

GOVERNMENT ACCOUNTABILITY PROJECT

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May 11, 1981

Mr. James G. Keppler
Director, Region III
United States Nuclear Regulatory Commission
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Glen Ellyn, Illinois 60137

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Dear Mr. Keppler:

On behalf of Mr. Thomas Applegate, the Government Accountability Project ("GAP") of the Institute for Policy Studies submits this request that you recommend suspension of the construction permit for the William H. Zimmer Power Station ("Zimmer") in Moscow, Ohio. Our action is based on a study our organization has just concluded of your office's reports of inspections and investigations from March 1979 to date, as well as on evidence Mr. Applegate has presented on his own and other witnesses' behalf to Region III's renewed investigation of Zimmer.*

The Government Accountability Project (GAP) is a non-profit, nonpartisan public interest organization that assists federal and corporate employees who report illegal, wasteful or improper activities by their agencies. GAP also monitors governmental reforms, offers its expertise about personnel issues to Executive Branch offices and agencies, responds to Congressional requests for analysis of issues related to accountable government and disseminates significant information about problems to appropriate places within government.

Our review of Region III reports revealed 62 items of noncompliance with law or NRC regulations over the last two years. In addition to repeated noncompliance and defective components in safety-related systems, NRC reports, combined with our own investigation, have documented mismanagement and systematic defects in two vital areas -- 1) the integrity of the quality assurance program, and 2) adequate security measures to protect the plant and the nuclear fuel already there. The Nuclear Regulatory Commission ("NRC") cannot fulfill its responsibility to the public health and safety without suspending

*We are submitting our analysis to you rather than formally petitioning the Commission under 10 CFR §2.202, because Region III is conducting a massive five month investigation at Zimmer. You have maintained personal oversight of the investigation.

MAY 11 1981

May 11, 1981

operations at Zimmer until these structural preconditions for safe nuclear power are finally established. The plant is too near completion to continue gambling the public safety and the ratepayers' funds on such a shaky foundation.

Even if the safety problems are resolved prior to final licensing, continuing current construction under an inadequate quality assurance system can only backfire. If nothing else, the citizens will be further delayed in enjoying the benefits of nuclear power from Zimmer. Further, maintaining "business as usual" will only increase the number of flaws to correct. The ratepayers will be stuck with the bill for problems that could be prevented by forcing Cincinnati Gas and Electric ("CG&E, or "licensee") to get its house in order before resuming construction.

BACKGROUND

In December, 1979, Cincinnati Gas and Electric hired private investigator Thomas Applegate as an undercover agent. His assignment, outlined in a letter from CG&E's director of media services, was to investigate "any possibility of misconduct on the part of anyone involved in the construction of the Zimmer Nuclear Power Station." His specific assignment was to obtain evidence of time-cheating by certain employees. In December, 1979 and early January, 1980, Applegate worked undercover as a "cost accounting engineer" at the site. He was authorized, through his cover, to roam freely throughout the plant and to compare construction sheets against the construction contract held by Kaiser Engineering International ("KEI"). His pretext also enabled him to speak with personnel from all levels of site construction and management. Before long, he had gained the confidence of both union officials and plant employees.

In four weeks, Applegate documented a scheme of labor-management collusion to permit and coverup illegal, dangerously negligent behavior among plant personnel; as well as dangerously faulty welds in key piping, indicative of a breakdown in quality assurance ("QA") practices. Bill Murray, his contact in CG&E management, was pleased about the evidence of time cheating, but ignored the discoveries of safety defects and collusion by KEI. Instead, Mr. Murray ordered Mr. Applegate to root out any reason to fire Peabody Magnaflux ("PM"), the company performing nuclear x-rays (radiography) for the plant's quality assurance program. Applegate followed instructions but found that the radiographers were among the most conscientious employees on the site. His research only further confirmed serious problems in the plant's safety-related quality control program.

May 11, 1981

When Mr. Applegate pressed these safety concerns, his position as CG&E undercover agent was terminated abruptly in early January. Soon after, the utility fired the employees who had been the targets of his time-cheating investigation. Curiously, these same employees were vocal critics of lax safety practices at the plant and had provided Mr. Applegate with the early leads for his probe into quality control. CG&E knew of these employees' dissent, because Applegate cited their allegations in his confidential reports. After the mass firings, CG&E blew Mr. Applegate's cover. Contrary to normal procedure, the utility informed the dismissed employees of Applegate's role in their termination. Mr. Applegate's life since has been threatened on numerous occasions. On April 1, 1980, after a mysterious break-in and alleged theft of records from the PM trailer, the utility fired the radiographers, against whom Applegate had been unable to find any evidence of impropriety.

On February 15, 1980, Mr. Applegate telephoned the NRC Washington headquarters to disclose the conditions he found at Zimmer. Simultaneously, he sent his evidence for analysis to Mr. Upchurch of the Federal Bureau of Investigation ("FBI") in Cincinnati. Mr. Applegate also provided his evidence to Mr. Cissel of the United States Attorney's Office in Cincinnati. Each of these offices and agencies assured Mr. Applegate that his charges would be pursued. Those assurances rang hollow as time wore on and nothing was done.

The NRC consented to investigate only after Mr. Applegate contacted NRC Chairman John Ahearne's office. On March 3, 1980, investigators led by Mr. Gerald Phillip met with Mr. Applegate and reviewed some of his contentions and allegations. But the ensuing July 3, 1980 report (No. 50-358/80-09) found only a minor technical violation.

Dissatisfied with the limited scope of the investigation and the failure to thoroughly pursue his evidence, on December 10, 1980, Mr. Applegate made a whistleblowing disclosure to the Office of the Special Counsel of the Merit Systems Protection Board. He charged that the investigative effort represented violations of law, abuse of authority, mismanagement, and perpetuated both gross waste and a substantial and specific danger to public health and safety.

On December 29, 1980, the Special Counsel agreed and ordered NRC Chairman John Ahearne to investigate and report back on the charges. The Commission opened two investigations -- one by the Office of Inspector and Auditor into the adequacy of the previous probe, and another by Region III into the issues admittedly not covered in the earlier investigation. NRC Region III investigators have contacted over 90 witnesses already and estimate they will continue the probe for another six weeks. Region III

has promised to take sworn statements from witnesses and to provide them with copies. (April 24, 1981 telephone conversation between Thomas Devine and Bert Davis, Paul McCarten and John Streator.) ("April 24 telephone conversation.")

LEGAL GROUNDS FOR SUSPENSION OF A CONSTRUCTION PERMIT

A. LEGAL REQUIREMENTS

The law gives the Commission broad discretion to revoke, suspend or modify the construction permit of an NRC licensee.

42 U.S.C. §2236 states that:

A license or construction permit may be revoked, suspended or modified in whole or in part, for any material false statement in the application for license or in the supplemental or other statement of fact required by the applicant; or because of conditions revealed by the application for license or statement of fact or any report, record, inspection, or other means which would warrant the Commission to refuse to grant a license on an original application; or for failure to construct or operate a facility in accordance with the terms of the construction permit or license or the technical specifications in the application; or for the violation of or failure to observe any of the terms and provisions of this chapter or of any regulation of the Commission.

Part 50.100 of Title 10 of the Code of Federal Regulations states the same criteria for the revocation, suspension or modification of a construction permit.

The NRC has a mandatory duty to exercise this authority when necessary. According to the decision in Natural Resources Defense Council v. U.S. Nuclear Regulatory Commission, 582 F.2d 166 (2nd Cir. 1978), under the Atomic Energy Act of 1954, the NRC is required to determine that there will be adequate protection of the health and safety of the public. The issue of safety must be resolved before the Commission issues a construction permit. (Porter Cty. Ch. of Izaak Walton League v. Atomic Energy Commission, 515 F.2d 513, 524 [7th Cir. 1975].)

B. CRITERIA TO EXERCISE DISCRETION

According to 10 C.F.R. §2.202 Order to show cause, the NRC "may institute a proceeding to modify, suspend, or revoke a license or for such other action as may be proper by serving on the licensee an order to show cause which will: (1) allege the

violations with which the licensee is charged, or the potentially hazardous conditions or other facts deemed to be sufficient ground for the proposed action." As interpreted in the Proposed General Statement of Policy and Procedure for Enforcement Actions, published in the Federal Register, 44 F.R. 66754, Oct. 7, 1980 (10 C.F.R. §2.202, 2.204), suspension orders can be used to remove a threat to the public health and safety, the common defense and security or the environment. More specifically, suspension orders can be issued to stop facility construction when further work would preclude or significantly hinder the identification and correction of an improperly constructed safety-related system or component; or if the licensee's quality assurance program implementation is not adequate and effective to provide confidence that construction activities are being properly carried out. Moreover, orders can be issued when the licensee has not responded adequately to other enforcement action or when the licensee interferes with the conduct of an inspection or investigation or for any reason not mentioned above for which license revocation is legally authorized. In order to help determine the significance of violations within this list, the Commission established "severity Categories" ranging from the most fundamental structural flaws -- Severity I; to minor technicalities -- Severity VI. 44 F.R. at 66758-59.

Region III's enforcement criteria are consistent with these guidelines. For example, in a February 26, 1981, meeting you explained that if there is faulty construction and the program for controlling the problem is inadequate, you would have no choice but to stop the project. You illustrated this criterion through the example of an across-the-board breakdown in a quality assurance program. (February 26, 1981 Transcript of Taped Meeting Between Members of the Region III Staff and Representative of the Government Accountability Project and Mr. Thomas Applegate, at 127, 129.)*

I. SAFETY-RELATED DEFECTS

GENERAL

Our review of inspection reports at the NRC Public Documents Room has revealed a pattern of increasingly significant safety-related problems, including failures to comply with the law and NRC regulations as well as to correct past noncompliances.

*Pursuant to an agreement among the participants at the meeting, the transcript will not be released publicly prior to the conclusion of the NRC's current investigation into Mr. Applegate's charges.

Region III increasingly has recognized the significance of this pattern. The February 3, 1981 report of the NRC's Systematic Assessment of Licensee Performance ("SALP") identified 59 violations of NRC construction and operations requirements during 1979 and the first ten months of 1980. The report concluded, "The noncompliance history is of regulatory concern. The number of items of noncompliance at Zimmer is the highest of any plant under construction in Region III." (Rep. No. 50-358/80-27) A sampling of significant safety-related violations follows. These findings consistently support the charges of Zimmer employees who have blown the whistle on significant safety defects and shared their evidence with Mr. Applegate through GAP.

SPECIFICS

A) Welds

Welds are the "glue" that holds the plant together, from piping to critical components. Unfortunately, NRC reports cite noncompliances at nearly every step of the process, including training, equipment, quality assurance, questionable welds and failure to correct previous citations. The NRC reports on welds at Zimmer offer a microcosm of the systematic weaknesses that we will discuss in this submission.

1) Qualifications of welders. 10 C.F.R. §50 App. B Criterion XIV, states that:

Measures shall be established to indicate by the use of markings such as stamps, tags, labels, routing cards, or other suitable means, the status of inspections and tests performed upon individual items of the nuclear power plant or fuel processing plant. These measures shall provide for the identification of items which have satisfactorily passed required inspections and tests, where necessary to preclude inadvertent bypassing of such inspections and tests.

Contrary to this section, a 1979 NRC report found that welding had proceeded even though the inspector had not stamped his acceptance/rejection of proper welding procedures, welder qualifications, filler material, joint design cleanliness and fit tack welds. (Rep. No. 50-358/79-12-01) In essence, the licensee just took it for granted in this instance that the welders were qualified. Without the proper inspection of welding procedures and welder qualification, it is impossible to guarantee the quality and safety of the welds.

Nor are questions about welder qualifications mere hypotheticals. A 1980 NRC report found that of 30 new welders tested between July 23, 1980 and August 6, 1980, seventeen were rejected. In response, the licensee agreed to "sample test" the previously qualified welders. (Rep. No. 50-358/80-16) In our opinion, spot-checking is an inappropriate response when over half the welders checked in this sample could not pass muster. Further, if the welders are rejected, it follows that the welds they performed should undergo independent tests.

The findings are especially troublesome in light of a January 29, 1981 affidavit provided to GAP by Mr. Ed Hofstadter, former manager of a Zimmer contractor. (Enclosed as Exhibit 1) The affidavit describes the almost arrogant disregard of the personnel qualification requirements of Criteria IX. He testified that the contractor permitted employees to take their qualification tests as many times as needed until they passed once. One employee took the test 60 times before he passed and was "certified" as qualified. The normal procedure is to require additional training, practice and experience before permitting the test to be retaken. (Id. at 3.)

2) Documentation for quality of equipment. 10 C.F.R. §50 App. B, Criterion IX, specifies that: "Measures shall be established to assure that special processes including welding, heat treating, and nondestructive testing, are controlled and accomplished by qualified personnel using qualified procedures in accordance with applicable codes, standards, specifications, criteria and other special requirements."

A 1979 NRC report found, however, that welding temperature requirements were not verified and the tools needed for such verification were not immediately available for personnel performing and verifying the acceptability of welding. (Rep. No. 50-358/79-12) Similarly, a 1980 NRC report found no American Society of Mechanical Engineers ("ASME") spec and qualification records for the welding equipment used in fabrication and supports for various safety-related parts. (Rep. No. 50-358/80-25)

3) Care of welding equipment. 10 C.F.R. §50 App. B, Criterion IX, states in part, "Measures shall be established to assure that special process, including welding...are accomplished ...using qualified procedures...and other special requirements."

But an April 23, 1980 NRC report found noncompliance when "the licensee failed to provide measures to control the welding process, in that two (2) portable rod warmers [used for work in the plant's suppression pod] were not plugged in while

May 11, 1981

in use." (Rep. No. 50-358) These portable ovens, or "caddies," must be plugged in at all times, except during transport to and from the rod shack. They keep the welding rods at a constant temperature of about 80°.

Unfortunately, one caddy was slightly warm and another "relatively cold." The ovens apparently had been unplugged for "quite a while." The inspector also found welding equipment that was rusted, with the ends uncapped and water inside. (Id.)

Of course, once defects in equipment are identified, the utility is legally obligated to correct them. 10 C.F.R. §50, App. B, Criterion XVI, requires in part:

Measures shall be established to assure that conditions adverse to quality such as failures, malfunctions, deficiencies, deviations, defective material and equipment, 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.

But CG&E apparently was unconcerned. A June 23, 1980 NRC report cited noncompliance with this requirement. The inspector had observed a rod warmer in use, although it wasn't plugged in and the top was removed, exposing the weld rod. The inspector noted with some frustration that "[w]eld rod control has been brought to the attention of the licensee for many years and has been cited as items of noncompliance at least ten times in the last five years..." (Rep. No. 50-358/80-14) (emphasis added.)

CG&E remained unimpressed. A September 19, 1980 report illustrated its inability or unwillingness to correct identified defects. The report observed:

The corrective action taken to ensure control of weld rod used for welding of safety-related components has been inadequate.... On August 19, 1980, the inspector observed portable weld rod warmer IA-18, containing approximately 1/2 pound of low hydrogen weld rod, deenergized and unattended for at least 4 hours. This item is repetitive of previously identified items of noncompliance in weld rod control and is indicative that previous corrective actions taken have been inadequate. (Rep. No. 50-358/80-19)

May 11, 1981

These findings confirm the reports of a former Zimmer employee, who provided an affidavit to GAP. Although the employee wishes to remain anonymous, he also has spoken with your current investigators. In his affidavit, he testified that the temperatures of the portable ovens range from 50°-300° Farenheit.

