Standard EB-117, and H. J. Kaiser Procedure SPPM No. 4.6, "Visual Examination," Revision 8, Paragraph 5.2.9, allowed up to 1/16 inch undercut.

9
8. 10 CFR 50, Appendix B, Criterion X states, in part, "A program for inspection of activities affecting quality shall be established and executed by or for the organization performing the activity to verify conformance with the documented instructions, procedures, and drawings for accomplishing the activity."

The Wm. H. Zimmer QA Manual, Section 10.1.2 states, in part, "Inspections are performed in accordance with written procedures which include requirements for check lists and other appropriate documentation of the inspections and tests performed."

AWS D1.1-1972 Code, Section 3.10.1, requires work to be completed and accepted before painting.

Contrary to the above:

a
1. As of March 1981, a QC inspection program had not been established to require verification of separation of electrical cables routed from the Cable Spreading Room to the Control Room. An example of a nonconforming condition that should have been identified by such a program was Blue Cables RI103 and CM111 that had been routed into Tray Riser (Green) No. 3025A, which extended from Tray (Blue) No. 2077A in the Cable Spreading Room to the Control Room.

b
2. The programs established for in-process and final inspections of welds on 180 cable tray hangers located in the Cable Spreading Room were not executed as required in the AWS D1.1-1972 Code. Specifically, the final weld inspections were made after the welds were painted (Galvanox).

10
K. 10 CFR 50, Appendix B, Criterion V states, in part, "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings."

The Wm. H. Zimmer QA Manual, Section 5.1 states, "Construction, fabrication, and manufacturing activities which affect the quality of the facility are accomplished in accordance with written instructions, procedures, and drawings which prescribe acceptable methods of carrying out those activities."

The Wm. H. Zimmer QA Manual, Section 3.12 states, in part, "Design changes...including field changes, are subject to design change control measures commensurate with those applied to the original design."

Contrary to the above:

a

I. Kaiser Procedure QACMI G-14, "Surveillance Reports," was not appropriate to the circumstances in that it allowed in-process nonconformances which constitute field changes to be dispositioned within 30 days without being subjected to design control measures commensurate with those applied to the original design. Examples of nonconformances so dispositioned were identified in SRs F-2899, F-2903, and F-2914.

b

I. Kaiser Procedure QACMI G-14 was not followed in that SRs F-2909, F-3070, F-3071, F-3072, F-3073, F-3074, F-3075, F-3076, F-3083, and F-7019 were not dispositioned within 30 days and were not transferred to Nonconformance Reports as required by Paragraph 5 of QACMI G-14.

11

L. 10 CFR 50, Appendix B, Criterion VII states, in part, "The effectiveness of the control of quality by contractors and subcontractors shall be assessed by the applicant or designee...."

The Wm. H. Zimmer QA Manual, Section 7.3.1 states, in part, "As part of the vendor selection process, S&L makes an independent evaluation of the bidders' QA programs as a part of their total bid evaluation."

Contrary to the above, as of March 1981, neither the licensee nor designee (Sargent & Lundy) had assessed the effectiveness of the control of quality by vendors who had supplied structural beams. Specifically, evaluations of the vendor (U.S. Steel Supply, PBI Steel Exchange, and Frank Adams Company) quality assurance programs for control of mill certifications and structural beams were not performed.

12

M. 10 CFR 50, Appendix B, Criterion XVII states, in part, "Sufficient records shall be maintained to furnish evidence of activities affecting quality. The records shall include...monitoring of work performance, and...include closely-related data such as qualifications of personnel, procedures, and equipment."

The Wm. H. Zimmer QA Manual, Section 17.1.4 states, in part, "Documentation of all performance surveillance includes personnel identification and qualification, procedure, type observation, date of performance, person or organization monitored, results and corrective action if required."

Contrary to the above, the Bristol Steel and Iron Works Quality Control Steel Erection Report, which was a generic form for monitoring in-process steel erection, did not identify closely related data such as weld procedure numbers, types of welding material, welder identification, and specific welds inspected.

13 ~~X~~. 10 CFR 50, Appendix B, Criterion XVIII states, in part, "A comprehensive system of planned and periodic audits shall be carried out to verify compliance with all aspects of the quality assurance program and to determine the effectiveness of the program."

The Wm. H. Zimmer QA Manual, Section 18.1 states, in part, "QA Division conducts a comprehensive system of planned and periodic audits of S&L, HJK...to verify compliance with all aspects of the quality assurance program."

Contrary to the above, during the past 9 years the licensee's QA Division did not perform an audit of the Sargent & Lundy nonconformance program.

This is a Severity Level II violation (Supplement II).

(Civil Penalty - $100,000)

Some of the examples of the violations continued during a period that spanned both the old and new enforcement policies. Application of either policy or a combination of both allows a large civil penalty. However, after weighing this matter relative to other civil penalties that have been issued to licensees of plants under construction and the change in enforcement policy ~~considering the financial impact and the potential construction schedule impact of the Quality Confirmation Program~~, we believe a civil penalty in the amount proposed to be appropriate. We believe this exercise of discretion in determining the amount of the civil penalty will result in assurance that the licensee fully appreciates the significance of the violation and will result in an adequate deterrent against future similar violations by licensees of plants under construction.

Pursuant to the provisions of 10 CFR 2.201, Cincinnati Gas and Electric Company is hereby required to submit to this office within 30 days of the date of this Notice a written statement or explanation, including for each ~~example of the~~ alleged violation: (1) admission or denial; (2) the reasons for the violation if admitted; (3) the corrective steps which have been taken and the results achieved; (4) the corrective steps which will be taken to avoid further violations; and (5) the date when full compliance will be achieved. Any statement or explanation may incorporate by specific reference

(e.g., giving page and paragraph numbers) the provisions of your Quality Confirmation Program and your actions in response to our Immediate Action Letter of April 8, 1981. Consideration may be given to extending the response time for good cause shown. Under the authority of Section 182 of the Act, 42 U.S.C. 2232, this response shall be submitted under oath or affirmation.

Within the same time as provided for the response required above under 10 CFR 2.201, Cincinnati Gas and Electric Company may pay the civil penalty in the cumulative amount of ~~One~~ Two Hundred and Fifty Thousand Dollars or may protest imposition of the civil penalty in whole or in part by a written answer. Should Cincinnati Gas and Electric Company fail to answer within the time specified, this office will issue an Order imposing the civil penalty in the amount proposed above. Should Cincinnati Gas and Electric Company elect to file an answer in accordance with 10 CFR 2.205 protesting the civil penalty, such answer may: (1) deny the violations listed in this Notice in whole or in part; (2) demonstrate extenuating circumstances; (3) show error in this Notice; or (4) show other reasons why the penalty should not be imposed. In addition to protesting the civil penalty in whole or in part, such answer may request remission or mitigation of the penalty. Any answer in accordance with 10 CFR 2.205 should be set forth separately from the statement or explanation in reply pursuant to 10 CFR 2.201, but may incorporate by specific reference (e.g., giving page and paragraph numbers) to avoid repetition. Cincinnati Gas and Electric Company's attention is directed to the other provisions of 10 CFR 2.205, regarding the procedure for imposing a civil penalty.

Upon failure to pay any civil penalty due, which has been subsequently determined in accordance with the applicable provisions of 10 CFR 2.205, this matter may be referred to the Attorney General, and the penalty, unless compromised, remitted, or mitigated, may be collected by civil action pursuant to Section 234c of the Act, 42 U.S.C. 2282.

The responses directed by this Notice are not subject to the clearance procedures of the Office of Management and Budget as required by the Paperwork Reduction Act of 1980, PL 96-511.

FOR THE NUCLEAR REGULATORY COMMISSION

Victor Stello, Jr., Director
Office of Inspection and Enforcement

Dated at Bethesda, Maryland
this day of , 1981

Cincinnati Gas and Electric
Company
ATTN: Mr. W. H. Dickhoner
President
139 East 4th Street
Cincinnati, OH 45201

Gentlemen:

This refers to the investigation conducted by Region III during the period January 12 to October 9, 1981, of construction activities at the Zimmer site. The investigation was initiated as a result of allegations made to the NRC by a Quality Control Inspector who formerly worked at the Zimmer site and by the Government Accountability Project of the Institute for Policy Studies (a non-governmental agency) on behalf of Mr. Thomas Applegate. The results of the continuing investigation reveal a widespread breakdown ~~of the implementation~~ of your quality assurance program as evidenced by numerous examples of noncompliance with eleven of the eighteen different criteria for a quality assurance program as set forth in 10 CFR 50, Appendix B. The cause of the breakdown was your failure to exercise adequate oversight and control of your principal contractors to whom you had delegated the work of establishing and executing quality assurance programs. You thereby failed to fulfill your vital responsibility as described in Criterion I of Appendix B to assure the execution of a quality assurance program. The safety concern of your quality assurance program breakdown was discussed during an enforcement conference at our Region III office in Glen Ellyn, Illinois, on August 5, 1981, attended by you and members of your staff and the NRC Region III staff.

Two of the violations (Items A and B) are of particular concern to us because of the very essential role they play in the execution of an effective quality assurance program. These two violations relate to false records and to harassment/intimidation of quality control inspectors.

With regard to false records, the examples we identified raise serious questions as to the accuracy of ~~all~~ quality records at the site. Our concern in this area served as a major factor in requiring the conduct of a confirmation program to be completed by you to furnish evidence of plant quality. Because the NRC inspection program is a sampling program that relies heavily on licensee records, the importance of accurate records cannot be overemphasized. Accordingly, we have addressed this matter as a separate violation and assessed a substantial civil penalty for it.

With regard to harassment/intimidation of Quality Control Inspectors, we have also addressed this matter as a separate violation and assessed a substantial civil penalty for it. Harassment/intimidation of quality control inspectors is clearly a barrier to effective implementation of a quality assurance program and results in loss of the organizational independence described in Criterion I of Appendix B. The importance of this matter is reflected in the recent amendment (Public Law 96-295, June 30, 1980) to the Atomic Energy Act of 1954, which added Section

235 relating to protection of nuclear inspectors such as your Quality Control Inspectors.

The impact of the identified quality assurance deficiencies on the actual construction has yet to be determined. Limited independent measurements were performed by the NRC in selected areas of concern in an attempt to characterize the actual safety significance of these deficiencies. Although a few problems requiring corrective action were identified (i.e., four unacceptably installed pipe hangers), the majority of the tests and examinations did not disclose hardware problems. Recognizing the significant quality assurance problems identified during this investigation, the NRC has required the establishment of a comprehensive Quality Confirmation Program to determine the quality of plant systems important to nuclear safety. The NRC will confirm the adequacy of the program and is making additional independent verifications. Deficiencies identified by these programs will require resolution prior to issuance of an Operating License.

Notwithstanding the fact that serious construction deficiencies have not been identified, in order to emphasize the significance NRC attaches to breakdowns of quality assurance programs such as the breakdown that occurred at Zimmer that have a high potential for serious construction deficiencies, we propose to impose civil penalties in the cumulative amount of Two Hundred and Fifty Thousand Dollars for the matters in the Notice of Violation.

Some of the examples in the Notice of Violation occurred under the revised enforcement policy and some prior to that time. In this regard we have exercised discretion in arriving at the amount of the proposed civil penalties which is less than allowed by either the old or new enforcement policies or a combination of the two. In arriving at the amount of the proposed civil penalties we considered the amount of the civil penalties that have been issued to licensees of other plants under construction and the changes in the enforcement policies. We believe our proposed amount provides assurance that you will fully appreciate the significance of the violations and will result in an adequate deterrent against future similar violations by you and other licensees of plants under construction. We have for convenience and clarity categorized the items in the Notice of Violation at the Severity Levels described in accordance with the Interim Enforcement Policy published in the Federal Register, 45 FR 66754 (October 7, 1980).

The results of this investigation and our review of your 10 CFR 50, Appendix B, noncompliance history reveal an additional matter which is of significant concern to us related to inadequate corrective actions. The results of our normal inspection program for the construction and testing of Zimmer indicate you were found in noncompliance forty-four times since December 1979 with thirteen of the eighteen different criteria of Appendix B. You will recall that we expressed concern with your relatively poor performance in this area during our Systematic Assessment of Licensee Performance review on

December 16, 1980. This poor history of compliance with Appendix B when considered with the recent findings of the investigation indicates that your corrective actions really only addressed individual problems and not the underlying programmatic causal factors. Consequently, we request that you review your history of noncompliance with Appendix B for the past two years and in your response to this letter provide those steps you have taken to address and correct the underlying programmatic causal factors related to the noncompliances.

You are required to respond to the Notice of Violation and in preparing your response you should follow the instructions in Appendix A. You should give particular attention to those actions designed to assure continuing compliance with NRC requirements. Your written reply to this letter and the results of future inspections will be considered in determining whether further enforcement action is appropriate.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosure will be placed in the NRC Public Document Room.

Sincerely,

Richard C. DeYoung
~~Victor Stello, Jr.~~, Director
Office of Inspection and Enforcement

Enclosure: Appendix A, Notice of Violation and Proposed Imposition of Civil Penalty and Appendix B, Cross References: Noncompliance to Report Details

cc w/encl:
E. A. Borgmann, Senior Vice President, Engineering Services and Electric Production
J. R. Schott, Plant Superintendent
DMB/Document Control Desk (RIDS)
Resident Inspector, RIII
Harold W. Kohn, Power Siting Commission
Citizens Against a Radioactive Environment
Helen W. Evans, State of Ohio

The responses directed by this ~~Notice~~ letter and the enclosed Appendix A are not subject to the clearance procedures of the Office of Management and Budget as required by the Paperwork Reduction Act of 1980, PL 96-511.

Appendix A

NOTICE OF VIOLATION

AND

PROPOSED IMPOSITION OF CIVIL PENALTIES

Cincinnati Gas and Electric Company
Wm. H. Zimmer Nuclear Power Station

Docket No. 50-358
Construction Permit No. CPPR-88
EA No. 81-

As a result of the investigation conducted at the Wm. H. Zimmer Nuclear Power Station in Moscow, Ohio, on January 12 - October 9, 1981, the violations listed below with multiple examples were identified. The numerous examples of the violations demonstrate your failure to exercise adequate oversight and control of your principal contractors, to whom you had delegated the work of establishing and executing quality assurance programs, and thereby fulfill your responsibility of assuring the effective execution of a quality assurance program. Your failure manifested itself in a widespread breakdown in the implementation of your quality assurance program and caused the NRC to require an extensive quality confirmation program to provide confidence that safety-related structures, systems, and components will perform satisfactorily in service. Included in the breakdown were findings we consider to be particularly disturbing relating to false records and harassment and intimidation of quality control inspectors. Because of the safety significance of the quality assurance program breakdown, in accordance with the Interim Enforcement Policy, 45 FR 66754 (October 7, 1980), the Nuclear Regulatory Commission proposes to impose civil penalties pursuant to Section 234 of the Atomic Energy Act of 1954, as amended, ("Act"), 42 U.S.C. 2282, PL 96-295, and 10 CFR 2.205 in the amounts set forth for the violations listed below.

A. 10 CFR 50, Appendix B, Criterion XVII states, in part, "Sufficient records shall be maintained to furnish evidence of activities affecting quality."

