

DOCUMENT RESUME

02451 - [A1672675]

Allegations of Poor Construction Practices on the North Anna Nuclear Powerplants. EMD-77-30; B-164105. June 2, 1977. 15 pp. + 2 appendices (5 pp.).

Report to Rep. John D. Dingell, Chairman, House Committee on Interstate and Foreign Commerce: Energy and Power Subcommittee; by Elmer B. Staats, Comptroller General.

Issue Area: Energy: Making Nuclear Fission a Substantial Energy Source (1608); Science and Technology: Management and Oversight of Programs (2004); Consumer and Worker Protection: Regulation of Biological Products to Insure their Safety, Purity, Potency, and Efficacy (908).

Contact: Energy and Minerals Div.

Budget Function: Natural Resources, Environment, and Energy: Energy (305).

Organization Concerned: Nuclear Regulatory Commission; Virginia Electric and Power Co.

Congressional Relevance: House Committee on Interstate and Foreign Commerce: Energy and Power Subcommittee.

In response to allegations of poor construction practices, the Nuclear Regulatory Commission investigated North Anna nuclear powerplants and inspection practices. GAO observed or monitored NRC activities throughout the investigation. Findings/Conclusions: Inspectors found 32 instances of failure by the Virginia Electric and Power Company and its contractors to meet acceptable construction criteria or specifications, but concluded that they had no direct safety significance. The Commission fined the utility \$31,900, required corrective action, and required the utility to strengthen its management and quality assurance efforts. GAO found that inspectors were thorough but did not find justification for the conclusion that safety significance was lacking. GAO also questioned the NRC requirement for the utility to audit engineering judgments since vested interests are involved. Recommendations: The NRC should: (1) expand investigations to include other North Anna units; (2) require that audits of engineering judgments be made by independent experts; and (3) issue regulations to protect individuals who notify NRC of problems from reprisals. (HTW)

02451 2615

**REPORT TO THE HOUSE COMMITTEE
ON INTERSTATE AND FOREIGN
COMMERCE**

**BY THE COMPTROLLER GENERAL
OF THE UNITED STATES**



**Allegations Of Poor Construction
Practices On The North Anna
Nuclear Powerplants**

Nuclear Regulatory Commission

GAO accompanied Nuclear Regulatory Commission inspectors to the North Anna nuclear powerplants in Virginia to observe their investigation of allegations of poor construction practices. The inspectors found 32 instances where the owner of the powerplants and its contractors failed to meet acceptable construction criteria.

GAO found that the inspectors were very thorough and aggressive in the investigation at North Anna. But, the Commission's investigation report did not justify its conclusion that the items found did not have any direct safety significance. GAO made several recommendations to the Commission aimed at assuring that the powerplants are constructed in accordance with prescribed criteria.



COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-164105

The Honorable John D. Dingell
Chairman, Subcommittee on
Energy and Power
Committee on Interstate and
Foreign Commerce
House of Representatives

Dear Mr. Chairman:

This report is in response to your request of August 25, 1976, that we review the Nuclear Regulatory Commission's investigation of poor construction practices at the North Anna, Virginia, nuclear powerplants. As we agreed with your office, this report will be available for unrestricted distribution.

We provided the Nuclear Regulatory Commission an opportunity to review a draft of this report. Its comments are included as appendix II.

The report contains recommendations to the Chairman of the Nuclear Regulatory Commission on page 11. As you know, section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement on actions taken on our recommendations to the House Committee on Government Operations and the Senate Committee on Governmental Affairs not later than 60 days after the date of the report and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

Sincerely yours,

A handwritten signature in black ink, reading "Thomas B. Steudt".

Comptroller General
of the United States

COMPTROLLER GENERAL'S REPORT
TO THE SUBCOMMITTEE ON
ENERGY AND POWER, COMMITTEE
ON INTERSTATE AND FOREIGN
COMMERCE
House of Representatives

ALLEGATIONS OF POOR
CONSTRUCTION PRACTICES
ON THE NORTH ANNA
NUCLEAR POWERPLANTS
Nuclear Regulatory
Commission

D I G E S T

On August 13, 1976, the Chairman of the Nuclear Regulatory Commission learned of allegations of poor construction practices at the nuclear powerplants being built at the North Anna site, which is about 40 miles north of Richmond, Virginia. The Commission's inspectors spent about 2 months investigating these allegations and other deficiencies found during the investigation. (See pgs. 1 and 2.)

The inspectors found 32 instances in which the owner of the powerplants--the Virginia Electric and Power Company--and its contractors failed to meet acceptable construction criteria or specifications. The Commission concluded that the items investigated had direct safety significance but, collectively, were indicative of poor management control over the construction and quality assurance programs. (See pg. 4.)