4) Keeping track of equipment. 10 C.F.R. §50, App. B, Criterion VII, states that:

Measures shall be established for the identification and control of materials, parts, and components, including partially fabricated assemblies. Those measures shall assure the identification of the item by heat number, part number, serial number or other appropriate means....

In violation of this section, the NRC reported that weld filler material maintained in the disbursement center (rod shack) was placed in holding ovens without benefit of the required material heat number traceability system. Nor were maps obtained for that location. (Rep. No. 50-358/79-12) If there were a breakdown within a particular system, it would be difficult, without prior identification and weld location maps, to identify and locate a faulty or defective weld. The report is consistent with the testimony of the anonymous Zimmer employee, who reported that rods routinely are taken and kept away from the rod shack without doing the necessary paperwork.

5) Damaging other components during welding. 10 C.F.R. §50, App. B, Criterion XIII, states that: "Measures shall be established to control the handling, storage, shipping, cleaning, and preservation of material and equipment in accordance with work and inspection instructions to prevent damage or deterioration."

But a 1979 NRC report found that welding activities were carried on without adequately protecting the installed cables. (Rep. No. 50-358/79-28) This type of carelessness could not only damage the cables, but could result in short circuiting of electrical cables or even outbreaks of fire.

6) Segregating defective materials and components. 10 C.F.R. §50, App. B, Criterion XV, gives the criteria for control of nonconforming materials, parts or components. "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. These

measures shall include, as appropriate, procedures for identification, documentation, segregation, disposition and notification to affected organizations."

In May, 1979, NRC inspectors observed an excess of 50 containers of acknowledged nonconforming weld filler material for several days within the primary weld rod disbursement room without benefit of nonconformance identifying tags or controlled segregation. (Rep. No. 50-358/79-15-11) With a large amount of unidentified nonconforming material in an area regularly used to disburse conforming material, it is possible that nonconforming material was used with the ultimate result of faulty welds in critical areas. Carelessness in workmanship was found not only in the control of weld materials, but also the weld activity itself.

Indeed, even the original NRC investigator for Mr. Applegate's disclosure found that safety-related piping with questionable welds was released and installed without "hold" tags, before the questions had been resolved. (Rep. No. 50-358/80-09)

7) Records base for welding inspections. 10 C.F.R. §50, App. B, Criterion XVIII, specifies that:

Sufficient records shall be maintained to furnish evidence of activities affecting quality. The records shall include at least the following: Operating logs and the results of reviews, inspections, tests, audits, monitoring of work performance and materials analyses. The records shall also include...the acceptability and the action taken in connection with any deficiencies noted.

In May, 1979, the field welding checklist located in the suppression pool for documenting modifications in welding activity did not adequately reflect the status of work as required by the Special Process Procedures Manual. (Rep. No. 50-358/79-12) Without an accurate checklist, it would be difficult to reaudit deficient areas where follow-up action is necessary.

8) Qualifications of Radiographers. 10 C.F.R. §50, App. B, Criterion IX, requires, "Measures shall be established to assure that special processes, including...nondestructive testing, are controlled and accomplished by qualified personnel using qualified procedures in accordance with applicable codes, standards, specifications, criteria and other special requirements."

May 11, 1981

A 1980 report, however, found a noncompliance for the radiographers who conduct x-rays for Kaiser Engineering, the construction firm building the plant. The Kaiser manual failed to specify experience in magnetic particle, ultrasonic or radiographic examinations, contrary to professional requirements for Level II personnel. (Rep. No. 50-358/80-20)

9) Reliability of x-rays for welds. A February 25, 1981 NRC report evidenced the ongoing inadequacy of the welding inspection effort at Zimmer. In violation of Criterion IX, supra, "unacceptable radiographic techniques and discrepancies in Kaiser Radiographic Reports were observed in four of the twenty field weld documentation packages reviewed." The report observed:

The significance of the noncompliance item is in its repetitiveness rather than in the actual finding. NRC inspections during 1978 and 1979 identified discrepancies in radiographic techniques and reports. As part of the corrective actions, Cincinnati Gas and Electric Company hired a consultant to review radiographs and reports for turnover prior to operation, and this effort was completed in April, 1980. The discrepancies identified in Appendix A were found during a review of packages which received final review and were accepted. In responding to this item, please describe actions taken to assure confidence that similar discrepancies do not exist in other packages already accepted. (Rep. No. 50-358/81-03) (Emphasis added.)

10) Recurring questions of faulty welds. NRC reports are beginning to show the results of the shoddy welding program. Many welds have unresolved questions and are on "hold" status. But the 1980 review of radiographic packages discussed above found 14 defective welds. (Id.) Another recent NRC report observed that new tests rejected 22 hangars and welds previously inspected and accepted in diesel generator areas. (Rep. No. 50-358/80-16)

11) Welds performed outside the plant. The above violations focus on defects surrounding safety-related welds done in-house at Zimmer. But several witnesses have insisted that most of the faulty welds were performed by outside suppliers. Mr. Applegate's disclosure passed on employee estimates that up to 20% of Zimmer's welds on prefabricated piping, outside the plant, are faulty. Similarly he forwarded an affidavit stating that repairs were only made on welds done in-house, excluding the prefabricated piping. Unfortunately, overlaps in the x-rays exposed the prefabricated welds as inferior to those performed on-site.

Mr. Hofstadter testified that questionable manual welds on the cable trays support the plant's electrical system. These

particular welds are at a key juncture because they hold all the weight of the cables that travel from the top of the plant down into the containment area where they switch to a horizontal direction and spread the weight out again. In the event of a weld failure at a juncture, the cables would fall and possibly have their insulation cut off due to sharp edges where the tray breaks. At a minimum there would be an electrical short. More likely, he explained, the result would be man-made lightning. With the primary and two back-up systems stacked on top of each other, any short could shut down the electrical circuits for the entire plant. (Exhibit 1, p. 2.)

* * *

In short, the NRC reports evidence a systematic breakdown of the welding process at Zimmer, including personnel training, equipment, records and inspections. There is little question that the confirmed defects only hint at the magnitude of the flaws produced by this operation. And the defects in welds prepared outside the plant may dwarf the in-house defects. The NRC reports add credibility to employee estimates of widespread deficiencies. In order to resolve the doubts, operations at Zimmer should be suspended while the Commission conducts comprehensive, independent tests of the welds in key safety-related systems.

B) Sanitation and maintenance of equipment

At a nuclear power plant, sensitive components are the public's defense against potentially disastrous accidents and costly shutdowns. As a result, there is no excuse for anything less than the highest sanitation standards. Damage to safety equipment must be avoided at all costs. Equally significant, debris, trash and dust are highly flammable materials, particularly when they accumulate around electrical equipment. In short, the area around sensitive equipment must be spotless. Unfortunately, NRC reports on the Zimmer construction site describe many of the characteristics of a garbage dump.

1) Pursuant to 10 C.F.R. §50 Appendix B, Criterion V, the utility periodically must conduct cleanup and flushing operations of various systems. A March, 1979 report illustrates the consequences of a violation. When they broke for lunch, pipe fitters forgot to close the valves and stop the flushing that operates heat removal systems for the reactor.

The consequences were frightening. Water overflowed from the reactor building equipment drain tank and into the corner room which contained the pumps, instruments and valves. The corner room can become an approximately five-foot pool. When water was discovered flowing out of this corner room, the uncontrollable flush was terminated by closing other valves. Instruments involved in the flood had to be dried, cleaned, inspected and recalibrated. This backup resulted in a water

washdown of a motor and pump. During the flushing the floor drains were also filled and backed up in another level of the reactor building. The operating staff told the NRC inspector that pump motors in the same corner of the room had been washed down in similar events several times within the previous few months! (Rep. No. 50-358/79-06-07)

2) Another instance of the failure to properly maintain safety-related equipment occurred when the area around a spare battery charger was not clean of debris and trash. The battery charger was not free of insulation and concrete pieces, even though it had been turned over for pre-operational testing. (Rep. No. 50-358/79-06)

3) The floor above the switchgear room, adjacent to the control room, had excess sand-like dust as a result of disintegration out of the miscellaneous construction debris and was observed scattered on the floor. (Rep. No. 50-358/79-28)

4) In violation of 10 C.F.R. §50 Appendix B, Criterion XIII, supra, relating to the cleaning and preservation of material and equipment, NRC inspections revealed that several electrical penetration blocks had an excessive amount of dust accumulated on them. (Rep. No. 50-358/79-39)

5) In violation of 10 C.F.R. §50 Appendix B, Criterion V, tools used in the suppression pool modification were not positively identified and controlled to preclude possible contamination. In addition, shock absorbers, known as hydraulic scrubbers, were observed without accumulation indicators or protective covers as required, thereby leaving the scrubbers unprotected from physical damage. The scrubbers are a key component in the piping support system. They help to keep the pipes from breaking. (Rep. No. 50-358/79-37)

6) The Criterion XIII violation uncovered in a 1980 NRC inspection, strains the imagination. In a May 1980 plant tour, the NRC inspector found the following materials scattered in cable trays throughout the reactor building and in the cable spreading room:

light bulbs*
paper towels
pipe
wooden boards
pop bottles*
pop cans*
empty oil cans
hanger support piece*
sawdust

concrete*
vacuum cleaner hose
wire brush*
goggles
magazines
face shield
apple cores
rags
cable tie wrap

*Asterisked items are material which will cause damage to safety-related cables.

(Rep. No. 50-358/80-12)

May 11, 1981

7) Apparently the utility was unimpressed. On June 9, a Region III inspector found, inter alia, the following items in cable trays during a plant tour: light bulbs, metal pipe, support clamp, wire brush, concrete chips, metal pipe fittings, expansion anchor bolt, various pieces of metal, rags, pieces of wood, paper towels and a cardboard box. The report noted, "As a result of this finding a cable tray cleaning crew has been assigned to clean all cable trays in the Reactor and Auxiliary buildings on a monthly rotating basis." (Rep. No. 50-358/80-14)

8) The "cleaning crew" was a good idea, but a January 27, 1981 Region III report described the results: The inspector found excessive amounts of combustible material in the Service Water Structure, and light bulbs in a cable tray. Most significant, "A collection of beer cans and paper trash was observed in the RH [Residue Heat] piping tunnel on the east wall, 570' elevation of the reactor building." (Rep. No. 50-358/80-26) (emphasis added)*

9) The mess at Zimmer remains. A February 13, 1981 report "[e]xcessive amounts of combustible material" in the RH Heat Exchanger Rooms, part of the plant's cooling system. (Rep. No. 50-358/81-01)

These NRC reports confirm the criticisms of Gorman Reynolds, a Millwright general foreman, who worked for Reactor Controls, Inc., at Zimmer in 1978 and 1979. In a May 21, 1979 affidavit (attached as Exhibit 2), he testified that small metal shavings were possibly clogging the control rod blades. Reactor Controls passed the blades anyway.

Clearly, the mess at Zimmer represents more than sloppy housekeeping. It supports suspension of the construction permit on two grounds. Due to the widespread contamination, it is impossible, without widescale independent testing, to assess the damage that may have affected sensitive equipment already. At a minimum, operations should be stopped for a thorough housecleaning to avoid future damage.

C. Control Rods

A 1979 NRC inspection of control rod blades documented that 86 out of 137 failed to pass certain tests, and eleven out of 86 exceeded permissible ranges of thickness under pressure. (Rep. No. 50-358/79-06)

*Interestingly the inspector noted the beer cans as a sanitation problem, but apparently neglected to inquire why employees were drinking 570 feet into the reactor.

May 11, 1981

The inspection report is consistent with employee concerns. For example, Mr. Applegate has forwarded to you an April 29, 1979 affidavit and 1981 interview notes from Mr. Thomas Martin, a former millwright who worked for Reactor Controls, Inc. ("RCI") inspecting control rods at Zimmer. (The documents are enclosed as Exhibit 3.) Mr. Martin explained that the control rods are necessary to shutdown the reactor. If the blades are larger than specifications, the rods might fuse with the reactor vessel during high temperatures in an accident, possibly resulting in a meltdown.

He reported that his crew found that around 75% of the reactor control rod blades exceeded specifications. Consistent with normal procedure, they recreated the rods to return to General Electric, the vendor. But the RCI supervisor ordered them to put clamps on the rods and reinspect them. With the help of the clamps, the rods passed the tests. When Mr. Martin informed a CG&E engineer about the defective control rods and other testing defects, his crew was laid off within a week. Mr. Martin has been vindicated. In a March 13, 1981 letter to CG&E, you reported that NRC inspections led to Stop Work Orders discontinuing all RCI activities. (Rep. No. 50-358/80-25)

Additionally, there are questions about backup equipment for the control rods. Mr. Vic Griffin is quality assurance engineer with 20 years' experience. He worked for Kaiser Engineering at Zimmer until his 1976 resignation. Mr. Applegate has forwarded the notes from his February 1, 1981 telephone interview to assist with your investigation. (The notes are attached as Exhibit 4.) Mr. Griffin provided numerous examples of suspect components in safety systems.

For instance, he reported that at one point the control rod drive pump, which activates the rods, was missing. Eventually the pump was located in the mud under a trailer. The licensee conducted a superficial test to see if the pump still worked, but failed to inspect whether its long-term reliability was compromised. As a result, this possibly weakened critical component remains a potential hazard waiting for activation.

D. Piping and Hangars

The plant's piping and hangars represent the skeleton of the system. But the recent SALP report evidenced an increasing trend of regulatory violations. Although construction is winding down, the report noted with concern the high incidence of rejected work in the area of piping and hangar supports. (Rep. No. 50-358/80-27) A March 3, 1981 NRC report revealed just how badly the quality of piping had deteriorated. Your cover letter cited a pattern of "repetitive noncompliance in this area [large and small bore piping activities] during the

past three years." (Rep. No. 50-358/80-25)

* * *

The violations summarized above provide only a few examples of the suspect safety components at Zimmer. Mr. Applegate's whistleblowing disclosure and subsequent submissions have referred to witnesses with information on inadequate fittings for residue heat valves; suspect quality metal in the residue heat valves; clogged flues in the feedwater pumps that carry makeup water to the plant's cooling tower; "waterproof" doors that leak; cable trays loaded to 50% of capacity when the legal limit is 60%; and other safety defects.

Even if management systems and security measures were sound, the physical deficiencies already documented at Zimmer justify a suspension of construction. Before permitting work on new systems, the Commission should thoroughly assess the damage through independent tests; order and monitor the utility's completion of necessary repairs; and force the licensee to clean up the inexcusable mess at the construction site.

II. QUALITY ASSURANCE

GENERAL

A licensee's quality assurance program is its internal structure of checks and balances to guarantee safe operations. Every applicant for a construction permit is required by the provisions of 10 C.F.R. §50.34 to include in its preliminary safety analysis report a description of the quality assurance program to be applied to the design, fabrication, construction and testing of the structures, systems and components of the facility. Quality assurance comprises all those planned and systematic actions necessary to provide adequate confidence that a structure, system or component will perform satisfactorily in service. Each structure, system or component must be documented, inspected and undergo periodic audits to verify compliance with all aspects of the quality assurance program.

Perhaps the most damning evidence of unacceptable performance at Zimmer concerns the quality assurance ("QA") program. The recently released SALP report found a "continued increase in items of noncompliance in spite of reduced construction activity" and noted the "lack of aggressive and effective management of the Quality Assurance Organization." (Rep. No. 50-358/80-27) The following examples illustrate the failure of quality control at Zimmer.