Contrary to the above, numerous examples of records were identified that did not furnish evidence of activities affecting quality in that they were false. Examples of false records are as follows:

1. Isometric drawings or other records did not furnish evidence of the actual piping components installed in the 10 pipelines in the diesel generator cooling water, starting air and fuel oil systems, in that the heat numbers recorded on the drawings did not match the heat numbers marked on the respective components. The 10 pipelines were:

1DG28AB1	1DGC5AA3/4
1DG27AB1	1DGF6AA1/2
1DG01AB1	1DGC5BA3/4
1DGF2AA1/2	1DGF6BA1/2
1DG28AE1	1DG25AC2

2. The Kaiser Nonconformance Reporting Log did not reflect all reports initiated as evidenced by the following:

   a. The original entry for a report (CN-4309) initiated by a QC Inspector on January 7, 1981, ~~assigned the number CN-4309~~ relating to deficient weld fit-up was eliminated by whiting-out and there was no other record of this report in the NR system.

   b. The original entry for a report (CN-5412) initiated by a QC Inspector on February 3, 1981, ~~assigned the number CN-5412~~ relating to violation of a hold tag was eliminated by whiting-out and there was no other record of this report in the NR system.

   c. A report (QC-0001) initiated by a QC Inspector on February 11, 1981, relating to excessive weld weave was not assigned a number and there was no other record of this report in the NR system.

3. Written statements as to planned actions were made to justify voiding reports E-1661 (voided 11/11/80), E-1662 (voided 11/11/80), and E-2466 (voided 6/30/80) and those actions were not taken.

This is a Severity Level II violation (Supplement II).

(Civil Penalty - $75,000)

B. 10 CFR 50, Appendix B, Criterion I states, in part, "The persons... performing quality assurance functions shall have sufficient...organizational freedom to identify quality problems...including sufficient independence from cost and schedule."

The Wm. H. Zimmer QA Manual, Section 1.2.3 describes QC Inspectors as members of QAD (Quality Assurance Division) and Section 1.2.4 states, in part, "QAD has been assigned sufficient...organizational freedom to identify quality problems..."

Contrary to the above, QC Inspectors did not have sufficient freedom to identify quality problems and were not sufficiently independent from cost and schedule. The results of interviews indicate that some QC Inspectors were: (a) harassed by construction workers and supervisors; (b) not always supported by QC management; and (c) intimidated. Although there was no evidence to suggest that these activities resulted in the acceptance by the inspectors of substandard conditions,

4. Written statements (relating to the availability of records which were) made to justify voiding reports E-1777, E-5108, CN-5476, CN-5477, CN-5479 were false.

6.1.2.4 Dow
(6.1.2.17 Taylor not same)

5. A QC Inspector executed a signed sworn statement wherein he claimed ~~that~~ he was struck by a stream of water from a fire extinguisher while performing an inspection.

6.1.2.23 Hong

6. A QC Inspector executed a signed sworn statement wherein he claimed he was threatened with bodily harm by a construction person if he did not pass a weld.

Ex. 31 Dow
(6.1.2.1 [illegible])

7. A Lead QC Inspector ~~Supervisor~~ executed a signed sworn statement wherein he claimed: a. he was accused by the QA Manager for holding up a concrete pour when in fact the delay was caused by the concrete trucks being late.

Ex. 31

~~10. A QC Inspection Supervisor executed a signed sworn statement wherein he claimed~~ b. construction management frequently approached QC Inspectors and challenged their inspection findings and questioned their judgement.

Ex. 31

~~11. A QC Inspection Supervisor executed a signed sworn statement wherein he claimed~~ c. the QA Manager said things like "our job here is to accept not reject and we are here to get this plant built."

6.1.2.17 Ex. 4
(May not be in Detail)

8. A Lead QC Inspector ~~Supervisor~~ executed a signed sworn statement wherein he claimed he was relieved of his inspection duties because he continued to submit legitimate nonconformance reports over construction management objections for deficient welds on pipe support hangers. He also stated that QA management had previously told QC Inspectors to not write anything to make Kaiser look bad.

Ex. 43

9. A ~~Lead~~ QC Inspector executed a signed sworn statement wherein he claimed he was told by QA management to accept inspected items that were almost acceptable.

they were not conducive to the ~~effective~~ implementation of an effective quality assurance program. The following are examples of insufficient freedom of QC Inspectors, including insufficient freedom from cost and schedule:

1. Five QC Inspectors interviewed executed signed sworn statements wherein they claimed they were doused with water (while engaged in the performance of inspection duties) by construction personnel. Two other QC Inspectors made similar statements.

2. A QC Inspection supervisor claimed that over his objections qualified QC Inspectors who were doing thorough jobs were reassigned by QC management because of complaints by construction personnel. [In some cases, nonconformance reports initiated by these inspectors were improperly voided after the inspectors were reassigned.] (CN-5476, CN-5477, CN-5479)

3. ~~Three~~ Two QC Inspectors executed signed sworn statements wherein they claimed they had been harassed by being searched for alcohol by security personnel at the request of construction supervisory personnel. One other QC Inspector made a similar statement.

4. A QC Inspector executed a signed sworn statement wherein he claimed the QA Manager had threatened to fire him after construction personnel complained he had used a magnifying glass to visually inspect a weld when in fact he was using a mirror and either device was an acceptable tool.

INSERT ATTACHED

This is a Severity Level II violation (Supplement II).

(Civil Penalty - $75,000)

C. 10 CFR 50, Appendix B, Criterion II requires holders of construction permits for nuclear powerplants to document, by written policies, procedures, or instructions, a quality assurance program which complies with the requirements of Appendix B for all activities affecting the quality of safety-related structures, systems, and components and to implement that program in accordance with those documents.

Contrary to the above, Cincinnati Gas and Electric Company and its contractors did not adequately document and implement a quality assurance program to comply with the requirements of Appendix B as evidenced by numerous examples of that noncompliance as follows:

1. 10 CFR 50, Appendix B, Criterion XV states, in part, "Nonconforming items shall be reviewed and accepted, rejected, repaired or reworked in accordance with documented procedures."

   Kaiser Procedure QACMI G-4, "Nonconforming Material Control," provides detailed instructions for the review and disposition of reports (Nonconformance Reports) of nonconforming items.

Contrary to the provisions of QACMI G-4, the sample of NRs reviewed indicate significant deficiencies with the nonconformance reporting system in the areas of voiding of reports, not entering reports into the system, improper dispositioning of reports, and incomplete report files. The deficiencies identified ~~in the sample reviewed~~ were as follows:

a. Four NRs related to documentation deficiencies had been improperly voided in that there was no adequate justification for the voiding. (NR-E-1777, NR-E-2191, NR-E-2233, NR-E-2237 voided 12/9/79, NR-E-5108) voided 6/20/80 voided 4/30/79 voided 2/22/80 voided 1/24/80

b. One NR related to nondestructive examination of a T-quencher weld had been erroneously closed (not voided) by administrative error. (NR-E-2996) closed 2/17/81

c. Four reports had been voided by personnel other than the QA Manager. (CN-5122, CN-5476, CN-5477, CN-5479) voided 1/2/81 voided 2/27/81 voided 2/27/81 voided 2/27/81

d. In one case during "revisions" some nonconforming items were removed from a NR without adequate justification. (NR-E-2466) voided 6/30/80

e. The following ~~eleven~~ Fifteen reports had not been issued NR numbers and/or ~~and~~ copies of the reports had not been retained in the Site Document Center:

CN-4309 CN-4389	CN-4958
CN-4930	CN-4959
CN-4931	CN-5122
CN-4955	CN-5412
CN-4956	CN-5476
CN-4957	CN-5477
~~NRC-0001~~	CN-5479
	NRC-0001

(The copies of the NRs reviewed by the investigator were provided by an alleger.)

2. 10 CFR 50, Appendix B, Criterion XV states, in part, "Measures shall be established to control materials, parts, or components which do not conform to requirements in order to prevent their inadvertent use or installation."

The Wm. H. Zimmer QA Manual, Section 15.2.2 states, "HJK is responsible for identifying and reporting nonconformances in receiving inspection, construction, or testing activities which are delegated to HJK Quality Assurance Procedures to assure that nonconforming items are conspicuously marked to prevent their inadvertent use or installation.

~~a. Three NRs related to equipment deficiencies were improperly voided in that the justification for the voiding (the reports were to be separated to track items more easily and reissued as separate NRs) was not fully implemented. (NR-E-1661 voided 11/4/80, NR-E-1662 voided 11/11/80, NR-E-2466 voided 6/30/80)~~

AWS Code D1.1-1972, Section 3 and 8.1.5 define requirements for weld quality and address slag, weld profiles, blowholes, porosity, and undercut.

AISC, Seventh Edition (1969), Page 4.113 requires 1/2 inch minimum radius for re-entrant corners.

Contrary to the above:

a. Based on an inspection of the 25 structural hanger support beams described in Item C.4 below,

   (1) Several welds on 9 beams did not conform with AWS D1.1-1972 requirements in that they contained unacceptable slag, weld profiles, blowholes, porosity, and/or undercut.

   (2) Five beams did not conform with AISC requirements in that the re-entrant corners were notched, creating potential stress risers, instead of being rounded with required radii.

   (3) Four beams, 2 of which had unacceptable welds as described in Item C.2.a.(1) above, did not conform with design documents in that they were not specified on any design document.

b. Based on an inspection of about 100 cable tray hangers in the Cable Spreading Room, 4 did not conform with AWS D1.1-1972 requirements in that the welds contained unacceptable slag, weld profiles, blowholes, porosity, and/or undercut.

The nonconforming conditions were not controlled in that they were not conspicuously marked to prevent their inadvertent use.

3. 10 CFR 50, Appendix B, Criterion XVI states, in part, "Measures shall be established to assure that conditions adverse to quality, such as...deviations...and nonconformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition."

The Wm. H. Zimmer QA Manual, Section 16.5 states, in part, "Vendors, contractors, and subcontractors are required to determine cause and corrective action to prevent recurrence of errors which could result in significant conditions adverse to quality."

ASME Code, Section III-1971 Edition, Article NB-3661.5(b) states, in part, "...a gap of approximately 1/16 in. shall be provided between the end of the pipe and the bottom of the socket before welding."

ASME Code, Section III-1971 Edition , Winter 1972 Addenda, Articles NA-4130(a), NA-4420, NA-4510, NA-4442.1, NB-4122, NA-4451, NB-4230, and NB-3661.5(b) require, in part, in-process inspections for pipe fitup, weld procedure, weld filler metal traceability, and welder qualifications...

Contrary to the above, the NRC inspectors identified the following nonconforming conditions that had not been corrected and action had not been taken to preclude their repetition:

a. The licensee identified that the socket engagement (fitup) for more than 439 socket welds was not verified in accordance with ASME Code, Section III-1971 Edition, Article NB-3661.5(b) and the condition was not corrected in that the corrective action was not commensurate with the ASME Code. The welds dated back to 1979.

b. The licensee was aware that the in-process inspections for more than 22 welds in the Diesel Generator cooling water, starting air, and fuel oil piping systems were not performed by Kaiser in accordance with ASME Code, Section III-1971 Edition, Article NB-3661.5(b), et. al., and the condition was not corrected in that the corrective action was not commensurate with the ASME Code. The welds date back to 1978.

c. Five licensee QA audits (audit performed 8/8-9/74 - no number, and Audit Nos. 78/07, 78/09, 78/10, 80/04) of Sargent & Lundy identified repetitive problems concerning S&L not performing certain design calculations, reviews, and verifications and action was not taken to preclude repetition.

4. 10 CFR 50, Appendix B, Criterion VIII states, in part, "Measures shall be established for the identification and control of materials... These measures shall assure that identification of the item is maintained..."

The Wm. H. Zimmer QA Manual, Section 8.2 states, in part, "H. J. Kaiser Company procedures provide that within the H. J. Kaiser Company jurisdiction the identification of items will be maintained by the method specified on the drawings, such as heat number, part number, serial number, or other appropriate means. This identification may be on the item or on records

traceable to the item. The identification is maintained throughout fabrication, erection, and installation. The identification is maintained and usable in the operation and maintenance program."

Contrary to the above, based on an inspection by NRC inspectors in March 1981 of approximately 25 structural hanger support beams located in the Blue Switchgear Room and the Cable Spreading Room, the identification of the material in 9 of those beams was not maintained to enable verification of quality.

The above examples raise questions about the adequacy of the quality of installed materials as well as the obvious paperwork deficiencies.

5. 10 CFR 50, Appendix B, Criterion III states, in part, "Measures shall be established to assure that applicable regulatory requirements and the design basis...are translated into...drawings..."

The Wm. H. Zimmer FSAR, Section 8, provides the design basis for electrical cable separation that includes the following:

> Associated cables (Green/White, Blue/White, and Yellow/White) from more than one Division cannot be routed in the same raceway. (FSAR Paragraph 8.3.1.13.2)
>
> Vertical separation of three feet or more must be maintained between cables from different Divisions. (FSAR Paragraph 8.3.1.11.2.1.d)
>
> Instrument (low-level signal) cables cannot be routed in the same raceway with power and control cables. (FSAR Paragraph 8.3.1.12.1.3)

The Wm. H. Zimmer QA Manual, Section 3.3.2. states, "Composite... drawings are prepared, translating the design concepts into layouts of structures, systems, and components necessary for the construction of the plant."

Contrary to the above, as of March 1981, the FSAR design basis for electrical cable separation had not been translated into the drawings which governed the following cable installation deficiencies in the Cable Spreading Room:

a. Associated Cable (Yellow/White) No. RE053 for Division 1 was routed in the same raceway (two-inch conduit and Class IE Sleeve No. 79) as Associated Cable (Blue/White) No. RE058 for Division 2. Also, Associated Cable No. RE053 was routed so that in places there was only a vertical separation of four inches between it and cables in Blue Tray No. 2072C for Division 2.

b. Instrument Cable (Green) No. WS714 and others for Division 3 were routed in the same raceway (Tray No. 4638B) as Associated Control Cables (Yellow/White and Blue/White) for Divisions 1 and 2. This deficiency was due, in part, to a design which specified the installation of a Green Instrument Tray (No. 3029K) inside a White Control Tray (No. 4638B).

c. Many Associated Cables from all three Divisions were routed in the same raceway (White Tray No. 4080K) including Cable (Blue/White) No. TI192, Cable (Yellow/White) No. RR781, and Cable (Green/White) No. TI816.

d. Associated Cables (Yellow/White) No. TI942 and No. TI943 for Division 1 were routed in the same raceway (White Tray Riser No. RK4627) as Associated Cables (Blue/White) No. TI808 and No. TI760 for Division 2.

e. Many Associated Cables (Yellow/White) for Division 1 were routed in the same raceway (White Tray Riser No. 4139) as Associated Cables (Blue/White) for Division 2.

The above installation deficiencies were noted during brief tours of the Cable Spreading Room while pursuing other unrelated matters.

6. 10 CFR 50, Appendix B, Criterion III states, in part, "Design control measures shall be applied to...the delineation of acceptance criteria for inspections and tests."

The Wm. H. Zimmer QA Manual, Section 3.13.1 states, in part, "Design control measures also apply to delineation of acceptable criteria for inspections and tests."

Weld acceptance criteria are required by the ASME Code, Section III-1971 Edition and AWS D1.1-1972 Code.

Contrary to the above:

a. The weld acceptance criteria used by H. J. Kaiser Company from July 1980 to January 1981 were not applied to weld inspections during that period in that the weld acceptance criteria for such items as the drywell support steel were deleted.

b. The acceptance criteria for Weld 55H (isometric drawing PSK-1WS-32) performed on Service Water System Line No. 1WS17A18 by H. J. Kaiser Company in November 1979 were not applied in that they were designated as not applicable.

7. 10 CFR 50, Appendix B, Criterion XI states, in part, "Test procedures shall include provisions for assuring that all prerequisites for the given test have been met... Test results shall be evaluated to assure that test requirements have been satisfied."