SPECIFICSA) Designs

The designs are the plant's blueprint and serve as the written foundation of quality control. Mr. Applegate's disclosure cited employees' repeated reports that designs were drawn after the fact to comport with work already done. NRC reports provide repeated examples where designs have been manipulated.

1. Failure to obtain approval for designs. 10 C.F.R. §50, Appendix B, Criterion III, provides, in part:

Measures shall include provisions to assure that appropriate quality standards are specified and included in design documents and that deviations from such standards are controlled.... Measures shall be established for the identification and control of design interfaces and for coordination among participating design organizations. These measures shall include the establishment of procedures among participating design organizations for the review, approval, release, distribution and revision of documents involving design interfaces.

However, in violation of this section, the design engineers had not approved all of the design criteria established to select steel structural beams, relative to the small bore pipe hanger and restraint systems. In addition, design guidance on multiple branched restraint structures was not made available to the site installers. (Rep. No. 50-358/80-05)

2. Inadequate designs for specific safety-related components. 10 C.F.R. §50 Appendix B, Criterion III, states, in part, that "measures shall be established to assure that applicable regulatory requirements and the design basis...are correctly translated into specifications, drawings, and procedures, and instructions." Four examples drawn from NRC reports illustrate the widescale of design defects.

A 1980 NRC report documented that design of the connecting bolts for certain pipe whip restraints was inadequate, because basic data was missing from the specification provided for field construction. (Rep. No. 50-358/80-13) The whip restraints help prevent piping from being damaged through movement. Similarly, a September 19, 1980 report cited five valves that did not appear on or match the design specifications. (Rep. No. 50-358/80-19) A March 13, 1981 NRC report cited additional noncompliances, including, inter alia, incomplete drawings and designs for the control rod drive suspension system;

May 11, 1981

and failure to provide necessary design and acceptance criteria for earthquakes. (Rep. No. 50-358/80-25)

3. Manipulation of design modifications. Changing designs in the middle of the construction process thwarts effective quality control, unless the modifications are carefully controlled. As a result, 10 C.F.R. §50, Appendix B, Criterion VI states that, "changes to documents shall be reviewed and approved by the same organizations that performed the original review and approval unless the applicant designates another responsible individual." Similarly, design modifications must be integrated into the quality assurance program through methods such as reinspection.

Region III reports over the last two years have cited noncompliances with all these requirements. A 1979 inspection found that the piping suspension system had not been properly reinspected after design modifications. (Rep. No. 50-358/79-37) Last year, your office reported that structural design changes were not incorporated into the quality assurance program to insure actual implementation. (Rep. No. 50-358/80-15)

4. Failure to correct identified design flaws. The test of a licensee's commitment to correct noncompliances the NRC has cited already. It is not surprising that an October, 1980 inspection cited two new noncompliances for failure to correct design violations identified earlier in the year. (Rep. No. 50-358/80-22)

These violations are consistent with information furnished to the NRC through Mr. Applegate alleging that inaccurate designs led to damage in the lining of the plant's suppression pool when modifications were attempted. Mr. Applegate's whistleblowing disclosure referred to employees who would testify that a design flaw in the heat exchanger control panel permitted an operator mistakenly to force 1200 pounds of pressure through pipes only meant to handle 300 pounds, ripping the pipe and soaking electricians with a hard spray of water that would have been radioactive had the plant been in operation. One employee told GAP the incident was so severe that a gash immediately opened up around 3/4 of the 48-inch diameter on 3/8th-inch thick steel piping. Another employee recalled that the rupture shook the building. As he summarized, "My God -- it was scary!"

In short, there is serious question whether the Zimmer plant "on paper" is the same as the Zimmer plant in reality. Design specifications are more than a formality. It would be a nightmare if repair crews were unable to accurately locate parts without delay in an emergency. Even worse, faulty designs may exacerbate the "human errors" that can cause accidents.

B) Audits

10 C.F.R. §50 Appendix B, Criterion XVIII states that:

A comprehensive system of planned and periodic audits shall be carried out to verify compliance with all aspects of the quality assurance program and to determine the effectiveness of the program. The audits shall be performed in accordance with the written procedures or check lists by appropriately trained personnel not having direct responsibilities in the areas being audited. Audit results shall be documented and reviewed by management having responsibility in the area audited. Follow up action, including reaudit of deficient areas, shall be taken where indicated.

Repeatedly the audits of Zimmer did not comply with NRC standards. In May, 1979, the NRC inspection team cited noncompliance for failure to develop and improve the tracking system for open audit items. The log contained multiple errors which had not been corrected and the status of open items was not clear. The same report documented the licensee's failure to even conduct a compulsory second audit during 1978. Similarly to the CG&E program, the report cited Kaiser's QA program for infrequent and noncomprehensive audits, as well as missing records. (Rep. No. 50-358/79-14)

Even when audits occur, all too often the utility has failed to act on the results. For example, a 1980 NRC report observed that the licensee had failed to act on Kaiser audits issued in 1977. (Rep. No. 50-358/80-07) Later last year, Region III found noncompliances due to repeated failures to respond to audit results. (Rep. No. 50-358/80-14) The pattern of ignoring noncompliances continues. A January 27, 1981 NRC report found that an audit report on deficiencies in the electric production department had been closed, despite the absence of promised repair work.

At least the utility went through the motions for in-site activities by Kaiser Engineering, the main construction firm. The utility didn't conduct any audits on certain vendors and subcontractors. For example, your office reported noncompliances this year when the licensee failed both to audit RCI design work at the corporate office, and RCI suspension system activities on-site. (Rep. No. 50-358/80-25) On February 19, 1981, Region III put the significance of this default in perspective. Referring to the January 28, 1981

May 11, 1981

enforcement conference with licensee officials that led to a Stop Work Order on RCI, you stated, "[i]n view of the continued occurrence of safety related suspension design and installation problems, and the recurrence of the same problems, the licensee's established corrective action measures are considered to be insufficient and ineffective." (IE Enforcement Report No. 50-358/81-04)

The evidence suggests that the RCI fiasco was not an isolated incident. Mr. Griffin reported that CG&E generally did not go beyond paperwork checks and telephone references of outside suppliers who back internal quality controls. He passed along the utility's excuse that "we have to put our trust in the manufacturers." Mr. Griffin explained that this kind of trust would turn the blood of any quality control engineer in the country to ice. (Exhibit 4, at pp. 2-3.)

Unless quality control procedures have improved drastically, Stop Work Orders may be a necessity for components throughout the plant supplied by outside vendors. Construction should be suspended until the NRC can thoroughly review the adequacy of both the licensee and outside vendor audits on a comprehensive basis.

C) Inspections and Tests

This key aspect of quality control is the last defense against defective components. As a result, 10 C.F.R. §50 Appendix B, Criterion XI states that --

[a] test program shall be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents.... Test results shall be documented and evaluated to assure that test requirements have been satisfied.

Distressingly, the sorry record of inspections and tests match the audit program's credibility gap.

1. Testing the right components. A quality control program cannot find defects in components it doesn't look at. But a 1980 NRC inspection found noncompliance when --

- a. Eight RH system valves were identified which had not been included in the system release for pre-operational testing.

May 11, 1981

- b. Four RH system instruments were identified which had not been included in the system release for preoperational testing.
- c. One RH system valve operator motor supply was identified which had not been included in the system release for pre-operational testing. (Rep. No. 50-358/80-19)

A 1979 Region III inspection revealed a related problem. The materials for safety-related gaskets were not the same ones that had been tested. (Rep. No. 59-358/79-13)

2. Finding defective components. Recent NRC reports have expressed alarm at the trend of newly-discovered problems with small bore piping, even as construction winds down. The late exposure should not be surprising. A 1980 report cited the licensee's failure to identify or document nonconformances in small bore piping and restraints. (Rep. No. 50-358/80-05)

3. Defining away test results. When the testing program has worked, all too often the "repairs" have been mere paperwork. Your March 3, 1981 letter to CG&E reported Stop Work Orders stopping the "voiding of...nonconformance reports." This is a polite way of saying that the Kaiser quality control manager fiated away test results that revealed safety problems. The same report also noted a repeat violation through another maneuver -- redrawing the designs when a part fails under the original design. (Rep. No. 50-358/80-25)

4. Recurring patterns of inadequate testing. For years, your office has been citing CG&E for inadequate tests and inspections. But the sloppiness continues. After an inspection two years ago, the NRC noted increasing concern with certain elements of CG&E's test program controls and the discipline of operations associated with the testing. The thrust was continued findings of numerous procedural violations and inadequate communications, some of which resulted in equipment degradation and damage. The report called for prompt management action needed to strengthen the overview and discipline of CG&E's pre-operational test program. (Rep. No. 50-358/79-)

Apparently the management wasn't listening. A March 3, 1981 report provides an illustration - the tests for hanger and concrete expansion bolts in the plant's suspension system. Region III first had identified deficiencies in March,

May 11, 1981

1978. During the system, RCI only tested half of the required 100% of the bolts. (Rep. No. 50-358/80-25) By December, 1980, after more than 90% of relevant safety-related components had been installed, over 50% needed repairs. The NRC concluded that "the QC ["Quality Control"] program for the installation and inspection of the suspension system has not proven to be effective." (Id.)

A February 13, 1981 report evidences a continuing comedy of errors in the pre-operational test program. The report cited a noncompliance when the test procedure was changed without notice - test sections were not verified as completed; and the test measurement instrument was nine months overdue. Additionally, the crew neglected to close a valve in the middle of the test, and "water was blown onto the floor and personnel." (Rep. No. 50-358/81-01)

Region III is confirming the allegations Zimmer whistleblowers have been making for years. Two years ago, Mr. Martin testified that the calibration was inaccurate on gauges used to measure control rods. (Exhibit 3, supra.) Five years ago, Mr. Griffin warned that the testing program was being manipulated. He described how critical safety components, i.e., their failure could lead to a meltdown, were underclassified as non-critical. After undergoing more superficial tests, the parts would be upgraded to their realistic status as critical components. In the process, the stringent test for critical components was circumvented. (Exhibit 4, at pp. 2-3.)

NRC reports are now confirming these charges. But the plant is nearly completed, and the program has been flawed for years. Until all of the faulty tests have been exposed and done over, nagging doubts will persist whether faulty components slipped through the gaping holes in the inspection program at Zimmer.

D) Maximizing Human Errors

"Human error" recently has been recognized as the Achilles Heel of even the most well-constructed plants. At Zimmer the phrase "comedy of human errors" would be more appropriate if the potential consequences were not so disastrous. Employees already have flooded rooms repeatedly or broken pipes by forgetting to turn off valves or pressing the wrong switch. At Zimmer, three factors maximize the chances for mistake:

1. Inadequate training. Other sections of this submission describe the poor or non-existent training program for radiographers and security guards. The weakness in training is not isolated, however. A 1980 inspection cited a noncompliance due to the lack of guidance for workers installing bolts on

seismic supports designed to guard against earthquakes. (Rep. No. 50-358/80-07) A February 13, 1981 report observed that the utility has not yet incorporated NRC requirements for requalification training of reactor operators. (Rep. No. 50-358/81-01) We wonder how many employees at Zimmer ever have been told what they're doing, let alone know.

2. Questionable personal backgrounds. Many of the employees at Zimmer are known as "transient workers" who take temporary jobs at various nuclear plants. Transient or not, any employee installing sensitive equipment has a serious responsibility. We shudder at some of the staff whom CG&E has chosen to trust. For example, one anonymous employee testified in an affidavit that bomb and other murder threats are common at the construction site. Another former employee disclosed that one worker carried around a machine gun in the back of his car, with ammunition to match. The employee shared knowledge that some of the construction workers are paroled murderers and drug dealers. Some are even wanted in other states. The utility refused to permit a computer check to learn how many workers were wanted by law enforcement authorities.

3. Intoxication. Mr. Applegate's disclosures reported widespread drunkenness on the job. Witness after witness has confirmed the routine of red-eyed employees who did their work under the handicap of an alcoholic stupor. Witnesses also have confirmed frequent use of marijuana, as well as speed and unidentified pills. When security officers took evidence of hard and soft drugs to the CG&E security chief, he told them to throw the drugs away so he wouldn't be bothered with the paperwork.

An NRC report confirmed that beer cans were found 570 feet into the reactor building. (Supra, at 14.) It is hard to understand why this inspector looked at the "empties" merely as a problem of litter, however. Intoxication weakens the capacity to install safety components, just as it debilitates the ability to drive or to engage in almost any other activity. At a minimum, the widespread use of drugs and liquor on-the-job increases the significance of a superficial quality control program. There are likely to be more defects! A nuclear plant constructed by drunken employees is likely to stagger into an accident.

E) Integrity of Voluntary Disclosure Program

At February 24, 1981 NRC authorization hearings, Congressman Morris Udall explained the significance of the utility's failure to report safety defects at Three Mile Island: "The reporting failures called into question the fundamental premise on which we are told that the regulatory framework is founded and that premise is that licensees will voluntarily provide state and federal officials with information affecting the public health and safety." Joanne Omang, "TMI's Owners Struggle With Radioactive and Financial Fallout," The Washington Post, March 19, 1981, at A2.

The Energy Reorganization Act, P.L. No. 93-438 (Oct. 11, 1974), recognizes the essential nature of this responsibility. 42 U.S.C. § 5846 requires that facilities voluntarily notify the Commission of noncompliances:

Any individual director, or responsible officer of a firm constructing, owning, operating or supplying the components of any facility or activity which is licensed or otherwise regulated pursuant to the Atomic Energy Act of 1954 as amended [42 U.S.C. §2011 et seq.1 or pursuant to those chapter, who obtains information reasonably indicating that such facility or activity or basic components supplied to such facility or activity (1) fails to comply with the Atomic Energy Act of 1954, as amended, or any applicable rule, regulation, order or license of the Commission relating to substantial safety hazard as designed by regulations which the Commission shall promulgate shall immediately notify the Commission of such failure to comply, or of such defect, unless such person has actual knowledge that the Commission has been adequately informed of such defect or failure to comply.

The rationale behind this law is contained in the legislative history for §205 of the Energy Reorganization Act of 1974:

The Committee intends by this provision to upgrade the system of detecting and anticipating the defects that increasinagly have plagued the nuclear power industry and threaten its safety record on a daily basis. The application of this provision to component suppliers is intended to benefit electric utilities in particular, which usually have no way of knowing that a sealed, prefabricated part is defective until it triggers a shutdown costing tens of thousands of dollars a day in lost generating capacity. S. Rep. No. 93-980, 93rd Cong. (1974), reprinted in [1974] U.S. DOE CONG. & AD. NEWS 5527.

NRC regulations interpret the law strictly. 10 C.F.R. §50.55(e)(1) and (2) provide that:

[T]he holder of the [construction] permit shall notify the Commission of each deficiency found in design and construction, which were it to have remained uncorrected could have affected adversely the safety of operations of the nuclear power plant at any time throughout the expected lifetime of the plant.... The holder of a construction permit shall within 24 hours notify the appropriate Nuclear Regulatory Commission Inspection and Enforcement Regional Office of each reportable deficiency.

In spite of these requirements, in April, 1980, the licensee waited ten days to report the magnitude of the sticking deficiency in a key General Electric safety system. (Rep. No. 50-358/80-08) But this noncompliance was only symptomatic of CG&E's cloak of silence about the safety defects at Zimmer.

The licensee has pursued a kneejerk reaction of denying all safety questions at the plant, with a shameless disregard for accuracy. For example, in an April 13, 1981 letter from CG&E's William J. Moran to A. Joseph Dowd of the American Electric Power Service Corporation, the licensee attempted to rewrite the NRC's regulatory record by asserting that Mr. Phillips' 1980 inspection report "did not substantiate any" of Mr. Applegate's charges. In fact, the report cited a noncompliance for installing piping without a hold tag before safety questions were resolved. (Supra, at 10.) Similarly, the licensee asserted that in the current investigation, "the NRC has not issued a formal rpoert on their findings but has indicated verbally to us that they are basically unsubstantiated."

May 11, 1981

Your office informed me that the utility had received no such assurance. (April 24 telephone conversation.) CG&E has a credibility gap that goes well beyond not taking the initiative to report defects. The licensee has not hesitated to lie in order to deny the obvious.

Unfortunately, CG&E has not been satisfied to maintain its own silence, or even its own denials. The utility will not tolerate others who expose safety problems at the construction site. For example, Mr. Applegate was hired in order to catch a number of workers time-cheating. Coincidentally, those same workers had been criticizing plant safety. When Mr. Applegate related the frustrations of Peabody Magnaflux employees who criticized Kaiser and CG&E for accepting welds revealed defective in x-rays, his contact in the utility ordered Applegate to find some way to fire the radiographers. When Mr. Applegate began investigating safety defects at the plant, he was released. Even worse, the utility promptly blew his cover, possibly endangering his life. The utility and Kaiser routinely have fired employees for "incompetence" who persisted in voicing safety concerns. CG&E officials have even stooped to a baseless, defamatory campaign of "red-baiting" the Government Accountability Project in retaliation for GAP's assistance to Mr. Applegate.

In sum, the licensee's consistent response to disclosures of problems has been to deny everything and smear the whistleblower as viciously as possible. There simply isn't any integrity left in CG&E's voluntary disclosure program. More than ever, the NRC would risk public health and safety by continuing to "trust" CG&E's reports.

F) Systematic breakdowns evidenced by repetitive violations.

10 C.F.R. §50 Appendix B, Criterion XVI, states that, "measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected."

The practice at Zimmer of ignoring noncompliances has turned both Criterion XVI and the normal NRC inspection process into a "circus," in the words of one current employee. This submission is packed with examples of repetitive noncompliances. A 1979 NRC report revealed one approach to guarantee that "repairs" will pass muster. An electrical test group made needed modifications but either failed to reinspect the installations or permitted reinspection by the same employees responsible for the original defect. (Rep. No. 50-358/79-39)

May 11, 1981

Your recent evaluations of the licensee's failure to control the quality of piping are long overdue. Region III has been patient to a fault. But the March 3 letter observed:

We are concerned about Cincinnati Gas & Electric Company's quality assurance program regarding the activities of Reactor Controls, Inc. (RCI) and in general, large and small bore piping activities, as demonstrated by repetitive noncompliance in this area during the past three years.... The identification of additional violations in future inspections which demonstrate ineffective management actions in this area, will likely lead to escalated enforcement action. (Rep. No. 50-358/80-25)

Your April 8, 1981 Immediate Action letter on measures to correct quality assurance flaws was a constructive step. But all of the reforms are designed to stop future compromises of the program. These constructive steps are inherently unable to evaporate the quality control circus of the last decade. The only way to learn how typical the RCI experience was is by stopping all work until the damage has been honestly assessed throughout the plant.

IV. SECURITY AND SAFEGUARDS FOR NUCLEAR FUEL

GENERAL

A 1977 General Accounting Office Report warned that "[s]afeguarding nuclear power plants is very important because the consequences of a successful sabotage attempt could be similar -- perhaps identical -- to those of the most serious nuclear accident." Security at Nuclear Powerplants -- At Best, Inadequate; (GAO Report NO. EMD 7732, April 7, 1977) The GAO report concluded, however, that "security systems at perhaps all powerplants would not be able to withstand sabotage attempts by threats that are now considered minimum by the Commission." (Id.)

GAO noted that no confirmed sabotage attempts have occurred at nuclear plants. But the report warned, "On the other hand, there have been a large number of threats made against powerplants. From January, 1975 to September 30, 1976, 62 incidents, involving bomb threats, extortion attempts, and actual security breaches, occurred at commercial nuclear powerplants." Id., at 2.

Zimmer has not escaped these chilling threats. For example, in 1979, CG&E reported three preliminary notifications of telephone bomb threats. The threats occurred in April, September and November, 1979. In each case, the plant was evacuated, but no bomb was found. (May 1, 1980 conversation between Thomas Devine and Ruth Neville of the Nuclear Regulatory Commission Public Documents Room in Washington, D.C. See NRC Doc. 50-358, Rep. Nos. I&E PNS 79-53, I&E PNS III-79-4, and I&E-PNS-79-99.) Former Zimmer security officers GAP interviewed described a series of fake plastic explosives left around the plant in 1980, apparently as "jokes." One witness also described a bomb scare during 1980, when an intruder traveled down the river and left a fake bomb near the back of the plant. In short, it is already clear that Zimmer will not be spared the sabotage scares that have become a fact of life in the nuclear industry.

In short, the threat is too serious to take lightly. GAO recommended the following six criteria for evaluations of physical security:

- detection of penetration or attempts to penetrate the protected area;
- bullet-resistant control room and guardhouses;
- equipment for detecting firearms, explosives, and incendiary devices;

May 11, 1981

- positive control of all points of personnel and vehicle access into vital areas;
- establishment of microwave or radio communications, in addition to conventional telephone, with local law enforcement authorities; and
- closed circuit television or other means of observing the protected area barriers. (Id., at iv-v.)

NRC regulations mirror these requirements and add provisions for, inter alia, adequate training and supervision of security officers, as well as reliable locks. 10 C.F.R. §73.50, 73.55.

The utility already has had nuclear fuel stored on-site since 1979 and expects Zimmer to begin operating next year. But the security system is nowhere near compliance either with the law or GAO guidelines. Employees have described a system that is little better than a joke, with drunken, overworked, untrained and poorly supervised, understaffed and poorly armed guards, the strongest defense the plant has against attempted sabotage. According to one former guard, the security system represents a "showpiece" but nothing else.

SPECIFICS

Mr. Applegate has forwarded affidavits or interview notes on this issue from five current or former Zimmer employees. These reports are unanimous that none of the GAO criteria have been met. In addition, their combined statements describe the following problems with security at Zimmer during 1980:

- 1) The force guarding nuclear fuel was so overworked that employees worked up to 48 hours straight, deteriorating into self-described "zombies" and "vegetables."
- 2) The same force routinely consisted of two guards, an understaffing problem so severe that an employee could not go to the bathroom without compromising security.
- 3) The guards received no firearms training and were simply permitted to retake the marksmanship test as many times as necessary until they passed.
- 4) The guards received no training on theft beyond some outdated company rules from the early 1970's.

May 11, 1981

- 5) The security force was so inadequately armed that even at top strength, there were only three .38 caliber pistols and 15 rounds of ammunition to defend the plant's fuel.
- 6) The force guarding the nuclear fuel only had direct supervision a tiny percentage of the time and endured one supervisor who generally was drunk.
- 7) Nuclear fuel has been left unguarded outside for periods up to ten minutes, and inside the plant for periods up to 45 minutes on over a dozen occasions due to emergency weather warnings or radiation alarms.
- 8) Employees routinely picked the locks to controlled areas with credit cards and knives. Employees have reported frequent break-ins at the radiographers' trailer, supposedly to go to the bathroom. Regardless of motives, the practice reveals the total absence of security for the plant's x-ray films and records.
- 9) The security officers would be little better than sitting ducks in the event of an attack. For example, the guard outside was told to defend against an attack by placing his body "between the adversary and the fuel."
- 10) Security guards at the main gate repeatedly were caught drunk, stoned and asleep on duty.
- 11) The guards at the main gate routinely failed to search incoming vehicles during the day. When a security officer voiced fears about vulnerability to sabotage, the CG&E supervisor only laughed.
- 12) The plant is particularly vulnerable due to its location. Intruders have close access to the intake building from a river and can easily climb a fence surrounding the grounds, if they choose not to enter through holes that existed during 1980.

* * *

The Zimmer plant may be nearing completion, but the security system is a caricature. There is no question that perpetuating these conditions after the plant goes on-line would justify suspending operations. 45 Fed. Reg. 66754, 759 (Oct. 7, 1980). A major effort is necessary to begin building a

professional force, or else the citizens of Cincinnati may someday face nuclear blackmail from terrorists who take advantage of the "easy pickings" at Zimmer.

V. CRIMINAL ACTIVITIES

Mr. Applegate's disclosure to the Special Counsel reported the following criminal activities at Zimmer --

1. sale of stolen guns on the site;
2. diversion of labor and materials for the personal benefit of a KEI superintendent, at a cost to CG&E of more than \$30,000;
3. fabrication and sale over seven years of belt buckles constructed from nuclear grade steel worth millions of dollars in labor and materials intended for use in pipes, braces and components at the plant;
4. theft of two thousand pounds of copper cable smuggled in small lots and resold within a week for \$15,000 on the black market by 30 plant personnel, to finance a Christmas party complete with prostitutes; and
5. an entrenched system of time card padding, implicitly sanctioned by KEI and CG&E, wasting significant amounts of time and money.

Mr. Applegate based his charges on his own undercover operations, as well as on the repeated descriptions from plant employees. Since the disclosure, four additional employees have confirmed some or all of the specific allegations denied above. None have expressed surprise or doubts about any of the allegations. They also provided additional details of gambling black market operations that make the Zimmer site appear like a cesspool even compared to non-nuclear construction sites.

Unfortunately, the NRC and federal law enforcement agencies have been passing the buck on this issue for the last year, despite repeated corroboration. While referral to the Department of Justice is the normal course, referral "does not preclude the NRC from taking other enforcement action under the General Statement of Policy." (45 Fed. Reg. 66757.) The general enforcement criteria include "common defense and security." (Id., at 66754.)

May 11, 1981

These criminal activities are a direct threat to public health and safety. The participation is systematic and wide-ranging, from line employees to supervisors. Employees mixed up with underground crime may have other priorities and loyalties besides building a safe plant. The consequences of an accident are too serious to take a gamble on the crime rings at Zimmer. There is no excuse for the NRC to continue sanctioning, by silence, the thriving criminal underworld at Zimmer. Your office should suspend further work at the plant until it has been cleaned up, either by the law or by the licensee. Perhaps if the NRC stops tolerating "wide open" construction sites at nuclear plants, the Department of Justice will begin to do its job.

CONCLUSION

The evidence of noncompliances and improprieties at Zimmer repeatedly meets the general NRC and Region III criteria for suspension of a construction permit. The NRC reports reveal widespread violations that the licensee has failed to correct. The Special Counsel of the Merit Systems Protection Board has agreed that Mr. Applegate's additional charges were based on a reasonable belief, a conclusion which NRC investigators have endorsed to him privately. In all, the evidence already on record reveals --

- 1) widespread noncompliances in key components and safety-related systems;
- 2) a quality assurance program plagued with basic structural flaws;
- 3) a management perspective of "stonewalling" problems and retaliating viciously against employees who expose them, rather than voluntarily disclosing and correcting the flaws;
- 4) a security system hopelessly compromised by inadequate staff and nonexistent or drunken supervisors; and
- 5) an unresolved mystery about the scope and forces behind criminal activity, including widespread gambling, shadow businesses, and black markets.

Even worse, the above structural flaws and patterns of noncompliance do not include the unacceptable potential for human error at Zimmer. We have yet to find a single employee witness who has denied Mr. Applegate's charge of widespread drunkenness on the job at the construction site. It is diffi-

May 11, 1981

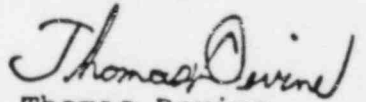
cult enough for a sober worker to construct any nuclear power plant safely. We shudder at the consequences of drunken employees trying to cope with the handicaps at Zimmer.

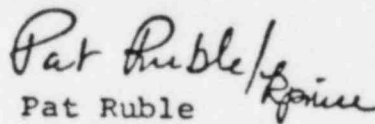
Region III has begun to recognize the seriousness of the problems at Zimmer, as evidenced by the April 8 Immediate Action letter. But the new sanctions primarily are prospective, aimed at halting future violations; while the shoddy work has been piling up for almost a decade. Far too many witnesses have confirmed that this plant is a disaster waiting to happen. General Public Utility's \$4 billion lawsuit blaming Three Mile Island on the NRC for not regulating strictly enough illustrates the desperate consequences even for a "near-miss."

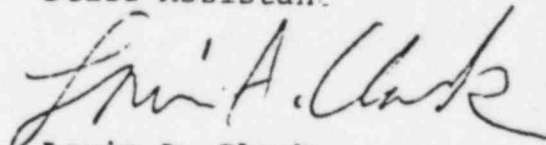
Mr. Applegate recognizes that it is rare for the Commission to respond to a citizen's initiative for such a severe enforcement action. But conditions have deteriorated too far at Zimmer, and the plant is too near completion to perpetuate the status quo.

The evidence already on the record justifies this sanction, and additional evidence will be forthcoming at the conclusion of Region III's current investigation. If the NRC's authority to suspend a construction permit is to have any credibility, it should be applied in this case.

Sincerely,


Thomas Devine
Associate Director


Pat Ruble
Staff Assistant


Louis A. Clark
Director

AFFIDAVIT

STATE OF OHIO)
) SS:
COUNTY OF HAMILTON)

Comes now Edwin P. Hofstadter, who, having been duly cautioned and sworn, deposes and says as follows:

My name is Edwin P. Hofstadter. For 5 1/2 years, from 1973 - 1978, I was employed by Husky Products, Incorporated, as Manager of Industrial Engineering. My responsibilities covered the tooling/equipment and the processes used in the manufacture of cable trays for industrial applications. I was dismissed from my position in August, 1978 after I dissented against our company's continued employment of untrained, unqualified welders to prepare cable trays at nuclear power plants. This Affidavit concerns the continued use of key cable trays at the Zimmer Nuclear Power Plant that are overloaded and compromised by faulty welds.

I first went to the Zimmer Plant during the spring of 1978. Husky had built the cable trays that hold masses of electrical cables at the plant. These cable trays carry all the control cables for the plant. The cables come from the control room and carry all the electricity for the plant, including the safety systems. The trays are essential to protect and isolate these cables.

When I went to Zimmer I was instructed to develop a fire protection plan for the cable trays. Unbeknownst to me at the time, Zimmer had been directed by the NRC to construct a fire protection system. The cable trays were in stacks of three on top of each other, the same as at the Brown's Ferry plant in Alabama, where a nearly disastrous fire occurred. The NRC had told Cincinnati Gas and Electric, ("CG&E") the utility which owns Zimmer, to learn from the Brown's Ferry mistakes. CG&E failed to prepare an alternate design to avoid stacking, but the utility did request Husky to develop a fire protection system for the "Brown's Ferry design" that was installed at Zimmer despite the NRC warning. Instead, CG&E had developed a plan to cover each tray with a fire protection "blanket" constructed from the same material used to protect missile nose cones from heat on re-entry.

When I arrived, I was surprised to find that the trays were loaded to the top with cables. Professional standards forbid trays from being loaded to more than 60% of their depth. Otherwise, the heat generated

by the cables could cause fires. I was appalled that all the trays in two rooms that I inspected were loaded to the top.