   The Wm. H. Zimmer QA Manual, Section 11.1 states, in part, "Test programs to assure that essential components, systems, and structures will perform satisfactorily in service are planned and performed in accordance with written procedures and instructions at vendor shops and at the construction site."

   M. W. Kellogg Co. (pipe manufacturer and agency performing the prefabricated pipe weld radiography in question) Radiographic Procedure No. ES-414, dated September 26, 1972, Paragraph 4.1.8, states, "Wherever required, shims shall be used to produce a total thickness under the penetrameter equal to the nominal thickness of the base metal plus the height of the crown or reinforcement."

   ASME Section III-1971 Edition, Winter 1972 Addenda, Appendix IX, Paragraph IX-3334.4 states, in part, "The shim thickness shall be selected so that the total thickness being radiographed under the penetrameter is the same as the total weld thickness..."

   Contrary to the above, the NRC inspectors reviewed approximately 800 radiographs involving 206 welds and determined that 187 of the radiographs did not comply with the ASME Code in that there was insufficient shimming of the penetrameter. The radiographed welds were prefabricated pipe welds in such systems as feedwater, diesel generator support systems, and main steam.

8. 10 CFR 50, Appendix B, Criterion III states, in part, "These measures [design control] shall include provisions to assure that appropriate quality standards are specified and included in design documents and that deviations from such standards are controlled...The design control measures shall provide for verifying or checking the adequacy of design."

   The Wm. H. Zimmer QA Manual, Section 3.4 states, in part, "Design reviews are conducted to assure that the appropriate quality standards are specified and included in design documents."

   The Wm. H. Zimmer QA Manual, Section 3.6 states, "Measures are established to assure that any deviations from the applicable standards are controlled."

   Wm. H. Zimmer QA Manual, Section 3.11.2 states, in part, "At S&L, design verification reviews are performed...."

The Wm. H. Zimmer FSAR states that cable ampacity is based on IPCEA Publication No. P-46-426. Also regarding cable ampacity, the FSAR states "the summation of the cross-sectional areas of the cables shall not exceed 50% of the tray usable cross-sectional area or two layers of cables, whichever is larger, but not to exceed 60% of the cross-sectional area in any case."

AWS D1.1-1972 Code, Section 3.6.4, states, "For building and tubular structures, undercut shall be no more than 0.01 inch deep when its direction is transverse to primary tensile stress in the part that is undercut, nor more than 1/32 inch for all other situations."

Contrary to the above:

a. As of March 1981, design control measures had not been established to assure that deviations from design conditions (quality standards) identified by Sargent & Lundy engineers were controlled. For example, Sargent & Lundy noted on a calculation sheet dated December 27, 1979, that the design thermal loading for two power cables (VC016 and VC073) in Yellow Tray No. 1057A would allow the cables to be thermally overloaded and no program existed to control those design deviations.

b. As of March 1981, design control measures had not been established by Sargent & Lundy to provide for verifying or checking the adequacy of the design for the thermal loading of power cable sleeves and the physical weight loading of cable trays.

c. As of March 1981, the cable ampacity design by Sargent & Lundy was not based on IPCEA P-46-426 (appropriate quality standard). The cable ampacity was instead based on IEEE Paper 70TP55[illegible]-PWR (1970), IPCEA P-54-440, and Sargent & Lundy Standard ESA-114a.

d. As of March 1981, the design allowable undercut on cable tray hanger welds was not based on AWS D1.1-1972 Code (appropriate quality standard). The design undercut was instead based on Sargent & Lundy Specification H-2713, Supplement 7, Sargent & Lundy Standard EB-117, and H. J. Kaiser Procedure SPPM No. 4.6, "Visual Examination," Revision 8, Paragraph 5.2.9, allowed up to 1/16 inch undercut.

9. 10 CFR 50, Appendix B, Criterion X states, in part, "A program for inspection of activities affecting quality shall be established and executed by or for the organization performing the activity to verify conformance with the documented instructions, procedures, and drawings for accomplishing the activity."

The Wm. H. Zimmer QA Manual, Section 10.1.2 states, in part, "Inspections are performed in accordance with written procedures which include requirements for check lists and other appropriate documentation of the inspections and tests performed."

AWS D1.1-1972 Code, Section 3.10.1, requires work to be completed and accepted before painting.

Contrary to the above:

a. As of March 1981, a QC inspection program had not been established to require verification of separation of electrical cables routed from the Cable Spreading Room to the Control Room. An example of a nonconforming condition that should have been identified by such a program was Blue Cables RI103 and CM111 that had been routed into Tray Riser (Green) No. 3025A, which extended from Tray (Blue) No. 2077A in the Cable Spreading Room to the Control Room.

b. The programs established for in-process and final inspections of welds on 180 cable tray hangers located in the Cable Spreading Room were not executed as required in the AWS D1.1-1972 Code. Specifically, the final weld inspections were made after the welds were painted (Galvanox).

10. 10 CFR 50, Appendix B, Criterion V states, in part, "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings."

The Wm. H. Zimmer QA Manual, Section 5.1 states, "Construction, fabrication, and manufacturing activities which affect the quality of the facility are accomplished in accordance with written instructions, procedures, and drawings which prescribe acceptable methods of carrying out those activities."

The Wm. H. Zimmer QA Manual, Section 3.12 states, in part, "Design changes...including field changes, are subject to design change control measures commensurate with those applied to the original design."

Contrary to the above:

a. Kaiser Procedure QACMI G-14, "Surveillance Reports," was not appropriate to the circumstances in that it allowed in-process nonconformances which constitute field changes to be dispositioned within 30 days without being subjected to design control measures commensurate with those applied

to the original design. Examples of nonconformances so dispositioned were identified in SRs F-2899, F-2903, and F-2914.

b. Kaiser Procedure QACMI G-14 was not followed in that SRs F-2909, F-3070, F-3071, F-3072, F-3073, F-3074, F-3075, F-3076, F-3083, and F-7019 were not dispositioned within 30 days and were not transferred to Nonconformance Reports as required by Paragraph 5 of QACMI G-14.

11. 10 CFR 50, Appendix B, Criterion VII states, in part, "The effectiveness of the control of quality by contractors and subcontractors shall be assessed by the applicant or designee...."

The Wm. H. Zimmer QA Manual, Section 7.3.1 states, in part, "As part of the vendor selection process, S&L makes an independent evaluation of the bidders' QA programs as a part of their total bid evaluation."

Contrary to the above, as of March 1981, neither the licensee nor designee (Sargent & Lundy) had assessed the effectiveness of the control of quality by vendors who had supplied structural beams. Specifically, evaluations of the vendor (U.S. Steel Supply, PBI Steel Exchange, and Frank Adams Company) quality assurance programs for control of mill certifications and structural beams were not performed.

12. 10 CFR 50, Appendix B, Criterion XVII states, in part, "Sufficient records shall be maintained to furnish evidence of activities affecting quality. The records shall include...monitoring of work performance, and...include closely-related data such as qualifications of personnel, procedures, and equipment."

The Wm. H. Zimmer QA Manual, Section 17.1.4 states, in part, "Documentation of all performance surveillance includes personnel identification and qualification, procedure, type observation, date of performance, person or organization monitored, results and corrective action if required."

Contrary to the above, the Bristol Steel and Iron Works Quality Control Steel Erection Report, which was a generic form for monitoring in-process steel erection, did not identify closely related data such as weld procedure numbers, types of welding material, welder identification, and specific welds inspected.

13. 10 CFR 50, Appendix B, Criterion XVIII states, in part, "A comprehensive system of planned and periodic audits shall be carried out to verify compliance with all aspects of the quality assurance program and to determine the effectiveness of the program."

The Wm. H. Zimmer QA Manual, Section 18.1 states, in part, "QA Division conducts a comprehensive system of planned and periodic audits of S&L, HJK...to verify compliance with all aspects of the quality assurance program."

Contrary to the above, during the past 9 years the licensee's QA Division did not perform an audit of the Sargent & Lundy nonconformance program.

This is a Severity Level II violation (Supplement II).

(Civil Penalty - $100,000)

~~Some of the examples of the violations continued during a period that spanned both the old and new enforcement policies. Application of either policy or a combination of both allows a large civil penalty. However, after weighing this matter relative to other civil penalties that have been issued to licensees of plants under construction and the changes in enforcement policy, we believe a civil penalty in the amount proposed to be appropriate. We believe this exercise of discretion in determining the amount of the civil penalty will result in assurance that the licensee fully appreciates the significance of the violation and will result in an adequate deterrent against future similar violations by licensees of plants under construction~~.

Pursuant to the provisions of 10 CFR 2.201, Cincinnati Gas and Electric Company is hereby required to submit to this office within 30 days of the date of this Notice a written statement or explanation, including for each alleged violation: (1) admission or denial; (2) the reasons for the violation if admitted; (3) the corrective steps which have been taken and the results achieved; (4) the corrective steps which will be taken to avoid further violations; and (5) the date when full compliance will be achieved. Any statement or explanation may incorporate by specific reference (e.g., giving page and paragraph numbers) the provisions of your Quality Confirmation Program and your actions in response to our Immediate Action Letter of April 8, 1981. Consideration may be given to extending the response time for good cause shown. Under the authority of Section 182 of the Act, 42 U.S.C. 2232, this response shall be submitted under oath or affirmation.

Within the same time as provided for the response required above under 10 CFR 2.201, Cincinnati Gas and Electric Company may pay the civil penalties in the cumulative amount of Two Hundred and Fifty Thousand Dollars or may protest imposition of the civil penalties in whole or in part by a written answer. Should Cincinnati Gas and Electric Company fail to answer within the time specified, this office will issue an Order imposing the civil penalties in the amount proposed above. Should Cincinnati Gas and Electric Company elect to file an answer in accordance with 10 CFR 2.205 protesting the civil penalties, such answer may: (1) deny the violations listed in this Notice in whole or in part; (2) demonstrate extenuating circumstances; (3) show error in this Notice; or (4) show other reasons why the penalty should not be imposed. In addition to protesting the civil penalties in whole or in part,

such answer may request remission or mitigation of the penalties. Any answer in accordance with 10 CFR 2.205 should be set forth separately from the statement or explanation in reply pursuant to 10 CFR 2.201, but may incorporate by specific reference (e.g., giving page and paragraph numbers) to avoid repetition. Cincinnati Gas and Electric Company's attention is directed to the other provisions of 10 CFR 2.205, regarding the procedure for imposing a civil penalty.

Upon failure to pay any civil penalty due, which has been subsequently determined in accordance with the applicable provisions of 10 CFR 2.205, this matter may be referred to the Attorney General, and the penalty, unless compromised, remitted, or mitigated, may be collected by civil action pursuant to Section 234c of the Act, 42 U.S.C. 2282.

~~The responses directed by this Notice are not subject to the clearance procedures of the Office of Management and Budget as required by the Paperwork Reduction Act of 1980, PL 96-511~~.

FOR THE NUCLEAR REGULATORY COMMISSION

Richard C. DeYoung, Director
Office of Inspection and Enforcement

Dated at Bethesda, Maryland
this day of , 1981

Zimmer - nits

ELD Need Dates on some of the citations and examples in the citation.
i.e.

B.2 / B.3 — Date it was closed when?

D.2 — what period that inspections were not performed?

E — when was the inspect. done?

Let them change

(2) Letter - p. 2 last sentence.
Make reference to statutory author and new policy
... Since events cross the effective date of new policy, the new policy is being applied.
(Stello made this point on TE

✓ Letter - p. 4 change "harassment" paras

No need since we are citing

(3) Letter - p.5 next to last ¶)
Suggest we make request for information pursuant to 50.54 (f).

(4) Letter p.5 All paperwork reduct act parag.

Won't break up flow C

(5) NOV
Identify severity levels

(6) Citation A
Co-Ident locate part 2(a) and 2(c) in Report

Ask if Is item 3 really a falsified record issue?

No

(7) Citation B
Item 3 appears to be a prove violation. Should it go with Citation K?

No (8) Citation J
Item #1 appears to belong to Citation I.

(9) NOV - page 11
The paragraph about old and new enforcement policies should be in cover letter

(10) NOV - page 12
Delete - paperwork reduction act.

Telecon @ Tom Devine (531-961-3572) 10/2/81 @ 5.20 to 5.45 pm

Devine called to get our position on his latest letter to us talking about specific problems. He said he had more specifics on those matters for our consideration in developing the IE independent measurement program and would be extremely disappointed if we didn't consider info. I said I would determine our position and call him at GAP HQ in Washington within next two weeks.

GTS

WM. H. ZIMMER NUCLEAR POWER STATION

UNIT 1

NRC/REGION III DISCUSSIONS

APRIL 10, 1981

DRAFT

PROPOSED AGENDA
FOR MEETING
FRIDAY, APRIL 10, 1981

1. Opening Remarks by Mr. Keppler.

2. Discuss Program for Confirming Quality of Completed Work. CG&E to Provide Specific Plan for Accomplishing This.

3. Discuss Immediate Action Letter (Both by NRC and CG&E). CG&E to Provide Approach and Plans for Implementation.

4. Concluding Remarks by Mr. Keppler.

PROGRAMMATIC MEASURES FOR CONFIRMING QUALITY OF COMPLETED WORK

Problem: The following programmatic measures will be taken with regard to each of the identified problem areas:

a. A program will be established to define the potential scope of each problem area. The scope shall include but not be limited to identifying, structures, components, materials, the affected organizations and disciplines, the organizations responsible, and the responsibilities of the affected organizations and disciplines. The program shall explicitly identify and distinguish the completed (past) activities and the incomplete (present and future) activities.

b. A program will be established to define the causes of each problem. This program will consider organization, QA program, design control, traceability of materials, welding controls, control of nonconformances, corrective action, and audits.

Case: The quality concerns identified by the NRC involve a variety of structures, components, systems and organizations. An overall review to evaluate their significance is appropriate.

Corrective Action: Plant walkdown and inspections are being conducted to address the structural steel, piping and electrical items identified by the NRC. The results of these walkdowns are being monitored to scope and prioritize potential problem areas.

Since such walkdowns by necessity, are limited to accessible areas and deviations which can be visually identified additional efforts are also being implemented. These efforts fall into three basic categories 1) Procedure Review 2) Documentation Review 3) Corrective Actions.

1. Procedure Review

As detailed elsewhere a review of all QC inspection procedures is being conducted by both Design and Q/A personnel. This review will address all of the areas of concern identified by the NRC as well as various Code, Standard and FSAR requirements. No construction work will proceed until the controlling procedure has been reviewed, revised as necessary and personnel have been retrained.

Construction procedures covering deviation from design documents and non-conformances are also being reviewed. Again personnel will be retrained if changes are identified.

Corrective Action:

1. Procedure Review (Continued)

Design procedures are also being reviewed to assure that all appropriate codes, standards and FSAR statements are addressed. Design control procedures are also being revised to assure any deviations are identified, CG&E is involved in approving the resolution and that such approved deviations are documented in the FSAR.

We believe the above will greatly improve project performance and will assure full compliance on all future work.

To help scope and identify any problems which may have occurred in the past, we will be also reviewing prior revisions of procedures. This review will help identify potential deviations which might have occurred during the time period when that revision was in effect. This will help focus on areas of greatest potential for deviations.

2. Documentation Review:

In conjunction with the above review of procedures which control or controlled the design, construction and inspection of the work, an audit of the QA/QC documentation will be conducted. This documentation audit will help establish the extent of potential deviations from codes, standards and FSAR statements. Typical documentation audits would include cable pull records, hydrotest records, and radiographs.