I was inspecting cable spreading rooms, above the reactor containment area. The cables traveled through openings in the wall down several flights into the containment area. They were resting on trays that switched from horizontal to vertical directions in order to travel through the plant down to the containment area. The different trays were connected by vertical fittings produced in a three piece construction, using hand or manual welds to join the three pieces. I was suspicious that these welds may have been faulty, because I had previously complained that our Husky welders were inadequately trained. I also knew that even the trained welders were using the speeded-up "incentive system" for commercial welds, rather than the slower, safer system required by the American Society of Mechanical Engineers for nuclear plants. The speeded-up incentive process produces welds with relatively poor fusion, resulting in little strength. That's what happens when you go too fast, you don't get a strong enough weld for a nuclear power plant. As a result, I was particularly worried at Zimmer when I saw that the trays were overloaded.

The questionable manual welds are at a key juncture, because they hold all the weight of the cables that travel from the top of the plant down into the containment area where they switch to a horizontal direction and spread the weight out again. In the event of a weld failure at a juncture, the cables would fall and possibly have their insulation cut off due to the sharp edges where the tray breaks. At a minimum, there would be an electrical short. More likely, the result would be man-made lightning -- an impressive, but disastrous fireball. With the primary and two backup systems stacked on top of each other as at Brown's Ferry, any short could shut down the electrical circuits for the entire plant.

I discussed my concerns with my supervisor at Husky, who agreed to set up a training program for our welders. I wanted to be sure that these key manual welds would be reliable for all our future jobs. But the company permitted employees to take their qualifications tests as many times as needed until they passed once. For example, one employee

took the test 60 times before he passed and was "certified" by Husky as qualified. The normal procedure when a man is having trouble passing the test even once is to require additional training, practice and experience before attempting the test again. Husky ignored this practical approach.

I refused to quietly accept my company's compromises in the certification process. As a result, I was discharged from my position. On August 2, I had told a fellow employee that I was preparing to submit my concerns to the NRC. On August 4, I was discharged without warning after 5 1/2 years service. Although my record was unblemished and I had received steady raises the personnel director gave me 15 minutes to clean out my desk and leave.

On August 18, 1978, I disclosed my criticisms in a letter to NRC Chairman Anders. (Attached as Exhibit 1). Later, at NRC hearings in the summer of 1979, I submitted an affidavit describing the problem. (Attached as Exhibit 2). Significantly, similar criticisms to my own had been voiced as early as October 30, 1974 by Mr. Lee Spievack, President of Technichron, Inc. School of Welding. (Attached as Exhibit 3). Husky had requested Mr. Spievack's opinion as how to improve our personnel qualifications. I have attached an overall chronological summary of events as Exhibit 4). My allegations were also supported in a 1979 affidavit offered by Mr. Donald Blanch, an electrician at Zimmer. (Attached as Exhibit 5). Mr. Blanch later told local attorney Tawn Fichter that CG&E threatened to blacklist him if he spoke out. As a result, he stopped criticizing the utility and publicly "changed his mind".

In the early fall of 1978, NRC inspectors came to investigate my charges. Eventually, the Commission found several faulty welds in the cable trays. The NRC report is attached as Exhibit 6. Unfortunately, the inspectors missed the point of my charges. Incredibly they looked at the machine-made resistance welds on the horizontal trays. These welds are not significant, because they carry very little weight. Their basic function is to keep the tray from spreading. My disclosure had questioned the manual welds on the vertical trays, critical

because they support all the weight of the cables traveling downward through the plant. In other words, the inspectors found flaws in the insignificant welds but ignored the welds that are essential for safety concerns.

Second, the inspectors only looked at a few of the horizontal trays. Since they found faults in those limited instances, it only made sense to check the rest of the system for similar flaws.

Frankly, I was at a loss to understand how the inspectors could make such fundamental mistakes. Later at the 1979 hearings, I learned that the two NRC employees who conducted the investigation were almost untrained themselves. Each man's experience was limited to two relatively brief welding background seminars. The two seminars combined involved about ten days of general information on welding. The seminars did not train participants in how to inspect welding. I understood better how the NRC had inspected the wrong welds when I realized that the Commission had assigned two "green rookies", in effect to investigate my charges. Unfortunately the result is that the faulty manual welds on the vertical trays remain in place today, leaving the plant vulnerable.

The NRC report did not go into detail on the dangerously overfilled trays. But after an August 1979 Commission hearing, CG&E hired Husky to construct four inch side extensions to the six inch trays. The utility then could claim that instead of six inch trays loaded 100%, there were ten inch trays loaded 60%.

In fact, this cosmetic solution does nothing to correct the basic problem. The patchwork ten inch tray simply is not equivalent to a legitimate ten inch tray. A ten inch tray has considerably thicker metal than the six inch version. The thickness has to be greater to support the added load. The "repair" at Zimmer only made the trays taller. They remain too thin to support the weight of the cable load for a ten inch tray. The significance is that the metal is inadequate to safely absorb all the heat from the load in a ten inch tray.

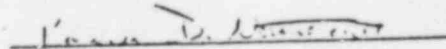
The retaliation against me did not end when I was fired. Since I began to speak out 2 1/2 years ago, I suspect that my telephone has been tapped. Repeatedly, my wife and I heard clicks. Our mail began routinely to arrive late, sealed with scotch tape that the senders hadn't affixed. Some of my mail was diverted mysteriously and held at a post office box. CG&E personally smeared me publicly as a laid-off, disgruntled "millwright", or janitor.

But I refuse to be intimidated into ignoring the obvious. I know that these dangerous shortcuts can be corrected. Since my dismissal, I have done consulting work with about half a dozen firms that supply material for nuclear plants. Unlike Husky, every company produced excellent welded parts under sound quality control systems. Similarly, I know the NRC could do better. At the Clinton Plant in Illinois, the Commission refused to allow Husky cable trays in the containment area, even though the trays at Clinton had a lower proportion of manual welds than at Zimmer. I remain completely willing to speak with the new NRC investigators who are supposed to pursue Mr. Tom Applegate's charges about Zimmer. This time I hope they do their job.


EDWIN P. HOFSTADTER

Sworn to and subscribed in my presence this 9th day of January,

1981.



KAREN D. NORTHCUTT
Notary Public, State of Ohio
My Commission Expires Jan. 22, 1985

AFFIDAVIT
OF
GORMAN L. REYNOLDS

STATE OF OHIO }
COUNTY OF CLERMONT } SS

I, Gorman L. Reynolds, aged 29, residing at _____
_____ hereby state that I am a member of Millwright
Local 1454; that I have been a journeyman Millwright for six years;
that I worked for Reactor Control Inc. as Millwright general foreman at
the Zimmer nuclear power station, Moscow, Ohio from October, 1978 to
February, 1979; and that I have personal knowledge of the facts
hereinafter related:

While working for Reactor Control Inc. (R.C.I.), my crew was required
to clean metal shavings from control rod blades. These shavings were
left by the manufacturer. We first took old cloths wrapped with a
heavy gray tape and beat the sides of the blades to remove these shavings.
We then ran a magnet along them followed by a machine shop vacuum cleaner
and finally wiped them down with an acetone solution. Quality control
inspectors employed by R.C.I. then ran a spot check on the blade con-
formity with a "go-no go gauge". Only about one third of the blades
were checked.

In February, R.C.I. required my crew to do grinding on all the
control rods (at the bottom of the blades) to remove an over-sized weld.
Small metal fragments from the grinding went into the control rod blades
by way of small holes running the length of them. When I informed R.C.I.
engineers of this I was told that these fragments could clog the rods
and to wipe them down with an acetone solution. I then told my super-

visors that wiping with acetone alone did not get the shavings out. (The proper procedure for removing shavings was the procedure we initially used to remove those left by the manufacturer.) They inspected the rods and passed them anyway.

When we first started the cleaning after grinding, H. I. Crane, project manager for R.C.I., told me the job would last two weeks. It lasted two days. We were rushed through this job and it is to my knowledge that metal shavings still remain in the control rod blades. I saw them; reported them and R.C.I. passed inspection on them anyway.

Gorman L. Reynolds
Gorman L. Reynolds

The foregoing affidavit was sworn to and subscribed before me by Gorman L. Reynolds this 21 day of May, 1979.

Jawn Fichter
Notary Public

JAWN FICTER, Attorney at Law
NOTARY PUBLIC, STATE OF OHIO
My Comm. Expires 12-31-1980
under Section 1473.0, O.R.C.

GOVERNMENT ACCOUNTABILITY PROJECT

Institute for Policy Studies
1901 Que Street N.W., Washington, D.C. 20009

(202) 234-9382

MEMORANDUM

To: Louis Clark
Fr: Tom Levine
Da: February 11, 1981
Re: Summary of February 1, 1981 conversation with Mr. Tom Martin

On February 1, 1981 I spoke with Mr. Tom Martin to provide additional background for his April 18, 1979 affidavit. Mr. Martin has been a millwright for ten years. After being laid off from the Zimmer plant, he worked as a millwright for eleven months at Ford's Batavia transmission plant. His duties involved setting up 90% of the laser measurement quality control testing machines at the plant.

Mr. Martin is anxious to speak at length with NRC investigators. He testified at a 1979 NRC hearing but complains that due to successful objections from utility lawyers, he was unable to present his evidence or explanations of faulty control rods at Zimmer. He also informed me that he can refer NRC investigators to a series of additional witnesses, including a millwright with 50 years experience, and two other employees whose affidavits we sent to the NRC--Messrs. Gorman Reynolds and Robert Anderson.

Mr. Martin provided some background explanation for the charges in his 1979 affidavit. The control rods are the key to shutting down the reactor. If they are larger than specifications, the rods could expand during high temperatures in an accident and fuse with the reactor vessel. This development could cause a meltdown. He added that the wrong type of gauge was used to measure the rods.

Mr. Martin is especially concerned that the new millwrights who replaced those from his firm did not check the allegedly faulty control rods. Instead, in violation of the rules, Kaiser's own quality control employees inspected the suspect components.

Mr. Martin added some brief explanation for the significance of Reynolds' and Anderson's charges. The leaks in the door units at the pump house are significant because that room has the motor for the pumps that control the plant's cooling system. The leaking door units in the reactor building compromise the hub of the whole plant and could allow water to enter the control room.

The metal shavings in the control rods represent a different potential problem. The shavings could flow through the system, clogging valves and pumps.

Mr. Martin is anxiously awaiting the arrival of the NRC investigating team.

AFFIDAVIT
OF
THOMAS DEAN MARTIN

STATE OF OHIO)
) SS
COUNTY OF CLERMONT)

I, Thomas Dean Martin, residing at _____
Age 28, hereby state that from May 1978 to
September 1978 I worked for Reactor Control Inc. as a Millwright,
inspecting control rods on the site of the Zimmer nuclear
power station at Moscow, Ohio and that I am a member of Local
1454 of the Brotherhood of Millwrights and Joiners and have
been employed as a Millwright for six years and that I have
personal knowledge as to the facts hereinafter related.

My crew, consisting of 3 journeyman millwrights and a general
foreman found that approximately 75% of the reactor control rod
blades exceeded the .280 " (Two hundred and eighty thousandths
of an inch) gauge specification. Because of this fact we recrated
these defective rods to send them back to the manufacturer, General
Electric Company. However, after recrating the rods, my supervisor
at Reactor Control, Inc., William Fowee, instructed us to put a
clamp on the rods and reinspect them. We followed these instructions,
and while the clamps were on the rods they met the .280" specification.
After taking the clamp off, however, each rod returned to its original
size, which did not meet the .280" specification. A number of the
rods which I inspected measured .300" or more when the clamps had
been removed. The control rods are made of thin gauge metal, with

numerous holes. When I expressed my concern about the defective control rods, Bud Crane, a supervisor at R.C.I. told me that when the control rods were put in the reactor vessel, clamping would not be necessary because water pressure would hold the rods to the proper specification. I asked him to explain how this would be possible when there were so many holes in the rods. I thought that the water would circulate both inside and outside of the rods, thus equalizing the water pressure, and not allowing the water pressure to push in the sides of the rods. No one could give me an answer.

This was not the only problem which I encountered at the Zimmer site. We had inspected approximately half of the reactor control rods before R.C.I. provided us with a rough surface gauge for inspecting the seals on the ends of the control rods. Therefore, half of the control rod seals were not inspected at all for roughness. The gauge with which we inspected the remaining control rod seals was made of metal with different degrees of roughness. I compared the roughness of the gauge with the roughness of the seals!... surfaces. Of the seals we inspected I did not find any as smooth as the specifications called for. When I asked an R.C.I. inspector about the discrepancy between the seals and the gauge, he asked me if I had a calibrated finger. I asked him, "If I'm just supposed to look at the seal instead of comparing it with the gauge, why hadn't they just given me a picture of the seal, instead of the rough surface gauge. I got no answer. I then informed Scott Swain, a C.G. & E. engineer on the project about the defective control rods and

seals. The next day my general foreman, William Fowee, got our crew together and told us, "Be quiet about the problems at the plant." Within a week my entire crew with the exception of the general foreman was laid off, although our work was not complete, and there had been no complaints as to the quality of the crew's work. Afterwards, a new crew was hired to complete our job.

Date

Thomas Dean Martin
Thomas Dean Martin

Sworn to and subscribed before me this 23rd day of April, 1979.

Shirley Fahrnbach
Notary Public

SHIRLEY FAHRNBACH
Notary Public, Clermont County, Ohio
My Commission Expires Oct. 15, 1979

Exh. 4

GOVERNMENT ACCOUNTABILITY PROJECT

Institute for Policy Studies

1901 Que Street, N.W., Washington, D.C. 20009

(202) 234-9382

MEMORANDUM

To: Louis Clark, Director
Fr: Tom Devine, Associate Director
Da: February 11, 1981
Re: Summary of February 1, 1981 Telephone Interview
with Mr. Vic Griffin

I. INTRODUCTION

I called and spoke with Mr. Vic Griffin on February 1, 1981, the day after my return from Cincinnati. Mr. Griffin is the 61 year old Kaiser Quality Assurance Engineer who resigned in early 1976. He left immediately after he went public with his concerns over a phony quality control system and faulty essential components at Zimmer. Mr. Griffin emphasized three topics during our discussion--circumvention of sound quality control techniques; damaged or potentially damaged essential components that may still be in place at Zimmer and possibly other plants; and a superficial NRC whitewash of his charges after a brief "investigation" by Region III's Gerald Phillips.

Mr. Griffin wants to speak with new NRC investigators who will thoroughly pursue the charges that worry him. He promised to do his best to help locate other employee witnesses. He said that employees speak freely at bars about the problems at Zimmer. For instance, one employee discussed an unreported blowout after an uncertified welder attempted to repair a heat exchanger. But due to fear of reprisal and past NRC breaches of confidentiality, employees are afraid that speaking to the Commission is like turning information over to the owner. I informed Mr. Griffin of the Commission's specific confidentiality pledges for this investigation.

II. PERSONAL BACKGROUND

Mr. Griffin worked in quality control for 20 years before he resigned in October 1972 to take a job with Kaiser Engineering at Zimmer. He worked with Kaiser for 3.5 years. On February 22, 1976, the day after he spoke with NRC investigator Phillips, Griffin resigned. He quit because it was obvious the Commission would not pursue his charges seriously. He wanted to avoid the untenable situation of being a whistleblower at Zimmer when his

allegations were about to be brushed aside by the government. In short, his aim was to leave before the inevitable dismissal on pretextual grounds. Kaiser refused to accept his resignation for a week, and his supervisor informed Phillips that Griffin was a "damn good engineer." But Griffin's supervisor also alerted him that Kaiser couldn't back him indefinitely and the resignation was accepted.

Currently Mr. Griffin works as an independant quality control contractor. His current job is to inspect components for defense weapons manufactured by the Honeywell Corporation.

III. CIRCUMVENTION OF STANDARD QUALITY CONTROL PROCEDURES

The bulk of Mr. Griffin's concerns involved the quality control system for essential, or "critical," components at the plant. He defined critical components as those whose failure could interfere with the safe shutdown of the plant. These include parts such as pumps, valves and switchboxes. Non-essential components will not prevent a shutdown, but their failure could still be very dangerous.

Griffin first became aware of structural quality control problems about two to three weeks after he started work at Zimmer. John Jackson, Kaiser's corporate manager of quality control out of Oakland, California, reported disturbing news to Griffin. The utility, Cincinnati Gas and Electric ("CG&E"), had just announced that it would replace Kaiser in handling quality control for purchases of critical components from suppliers. The only exception was that Kaiser would be permitted to inspect for identification and transit damage. Mr. Jackson was upset, because General Electric ("GE") was the only supplier of critical components that had its own quality control program.

The problem was that CG&E did not perform independant inspections on those suppliers who lacked internal quality control. In fact, CG&E was satisfied with paperwork checks. Contrary to the standard quality control process, it flatly refused to inspect components itself or to allow Kaiser to conduct inspections at the manufacturing sites. The utility's excuse was that "we have to put our trust in the manufacturers." CG&E was satisfied to call up other utilities and obtain telephone references on the suppliers. Griffin explained to me that this practice of trusting the paperwork would turn the blood of any quality control engineer in the country to ice. He told CG&E officials, "I'm not worried about the paperwork blowing up." He noted that the "trust" approach violated the AEC requirements, but the Commission winked at the practice.

To add insult to injury, Mr. Griffin pointed out that frequently the paperwork was not even checked for up to 1.5 years. When CG&E did stumble across a faulty component, routinely the

utility would simply return the part to the vendor and fail to file a nonconformance report with the AEC.

Another quality control circumvention technique involved collusion with Kaiser. CG&E would order components as non-critical and then upgrade them to critical status at the site. Kaiser's then site manager for quality control, Mr. Bill Friedrig, routinely upgraded whatever parts CG&E requested.

Mr. Griffin emphasized that the defense industry does not engage in the same quality control shortcuts he observed at Zimmer. He explained that GE sends field inspectors right to the vendors' plants to inspect jet engines. He concluded that if the quality control for nuclear plants were 1/10th as effective as that for 120 millimeter cannon shells, he wouldn't be nearly so concerned.

Based on Mr. Griffin's observations, the NRC should conduct a thorough review of all components which have been returned to vendors or upgraded at the site, since construction began. Further, the utility should be ordered to contract with outside quality control experts to independantly inspect all critical components received from suppliers other than GE. I doubt that the citizens of Cincinnati would trust the manufacturers of essential safety systems which remain untested today.

IV. EXAMPLES OF SUSPECT COMPONENTS

To illustrate his critique, Mr. Griffin discussed two specific examples of dubious critical components. The control rod drive pump activites the control rods. These rods control the heat levels in the reactor. The pump is sensitive and is supposed to be stored in a temperature-controlled room. The temperature controls are necessary to prevent condensation which could damage the parts. At Brown's Ferry, the drive pump was the essential component that finally worked, preventing a bad fire from causing a meltdown.

Mr. Griffin was upset that the control rod drive pump at Zimmer was missing. He eventually found the pump outside in the mud under a trailor. CG&E consented to a superficial "pre-op" test to check whether the pump had broken down yet. But there was never any independent inspection to see whether its long-term reliability had been compromised. Mr. Griffin fears that the pump may not operate effectively in any Brown's Ferry-type emergency that occurs a few years down the road.

Similarly, CG&E kept other uninspected critical components in unheated rooms, in violation of safety requirements. Finally, in January or February 1973 the utility installed portable heaters. Again, however, there was no inspection for structural damage that might have occurred already.

Mr. Griffin's second major example involves the "Nash condensor," used with the terry turbine. These components are also essential to prevent a meltdown. Griffin opened the package to check for transit damage and saw that the motor had broken off. The problem was a "core-shift"--the component had cracked and fallen apart because the circular metal in the condensor was not even all around.

Although Mr. Griffin wrote up the incident, he charges that CG&E violated AEC requirements to report it as a "significant event." Mr. Griffin thinks it is significant for nuclear plants around the country if Nash condensers can't survive a truck ride.

V. EXPERIENCES WITH THE NRC

Mr. Griffin recalls that on February 21, 1976 he discussed the above problems for three hours with NRC investigator Gerald Phillips and two aides. Phillips was courteous and the aides took notes. But after Phillips explained he was a non-technical man and would require simplified explanations, Griffin became concerned that the NRC would not pursue his charges aggressively.

Mr. Griffin's fears soon were confirmed. Other plant employees told him that Phillips conducted no independent inspection. Instead, he merely reviewed the paperwork and obtained responses from CG&E and Kaiser officials. Mr. Griffin was not invited to point out the violations at the site. At a press conference after Phillips' review, an NRC spokesman said that Griffin's complaints were accurate, but no violation of NRC regulations had occurred. Griffin disagrees with this conclusion, since he was familiar with the regulations in question. At any rate, he contends that the problems were so serious in terms of potential safety defects that the surrounding population remains vulnerable to disaster.

VI. CONCLUSION

Mr. Griffin is an extremely credible witness. He had no axe to grind when he went public. Part of his continuing concern apparently stems from the location of his home. He lives two miles from Zimmer, overlooking the plant's cooling towers. His primary theme is that there is no margin for error in critical components at nuclear plants. In his opinion, CG&E is not close to meeting that standard.

Mr. Griffin was careful not to overstate his case. He told me that he never makes a statement he can't prove; because "you can be right 99 times and wrong once, and they'll kill you." He informed me that a GAO report on Zimmer backed his charges in 1977 and 1978. Pat Ruble should obtain a copy.

Mr. Griffin's experience is also valuable because it foreshadowed the experiences of Applegate and others. For example,

Kellogg's faulty prefabricated piping welds are more understandable in light of CG&E's refusal to conduct quality control inspections at the Kellogg plant. Similarly, Phillips' "paperwork-management chat" inspection mirrors his response to Applegate's allegations.

Finally, many of the suspect components exposed by Mr. Griffin still may be faulty. CG&E installed them without normal testing. The parts have just sat in the plant for five to eight years as dormant threats to the local population.

Based on Mr. Griffin's credibility, the fundamental nature of his charges and the scope of his allegations, his evidence could make a strong case for suspending CG&E's construction permit. If Griffin's charges are correct, Zimmer is packed with essential components which have never been adequately inspected. The NRC should perform or order a through, independent inspection of these components throughout the plant. In many cases, it will be the first time that CG&E's "trust" in the manufacturers will have been checked.

A-11-
B 9

I, , do hereby make the following voluntary statement to Mr. J.B. McCarten who has identified himself to me as an Investigator with the U.S. Nuclear Regulatory Commission. I make this statement freely with no threats or promises of reward having been made to me. Investigator McCarten is having this statement typed for me at my request.

I have been employed as a General Foreman, Pipefitter for Kaiser Inc., at the Wm. H. Zimmer Nuclear Power Station since 1976, with periodic lapses where I terminated my employment for various reasons. I was previously contacted by phone by Mr. Thomas Devine of the Government Accountability Project (GAP) who is investigating allegations of faulty construction at the Zimmer Site. I am providing the following information as amplification of what I told Mr. Devine over the phone earlier.

A⁹ While employed at Zimmer, I on occasion talked with the Peabody Magnaflux personnel assigned to the site, about their rejection rates for welds they tested onsite. They told me they have rejected about 20% of the welds they were examining at the plant. The radiographers did not distinguish to me if these were Kaiser construction field welds, or prefabricated welds manufactured by Kellogg Inc. They did not distinguish to me if they rejected the welds due to poor radiography technique or for actual defects they found in the welds. I personally did not have much contact with the work on large bore piping that the Peabody Magnaflux personnel routinely radiographed, I was assigned as a pipefitter on three inch and smaller bore pipes.

A² I do recall one incident where 3,000 pound fittings were installed on two Resert Flow Control Valves when 6,000 pound fittings are required.

A⁴ These fittings were socket welded too two small hydraulic lines on the valves in question. Also on the same valves a pipefitter bump into it, and a small hydraulic fitting on it fall off. The fitting was later identified as an nonconforming item by Kaiser Inc. and a (DDC)

13
a repairman to the Zimmer site where he repaired the fittings on the valve. I am also aware of drains that were clogged with concrete in the radioactive waste disposal system. I was working as a pipefitter on the drain flushing crew which was responsible for insuring that these drains were cleared of any debris prior to their being used. We found concrete in the drains and I ~~supervised~~ ^{WENT TO} the men who chisled the concrete out of the drains. Some of the drains could not be cleared and the concrete remained in them until the Construction department could ascertain how they were going to remove the concrete from the drains. At the time I stopped working on the system the drains had not been cleared.

AS
In regards to Kaiser's control of weld rod, it is a requirement that weld rod ovens be plugged in and maintained at the right temperature. Although I could not say this for everyone on site, I as a foreman always made sure my men had theirs plugged in. Also if someone used the wrong weld rod, QC Inspectors would reject the welds during fit-up inspections and require you to rework the initial pass on the weld. On occasion when ^{ROD SLIP WAS LOST} ~~A~~ lost a weld rod issue form, I would go and find a blank form and put the right heat number and other information on it. I did this in order for ~~the~~ ^{the} weld to pass the Quality Control Inspections. I knew this was falsifying a record presented to the Inspector, but this was a common practice among welders at the site. The QA Inspectors were aware of it. In most instances the weld rod was the same, and met industry codes and standards, we just covered ourselves by filling out a new weld rod issue form for the one we had lost. I would fill out the weld rod forms at the request of Hal Yoe who needed them for the QC inspectors to fill out their documentation, the slips were made for welds that had been done two months ago, this was done so the new rod slip would make up not have to cut out and rework the weld.

A12
I do recall an incident where the Alpha Air Injector Condensor on the ground floor of the turbine building was injected with high pressure water; when it should have been injected with low pressure water. This was due to an operator error; and from what I learned by talking to other workers at the plant the operator failed to close the high pressure valve, ~~and~~ this allowed water to enter the low pressure system which resulted in a rupture of the low pressure lines.

9
Another area where I observed problems was ~~that~~ we were constructing the plant from Field Construction drawings. We would install a system according to a field construction plan and would show the engineer our changes we made, he would then red line the field construction drawing to effect the change. In 1977 Kaiser QC Inspectors hired from Butler Service Inc. , observed this practice , and directed it be stopped, which it was. In regards to Quality Control (QC) activities at the site I felt the QC staff was grossly understaffed which resulted in daily delays in construction activities at the site, and contributed to workers standing idle for excessive amounts of time. I recall one occasion where as a pipefitter I would wait 90 minutes for an inspector to arrive and verify the fit-up on my weld. On the ~~night~~ ^{DAY} shift I had 50 pipe fitters ASSIGNED TO ME, AND HAD ONLY two inspectors checking their work. I believe the pipefitters on site did a good job, and I personally as a foreman fired two men for poor quality work. The problem as I saw it was an inadequate Quality Control staff ^{AND UNCONTROLLED PROGRAM CHANGES} during the 1976 to 1978 time frame; and this time 500 pipefitters were on site and only ^{about} four QC men inspected their work. ^{IN MY AREA,} At times we waited so long for inspectors to check our work that we put "wait on QA" on the time sheet to account for the hours waiting for the inspector to arrive to check our work. I have no personal knowledge of QC inspectors being intimidated or being doused with water on the Site.

Mr. McCarten has showed me a three page memo written by MR Devine of the Government Accountability Project, which documents a phone conversation he had with me on July 2, 1980. This statement although in some areas is true, is false in other areas and inaccurate in other areas. First off all I would not characterize my self as a "vocal critic of plant safety" I had concerns about the way the Zimmer QC program was run. I was not fired for any complaints I had about nuclear safety issues on site. In fact I have no concern over the safe operation of the plant. The problems I identified were with Quality Control on site constantly changing the procedures. In regards to 20% of the prefabricated pipe welds being defective, this was a rumor on site at the time, I do not have any factual knowledge of this, I think I heard this rumor from [redacted] I was not involved in fabricating large bore pipe at the time and prefabricated pipe was all large bore. I do recall mentioning this statement to MR. Devine in my phone conversation however, he asked me the question and I said yes I had heard the same thing. Mr. Devine told me that MR. Walter Herd had told him that the pre fab welds were not ^{REPAIR IN BETWEEN NRC VISITS,} defective, I replied that Walter would be the man to know since he was Piping Superintendent and if he said the pipes were not ^{REPAIRED} defective it was ok to me. TO say I ~~was~~ generally confirmed this is a misstatement, I just confirmed there was a rumor the pre fab pipes were defective.

I heard a rumor at the time that Peabody Magnaflux was being forced off site for their complaining about being overridden on the repair of welds, I have ^{no} specifics on this I just heard the rumor on site. I have no direct knowledge of any attempt by Kaiser to repair welds in between NRC visits, I told MR. Devine that this was possible, but did not tell him that it had occurred, in fact when I heard Walter Herd said it did not occur I figured it did not, since I trust Walter and he would tell the truth if any repairs were made between visits.

In regards to the cutting of flushing time, it really is irrelevant now since construction has cut into a majority of the pipes and they are ~~gas~~ going to have to be flushed any way again.

Ab I do recall instances where Argon gas hoses leaked in the suppression pool, we had safety lamps in the suppression pool and when they went out we would sound an evacuation alarm and would evacuate the suppression pool area. This I attributed to leaking hoses where Argon gas would escape and to a lack of proper ventilation in the area, the air was foul and I frequently ~~took my men out of there~~ ^{Told my men to come out if they had any discomfort breathing} No one was ever overcome by argon gas to my knowledge.

I did see Mr. Marshall's car in the paint shop on site and it was ~~being~~ being worked on. On occasion Supervisors did have fireplace accessories made from materials on site. We did not have Kaiser employees standing around all the time doing nothing just to burn money up, what ~~it~~ did occur was that we would wait on ^{the} Engineer Department for drawings, or for QC to check a weld, we would give them jobs to do to keep them busy. ~~that is~~ I do not know what MR. Devine means by my saying these men stood around while ignoring ~~any~~ serious problems, we usually resolved any serious safety problem or construction problem on site. Some of these statements were taken out of context for example I agree that the quality of work was good, we had problems with Kaiser and Sargent and Lundy in the engineering department because some of ~~their~~ their men had never worked on a nuclear plant before, or had no field experience. I meant the engineers had no experience in nuclear construction. I never said I don't think the plant will ever open. I said after MR. Devine asked me if the plant would open or not, I said I don't know, if CG&E ^{was} what ~~it~~ ^{it} bad ~~enough~~ ^{enough} it will open.

I also heard a site rumor that Kaiser had to use larger pipe support hangers on the main steam relief system, apparently the design was not adequate for the pipe. I have no direct knowledge of any improper installation of pipe hanger supports, what I heard was a rumor. I never said that the NRC was in the dark about the problem, I think he said that to me and I responded I don't know I have only seen them on the job twice. My main concern is with Quality Control and the fact that the paperwork at the site does not jive, it is not maintained properly and checked by QC. *continued on next page*

In regards to the loading of electrical cable trays, I am no expert in the electrical area, my trade is pipefitting, however these trays look overloaded to me. I will ^{again} state that I am not knowledgeable in this area of construction.

In 1980 [redacted] told me that the Peabody Magnaflux radiographers were being removed from the site for rejecting welds that Kaiser had made and did not want to repair. He told me that their contract was not renewed and they were forced to leave the site, he also stated that their trailer had been broken into, and that records of the welds Kaiser did not want repaired were stolen from the trailer at this time.