Records of work performed both at site or in vendor shops will be audited as required.

3. Corrective Actions

If the above procedure and record review identifies potential deviations to Codes, Standards or FSAR statements which cannot be justified, physical testing, requalification, or replacement will be used to assure compliance.

Testing might involve various NDT methods or selective destructive testing of coupons removed from potentially devient areas.

Requalification might involve testing prototypes or if many duplicates are installed in the plant a test unit might be removed and tested.

In addition to the above efforts the Q/C inspectors will be advised, as part of their re-training, to bring concerns directly to the CG&E management whenever they feel such action is appropriate. CG&E management will see that any such concerns are investigated promptly and that corrective measure are taken.

In all the above efforts CG&E staff and management as well as the staff and management of all other involved organizations are being alerted to look for repeat items which might typify a generic problem.

AREAS OF CONCERN

FOR

WM. H. ZIMMER NUCLEAR POWER STATION

INVESTIGATION

INSPECTION REPORT #1 - BRISTOL STRUCTURAL BEAM WELDS

PROBLEM: Apparent lack of an adequate QA program covering field welding by Bristol resulting in some unacceptable structural welds.

CASE: Inspection of Bristol structural beam welds in the 546' elevation of the Auxiliary Building, Cable Spreading Room, and RHR Heat Exchanger Room revealed that several field welds are unacceptable to AWS weld inspection criteria.

CORRECTIVE ACTION: Inspections of all accessible, essential field welds will be performed to ensure compliance with applicable codes. Those welds found to be unacceptable will be documented and repaired as required. Documentation on the balance of field work will be reviewed for validation. If there are problems with the documentation, sufficient inspections will be made to ensure a satisfactory level of confidence for the service involved.

inaccessible essential field welds and other non-welded attachments.

INSPECTION REPORT #2: LACK OF BRISTOL QUALITY ASSURANCE PROGRAM

PROBLEM: The Quality Assurance Program required only inspection by a non-QC person.

CASE: Structural welds did not receive adequate independent inspection.

Bristol Steel & Iron was responsible for furnishing, fabricating, delivering, and erecting structural steel at the Zimmer Site. Bristol Steel & Iron (BS&I) was relieved of their responsibility for erecting structural steel in some areas of the project; i.e., drywell and SWPS, because of scheduling conflicts with Henry J. Kaiser Company. In these areas, Henry J. Kaiser Company erected the structural steel.

BS&I had their own Quality Assurance Program for field erection and shop fabrication work. The "Erection Quality Control" section of their Quality Assurance Manual sums up the areas of responsibility of their field QC work:

- Unloading Inspection
- Verify anchor bolt location
- Verifying proper location of erected materials
- Verifying proper erection practice is followed
- Verifying that high-strength bolting is performed to AISC's "turn of the nut" method
- Performing visual inspection of welds
- Reporting nonconforming items to proper authorities.

Bristol Steel had a Project Manager or Superintendent who handled both the bridge erection for I-471 and the

CASE: (Cont'd)

Zimmer Project concurrently. Approximately 60% of his time was spent at the Zimmer Project. Another individual was designated as responsible for QC activities acted as Superintendent in absence of the Superintendent.

Reports were prepared by Bristol Steel as the job progressed which indicate that visual inspection of applicable welds was performed for those welds included in the area covered by the report.

Henry J. Kaiser Company was delegated responsibility for conduct of audits and assurance that quality requirements for structural steel were acceptable. It appears that the Bristol reports are inadequate and insufficient independent weld inspection was performed.

Henry J. Kaiser Quality Assurance inspectors were responsible for all bolting inspection of structural steel erected by both Henry J. Kaiser Company and Bristol Steel & Iron. The requirement for bolting inspection is specified in Henry J. Kaiser QACMI C-11 and the results of the bolting inspection is documented on the "Daily Bolting Inspection Report" from the BS&I erected work.

The implementation of the shop QA/QC fabrication program was verified by CG&E audits. There are no apparent deficiencies in the total program other than in structural welding.

CORRECTIVE ACTION:

See Inspection Report #1 - Bristol Structural Beam Welds.

INSPECTION REPORT #3a & b: MATERIAL TRACEABILITY - BEAMS IN REACTOR AND AUXILIARY BUILDING

PROBLEM: Several hundred feet of beams have been received from an unapproved vendor, and cannot be accounted for as to where installed or other disposition.

CASE: H. J. Kaiser purchased W8X17 beams from a non-approved vendor. These beams were placed in essential steel stock on the basis that they were supplied with valid mill certificates by the vendor at time of purchase.

CORRECTIVE ACTION:

An investigation will be made of the unapproved supplier of the structural beams. An evaluation will be made to determine the credibility of the mill certifications from the unapproved supplier and/or the supplier's supplier.

INSPECTION REPORT #3c & d: LACK OF TRACEABILITY OF MATERIALS

PROBLEM: Traceability of heat numbers on small bore piping for the diesel generators.

CASE: A review of the documentation of the small bore piping in the diesel generator system followed by a walkdown of the piping revealed some lack of traceability in accordance with ASME Code requirements.

CORRECTIVE ACTION:

Reinspect the diesel generator small bore piping and take corrective action where traceability is found deficient. With regards to the other small bore piping systems, a comparison of documentation to the actual field installation will be made on respresentative systems. If a satisfactory level of traceability and confidence level is indicated, the review of the balance of the small bore systems would be confined to an audit of document verification.

159000 feet of installed small bore piping

INSPECTION REPORT #3e: LACK OF TRACEABILITY

PROBLEM: Weld rod heat numbers, because heat numbers are being transferred to KEI-1 form from KEI-2 by individuals other than QC inspector who inspected the welds.

CASE: Investigation confirmed that the transfer of information was occurring on the documents performed by inappropriate personnel.

CORRECTIVE ACTION:

Henry J. Kaiser Company has been directed to stop any additional alterations of KEI-1 forms. Reference attached April 2 letter from Borgmann to Gittings on this subject.

RE: INSPECTION REPORT - ITEM 3e.

THE CINCINNATI GAS & ELECTRIC COMPANY

CINCINNATI, OHIO 45201

April 2, 1981
KEF-642

E. A. BORGMANN
SENIOR VICE PRESIDENT

Henry J. Kaiser Company
P.O. Box 201
Moscow, Ohio 45153

ATTENTION: Mr. P. S. Gittings
Site Quality Assurance Manager

RE: Wm. H. Zimmer Nuclear Power Station
Unit 1 - Alterations to Quality Records
W.O. 57300, Job E-5590

Gentlemen:

As a result of the Nuclear Regulatory Commission's concerns expressed in the exit meeting held at the site on Thursday, March 26, 1981, you are requested to implement the following directives immediately:

1. Absolutely no additional alterations will be made to KEI-1 forms or any other record to correct the alterations or for any other reason.

2. Absolutely no alterations will be made to the voided nonconformance reports. All additional information will be documented on separate records which can be attached to the original records after review by NRC personnel.

Please contact me personally if you have any questions regarding this matter.

Very truly yours,
THE CINCINNATI GAS & ELECTRIC COMPANY

By E. A. Borgmann
E. A. Borgmann
Senior Vice President

EAB:dw

cc: W. W. Schwiers
J. P. Coyle
B. K. Culver
W. D. Waymire

INSPECTION REPORT #4: SURVEILLANCE REPORTS NOT BEING CONVERTED TO NON-CONFORMANCE REPORTS IN 30 DAYS

This item is covered under Item 9 of the Immediate Action Letter.

INSPECTION REPORT #5 - WELDS INSPECTED AFTER PAINTING

— Is this contrary to Code? CG&E thinks no

PROBLEM: Structural welds were inspected after painting.

Foothill electric company

CASE: FEC has installed structural beams and cable tray supports and have used Galvanox and other coatings to prevent the corrosion of the welds. Although no documentation exists that verifies that these welds were inspected at that time, hanger inspection along with its associated structural steel was in-process inspected and all work was assumed to be acceptable by construction unless reported unacceptable by Quality Control inspectors.

CORRECTIVE ACTION: A sampling program will be established to verify that the FEC structural beams and cable tray support welds which have been coated have acceptable welds by removing the coating and reinspecting. H. J. Kaiser has been instructed to revise their procedures to add a hold point on painting until final acceptance of the weld and NRC concurrence. (See attached April 3, 1981 letter Schwiers to Gittings)

Some of these coatings have to be ground off

RE: INSPECTION REPORT #5

KEQ

THE CINCINNATI GAS & ELECTRIC COMPANY

CINCINNATI, OHIO 45201

April 3, 1981
KEQ-550

Henry J. Kaiser Company
P. O. Box 201
Moscow, Ohio 45153

Attention: Mr. P. S. Gittings

RE: WM. H. ZIMMER NUCLEAR POWER STATION
UNIT I - WELD INSPECTION - W.O. #
57300-957, JOB E-5590

Gentlemen:

Effective immediately, all welds requiring visual inspection shall be inspected prior to covering with Galvanox or other applicable paints. To accomplish this, hold points must be established to assure that these required inspections are completed. If the weld inspection has not been completed and the component is painted, it shall require removal of the paint prior to conduct of the visual inspection and QC inspection documentation.

By copy of this letter, Waldinger-Young & Bertke is requested to comply with the above project requirements.

If you have any questions regarding the above, please call.

Very truly yours,

THE CINCINNATI GAS & ELECTRIC COMPANY

By W. W. Schwiers
W. W. SCHWIERS
MANAGER, QUALITY ASSURANCE

WWS:pa
cc: Henry J. Kaiser Company
Attn: R. Marshall
Waldinger-Young & Bertke
Attn: D. Martin
S. C. Swain

INSPECTION REPORT #6: UNACCEPTABLE TECHNIQUE FOR RADIOGRAPHS OF PREFABRICATED PIPE WELDS

PROBLEM: Radiograph technique was inadequate on 25% of the prefab welds that NRC Inspector reviewed (approximately 180 of 600). The penetrometers were not adequately shimmed.

CASE: Region III reviewed approximately 600 radiographs and cited approximately 25% as being in violation of ASME Section III Code requirements for radiographic technique. According to Region III interpretation of the Code, shimming of the penetrometer is required to assure that total thickness being radiographed under the penetrometer is the same as the total weld thickness, regardless of whether or not the Code film density and quality requirements were achieved.

CORRECTIVE ACTION:

It is the intent of the Code to see that radiography is performed with a technique of sufficient sensitivity to display the penetrometer image and the specified hole. For welds the thickness is based on the nominal single wall thickness plus the reinforcement permitted by the Code. If the reinforcement where permitted is not removed then shims may become necessary to meet Code density requirements of -15% +30%. On the other hand, if a weld is blended smooth or nearly smooth into the base material to possibly meet pre-service ultrasonic requirements, the use of shim(s) may cause the

CORRECTIVE ACTION: (Cont'd)

penetrometer to exceed density requirements and will be cause for a rejectable radiograph. It is not a shim(s) itself that is mandatory by Code, but shims are a mechanism that may or may not be used to meet density which is a Code requirement.

Within the present state of the radiographic art, this practice is acceptable to all processes and techniques.

Pullman Power Products is an ASME Certificate Holder subject to audit and review by ASME and NRC. Furthermore, the Authorized Nuclear Inspector has not rejected Pullman radiographs for inadequate shimming.

CG&E will recheck the 180 radiographs in question to verify that the film density meets the ASME Code requirements.

If above actions are rejected by the NRC, a formal ASME Code Interpretation will be requested.

Inspection Report #7. NR's are being voided improperly.

This concern is addressed in Item 7 of the Immediate Action Letter.

INSPECTION REPORT #8: DESIGN VIOLATION CONTRARY TO FSAR - CABLE SEPARATION

Will be removed

PROBLEM: A 6 in. green cable tray was designed and installed inside a white tray. The green tray includes green Class 1E cables and the white tray contains blue/white and yellow/white associated cables.

CASE: The white tray is classified as "non-essential"; the green tray is "essential". Separation criteria does not require a specific difference between "essential" and "non-essential" trays.

The blue/white and yellow/white associated cables in the white tray does not make the tray "essential".

The design basis for electrical separation on the Wm. H. Zimmer Nuclear Power Station includes three essential electrical divisions: yellow, blue, and green. In addition, there is a white division which includes non-essential cables. As a design basis, there are cases where non-essential cables are placed in trays dedicated to a specific essential division and there are cases where non-essential cables are connected to a bus to which essential cables are also connected. By definition in the FSAR (8.3.1.12.2.3), these are called "associated cables" and are called blue/white, green/white, or yellow/white depending on the interfacing divisions.

CASE: (Cont'd)

This design basis, which is different from the current requirements of Reg. Guide 1.75, was accepted by NRR in the Zimmer Safety Evaluation Report, NUREG-0528 of January, 1979, Section 7.1.2(2) which says:

> "Institute of Electrical and Electronic Engineers Standard 384 and Reg. Guide 1.75, "Physical Independence of Electrical Systems," did not exist when the construction permit was issued. However, with the exceptions as indicated in Sections 7 and 8 of this report, the Zimmer Station meets the requirements of these latter criteria."

In November, 1979, Mr. J. F. Stolz of NRR requested an audit of separation of electrical equipment and systems at Zimmer Station. In response to this request, CG&E conducted an audit of 16% of the essential cables in the plant which resulted in the identification of one (1) finding which was subsequently rectified. Based on this audit, CG&E has a high confidence level in electrical separation at this plant.

As a result of the recent investigations by RIII, specifically this item being discussed, CG&E reviewed this matter again. It was found that the audit failed to address non-essential cables in essential

CASE: (Cont'd) trays and non-essential cables connected to essential buses, which by definition are associated cables.

CORRECTIVE ACTION:

CG&E has initiated the following corrective action regarding concerns of electrical separation:

1. Sargent & Lundy will clarify the criteria for associated cables. The appropriate section of the FSAR will be modified to include the clarifying criteria.
2. Sargent & Lundy will perform a 100% analysis on associated cables and demonstrate that Class 1E circuits are not degraded below acceptable levels.
3. Utilizing the clarified criteria and results of the analysis, an audit team consisting of CG&E Engineering, Construction, and Quality Assurance representatives will conduct a 10% audit of associated cables.

INSPECTION REPORT #9: LACK OF INSPECTION CONTROL TO VERIFY CABLE SEPARATION

This report is divided into four parts, each of which will be addressed separately below:

9a.
PROBLEM: From the end of tray points up to the control panels, two blue cables in the cable spreading room have been pulled into a green tray section leading up to the control room.

CASE: CG&E investigation of this problem revealed that the blue cables were not pulled into the green tray section; however, their proximity did not meet separation criteria. The blue cables were improperly bundled together when the bundle was installed in a riser.

CORRECTIVE ACTION:

The corrective action is to properly secure the blue cables in the riser.

9b.
PROBLEM: Yellow/white cable coming out of conduit and suspended approximately 6 in. above the cables in the blue tray (in the cable spreading room).

CASE: If the conduit, containing the yellow/white cable were extended to the wall penetration, no separation deviation would exist.

9b. (Cont'd)
CORRECTIVE ACTION:

The corrective action is to extend the conduit containing the yellow/white cable to the wall penetration.

9c.
PROBLEM: In the instrument and relay room, a non-safety related white cable, No. DC258 (also labeled DC257) has been misrouted into a yellow tray No. 1040B.

CASE: The unterminated white cable was routed correctly but installed incorrectly in the yellow tray.

CORRECTIVE ACTION:

The corrective action is to remove cable No. DC258 from the yellow tray, and install it in a white tray.