BUT I HAVE NO PERSONAL KNOWLEDGE OF THESE INCIDENTS.

I was aware that there was ~~excessive~~ drinking by construction personnel at the Zimmer site, however, I never saw an incident where this resulted in an improper construction of materials at the site, or damage to plant equipment. Also I never heard of an incident where an employee was overcome by leaking argon gas, although frequently welders would be careless and leave the argon gas hoses on, it would settle in low areas and it did present a hazard to workers in the plant.

I have read the foregoing statement consisting of 7 typewritten pages. I have made the necessary corrections, initialed mistakes and signed my name in ink in the margin of each page. This statement is the truth to the best of my knowledge and belief. I declare under penalty of perjury that the foregoing is true and correct.

Subscribed to and sworn to before me on this 14 Day of April 1981 in Cincinnati Ohio.

James B. McCarten
J.B. McCarten
Investigator, NRC

A / 10

April 22, 1981

Cincinnati, Ohio

I ~~am~~, do hereby make the following voluntary statement to Mr. J. B. McCarten who has identified himself to me as an Investigator with U.S. Nuclear Regulatory Commission I make this statement freely with no threats or promises of reward having been made to me. Investigator McCarten is having this statement typed for me at my request.

For five years I was assigned as a Pipefitter Foreman whose duties were to coordinate work between the Construction Department and the Peabody Magnaflux radioographers who conducted nondestructive examinations (radioagraphic examinations) at the Wm. H. Zimmer Nuclear Power Station located in Moscow, Ohio. My duties included daily contact with the Peabody Magnaflux (PM) radioographers because it was my job to clear potential high radiation areas of construction personnel, and to procure scaffolding and ladders for the radioographers to provide them access to pipe welds that they were x-raying in the plant. I was previously interviewed by Mr. Thomas Devine of the Government Accountability Project (GAP) who was also investigating allegations of faulty construction at the Zimmer site. I am providing the following information as amplification of what I told Mr. Devine in my earlier statement.

While employed at the Zimmer site I worked with the PM radioographers who frequently radioagraphed field construction welds made by Kaiser construction personnel. The PM radiographers on occasion would inadvertently examine a weld fabricated by Kellogg Inc., the firm who provided prefabricated piping

sections to the Zimmer site. The radiographers while examining the Kaiser field welds would see defects in the vendor welds fabricated by Kellogg. I was aware that on about four occasions Peabody Magnaflux radiographers found defects in the prefabricated welds; while examining the pipes in the Residual Heat Removal System. The reason that the Peabody Magnaflux radiographers found defects in the welds was from what I heard Kellogg Inc., only x-rayed 10% of the welds on the pipes they supplied to the Zimmer site. I recall that PM radiographers David Binning and Alan Sellars reported these defects to Kaiser and was told by Cincinnati Gas and Electric (CG&E) that they were not to examine these welds because they were vendor supplied welds. Later in December of 1979 I had a discussion with Robert Marshall, Construction Superintendent, for Kaiser Inc., in which he agreed with me when I said "20% of the prefabricated welds in the plant are bad". I'm also basing the statement that 20% of Kellogg prefabricated welds are bad on two incidents; the first is when I was told by Sellars and Binning that on four occasions when there x-rays overlapped with Kellogg welds, they saw defects in the Kellogg welds. The second incident is in August of 1979 when PM radiographers examined some Kellogg pipe that fell off the truck when they were being delivered to the site. The radiographers found that five of the twenty welds on the Main Steam Relief System piping were bad, when they examined these pipes. When Peabody Magnaflux identified these defects in the Kellogg welds onsite they were overridden by CG&E on their decision to reject the defects that they uncovered in these welds. The PM radiographers retained their reports to Kaiser Inc. and CG&E on this subject. I will state that this time however, that PM was not overridden in their decision to reject welds fabricated by Kaiser construction welders on site. I worked with the radiographers who identified defects in welds made

on site, these were reported to Kaiser Welding Engineer, Anthony Pallon who directed that the welds be repaired by Kaiser construction personnel. Frequently, I assisted the PM radioographers when they reexamined welds that they had found previously defective, and were repaired by Kaiser, PM was reexamining the repaired welds to insure the repairs corrected the deficiencies that they identified in the welds, during their earlier examination. I will state emphatically that Anthony Pallon did not override the PM radiographers for their identification of defects in welds made by Kaiser personnel on site.

In December and January 1979 CG&E hired a undercover Private Investigator who used the cover of Thomas Jackson, a Cost Accounting Engineer for CG&E. While Thomas Jackson (Thomas Applegate) was on site he met with the Peabody Magnaflux personnel who talked about being overridden in their identification of defects in the prefabricated piping on site. In January of 1980 I set up a meeting between Applegate and Alan Sellars of PM at the Riverview Bar. Sellars told me he was going to show Applegate paper work of the defective prefabricated welds on site. I think that Applegate and Sellars got together at the Riverview Bar. A few days after this meeting Sellars met me on site and asked me who was it that he had introduced him to in the bar. Sellars said a PM Vice President came to Cincinnati that week, and told his supervisor that you are to "go get a hold of those people in Moscow and tell them to shut up". That same day I was fired from the site for cheating on my time card which Applegate had uncovered, and reported to the utility, who in turn reported it to Kaiser, and had me removed from my job. I was not fired for uncovering any safety defects at the plant, but was fired for irregularities in my time card.

In January 1980 I was informed by Alan Sellars that there had been a burglary of the Peabody Magnaflux trailer on site, and that film and exam reports for the prefabricated piping which were defective, was missing from the trailer. In April of 1980 I was told by Applegate that he had talked with PM personnel on the telephone concerning there being overridden in their identification of defects in prefabricated piping, and their subsequent dismissal from the site. In April of 1980 Mr. Applegate requested an NRC investigation of these incidents and Alan Sellars called me on the phone and said that during the week between the NRC investigation teams visit to the site Kaiser had made some repairs to the questioned prefabricated main steam relief piping, that had fell off the truck, and had been x-rayed by PM and defective welds found on the pipes. } A1
Sellars stated to me that repairs were made to the pipe, but did not say the repairs were any attempt to coverup defective piping for the NRC investigator's. I told the same thing to Mr. Thomas Devine of the Government Accountably Project he later stated that this was an attempt to "coverup" activities going on at the site, when in fact I did not make this statement that Kaiser was attempting to coverup work on the site. I do agree with the statement that during the April and May, Alan Sellars and Steve Binning told me that they had been told not to say anything about their work on site, because PM corporate management was afraid of other utilities taking reprisals against them. I think Sellars said to me that the company was afraid that they would not get any more work so they told them to shut up about their work at Zimmer. Peabody Magnaflux's contract was not renewed at the site due to a lot of reasons, first of all PM was having production problems which they attributed to a malfunction in their film processing machine on site, which also effected the quality of their film. In addition an NRC inspector identified some construction personnel } A17

entering their high radiation areas during an NRC inspection. Also I found that construction was not cooperating with PM in removing workers from the area, and providing them with scaffolding and ladders so that they could x-ray their pipes which again affected their production on the site. I did not know why PM contact was not renewed, but these and other factors may have led to the utilities decision not to keep PM on site. I ~~do not~~ think that PM was thrown off site for the identification of defects in vendor supply welds.

In regards to the allegation that Kaiser knowingly installed and later removed out unsuitable main steam relief piping, I recall that the main steam relief piping was installed in the plant by Kaiser when they knew that they were going to have to tear out sections of the piping that they installed. I think that on the section of the main steam pipe that I was discussing, from the 525 foot level on downward all the pipe sections were ripped out two years after they were installed, however from the 525 foot level upward the pipe that was installed two years ago still remains. I know, at the time that this pipe was installed, Kaiser knew that they were going to have rip out sections of main steam relief piping. In addition my brother-law Ronald ^{RIKE} ~~Wright~~ told me that he was working on the hydraulic lines in the Residual Heat Removal System in which 6000 pounds pressure fittings were required, and he was told only to install 3000 pound fittings on the hydraulic lines. Also while installing concrete in the radioactive waste disposal system, concrete did enter the lines and clogged radiation waste drains in the area. As a pipefitter supervisor I wanted to keep a pipefitter in the area while the men were pouring the concrete in order to prevent concrete from entering the drains and clogging them. Kaiser Construction said that to have a pipefitter to stand by just to ensure that the drains

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Melvin

did not get clogged was a waste of manpower and that duct tape should be placed over the drains. The tape was applied to the drains, and in my opinion some of the men working on the concrete finishing in the area poured excess concrete down the drains, rather than carry it all the way up the stairs to dispose of it properly. This concrete clogged the drains and later it had to be removed I still don't know if Kaiser ever cleared those drains. In my opinion the finishers intentionally poured the concrete down the drains since the duct tape would have prevented the concrete from entering the drains.

A3

There also was a problem in the control of weld rod on site. Frequently I have observed both uncontrolled weld rod in the plant, and weld rod ovens not being plugged in or kept at the proper temperatures. Also for a two month period in 1979 there was no one assigned to the weld rod issue shack on site. Weld rod for the night shift was merely left out unattended with a weld rod issue slip available for any one to pick up and sign. Also the KE-1 weld control forms were not being properly be maintained. QC inspectors were filling out these forms from their desk and not actually verifying the information put on the forms by performing the required field inspections and verification of the data they entered on the form. This has led to problems with the in process inspection documentation, KE-1 forms do not properly show the data for welds fabricated by Kaiser on site.

A5

A5

McCarten

Another problem that I identified on site was that frequently Argon gas was leaking from hoses in the suppression pool area and the Argon gas was settling in low levels of the suppression pool. The gas hoses were being crimped with wire rather rather than being turned off at the valve which was located one or

A6

two floors up from where the hose was located. Of course the crimping did not keep small quantities of the Argon gas escaping from the hoses, and this gas settling in low lying areas of the plant. This was a hazard to someone if they entered a room and Argon gas was in the room. I brought this matter to the attention of the ^{KE-1} ~~CG&E~~ Safety Man on site, who was not aware that Argon gas in low lining areas presented a hazard to workers.

Another records problem at the site was that Engineering Design for pipe hangers were drawn up after the hangers had been installed. The construction personnel was using drawings defined as "construction aids" which were instructions on how to install the hangers in the plant. If construction moved a hanger, or a pipe line, or a pipe support, they would draw the new location where they moved it to on the "construction aid" this data was later transposed onto the formal drawings. This was designing the pipe hanger system after the fact, rather than designing it prior to installation as it should of been. In my opinion Sargent and Lundy should have been on site to insure the drawings and fabrication of the hanger system was properly done however, they were not on site and this led to a situation where pipe support hangers were installed and the drawings were drawn after the installation. These design problems and the control of KE-1 weld control forms that I mentioned earlier should be characterized as records problems but not as any attempt to "coverup" any defective welds or designs at the plant. The way I see it, the design and records problems were cases of lost documentation, or improper documentation which occurs frequently on any construction project. I have no knowledge of any CG&E or Kaiser Construction personnel engaging in any systematic coverup activities to deceive the NRC or other inspection groups at the Zimmer site.

I also mentioned to Mr. Devine in my statement that I made to him last year that I had learned that the main feedwater pumps were installed improperly and were clogged with mud and sand which caused the pumps to burn up. Apparently the pumps had been installed improperly which let sand from the river bottom to enter the pumps which clogged them up.

A11

Another incident I related to Mr. Devine was when a heat exchanger control panel was pressurized with 1200 pounds pressure when it was only meant to handle 300 pounds. The high pressure water entered the low pressure system and caused the ~~three eight's inch pipes on~~ the heat exchanger to burst open. Two electricians in the area were soaked with water. I think this occurred due to an operator error, apparently the operator failed to turn off a valve which allowed high pressure water to enter the low pressure system which caused the pipes to rupture.

A12

~~In regards to the use of alcohol and drug use on site.~~

End of statement.

I have read the foregoing statement consisting of 9 type written pages.
I have made the necessary corrections, initial mistakes, and sign my name
in ink in the margin of each page. This statement is the truth to the
best of my knowledge and belief. I declare this on a penalty of perjury
that the foregoing is true and correct.

A large, dark, irregular redacted area covering the signature of the person being sworn to.

Subscribed to and sworn to before me on this 22 day of April 1981 in
Cincinnati, Ohio.

A handwritten signature in cursive script, reading "James B. McCarten".

J. B. McCarten, Investigator, NRC



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

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December 15, 1980

MEMORANDUM FOR: Region III Files

THRU:

E. E. Norelius
Charles E. Norelius, Assistant to the Director

FROM:

G. A. Phillip, Investigative Specialist

SUBJECT:

ZIMMER PLANT - ALLEGATIONS

On November 18, 1980 Jay Harrison, Resident Inspector at Marble Hill, advised Jim Foster and me by telephone that he had been contacted by an individual [] who has been a QC inspector at Zimmer and who is now working at the Marble Hill site. According to Harrison, [] had made allegations primarily relating to welding. I agreed to contact []

On December 9, 1980 J. Shapker and I had a telephone conversation with [] who's specific concerns were as follows:

1. [Phill Gittings, Kaiser QC Manager,] who has been at Zimmer since July 1980, has voided several nonconformance reports issued on hanger welds. [Gittings] has done this on the basis of personally examining fillet welds by shining a flashlight on them from several feet away and concluding the weld is acceptable. [] advised that [Rex Baker, Inspection Supervisor, Kaiser] should be interviewed and he will be able to provide specific examples.
2. Bolt holes for large bore pipe support hangers are required to be made by drilling rather than burning. Although some instances of burned bolt holes have been identified, there is no inspection program to assure the bolt holes are inspected.
3. [David Fox, Welding NDE Quality Engineer] and [Len Wood, QA Engineer,] CG&E, are finding as many as 30 discrepancies during reviews of ASME Code data packages. They "are getting a lot of flak" for identifying so many discrepancies. The discrepancies are being recorded on an exception list rather than in nonconformance reports. [] did not know whether there was a procedure controlling this review, the documentation of discrepancies and the resolution of them.
4. Kaiser threatened to fire an inspector [] for refusing to accept a weld. He said he heard that [] was also nearly fired for using a magnifying glass when examining welds when, in fact, he was using a mirror to view the far side of a pipe weld. [] indicated [Rex Baker] would have more specific information in this regard.

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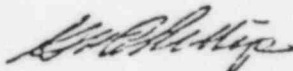
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Zimmer Plant - Allegations

2

December 15, 1980

[] was advised that we might not be able to follow up on these items until January 1981 but that we would contact him to inform him of our findings.



G. A. Phillip
Investigative Specialist

cc: J. Schapker
G. Fiorelli
I. Yin
D. Danielson
F. Daniels

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Per conversation w P. Britt 11/2/81

approached Paul - not vice versa

1. [Sager] was aware before Paul was told and [Sager] was evaluating. Much of alleged discontent may be management not doing things fast enough.
2. Stop-work initiated by Sager before Paul was told.
3. Probably a bit - we will follow up.
4. Paul recognized general problem some time ago and QCF was designed to identify problems such as this.
5. We were aware - we will follow up.
6. We were not aware - we will follow up.

ZIMMER MEETING AGENDA

APRIL 10, 1981

- . OPENING REMARKS (J.G.K.)
- . DISCUSS PROGRAM FOR CONFIRMING QUALITY OF COMPLETED WORK. CG&E
TO PROVIDE SPECIFIC PLAN FOR ACCOMPLISHING THIS
- . DISCUSS IAL (NRC/CG&E)
CG&E TO PROVIDE APPROACH AND PLANS FOR IMPLEMENTATION
- . CONCLUDING REMARKS (J.G.K.)

HQ BRIEFING

April 9, 1981

- 4
A. Ex-Zimmer employee allegations — 11/18/80 by RFD read Marble Hill Started invest 1/2/81
- B. Applegate/Gap allegations — 1/5/81 Started invest 1/27/81
- C. Investigative effort to date
- 4
D. Problems identified through Applegate allegations investigation
- 5
E. Problems identified through ex-employee allegations investigation
- 10
F. Problems identified by NRC inspectors while investigating allegations
- G. RIII Actions
- H. Remaining RIII efforts
1. Work
 2. Schedule

2/12/81

Mrs. Ward,

These memos may be helpful for the IE team already in Cincinnati. We are somewhat concerned that you did not inform us of the IE team's arrival, as promised.

You may also be interested in learning the phone number for one of the more active witnesses, (It was testified when we prepared a witness list.) Both he and Mrs. Applegate are extremely interested in talking with the NRC investigators at length.

Sincerely,
Tom Divine
Associate Director

TO: BERT DAVIS
WTT

FM: BILL WARD
IE:HQ
7 PAGES

FEB 23 1981
10:45
RW

GOVERNMENT ACCOUNTABILITY PROJECT

Institute for Policy Studies

1901 Que Street, N.W., Washington, D.C. 20009

(202) 234-9381

MEMORANDUM

To: Louis Clark

Fr: Tom Devine

Da: February 11, 1981

Re: Summary of February 1, 1981 conversation with Mr. Tom Martin

On February 1, 1981 I spoke with Mr. Tom Martin to provide additional background for his April 18, 1979 affidavit. Mr. Martin has been a millwright for ten years. After being laid off from the Zimmer plant, he worked as a millwright for eleven months at Ford's Batavia transmission plant. His duties involved setting up 90% of the laser measurement quality control testing machines at the plant.

Mr. Martin is anxious to speak at length with NRC investigators. He testified at a 1979 NRC hearing but complains that due to successful objections from utility lawyers, he was unable to present his evidence or explanations of faulty control rods at Zimmer. He also informed me that he can refer NRC investigators to a series of additional witnesses, including a millwright with 50 years experience, and two other employees whose affidavits we sent to the NRC--Messrs. Gorman Reynolds and Robert Anderson.

Mr. Martin provided some background explanation for the charges in his 1979 affidavit. The control rods are the key to shutting down the reactor. If they are larger than specifications, the rods could expand during high temperatures in an accident and fuse with the reactor vessel. This development could cause a meltdown. He added that the wrong type of gauge was used to measure the rods.

Mr. Martin is especially concerned that the new millwrights who replaced those from his firm did not check the allegedly faulty control rods. Instead, in violation of the rules, Kaiser's own quality control employees inspected the suspect components.

Mr. Martin added some brief explanation for the significance of Reynolds' and Anderson's charges. The leaks in the door units at the pump house are significant because that room has the motor for the pumps that control the plant's cooling system. The leaking door units in the reactor building compromise the hub of the whole plant and could allow water to enter the control room.

The metal shavings in the control rods represent a different potential problem. The shavings could flow through the system, clogging valves and pumps.

Mr. Martin is anxiously awaiting the arrival of the NRC investigating team.

MEMORANDUM

To: Louis Clark, Director
Fr: Tom Devine, Associate Director
Da: February 11, 1981
Re: Summary of February 1, 1981 Telephone Interview
with Mr. Vic Griffin

I. INTRODUCTION

I called and spoke with Mr. Vic Griffin on February 1, 1981, the day after my return from Cincinnati. Mr. Griffin is the 61 year old Kaiser Quality Assurance Engineer who resigned in early 1976. He left immediately after he went public with his concerns over a phony quality control system and faulty essential components at Zimmer. Mr. Griffin emphasized three topics during our discussion: circumvention of sound quality control techniques; damaged or potentially damaged essential components that may still be in place at Zimmer and possibly other plants; and a superficial NRC whitewash of his charges after a brief "investigation" by Region IV's Gerald Phillips.

Mr. Griffin wants to speak with new NRC investigators who do his best to help locate other employee witnesses. He promised to speak freely at bars about the problems at Zimmer. For instance, one employee discussed an unreported blowout after an uncertified welder attempted to repair a heat exchanger. But due to fear of reprisal and past NRC breaches of confidentiality, employees are afraid that speaking to the Commission is like turning information over to the owner. I informed Mr. Griffin of the Commission's specific confidentiality pledges for this investigation.

II. PERSONAL BACKGROUND

Mr. Griffin worked in quality control for 20 years before he resigned in October 1972 to take a job with Kaiser Engineering at Zimmer. He worked with Kaiser for 3.5 years. On February 22, 1976, the day after he spoke with NRC investigator Phillips, Griffin resigned. He quit because it was obvious the Commission would not pursue his charges seriously. He wanted to avoid the untenable situation of being a whistleblower at Zimmer when his

allegations were about to be brushed aside by the government. In short, his aim was to leave before the inevitable dismissal on pretextual grounds. Kaiser refused to accept his resignation for a week, and his supervisor informed Phillips that Griffin was a "damn good engineer." But Griffin's supervisor also alerted him that Kaiser couldn't back him indefinitely and the resignation was accepted.

Currently Mr. Griffin works as an independant quality control contractor. His current job is to inspect components for defense weapons manufactured by the Honeywell Corporation.

III. CIRCUMVENTION OF STANDARD QUALITY CONTROL PROCEDURES

The bulk of Mr. Griffin's concerns involved the quality control system for essential, or "critical," components at the plant. He defined critical components as those whose failure could interfere with the safe shutdown of the plant. These include parts such as pumps, valves and switchboxes. Non-essential components will not prevent a shutdown, but their failure could still be very dangerous.

Griffin first became aware of structural quality control problems about two to three weeks after he started work at Zimmer. John Jackson, Kaiser's corporate manager of quality control out of Oakland, California, reported disturbing news to Griffin. The utility, Cincinnati Gas and Electric ("CG&E"), had just announced that it would replace Kaiser in handling quality control for purchases of critical components from suppliers. The only exception was that Kaiser would be permitted to inspect for identification and transit damage. Mr. Jackson was upset, because General Electric ("GE") was the only supplier of critical components that had its own quality control program.

The problem was that CG&E did not perform independant inspections on those suppliers who lacked internal quality control. In fact, CG&E was satisfied with paperwork checks. Contrary to the standard quality control process, it flatly refused to inspect components itself or to allow Kaiser to conduct inspections at the manufacturing sites. The utility's excuse was that "we have to put our trust in the manufacturers." CG&E was satisfied to call up other utilities and obtain telephone references on the suppliers. Griffin explained to me that this practice of trusting the paperwork would turn the blood of any quality control engineer in the country to ice. He told CG&E officials, "I'm not worried about the paperwork blowing up." He noted that the "trust" approach violated the AEC requirements, but the Commission winked at the practice.

To add insult to injury, Mr. Griffin pointed out that frequently the paperwork was not even checked for up to 1.5 years. When CG&E did stumble across a faulty component, routinely the

utility would simply return the part to the vendor and fail to file a nonconformance report with the AEC.

Another quality control circumvention technique involved collusion with Kaiser. CG&E would order components as non-critical and then upgrade them to critical status at the site. Kaiser's then site manager for quality control, Mr. Bill Friedrig, routinely upgraded whatever parts CG&E requested.

Mr. Griffin emphasized that the defense industry does not engage in the same quality control shortcuts he observed at Zimmer. He explained that GE sends field inspectors right to the vendors' plants to inspect jet engines. He concluded that if the quality control for nuclear plants were 1/10th as effective as that for 120 millimeter cannon shells, he wouldn't be nearly so concerned.

Based on Mr. Griffin's observations, the NRC should conduct a thorough review of all components which have been returned to vendors or upgraded at the site, since construction began. Further, the utility should be ordered to contract with outside quality control experts to independantly inspect all critical components received from suppliers other than GE. I doubt that the citizens of Cincinnati would trust the manufacturers of essential safety systems which remain untested today.

IV. EXAMPLES OF SUSPECT COMPONENTS

To illustrate his critique, Mr. Griffin discussed two specific examples of dubious critical components. The control rod drive pump activates the control rods. These rods control the heat levels in the reactor. The pump is sensitive and is supposed to be stored in a temperature-controlled room. The temperature controls are necessary to prevent condensation which could damage the parts. At Brown's Ferry, the drive pump was the essential component that finally worked, preventing a bad fire from causing a meltdown.

Mr. Griffin was upset that the control rod drive pump at Zimmer was missing. He eventually found the pump outside in the mud under a trailer. CG&E consented to a superficial "pre-op" test to check whether the pump had broken down yet. But there was never any independent inspection to see whether its long-term reliability had been compromised. Mr. Griffin fears that the pump may not operate effectively in any Brown's Ferry-type emergency that occurs a few years down the road.

Similarly, CG&E kept other uninspected critical components in unheated rooms, in violation of safety requirements. Finally, in January or February 1973 the utility installed portable heaters. Again, however, there was no inspection for structural damage that might have occurred already.

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Mr. Griffin's second major example involves the "Nash condensor," used with the terry turbine. These components are also essential to prevent a meltdown. Griffin opened the package to check for transit damage and saw that the motor had broken off. The problem was a "core-shift"--the component had cracked and fallen apart because the circular metal in the condensor was not even all around.

Although Mr. Griffin wrote up the incident, he charges that CG&E violated AEC requirements to report it as a "significant event." Mr. Griffin thinks it is significant for nuclear plants around the country if Nash condensers can't survive a truck ride.

V. EXPERIENCES WITH THE NRC

Mr. Griffin recalls that on February 21, 1976 he discussed the above problems for three hours with NRC investigator Gerald Phillips and two aides. Phillips was courteous and the aides took notes. But after Phillips explained he was a non-technical man and would require simplified explanations, Griffin became concerned that the NRC would not pursue his charges aggressively.

Mr. Griffin's fears soon were confirmed. Other plant employees told him that Phillips conducted no independent inspection. Instead, he merely reviewed the paperwork and obtained responses from CG&E and Kaiser officials. Mr. Griffin was not invited to point out the violations at the site. At a press conference after Phillips' review, an NRC spokesman said that Griffin's complaints were accurate, but no violation of NRC regulations had occurred. Griffin disagrees with this conclusion, since he was familiar with the regulations in question. At any rate, he contends that the problems were so serious in terms of potential safety defects that the surrounding population remains vulnerable to disaster.

VI. CONCLUSION

Mr. Griffin is an extremely credible witness. He had no axe to grind when he went public. Part of his continuing concern apparently stems from the location of his home. He lives two miles from Zimmer, overlooking the plant's cooling towers. His primary theme is that there is no margin for error in critical components at nuclear plants. In his opinion, CG&E is not close to meeting that standard.

Mr. Griffin was careful not to overstate his case. He told me that he never makes a statement he can't prove; because "you can be right 99 times and wrong once, and they'll kill you." He informed me that a GAO report on Zimmer backed his charges in 1977 and 1978. Pat Ruble should obtain a copy.

Mr. Griffin's experience is also valuable because it foreshadowed the experiences of Applegate and others. For example,

-3-

Kellogg's faulty prefabricated piping welds are more understandable in light of CG&E's refusal to conduct quality control inspections at the Kellogg plant. Similarly, Phillips' "paperwork-management chat" inspection mirrors his response to Applegate's allegations.

Finally, many of the suspect components exposed by Mr. Griffin still may be faulty. CG&E installed them without normal testing. The parts have just sat in the plant for five to eight years as dormant threats to the local population.

Based on Mr. Griffin's credibility, the fundamental nature of his charges and the scope of his allegations, his evidence could make a strong case for suspending CG&E's construction permit. If Griffin's charges are correct, Zimmer is packed with essential components which have never been adequately inspected. The NRC should perform or order a through, independent inspection of these components throughout the plant. In many cases, it will be the first time that CG&E's "trust" in the manufacturers will have been checked.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

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Foster*

13

August 14, 1981

MEMORANDUM FOR: J. F. Streeter, Acting Director,
Enforcement and Investigation Staff
J. B. McCarten, Investigator

FROM: James Foster, Investigator

SUBJECT: 1978 ELECTRICAL ALLEGATIONS - ZIMMER

On October 12, 1978, I received a telephone call from [redacted] of the U. S. Testing Company (UST). [redacted] was employed at the Zimmer site as an electrical QC inspector and had been there for approximately three months. UST was being replaced as the lead electrical inspection group, and Kaiser was performing most electrical inspections.

[redacted] indicated he was going to be dismissed, and that he was concerned regarding several aspects of the electrical QC program at Zimmer. He recounted concerns relative to cable pulling, cable storage, Nonconformance Reports (which were either not being processed or were voided), and design changes which he felt relaxed the original plant specifications.

He stated that UST personnel had formerly reported to Mr. Stu Tulk, but he had been promoted, and they now reported to Mr. Mike Kopp. He stated that Tulk was not to blame for the conditions which concerned him. He named three other inspectors who were involved with electrical QC inspections:

The central concern he discussed involved Design Document Change (DDC) E-3710, modifying specification H-2173 by deleting paragraph 202.22(b) which dealt with electrical cable installation. The DDC indicated that Sargent & Lundy would identify any cable tray overfill and direct the contractor to take corrective action. On the basis of the DDC, Nonconformance Reports dealing with cable tray overfill had been voided with the notation "see DDC-E-3710". Nonconformance Report (NR) numbers provided as examples of such voiding were 2393, 2394, 2395, and 2396, all dated September 8, 1978 (apparently, many "hold" tags had been applied on that date).

August 14, 1981

On October 16, 1978, [redacted] telephoned RIII. They indicated that [redacted] had been let go from UST for lack of work, and [redacted] was afraid that he would be terminated shortly. They also stated that several of the Kaiser electrical QC personnel had concerns in the electrical area, but were afraid to talk to the NRC for fear of repression.

During this conversation, we again discussed the previously expressed concerns, and concerns relative to temporary wiring, temporary cable tray supports, conduit inspection, and grounding deficiencies. NR E-1270 relative to a conduit inspection deficiency was mentioned.

From the discussion, [redacted] had discussed his concerns with site personnel including Turner, Ehas, and Schweirs, without gaining any satisfaction. He stated that he was preparing a letter to Cincinnati Gas & Electric, Kaiser, and the local newspapers detailing his concerns, but had not decided whether to send it. He indicated his decision might be affected by a meeting with Turner and Culver, scheduled for later that day.

On October 17, 1978, [redacted] again telephoned me. He stated that UST had offered him a job in their New Jersey home office, and he had accepted this position. He had decided not to send his letter, and did not wish to continue to discuss his concerns with RIII personnel. He inquired as to whether NRC had any open positions, and indicated that he would call me from New Jersey sometime in the future.

I was never re-contacted by [redacted] or contacted by the others named. I referred the information I had been provided to electrical inspectors in the Reactor Construction Branch (T. Vandel, G. Maxwell, J. Hughes). They inspected the Zimmer site on October 24-26, 1978, and reviewed the information I had provided. Their inspection is documented in IE Inspection Report No. 50-358/78-25. No items of noncompliance with NRC requirements were observed during the inspection.

Attached are my notes of the telephone conversations, the inspection report, and a note to T. Vandel (then the Zimmer Project Inspector) from F. Jablonski regarding similarities of the concerns to earlier NRC observed deficiencies. Also attached is C. Norelius' memo documenting his more recent telephone conversation with [redacted]