9d.
PROBLEM: Tray loading and cable separation concerns.

CASE: Cable tray loading is addressed in the response to inspection report #10. Cable separation concerns are addressed in the response to inspection report #8.

INSPECTION REPORT #10: S&L CABLE TRAY LOADING DESIGN CONTROL

PROBLEM: The Region III inspection report under this item lists three specific areas indicating lack of design controls on the part of Sargent & Lundy. In addition, four unresolved items regarding S&L's design are listed.

CASE: Attached is a draft of responses to the specific items of non-compliance and the unresolved items listed under this problem. However, CG&E recognizes that these are examples of deficiencies in exercising design control. Specifically, CG&E must reassess the programs utilized by design organizations working on the Zimmer Project. Generic problems stemming from these inspection examples include:

a. The FSAR did not reflect the actual reference used in the design.

b. Procedures were not in place requiring calculations exceeding design index.

c. Lack of formal procedure to control deviations from design.

CORRECTIVE ACTION:

CG&E will issue specific instructions to all design organizations presently active on the Zimmer Project to review and/or implement formal, disciplined design controls. CG&E will develop a program to audit the policies, procedures and methods utilized by the design organizations to meet this requirement.

ATTACHMENT TO RESPONSE FOR INSPECTION REPORT #10

DRAFT - PENDING RECEIPT OF FORMAL NRC AUDIT REPORT

POSSIBLE NONCOMPLIANCE NO. 1

Finding

The finding was that the reference in the FSAR, Section 8.3.3.1, for cable ampacity in trays did not reflect the actual reference used for design. The FSAR states that "The tables for power cable loading are based on IPCEA Publication No. P-46-426."

Response

The FSAR Section 8.3.3.1.1 will be reviewed and revised to reference IEEE Paper 70TP557-PWR rather than IPCEA Publication No. 9-46-426. Table 8.3-18 was revised in June 1976 to indicate the actual data used for design; however, the reference was overlooked in the revision.

This revision will be made to the FSAR by June 1981.

POSSIBLE NONCOMPLIANCE NO. 2

Finding

The finding was that procedures were not in place requiring final weight calculations for cable trays exceeding a design index of 1.25 and thermal check calculations for power sleeves.

Response

Project Procedure PI-ZI-10.1, Revision 0, dated February 6, 1978, provided the requirements for performing final thermal loading calculations for those cable tray sections exceeding a design index of 1.25. The project instruction did not explicitly state that final weight checks are also to be performed as well as thermal checks of power sleeves.

Although the procedure was deficient, "worst case" calculations that were actually performed included a weight check to confirm compliance with the tray design criteria. Final calculations had not been performed since the cable issues have not been completed. Final calculations are being initiated in response to unresolved item below.

Project Instruction PI-ZI-10.1, Revision 1, dated March 18, 1981, has been revised to address the specific findings. This action has therefore been completed.

We are presently reviewing if there are any further aspects of cable tray fill that have not been adequately addressed by the project instruction. This review will be complete by April 30, 1981. If additional items are identified, revisions to the project instruction will be initiated.

POSSIBLE NONCOMPLIANCE NO. 3

Finding

This finding was a concern on the lack of a formal procedure to control deviations from design.

Response

Deviations from design or procedure are controlled by Sargent & Lundy QA Procedures GQ-16.01 and GQ-16.01. The deviations are identified as nonconformances per GQ-16.01 and corrective action reports generated per GQ-16.01.

It was observed that, while checking the thermal loading of the cable trays, the design ampere loading of two cables were found to exceed the design ampacity. The control of this deviation was maintained by the control of the design calculation for these cables. The design calculation which specifically noted the deviation was not approved by the responsible design engineer due to the exceedence of the cable ampere criteria. Resolution of these cable problems was awaiting actual ampere loading data of the electrical device for recalculation. Withholding approval of the design calculation assured follow-up to correct the deviation.

The final ampere loading data has been received and the two cables have been recalculated and found acceptable. The calculation has been reviewed and signed approved per Sargent & Lundy Procedure GQ-3.08. This action is therefore complete.

In addition to the corrective actions summarized under each of the specific possible noncompliances identified above, the following action will be taken to assess the project generic aspects and their corrective action to prevent recurrence:

Project Generic Aspects of Noncompliance 1:

1. The FSAR will be re-reviewed for correctness and consistency with respect to the design by the responsible system engineers. This review will be complete by July 1981.
2. A new project procedure will be written establishing the need to submit corrections to the FSAR as changes are identified by the design engineers. Formal issue of the FSAR changes will be made on a semi-annual basis. This action will be implemented by May 30, 1981.
3. The project instruction noted in Paragraph 2 will include a requirement to identify changes or deviations from industry codes and standards; i.e., ASME, AWS, ANSI, etc. when applied categorically in the design.

Project Generic Aspects of Noncompliance 2 are addressed in the continuing procedural review of cable tray fill addressed under Noncompliance 2.

Project Generic Aspects of Noncompliance 3:

1. S&L is reviewing within the office on a company generic basis the adequacy of the procedure of using design calculations to control deviations. S&L will review the existing procedures, including CQ procedures, project instructions, general

drafting standards and department standards to determine if additional controls are required. The review will be completed along with identification of specific corrective actions by June 1, 1981.

As further clarification, generic aspects of the adequacy of procedural control will be applied on the Zimmer Project.

DRAFT - PENDING RECEIPT OF FORMAL NRC AUDIT REPORT

UNRESOLVED ITEM 1

Item

Mr. Barrett would like further explanation of the justification for calculating weight and thermal loading of only those trays with design index greater than 1.25.

Response

Sargent & Lundy will prepare a justification demonstrating adequate thermal and weight design for those cable tray sections with a design index less than 1.25. The justification will be provided to The Cincinnati Gas & Electric Company (CG&E) and to Mr. Barrett by June 1, 1981.

UNRESOLVED ITEM 2

Item

Sargent & Lundy will perform final thermal and weight calculations for all power trays with design index greater than 1.25; final thermal calculations for power sleeves with design index greater than 1.25, and final weight calculations for control and instrument trays with design index greater than 1.25.

Response

These calculations or justification will be provided to CG&E and to Mr. Barrett by July 1, 1981.

UNRESOLVED ITEM 3

Item

Mr. Barrett would like further assurance that cable trays exceeding 50% fill (design index 1.25) are adequately analyzed.

Response

The FSAR will be revised for the next scheduled revision to add a statement to the effect that, when the design point is exceeded, the adequacy is checked by analysis. This will clarify that all cables in trays exceeding the design index of 1.25 will have calculations performed to justify the design. Project Instruction PI-XI-10.1 requires final calculations for all cable tray sections exceeding a design index of 1.25.

UNRESOLVED ITEM 4

Item

Mr. Barrett would like further clarification on the relationship of percent tray fill and design index.

Response

The relationship of 50% tray fill and 1.25 design index was summarized and a copy was given to Mr. Barrett and CGSE on March 20, 1981 while in our office for the exit interview.

INSPECTION REPORT #11: LACK OF CG&E FOLLOW-UP ON REPETITIVE PROBLEMS (INADEQUATE CORRECTIVE ACTION)

PROBLEM: Repetitive problem regarding design calculations and verifications not being performed by Sargent & Lundy.

CASE: Five audits by CG&E identified this problem.

CORRECTIVE ACTION:

Responses to audit findings now require that corrective action taken to avoid further noncompliance must be supplied by the auditee. In verification of this action, the auditor must have assurance that this corrective action is adequate to address any possible generic deficiency. Also an Unresolved Deficiency Summary is issued monthly from the Manager-Quality Assurance to the Senior Vice President and the Manager of any organization responsible for corrective actions to deficiencies that are past due. This includes deficiencies which are delinquent past the due date and deficiencies which have exceeded the planned completion date and QA verification was not possible due to lack of, or inadequate corrective action on the part of, the audited organization.

The deficiencies addressed by this procedure are those identified during audits conducted in accordance with audit and surveillance procedures.

A new procedure has been established to define the method for the reporting of repetitive, generic, procedural, or significant concerns adverse to quality to the appropriate levels of management.

Conditions for which Corrective Action Reports are issued as follows:

1) The condition indicates a trend of declining quality.

CORRECTIVE ACTION (CONT'D.)

2) The condition is repetitive indicating current controlling measures are inadequate or insufficient.

3) Evaluation indicates that the condition is a result of a program deficiency.

4) The condition indicates failures to obtain required approvals for changes in procedures or documents.

5) Failure to resolve a deficiency in a timely manner.

6) The condition indicates negligence or disregard of document or procedural requirements.

7) QA follow-up review of conditions adverse to quality show that the approved corrective action has not been taken, or has been improperly or incompletely accomplished.

The Corrective Action Reports are distributed to the appropriate management of the organization to which the corrective action was addressed as well as those responsible for implementation of the corrective action and the CG&E Senior Vice President.

CAR's must be responded to and corrective action verified within 10 working days or a Stop Work Order is issued in accordance with the applicable Stop Work Order Procedure.

Inspection Report #12.

Problem: CG&E has not performed any audits to verify compliance with and the effectiveness of the S&L non-conformance program.

Case: The response to this concern is covered in Item 10 of the Immediate Action Letter.

INSPECTION REPORT #13 - DELETED DESIGN CRITERIA

PROBLEM: Weld inspection criteria has been deleted from the KE-1 form from 7/80 - 2/81.

CASE: Weld inspection criteria has been deleted from the KE-1 form for AWS structural welding on the drywell steel, and other instructions added as follows:

Deleted: Item 1 on KE-1 form in its entirety
Added: Item 1 on KE-1 form "Rod slip (KE-2 form) to be part of package"

Deleted: Item 2 on KE-1 form except for "Verify Mark Numbers"

Unless the welds are full penetration welds, this criteria need not be hold points; however, proper weld procedure, welders qualification and proper filler metal verification must be conducted prior to weld acceptance. (See KE-2 form)

CORRECTIVE ACTION: All AWS structural steel KE-1 forms from 7/80 - 2/81 will be checked to ensure that no hold points were violated for full penetration welds. Any welds so found will be documented on a nonconformance report and properly dispositioned and corrected. A sampling of the structural welds that had weld inspection criteria "improperly lined out, noted as not applicable, or otherwise deleted" will be conducted to verify from the record that the weld inspection criteria required by AWS can be verified. If required inspection criteria cannot be verified, then those welds will be documented with a nonconformance and corrective action defined and documented.

This action was initiated to eliminate an overcommitment.

INSPECTION REPORT #14: NONVERIFIED SOCKET-WELD FIT-UPS

PROBLEM: Socket weld fit-up has not been verified on numerous small bore pipes.

CASE: According to HJK Procedure SPPM 4.6 and the KE-1 form used for the inspection of small bore piping, the fit-up of socket weld joints is required. ASME Section NB4427-1 requires that approximately a 1/16" disengagement be met on socket welds. Numerous socket welds have been made without the proper documentation witnessing the proper visual inspection of pipe fit-up as documented on several surveillance reports.

CORRECTIVE ACTION: A review of the completed document packages for small bore piping will be conducted to determine those socket welds for which a verification was not made for disengagement. Any joints so identified will be documented on a nonconformance report, with a disposition to radiograph in sufficient quantity to develop a level of confidence that the fit-ups are acceptable.

INSPECTION REPORT #15: DELETED

INSPECTION REPORT #16: Response covered in Item 8 of the Immediate Action Letter.

INSPECTION REPORT #17 - UNCONTROLLED DESIGN DOCUMENT CHANGES

PROBLEM: The KEI Configuration Control Center does not know the status of DDCs written prior to late 1980 . . . . When a DDC is written against one document and subsequent changes are made to one or more other documents (drawings) not referenced by the original DDC.

CASE: In accordance with Sargent and Lundy project instruction PI-ZI-2.1, the designer is responsible for ensuring that all documents that require a revision by a DDC are in fact, revised even though all affected drawings are not stated on the DDC. For the past year, CG&E and S&L have been in a mode of resolving all DDCs which still appear open in the Configuration Control Center master DDC index.

CORRECTIVE ACTION: With the issuance of CG&E's GCD ADMIN-5 procedure on DDCs, S&L is going to revise their project instruction PI-ZI-2.1 requiring that a cover sheet be attached to the DDC indicating all drawings affected by the DDC and forwarded to the HJK Configuration Control Center. This will allow the CCC to close out the DDC when all affected drawings are revised and issued.

Sargent and Lundy has already revised their project instruction which states "Essential DDCs shall be incorporated into the next revision of the engineering design documents but shall not be carried beyond two revisions of the document, or two months, whichever is less." When this procedure is fully implemented by S&L, there will be very few open DDCs and HJK CCC will be able to accurately monitor all open DDCs.

CG&E through the HJK CCC will continue to review all open DDCs and reconcile the open listing with the S&L status listing. Upon completion of the reconciliation, this program will be maintained to ensure that outstanding DDCs as shown in the HJK CCC are in accordance with the S&L DDC completion.

INSPECTION REPORT #18:

PROBLEM: H. J. Kaiser Procedure SPPM 4.6, Rev. 8 and S&L Specification H-2173, Supplement 7, (Standard EB-117 for cable tray hanger welds) takes exception to A.W.S. D1.1-1972 inspection acceptance criteria for undercut. The FSAR does not stipulate these exceptions.

CASE: Sargent & Lundy approved this exception and had not as yet modified the FSAR.

CORRECTIVE ACTION:

The FSAR will be modified to include this exception. A generic response on Design Control Criteria is given in Item 6 of the Immediate Action Letter.

RESPONSES TO APRIL 8, 1981

IMMEDIATE ACTION LETTER

IAL 1. Concerning QA Staffing

The following corrective actions shall be implemented to increase and improve the CG&E Quality Assurance staff.

A. Quality Assurance Engineering

Six (6) Quality Assurance Engineers shall be added from a contract organization on a temporary basis. Such personnel will have experience in metallurgy, welding, documentation and procedure reviews and similar Quality Engineering expertise. They will have varied discipline capabilities and should start to arrive on site May 4, 1981. It is anticipated that they will supplement the Quality Assurance staff for one year or for however long required. Additional requisitions have been approved for permanent CG&E staff Quality Assurance positions for the following:

1) Metallurgical and Weld Quality Assurance Engineer (1)
2) Electrical Quality Assurance Engineer (1)
3) Structural Quality Assurance Engineer (1)

CG&E Electric Production Department personnel with Quality Assurance experience shall be incorporated into Corporate Quality Assurance Organization. These personnel have experience in structural, chemical and operations expertise. These personnel will be utilized to supplement the present auditing staff and shall be certified to N45.2.23.

Some of those personnel presently in the Quality Assurance organization shall be reassigned outside of the Quality Assurance organization or replaced.

B. Quality Control (Inspection)

Ten (10) qualified inspectors (45.2.6) shall be assigned from an outside contractor for a minimum of one year or however long required. These

B) Cont'd.

personnel shall have experience and qualifications in varied areas of inspection requirements. One individual capable of being designated as a Level III NDE Technician will be included in this group. The other will also be qualified in PT, MT, RT, UT or visual inspection of welds as required by their assignment.

Present personnel in the Quality Assurance organization will be reassigned or assigned as follows:

D. C. Kramer - Lead Quality Control Inspection Supervisor

R. N. Taylor - Pipe Support and Inspection

D. C. Fox - Pipe Support and Inspection

W. Hopka - Pipe Support and Inspection

Two inspection technicians, qualified to N45.2.6 shall be reassigned from the Electric Production Department to assist in the resinspection verification. A requisition for a technician with inspector's expertise in NDE, capable of certification to Level II of ASNT TC-1A, with eventual certification to Level III has been approved and search is in progress to locate and hire this individual.

C) Miscellaneous Quality Assurance/Quality Control

Contract personnel have been employed on a temporary basis to review procedures, correct inconsistencies or errors, and prepare new procedures as required. These personnel shall also assist in preparation and coordination of training schedules.

Summary of Additions

	Temporary Personnel*
Temporary	6 Quality Assurance Engineers
	10 Quality Control Inspectors
	2 Misc. QA/QC
	18

CG&E Staff Additions

4 Transfers from EPD
1 NDE Technician
3 Quality Assurance Engineers
8

Existing CG&E QA Staff

4 Engineers
4 Contract Personnel
1 QA Technician
1 QA Manager
10

* As permanent CG&E personnel are added these may be reduced.

IAL 2. Concerning independence and separation between Kaiser construction and Kaiser QA/QC

In a letter dated April 7, 1981, to the President of Henry J. Kaiser Company, CG&E outlined the steps to be taken by H. J. Kaiser in their QA/QC effort for the Zimmer project. In that letter the Kaiser organization was directed to eliminate any domination by construction of the QA organization and the QC inspectors. They were further instructed to stress the independence of the QA/QC organization and to provide effective leadership to allow that independence to be maintained and for the organization to properly function.

We are also committing to revise the Kaiser QA procedures such that they no longer will require approval by construction personnel.

EAB

THE CINCINNATI GAS & ELECTRIC COMPANY

April 7, 1981

Mr. James F. McCloud
President
Henry J. Kaiser Company
300 Lakeside Drive
Oakland, California 94623

COPY

Dear Mr. McCloud:

As you are aware, the Zimmer Project's QA/QC program has been the subject of an extensive NRC investigation over the past few months. Both the H. J. Kaiser program and the CG&E program have been reviewed as the result of several allegations made to the NRC by unidentified personnel connected with the project.

The NRC has now called to our attention several deficiencies in the execution of our mutual programs which surfaced as the result of its investigations and which must be corrected in a timely fashion. My purpose in writing is to outline the minimum steps to be taken by H. J. Kaiser if they are to remain as the QA/QC entity for the Zimmer construction effort. These are as follows:

1. Eliminate any domination by construction of the H. J. Kaiser Quality Assurance organization as well as the QC inspectors.

2. Stress the independence of the QA/QC organization from construction and provide effective leadership for that organization, both in the field and in the corporate office.

3. Add 6 degreed discipline engineers with nuclear site experience to review acceptability of data packages.

4. Construction will keep both the H. J. Kaiser and the CG&E Co. QA organizations fully informed on all activity affecting essential systems.

5. Stop the voiding of any non-conformance reports and the transferring of documentation from the KE-2 form to the KE-1 form.

6. Restore a disciplined and rigorous approach to the QA/QC program through surveillance and comprehensive in depth QA audits of the QC activities.

It's disappointing to me to have to write this letter. Since the beginning of construction on the Zimmer project, we have placed our faith in the Kaiser QA/QC program for construction and have limited our own QA involvement to an auditing function. I now find that some of our confidence has been misplaced, not in the basic program, but in its implementation.

I still have every confidence in the quality of construction, but it has become apparent that CG&E must take steps to take control and become completely involved on a day to day basis in the QA function. It is our intention to exercise a level of surveillance over the H. J. Kaiser effort to the extent that Kaiser QA/QC performs on a continuous basis to our and the NRC's high standard.

On a project of this duration, it is not surprising that morale and discipline slide from time to time. At this point, however, we cannot allow it to continue nor to reoccur before we finally achieve our mutual goal of placing Zimmer into successful operation. I still am confident that with the dedicated cooperation of both our organizations we can complete the Zimmer project with pride in a plant that will bring credit to us all in the future.

Yours very truly,

W. H. Dickhoner

WHD:vm

bcc: E. A. Borgmann
J. Coyle
B. K. Culver
W. W. Schwiers
W. D. Waymire

IAL 3. Concerning QC Inspections.

CG&E will conduct 100% reinspection of QC inspections conducted by Kaiser and other contractors by utilizing additional personnel described in Item 1 above, and qualified personnel already on site. This effort will continue until the CG&E audit program is revised, as outlined in Item 10 below, and accepted by Region III. It is requested that Region III regularly monitor CG&E's progress in developing this program so that prompt reduction in the 100% reinspection requirement can be made consistent with the implementation of the revised audit program. Consideration of stepped reductions in reinspections to 50%, then 20%, and then a continuing surveillance by CG&E qualified inspectors is proposed.

IAL 4. Concerning Q.C. Inspection Procedures

All QC inspection procedures are being reviewed by qualified design engineers and QA personnel who are independent of the construction organization. The object of this review is to confirm that the procedures include appropriate inspection requirements and applicable hold points. This review is being performed in accordance with an approved procedure that specifies the reviewers qualifications and training, provides instructions for performing the review, and establishes review documentation requirements. Construction activities controlled by these Q C inspection procedures will not be performed until the applicable procedures have been reviewed, comments as the result of this review resolved, and the procedures approved.

IAL 5. Concerning Training.

Training on any new procedure or practice resulting from the actions taken to fulfill the provisions of this letter will be given to QA/QC personnel at the Zimmer site prior to implementation of the procedures. Refresher training in quality procedures is underway and will include the four specific areas mentioned under this IAL item. The "feedback mechanism" for informing the identifying individual of the resolution of an item, and the "avenue of appeal" regarding the resolution, as described in the IAL are being developed. All refresher training will be accomplished by June 1, 1981.

IAL 6. Concerning Deviations from Codes and FSAR

A. Construction Forces

Project Procedures such as DDC and NR procedures have been in effect continuously throughout construction.

These procedures have adequate provisions to assure that deviations to codes or design documents are identified and dispositioned by responsible design engineers. Prior to May 1, 1981, a formal review of these procedures will be conducted.

B. QC Inspection Forces

All QC inspection procedures are being reviewed by both Design and QA Personnel now. A part of this review is to assure that any deviations from Codes and FSAR statements are identified and that CG&E reviews and approves the resolution of such deviations. All construction activities controlled by these QC inspection procedures have been stopped until the applicable procedure has been reviewed and approved.

QC Inspectors will receive training in any procedure changes which are required.

C. Design Forces

Organizations responsible for design of safety-related equipment will be audited to assure that they have sufficient procedures and training to identify deviations from codes and FSAR statements. All such organizations will be required to advise CG&E of any such deviations. CG&E will review and approve the resolution.

IAL 6. Concerning Deviations from Codes and FSAR

D. Other Actions by S&L

In addition to the corrective actions identified above, the following actions will be taken to assess the project generic aspects and their corrective action to prevent recurrences:

1. The FSAR will be re-reviewed for correctness and consistency with respect to the design by the responsible system engineers. This review will be complete by July, 1981.
2. A new project procedure will be written establishing the need to submit corrections to the FSAR as changes are identified. Formal issue of the FSAR changes will be made on a semi-annual basis.
3. The project instructions will be revised to include a requirement to identify changes or deviations from industry codes and standards, i.e. ASME, AWS, ANSI, etc. when applied categorically in the design.
4. S&L is reviewing on a company generic basis the adequacy of the procedure of using design calculations to control deviations. S&L will review the existing procedures, including GC procedures, project instructions, general drafting standards and department standards to determine if additional controls are required. The review will be completed along with identification of specific corrective actions by June 1, 1981.

IAL 7. Concerning the Voiding of Nonconformance Reports

The Cincinnati Gas & Electric Company is presently awaiting the response from Henry J. Kaiser on an audit conducted by CG&E of a sampling of the voided NR's. The audit requested a 100% review of the voided NR's. and justification for the voiding or lack of disposition of each NR. A letter has been submitted to the Senior Resident NRC Inspector committing to a 100% independent review of the voided NR's. This review will be performed by a qualified CG&E Quality Engineer. The original copies of the voided NR's are under the control of NRC personnel. Upon their release by the NRC, the independent review will be performed. While copies of each voided NR are available, CG&E has been informed by the NRC that the original copies are more indicative of a representation of the NRC's concerns.

QACMI G-4, which covers Nonconforming Material Control was reviewed on April 8, 1981. The review generated numerous comments mainly in the area of increasing the clarity of the procedure. Examples of some of the comments are as follows:

1. A statement should be added to indicate that only a member of the Quality Assurance organization is permitted to remove any tag that applies to an NR.
2. Under no circumstances should an NR be stamped "void". A separate form should be initiated to cancel the NR with sufficient personnel reviews including CG&E.
3. Clarification should be provided regarding the Material Review Board including a statement that CG&E must be in the review cycle regardless of disposition.

IAL 8. Concerning QA/QC Records

All Kaiser QC records were moved to a protected, centralized location at the Zimmer Site on April 7, 1981. (See attached memorandum, Borgmann to Gittings 4/7/81) These records will remain under the care, custody and control of CG&E Quality Assurance Department until agreed to by Region III. Procedures are being developed to implement records handling under this arrangement. Programs for review of the adequacy of these records are being investigated.

INTER-DEPARTMENT CORRESPONDENCE

TO: MR. P. S. GITTINGS

DATE: April 7, 1981

FROM: E. A. BORGMANN

SUBJECT: WM. H. ZIMMER NUCLEAR POWER STATION
UNIT 1 - QA/QC RECORDS

In order to exercise better control over the QA/QC records, we have decided that these records should be placed in a central location immediately. By the close of business on April 7, it is our intention to have these records moved from various locations around the site into the trailer complex formerly occupied by Foothill Electric personnel.

Having these records in a central location will allow us to control the records until a more definitive program with regards to their control and usage has been finalized and accepted by the NRC.

For some time we have been concerned about the lack of fire protection for these records and having them in a central location will allow us to install one fire protection system for their protection.

It is our further intention to assign a CG&E individual as custodian of the QA/QC records until further notice. All removal or insertion of records into the files will be under the jurisdiction of our assigned personnel.

Your cooperation in effecting an efficient and timely transfer of these records as outlined above is requested.

E. A. Borgmann

EAB:mjl
cc: J. Coyle
R. Marshall
B. K. Culver
W. D. Waymire
W. W. Schwiers

IAL #9 - Concerning Conditions Adverse to Quality

On April 7, 1981, a letter was transmitted to the Henry J. Kaiser Company directing them to submit to CG&E a copy of each new Nonconformance Report or Surveillance Report prepared. A method evaluating these reports will be developed by CG&E to assure that the validity and adequate control exists regarding these reports.

This procedure will be completed May 1, 1981 and implemented May 15, 1981.

KEQ

THE CINCINNATI GAS & ELECTRIC COMPANY

CINCINNATI, OHIO 45201

April 7, 1981
KEQ-551

Henry J. Kaiser Company
P. O. Box 201
Moscow, Ohio 45153

Attention: Mr. P. S. Gittings

RE: WM. H. ZIMMER NUCLEAR POWER STATION
UNIT I - SURVEILLANCES AND NR's -
W.O. #57300-957, JOB E-5590

Gentlemen:

Effective immediately, one (1) copy of each new or revised nonconformance report and surveillance report shall be submitted to CG&E QA.

Submittal of these reports shall be made at the time of preparation; for example, if a Nonconformance Report is prepared by an inspector, reviewed by the Lead Inspector, and concurred with by the Supervisor of Inspections, and a control number assigned, a copy of the report shall concurrently be submitted to CG&E for review.

If you have any questions regarding this request, please let me know.

Very truly yours,

THE CINCINNATI GAS & ELECTRIC COMPANY

By W. W. Schwiers
W. W. SCHWIERS
MANAGER, QUALITY ASSURANCE

WWS:pa

IAL 10. Concerning the Audit Program

Additional auditing personnel, as covered under Item 1 above, "QA Staffing" will be added to implement the CG&E audit program. The existing audit schedule will be completely reviewed and expanded to include technical hands-on type audits and audits of a technical nature at all firms providing design services. Personnel from the General Engineering Department will provide assistance in the conduct of these audits. The audits will be in-depth and comprehensive as to the activity being audited.

Cincinnati Gas and Electric
Company
ATTN: Mr. W. H. Dickhoner
President
139 East 4th Street
Cincinnati, OH 45201

Gentlemen:

This refers to the investigation conducted by Region III during the period January 12 to October 9, 1981, of construction activities at the Zimmer Nuclear Power Station ~~site~~. The investigation was initiated as a result of allegations made to the NRC by a Quality Control Inspector who formerly worked at the Zimmer site and by the Government Accountability Project of the Institute for Policy Studies (a non-governmental agency) on behalf of Mr. Thomas Applegate. The results of the continuing investigation reveal a widespread breakdown of your quality assurance program as evidenced by numerous examples of noncompliance with ~~eleven~~ twenty of the eighteen different criteria for a quality assurance program as set forth in 10 CFR 50, Appendix B. The cause of the breakdown was your failure to exercise adequate oversight and control of your principal contractors to whom you had delegated the work of establishing and executing quality assurance programs. You thereby failed to fulfill your vital responsibility as described in Criterion I of Appendix B to assure the execution of a quality assurance program. The potential safety concern of your quality assurance program breakdown was discussed during an enforcement conference at our Region III office in Glen Ellyn, Illinois, on August 5, 1981, attended by you and members of your staff and the NRC Region III staff.

Two of the violations (Items A and B of Appendix A of this letter) are of particular concern to us because of the very essential role they play in the execution of an effective quality assurance program. These two violations relate to false records and to harassment/intimidation of quality control inspectors.

With regard to false records, the examples we identified raise serious questions as to the accuracy of quality records at the site. Our concern in this area served as a major factor in requiring the conduct of a confirmation program to be completed by you to furnish evidence of plant quality. Because the NRC inspection program is a sampling program, the importance of accurate quality records cannot be overemphasized. Accordingly, we have addressed this matter as a separate violation and assessed a separate civil penalty for it.

With regard to harassment/intimidation of Quality Control Inspectors, we have also addressed this matter as a separate violation and assessed a separate civil penalty for it. We determined that your construction contractor took some action to stop the water dousing of Quality Control Inspectors; however, those actions did not stop the activity. Harassment/intimidation of quality control inspectors is clearly a barrier to effective implementation of a quality assurance program and results in loss of the organizational independence described in Criterion I of Appendix B. The importance of this matter is reflected in the recent amendment (Public Law 96-295, June 30, 1980) to the Atomic Energy Act of 1954, which added Section

that significant construction deficiencies could have resulted from

235 relating to protection of nuclear inspectors such as your Quality Control Inspectors.

The impact of the identified quality assurance deficiencies on the actual construction has yet to be determined. Limited independent measurements were performed by the NRC in selected areas of concern in an attempt to characterize the actual safety significance of these deficiencies. Although a few problems requiring corrective action were identified (i.e., four unacceptably installed pipe hangers), the majority of the ~~tests and examinations~~ NRC independent measurements did not disclose hardware problems. However, Recognizing the ~~significant~~ quality assurance problems identified during this investigation, the NRC has required the establishment of a comprehensive Quality Confirmation Program to determine the quality of plant systems important to nuclear safety. The NRC will confirm the adequacy of the program and may ~~is making~~ make additional independent verifications. Deficiencies identified by these programs will require resolution prior to issuance of an Operating License.

need for benefits to have complete and accurate records to maintain a work structure where quality assurance personnel are not harassed or intimidated, and to implement effective quality assurance programs which identify and correct deficiencies

Notwithstanding the fact that serious construction deficiencies have not been identified, in order to emphasize the ~~significance NRC attaches to false records, harassment/intimidation of quality assurance personnel, and breakdowns of quality assurance programs that have a high potential for serious construction deficiencies~~, we propose to impose civil penalties in the cumulative amount of Two Hundred Thousand Dollars for the matters in the Notice of Violation.

Some of the examples in the Notice of Violation occurred ~~under~~ subsequent to the issuance of the revised enforcement policy and some prior to that time. ~~In this regard we have exercised discretion in arriving at the amount of the proposed civil penalties which is less than allowed by either the old or new enforcement policies or a combination of the two~~. In arriving at the amount of the proposed civil penalties we considered the amount of the civil penalties that have been issued to licensees of other plants under construction ~~and the changes in the enforcement policies~~. We believe our proposed amount provides assurance that you will fully appreciate the significance of the violations and will result in an adequate deterrent against future similar violations by you and other licensees of plants under construction. We have for convenience and clarity categorized the items in the Notice of Violation at the Severity Levels described in accordance with the Interim Enforcement Policy published in the Federal Register, 45 FR 66754 (October 7, 1980).

have expressed discretion not included in the new enforcement policy at

The results of this investigation and our review of your 10 CFR 50, Appendix B, noncompliance history reveal an additional matter which is of significant concern to us related to inadequate corrective actions. The results of our normal inspection program for the construction and testing of Zimmer indicate you were found in noncompliance forty-four times since December 1979 with thirteen of the eighteen different criteria of Appendix B. During our Systematic Assessment of Licensee Performance review on December 16, 1980, we expressed concern with your relatively poor performance in this area.

the number of exceptions should be reduced and the quality improved

This poor history of compliance with 10 CFR 50, Appendix B, when considered with the recent findings of the investigation indicates that your corrective actions ~~really~~ only addressed individual problems and not ~~the~~ underlying programmatic causal factors. Consequently, we request that you review your history of noncompliance with 10 CFR 50, Appendix B, for the past two years and in your response to this letter provide those steps you have taken to address and correct the underlying programmatic causal factors related to the noncompliances.

You are required to respond to the Notice of Violation and in preparing your response you should follow the instructions in Appendix A. You should give particular attention to those actions designed to assure continuing compliance with NRC requirements. Your written reply to this letter and the results of future inspections will be considered in determining whether further enforcement action is appropriate.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosure will be placed in the NRC Public Document Room.

The responses directed by this letter and the enclosed Appendix A are not subject to the clearance procedures of the Office of Management and Budget as required by the Paperwork Reduction Act of 1980, PL 96-511.

Sincerely,

Richard C. DeYoung, Director
Office of Inspection and Enforcement

Enclosures: Appendix A, Notice of Violation and Proposed Imposition of Civil Penalty and Appendix B, Cross References: Noncompliance to Report Details

cc w/encl:
E. A. Borgmann, Senior Vice President, Engineering Services and Electric Production
J. R. Schott, Plant Superintendent
DMB/Document Control Desk (RIDS)
Resident Inspector, RIII
Harold W. Kohn, Power Siting Commission

Cincinnati Gas and Electric
Company

Citizens Against a Radioactive
Environment
Helen W. Evans, State of Ohio

Appendix A

NOTICE OF VIOLATION

AND

PROPOSED IMPOSITION OF CIVIL PENALTIES

Cincinnati Gas and Electric Company
Wm. H. Zimmer Nuclear Power Station

Docket No. 50-358
Construction Permit No. CPPR-88
EA No. 81-12

As a result of the investigation conducted at the Wm. H. Zimmer Nuclear Power Station in Moscow, Ohio, on January 12 - October 9, 1981, the violations listed below with multiple examples were identified. The numerous examples of the violations demonstrate your failure to exercise adequate oversight and control of your principal contractors, to whom you had delegated the work of establishing and executing quality assurance programs, and thereby fulfill your responsibility of assuring the effective execution of a quality assurance program. Your failure manifested itself in a widespread breakdown in the implementation of your quality assurance program and caused the NRC to require an extensive quality confirmation program to provide confidence that safety-related structures, systems, and components will perform satisfactorily in service. Included in the breakdown were findings we consider to be particularly disturbing relating to false records and harassment and intimidation of quality control inspectors. Because of the ~~safety significance of the quality assurance program breakdown~~, in accordance with the Interim Enforcement Policy, 45 FR 66754 (October 7, 1980), the Nuclear Regulatory Commission proposes to impose civil penalties pursuant to Section 234 of the Atomic Energy Act of 1954, as amended, ("Act"), 42 U.S.C. 2282, ~~PL 96-295~~, and 10 CFR 2.205 in the amounts set forth for the violations listed below.

A. 10 CFR 50, Appendix B, Criterion XVII states, in part, "Sufficient records shall be maintained to furnish evidence of activities affecting quality."

Contrary to the above, ~~numerous examples of~~ records were identified that did not furnish evidence of activities affecting quality in that they were false. Examples of false records are as follows:

1. Isometric drawings or other records did not furnish evidence of the actual piping components installed in the 10 pipelines in the diesel generator cooling water, starting air and fuel oil systems, in that the heat numbers recorded on the drawings did not match the heat numbers marked on the respective components. The 10 pipelines were:

Significance of ~~[illegible]~~ having complete and accurate records, not maintaining a work atmosphere where quality assurance procedures are not harassed, and not assuring implementation of an effective quality assurance program which identifies and corrects nonconforming conditions

1DG28AB1	1DGC5AA3/4
1DG27AB1	1DGF6AA1/2
1DG01AB1	1DGC5BA3/4
1DGF2AA1/2	1DGF6BA1/2
1DG28AE1	1DG25AC2

2. The Kaiser Nonconformance Reporting Log did not reflect all reports initiated as evidenced by the following:

   a. The original entry for a report (CN-4309) initiated by a QC Inspector on January 7, 1981, relating to deficient weld fit-up was eliminated by whiting-out and there was no other record of this report in the NR system.

   b. The original entry for a report (CN-5412) initiated by a QC Inspector on February 3, 1981, and relating to violation of a hold tag was eliminated by whiting-out and there was no other record of this report in the NR system.

   c. A report (NRC-0001) initiated by a QC Inspector on February 11, 1981, relating to excessive weld weave was not assigned a number and there was no other record of this report in the NR system.

3. Written statements as to planned actions which were made to justify voiding reports E-1661 (voided 11/11/80), E-1662 (voided 11/11/80), and E-2466 (voided 6/30/80) ~~and those actions~~ were not taken.

4. Written statements relating to the availability of records which were made to justify voiding reports E-1777, E-5108, ~~CN-5476, CN-5477, CN-5479~~ were false.

This is a Severity Level III violation (Supplement II).

(Civil Penalty - $50,000)

B. 10 CFR 50, Appendix B, Criterion I states, in part, "The persons... performing quality assurance functions shall have sufficient...organizational freedom to identify quality problems...including sufficient independence from cost and schedule."

The Wm. H. Zimmer QA Manual, Section 1.2.3 describes QC Inspectors as members of QAD (Quality Assurance Division) and Section 1.2.4 states, in part, "QAD has been assigned sufficient...organizational freedom to identify quality problems..."

Contrary to the above, QC Inspectors did not have sufficient freedom to identify quality problems and were not sufficiently independent from cost and schedule. The results of interviews indicate that

5. Reports CN-5476, CN-5477, and CN-5479 were knowingly erroneously voided and deleted from the NR system at the direction of the Kaiser QA Manager.

some QC Inspectors were: (a) harassed by construction workers and supervisors; (b) not always supported by QC management; and (c) intimidated. ~~Although there was no evidence to suggest that these activities resulted in the acceptance by the inspectors of substandard conditions, they were not conducive to the implementation of an effective quality assurance program.~~ The following are examples of insufficient freedom of QC Inspectors, including insufficient freedom from cost and schedule, which occurred between 1978 and March 11, 1981:

1. Five QC Inspectors interviewed executed signed sworn statements wherein they claimed they were doused with water (while engaged in the performance of inspection duties) by construction personnel. Two other QC Inspectors made similar statements.

2. A QC Inspection supervisor claimed that over his objections qualified QC Inspectors who were doing thorough jobs were reassigned by QC management because of complaints by construction personnel. ~~[In some cases (CN 5476, CN 5477, CN 5479), nonconformance reports initiated by these inspectors were improperly voided after the inspectors were reassigned.]~~

3. Two QC Inspectors executed signed sworn statements wherein they claimed they had been harassed by being searched for alcohol by security personnel at the request of construction supervisory personnel. One other QC Inspector made a similar statement.

4. A QC Inspector executed a signed sworn statement wherein he claimed the QA Manager had threatened to fire him after construction personnel complained he had used a magnifying glass to visually inspect a weld when in fact he was using a mirror and either device was an acceptable tool.

5. A QC Inspector executed a signed sworn statement wherein he claimed he was struck by a stream of water from a fire extinguisher while performing an inspection.

6. A QC Inspector executed a signed sworn statement wherein he claimed he was threatened with bodily harm by a construction person if he did not pass a weld.

7. A Lead QC Inspector executed a signed sworn statement wherein he claimed:

   a. he was accused by the QA Manager for holding up a concrete pour when in fact the delay was caused by the concrete trucks being late.

   b. construction management frequently approached QC Inspectors and challenged their inspection findings and questioned their judgement.

c. the QA Manager said things like "our job here is to accept, not reject, and we are here to get this plant built."

8. A Lead QC Inspector executed a signed sworn statement wherein he claimed he was relieved of his inspection duties because he continued to submit legitimate nonconformance reports over construction management objections for deficient welds on pipe support hangers. He also stated that QA management had previously told QC Inspectors to not write anything to make Kaiser look bad.

9. A QC Inspector executed a signed sworn statement wherein he claimed he was told by QA management to accept inspected items that were unacceptable. ~~almost acceptable.~~

This is a Severity Level III violation (Supplement II).

(Civil Penalty - $50,000)

C. 10 CFR 50, Appendix B, Criterion II requires holders of construction permits for nuclear powerplants to document, by written policies, procedures, or instructions, a quality assurance program which complies with the requirements of Appendix B for all activities affecting the quality of safety-related structures, systems, and components and to implement that program in accordance with those documents.

Contrary to the above, Cincinnati Gas and Electric Company and its contractors did not adequately document and implement a quality assurance program to comply with the requirements of Appendix B as evidenced by ~~numerous~~ the following examples: ~~of that noncompliance as follows:~~

1. 10 CFR 50, Appendix B, Criterion XV states, in part, "Nonconforming items shall be reviewed and accepted, rejected, repaired or reworked in accordance with documented procedures."

   Kaiser Procedure QACMI G-4, "Nonconforming Material Control," provides detailed instructions for the review and disposition of reports (Nonconformance Reports) of nonconforming items.

   Contrary to the provisions of QACMI G-4, the sample of NRs reviewed indicate significant deficiencies with the nonconformance reporting system in the areas of voiding of reports, not entering reports into the system, improper dispositioning of reports, and incomplete report files. The deficiencies identified were as follows:

   a. ~~Four~~ Five NRs related to documentation deficiencies had been improperly voided in that there was no adequate justification for the voiding. (NR-E-1777 voided 4/30/79, NR-E-2191 voided 2/22/80, NR-E-2233 voided 1/24/80, NR-E-2237 voided 12/19/79, NR-E-5108 voided 6/20/80)

b. One NR related to nondestructive examination of a T-quencher weld had been erroneously closed (not voided) by administrative error. (NR-E-2996 closed 3/17/81)

c. Four reports had been voided by personnel other than the QA Manager. (CN-5122 voided 1/2/81, CN-5476 voided 2/27/81, CN-5477 voided 2/27/81, CN-5479 voided 2/27/81)

d. In one case during revisions of the report some nonconforming items were removed from a NR without adequate justification. (NR-E-2466 voided 6/30/80)

e. The following ~~fifteen~~ nine reports had not been issued NR numbers and/or copies of the reports had not been retained in the Site Document Center:

~~CN-4909~~	CN-4959
CN-4389	CN-5122
CN-4930	~~CN-5412~~
CN-4931	~~CN-5476~~
CN-4955	~~CN-5477~~
CN-4956	~~CN-5479~~
CN-4957	~~NRC-0001~~
CN-4958	

~~(The copies of the NRs reviewed by the investigator were provided by an alleger.)~~

2. 10 CFR 50, Appendix B, Criterion XVI states, in part, "Measures shall be established to ~~control materials, parts, or components which do not conform to requirements in order to prevent their inadvertent use or installation.~~"

The Wm. H. Zimmer QA Manual, Section 15.2.2 states, "HJK is responsible for identifying and reporting nonconformances in receiving inspection, construction, or testing activities which are delegated to HJK Quality Assurance Procedures to assure that nonconforming items are conspicuously marked to prevent their inadvertent use or installation."

AWS Code D1.1-1972, Section 3 and 8.1.5 define requirements for weld quality and address slag, weld profiles, blowholes, porosity, and undercut.

AISC, Seventh Edition (1969), Page 4.113 requires 1/2 inch minimum radius for re-entrant corners.

and 3.13.10.1.1

Contrary to the above, the following nonconforming conditions were not identified and ~~corrected~~ corrected:

a. Based on an inspection of the 25 structural hanger support beams described in Item C.4 below,

(1) Several welds on ~~8~~ nine beams did not conform with AWS D1.1-1972 requirements in that they contained unacceptable slag, weld profiles, blowholes, porosity, and/or undercut.

(2) Five beams did not conform with AISC requirements in that the re-entrant corners were notched, creating potential stress risers, instead of being rounded with required radii.

(3) Four beams, ~~2~~ two of which had unacceptable welds as described in Item C.2.a.(1) above, did not conform with design documents in that they were not specified on any design document.

b. Based on an inspection of about 100 cable tray hangers in the Cable Spreading Room, ~~4~~ four did not conform with AWS D1.1-1972 requirements in that the welds contained unacceptable slag, weld profiles, blowholes, porosity, and/or undercut.

~~The nonconforming conditions were not controlled in that they were not conspicuously marked to prevent their inadvertent use~~.

3. 10 CFR 50, Appendix B, Criterion XVI states, in part, "Measures shall be established to assure that conditions adverse to quality, such as...deviations...and nonconformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition."

FSAR Section 3.9.3.1

The Wm. H. Zimmer QA Manual, Section 16.5 states, in part, "Vendors, contractors, and subcontractors are required to determine cause and corrective action to prevent recurrence of errors which could result in significant conditions adverse to quality."

ASME Code, Section III-1971 Edition, Article NB-3661.5(b) states, in part, "...a gap of approximately 1/16 in. shall be provided between the end of the pipe and the bottom of the socket before welding."

ASME Code, Section III-1971 Edition , Winter 1972 Addenda, Articles NA-4130(a), NA-4420, NA-4510, NA-4442.1, NB-4122, NA-4451, NB-4230, and NB-3661.5(b) require, in part, in-process inspections for pipe fitup, weld procedure, weld filler metal traceability, and welder qualifications...

Contrary to the above, the NRC inspectors identified the following nonconforming conditions that had not been corrected and action had not been taken to preclude their repetition:

a. ~~The~~ Licensee records indicate ~~identified~~ that the socket engagement (fitup) for more than 439 socket welds was not verified in accordance with ASME Code, Section III-1971 Edition, Article NB-3661.5(b) and the condition was not corrected in that the corrective action was not commensurate with the ASME Code. The welds date back to 1979.

b. ~~The~~ Licensee records indicate ~~was aware~~ that the in-process inspections for more than 22 welds in the Diesel Generator cooling water, starting air, and fuel oil piping systems were not performed by Kaiser in accordance with ASME Code, Section III-1971 Edition, Article NB-3661.5(b), et. al., and the condition was not corrected in that the corrective action was not commensurate with the ASME Code. The welds date back to 1978.

c. Five licensee QA audits (audit performed 8/8-9/74 - no number, and Audit Nos. 78/07, 78/09, 78/10, 80/04) of Sargent & Lundy identified repetitive problems concerning S&L not performing certain design calculations, reviews, and verifications and action was not taken to preclude repetition.

4. 10 CFR 50, Appendix B, Criterion VIII states, in part, "Measures shall be established for the identification and control of materials... These measures shall assure that identification of the item is maintained..."

The Wm. H. Zimmer QA Manual, Section 8.2 states, in part, "H. J. Kaiser Company procedures provide that within the H. J. Kaiser Company jurisdiction the identification of items will be maintained by the method specified on the drawings, such as heat number, part number, serial number, or other appropriate means. This identification may be on the item or on records traceable to the item. The identification is maintained throughout fabrication, erection, and installation. The identification is maintained and usable in the operation and maintenance program."

Contrary to the above, based on an inspection by NRC inspectors in March 1981 of approximately 25 structural hanger support beams located in the Blue Switchgear Room and the Cable Spreading Room, the identification of the material in ~~8~~ of those beams was not maintained to enable verification of quality.

~~The above examples raise questions about the adequacy of the quality of installed materials as well as the obvious paperwork deficiencies.~~

5. 10 CFR 50, Appendix B, Criterion III states, in part, "Measures shall be established to assure that applicable regulatory requirements and the design basis...are translated into...drawings..."

The Wm. H. Zimmer FSAR, Section 8, provides the design basis for electrical cable separation that includes the following:

> Associated cables (Green/White, Blue/White, and Yellow/White) from more than one Division cannot be routed in the same raceway. (FSAR Paragraph 8.3.1.13.2)
>
> Vertical separation of three feet or more must be maintained between cables from different Divisions. (FSAR Paragraph 8.3.1.11.2.1.d)
>
> Instrument (low-level signal) cables cannot be routed in the same raceway with power and control cables. (FSAR Paragraph 8.3.1.12.1.3)

The Wm. H. Zimmer QA Manual, Section 3.3.2. states, "Composite... drawings are prepared, translating the design concepts into layouts of structures, systems, and components necessary for the construction of the plant."

Contrary to the above, as of March 1981, the FSAR design basis for electrical cable separation had not been translated into ~~the~~ drawings ~~which governed~~ the following cable installation deficiencies in the Cable Spreading Room:

a. Associated Cable (Yellow/White) No. RE053 for Division 1 was routed in the same raceway (two-inch conduit and Class IE Sleeve No. 79) as Associated Cable (Blue/White) No. RE058 for Division 2. Also, Associated Cable No. RE053 was routed so that in places there was only a vertical separation of four inches between it and cables in Blue Tray No. 2072C for Division 2.

b. Instrument Cable (Green) No. WS714 and others for Division 3 were routed in the same raceway (Tray No. 4638B) as Associated Control Cables (Yellow/White and Blue/White) for Divisions 1 and 2. This deficiency was due, in part, to a design which specified the installation of a Green Instrument Tray (No. 3029K) inside a White Control Tray (No. 4638B).

c. Many Associated Cables from all three Divisions were routed in the same raceway (White Tray No. 4080K) including Cable (Blue/White) No. TI192, Cable (Yellow/White) No. RR781, and Cable (Green/White) No. TI816.

d. Associated Cables (Yellow/White) No. TI942 and No. TI943 for Division 1 were routed in the same raceway (White Tray Riser No. RK4627) as Associated Cables (Blue/White) No. TI808 and No. TI760 for Division 2.

e. Many Associated Cables (Yellow/White) for Division 1 were routed in the same raceway (White Tray Riser No. 4139) as Associated Cables (Blue/White) for Division 2.

~~The above installation deficiencies were noted during brief tours of the Cable Spreading Room while pursuing other unrelated matters.~~

6. 10 CFR 50, Appendix B, Criterion III states, in part, "Design control measures shall be applied to...the delineation of acceptance criteria for inspections and tests."

The Wm. H. Zimmer QA Manual, Section 3.13.1 states, in part, "Design control measures also apply to delineation of acceptable criteria for inspections and tests."

FSAR

Weld acceptance criteria are required by the ASME Code, Section III-1971 Edition and AWS D1.1-1972 Code.

Contrary to the above:

a. The weld acceptance criteria used by H. J. Kaiser Company from July 1980 to January 1981 were not applied to weld inspections during that period in that the weld acceptance criteria for such items as the drywell support steel were deleted.

b. The acceptance criteria for Weld 55H (isometric drawing PSK-1WS-32) performed on Service Water System Line No. 1WS17A18 by H. J. Kaiser Company in November 1979 were not applied in that they were designated as not applicable.

7. 10 CFR 50, Appendix B, Criterion XI states, in part, "Test procedures shall include provisions for assuring that all prerequisites for the given test have been met... Test results shall be evaluated to assure that test requirements have been satisfied."

The Wm. H. Zimmer QA Manual, Section 11.1 states, in part, "Test programs to assure that essential components, systems, and structures will perform satisfactorily in service are planned and

performed in accordance with written procedures and instructions at vendor shops and at the construction site."

M. W. Kellogg Co. (pipe manufacturer and agency performing the prefabricated pipe weld radiography in question) Radiographic Procedure No. ES-414, dated September 26, 1972, Paragraph 4.1.8, states, "Wherever required, shims shall be used to produce a total thickness under the penetrameter equal to the nominal thickness of the base metal plus the height of the crown or reinforcement."

ASME Section III-1971 Edition, Winter 1972 Addenda, Appendix IX, Paragraph IX-3334.4 states, in part, "The shim thickness shall be selected so that the total thickness being radiographed under the penetrameter is the same as the total weld thickness..."

Contrary to the above, the NRC inspectors reviewed approximately 800 radiographs involving 206 welds and determined that 187 of the radiographs did not comply with the ASME Code in that there was insufficient shimming of the penetrameter. The radiographed welds were prefabricated pipe welds in such systems as feedwater, diesel generator support systems, and main steam.

8. 10 CFR 50, Appendix B, Criterion III states, in part, "These measures [design control] shall include provisions to assure that appropriate quality standards are specified and included in design documents and that deviations from such standards are controlled...The design control measures shall provide for verifying or checking the adequacy of design."

The Wm. H. Zimmer QA Manual, Section 3.4 states, in part, "Design reviews are conducted to assure that the appropriate quality standards are specified and included in design documents."

The Wm. H. Zimmer QA Manual, Section 3.6 states, "Measures are established to assure that any deviations from the applicable standards are controlled."

The Wm. H. Zimmer QA Manual, Section 3.11.2 states, in part, "At S&L, design verification reviews are performed...."

The Wm. H. Zimmer FSAR Section 8.3.3.1.1 states that cable ampacity is based on IPCEA Publication No. P-46-426. ~~Also regarding~~ As mentioned in cable ampacity, as stated in Section 8.3.3.1.3 the FSAR [redacted] "the summation of the cross-sectional areas of the cables shall not exceed 50% of the tray usable cross-sectional area or two layers of cables, whichever is larger, but not to exceed 60% of the cross-sectional area in any case."

AWS D1.1-1972 Code, Section 3.6.4, states, "For building and tubular structures, undercut shall be no more than 0.01 inch deep when its direction is transverse to primary tensile stress in the part that is undercut, nor more than 1/32 inch for all other situations."

Contrary to the above:

a. As of March 1981, design control measures had not been established to assure that deviations from design conditions (quality standards) identified by Sargent & Lundy engineers were controlled. For example, Sargent & Lundy noted on a calculation sheet dated December 27, 1979, that the design thermal loading for two power cables (VC016 and VC073) in Yellow Tray No. 1057A would allow the cables to be thermally overloaded and no program existed to control those design deviations.

b. As of March 1981, design control measures had not been established by Sargent & Lundy to provide for verifying or checking the adequacy of the design for the thermal loading of power cable sleeves and the physical weight loading of cable trays.

c. As of March 1981, the cable ampacity design by Sargent & Lundy was not ~~based~~ based on IPCEA P-46-426 and the FSAR limit on cross-sectional area ~~(appropriate quality standard). The cable ampacity was instead based on IEEE Paper 70TP557-PWR (1970), IPCEA P-54-440, and Sargent & Lundy Standard ESA 114.~~

d. As of March 1981, the design allowable undercut on cable tray hanger welds was not based on AWS D1.1-1972 Code (appropriate quality standard). The design undercut was instead based on Sargent & Lundy Specification H-2713, Supplement 7, Sargent & Lundy Standard EB-117, and H. J. Kaiser Procedure SPPM No. 4.6, "Visual Examination," Revision 8, Paragraph 5.2.9, allowed up to 1/16 inch undercut.

9. 10 CFR 50, Appendix B, Criterion X states, in part, "A program for inspection of activities affecting quality shall be established and executed by or for the organization performing the activity to verify conformance with the documented instructions, procedures, and drawings for accomplishing the activity."

The Wm. H. Zimmer QA Manual, Section 10.1.2 states, in part, "Inspections are performed in accordance with written procedures which include requirements for check lists and other appropriate documentation of the inspections and tests performed."

AWS D1.1-1972 Code, Section 3.10.1, requires work to be completed and accepted before painting.

Contrary to the above:

a. As of March 1981, a QC inspection program had not been established to require verification of separation of electrical cables routed from the Cable Spreading Room to the Control Room. An example of a nonconforming condition that should have been identified by such a program was Blue Cables RI103 and CM111 that had been routed into Tray Riser (Green) No. 3025A, which extended from Tray (Blue) No. 2077A in the Cable Spreading Room to the Control Room.

b. The programs established for in-process and final inspections of welds on 180 cable tray hangers located in the Cable Spreading Room were not executed as required in the AWS D1.1-1972 Code. Specifically, the final weld inspections were made after the welds were painted (Galvanox).

10. 10 CFR 50, Appendix B, Criterion V states, in part, "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings."

The Wm. H. Zimmer QA Manual, Section 5.1 states, "Construction, fabrication, and manufacturing activities which affect the quality of the facility are accomplished in accordance with written instructions, procedures, and drawings which prescribe acceptable methods of carrying out those activities."

The Wm. H. Zimmer QA Manual, Section 3.12 states, in part, "Design changes...including field changes, are subject to design change control measures commensurate with those applied to the original design."

Contrary to the above:

a. Kaiser Procedure QACMI G-14, "Surveillance Reports," was not appropriate to the circumstances in that it allowed in-process nonconformances which constitute field changes to be dispositioned within 30 days without being subjected to design control measures commensurate with those applied to the original design. Examples of nonconformances so dispositioned were identified in SRs F-2899, F-2903, and F-2914.

b. Kaiser Procedure QACMI G-14 was not followed in that SRs F-2909, F-3070, F-3071, F-3072, F-3073, F-3074, F-3075, F-3076, F-3083, and F-7019 were not dispositioned within 30 days and were not transferred to Nonconformance Reports as required by Paragraph 5 of QACMI G-14.

11. 10 CFR 50, Appendix B, Criterion VII states, in part, "The effectiveness of the control of quality by contractors and subcontractors shall be assessed by the applicant or designee...."

The Wm. H. Zimmer QA Manual, Section 7.3.1 states, in part, "As part of the vendor selection process, S&L makes an independent evaluation of the bidders' QA programs as a part of their total bid evaluation."

Contrary to the above, as of March 1981, neither the licensee nor designee (Sargent & Lundy) had assessed the effectiveness of the control of quality by vendors who had supplied structural beams. Specifically, evaluations of the vendor (U.S. Steel Supply, PBI Steel Exchange, and Frank Adams Company) quality assurance programs for control of mill certifications and structural beams were not performed.

12. 10 CFR 50, Appendix B, Criterion XVII states, in part, "Sufficient records shall be maintained to furnish evidence of activities affecting quality. The records shall include...monitoring of work performance, and...include closely-related data such as qualifications of personnel, procedures, and equipment."

The Wm. H. Zimmer QA Manual, Section 17.1.4 states, in part, "Documentation of all performance surveillance includes personnel identification and qualification, procedure, type observation, date of performance, person or organization monitored, results and corrective action if required."

Contrary to the above, the Bristol Steel and Iron Works Quality Control Steel Erection Report, which was a generic form for monitoring in-process steel erection, did not identify closely related data such as weld procedure numbers, types of welding material, welder identification, and specific welds inspected.

13. 10 CFR 50, Appendix B, Criterion XVIII states, in part, "A comprehensive system of planned and periodic audits shall be carried out to verify compliance with all aspects of the quality assurance program and to determine the effectiveness of the program."

The Wm. H. Zimmer QA Manual, Section 18.1 states, in part, "QA Division conducts a comprehensive system of planned and periodic audits of S&L, HJK...to verify compliance with all aspects of the quality assurance program."

Contrary to the above, during the past 9 years the licensee's QA Division did not perform an audit of the Sargent & Lundy nonconformance program.

This is a Severity Level II violation (Supplement II).

(Civil Penalty - $100,000)

Pursuant to the provisions of 10 CFR 2.201, Cincinnati Gas and Electric Company is hereby required to submit to this office within 30 days of the date of this Notice a written statement or explanation, including for each alleged violation: (1) admission or denial; (2) the reasons for the violation if admitted; (3) the corrective steps which have been taken and the results achieved; (4) the corrective steps which will be taken to avoid further violations; and (5) the date when full compliance will be achieved. Any statement or explanation may incorporate by specific reference (e.g., giving page and paragraph numbers) the provisions of your Quality Confirmation Program and your actions in response to our Immediate Action Letter of April 8, 1981. Consideration may be given to extending the response time for good cause shown. Under the authority of Section 182 of the Act, 42 U.S.C. 2232, this response shall be submitted under oath or affirmation.

Within the same time as provided for the response required above under 10 CFR 2.201, Cincinnati Gas and Electric Company may pay the civil penalties in the cumulative amount of Two Hundred Thousand Dollars or may protest imposition of the civil penalties in whole or in part by a written answer. Should Cincinnati Gas and Electric Company fail to answer within the time specified, this office will issue an Order imposing the civil penalties in the amount proposed above. Should Cincinnati Gas and Electric Company elect to file an answer in accordance with 10 CFR 2.205 protesting the civil penalties, such answer may: (1) deny the violations listed in this Notice in whole or in part; (2) demonstrate extenuating circumstances; (3) show error in this Notice; or (4) show other reasons why the penalty should not be imposed. In addition to protesting the civil penalties in whole or in part, such answer may request remission or mitigation of the penalties. Any answer in accordance with 10 CFR 2.205 should be set forth separately from the statement or explanation in reply pursuant to 10 CFR 2.201, but may incorporate by specific reference (e.g., giving page and paragraph numbers) to avoid repetition. Cincinnati Gas and Electric Company's attention is directed to the other provisions of 10 CFR 2.205, regarding the procedure for imposing a civil penalty.

Upon failure to pay any civil penalty due, which has been subsequently determined in accordance with the applicable provisions of 10 CFR 2.205, this matter may be referred to the Attorney General, and the penalty, unless compromised, remitted, or mitigated, may be collected by civil action pursuant to Section 234c of the Act, 42 U.S.C. 2282.

FOR THE NUCLEAR REGULATORY COMMISSION

Richard C. DeYoung, Director
Office of Inspection and Enforcement

Dated at Bethesda, Maryland
this day of , 1981