The Commission (1) fined the utility \$31,900, (2) required corrective action on the items of poor construction, and (3) required the utility to strengthen its management and quality assurance efforts to preclude further deficiencies. (See pg. 4.)

The Commission is reasonably satisfied with the utility's plans to correct the situation at North Anna. But before it permits the powerplants to operate, the Commission must satisfy itself that the utility carries out the planned corrections. (See pg. 5.)

GAO has the following observations and conclusions on the Commission's investigation at the North Anna powerplant site.

- Investigators dispatched to the North Anna site were thorough and aggressive in their work. (See pg. 8.)
- The investigation report and attachments did not provide the Commission's basis for concluding that the items of noncompliance had no direct safety significance. GAO

believes that the public should have been informed that if some of the items had not been found and corrected, there could have been a decrease in reliability in certain secondary, backup, or supporting components or systems. (See pg. 9.)

- Most of the Commission's past and ongoing investigation has focused on one of the units at North Anna. A comparable effort should be made on unit 2 because many of the allegations related to it and the same parties were involved in most of its construction. (See pg. 8.)
- The Commission does not have regulations to protect construction workers, who bring poor workmanship to its attention, from reprisals by their employers. Without this protection, the Commission jeopardizes a very useful way to supplement inspection efforts. (See pg. 10.)
- The Commission has required the utility to audit and evaluate past engineering judgments made at the North Anna plants. Considering the utility's management weaknesses and its present interest in getting the plant ready to operate, GAO does not believe the utility should be relied on to perform this audit and evaluation. (See pg. 10.)

GAO intends to continue to monitor the Commission's inspection and enforcement actions at North Anna.

GAO is recommending that the Chairman of the Nuclear Regulatory Commission direct the Office of Inspection and Enforcement to:

- Expand phases 2, 3, and 4 of the North Anna investigation (as identified on pg. 8 of this report) to unit 2.
- Require that the independent audits of past engineering judgments are made by experts who have no direct vested interest in the North Anna plants. GAO believes that the Commission should either make the audits itself or insure that they are made by an independent group of experts.

--Issue a rule or regulation to protect individuals from reprisals by employers or others if those individuals notify the Commission of legitimate concern about activities at construction sites.

In commenting on GAO's draft report the Commission disagreed with some of GAO's positions but said it believed that the differences were more a matter of degree than substance. The Commission disagreed with GAO's: observations about the safety significance of the individual items of noncompliance; recommendation for independent audits of past engineering judgments and events by the utility and its contractors, and; recommendation for the Commission to expand its investigation efforts to unit 2 at North Anna.

The Commission concurred with GAO's recommendation to issue a regulation to protect construction workers against retaliation by their employers for bringing matters of concern to the attention of the Commission. (See pg. 2.)

GAO still believes that the Commission should require that independent experts review past engineering judgments and audits performed on the North Anna plants and that all phases of the investigation that were made on unit 1, be done on unit 2.

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ABBREVIATIONS

GAO	General Accounting Office
NRC	Nuclear Regulatory Commission
VEPCO	Virginia Electric and Power Company

CHAPTER 1

NRC INVESTIGATION AT NORTH ANNA POWERPLANTS

BACKGROUND

The North Anna nuclear powerplant site, owned by the Virginia Electric and Power Company (VEPCO), is located in the northeastern portion of Virginia about 40 miles north of Richmond. Four nuclear powerplants are now under construction at the site. In April 1977 unit 1 was 97.4 percent complete; unit 2, 76.9 percent; unit 3, 5.4 percent; and unit 4, 3.5 percent.

On August 13, 1976, the Chairman of the Nuclear Regulatory Commission (NRC) was notified by a member of the Advisory Committee on Reactor Safeguards ^{1/} that a construction worker at North Anna had alleged to members of the news media that certain construction activities at the site were improper. The Chairman immediately directed a thorough investigation.

NRC officials talked with the worker on the following day and later met with two other construction workers who supported and added to the allegations. In total, the three men made 52 allegations which primarily concerned inadequate installation of piping in units 1 and 2. It was also alleged that Federal inspectors were not making the required inspections and were possibly being "paid off" and notifying VEPCO of upcoming inspections.

NRC's region II office in Atlanta, Georgia, has inspection cognizance over the North Anna site and was originally scheduled to investigate the allegations, along with two NRC headquarters personnel. However, because the allegations about Federal inspectors could have related to region II inspectors, the director of NRC's Office of Inspection and Enforcement selected an inspection team outside of region II. Concurrently, NRC's Office of Inspector and Auditor began a separate investigation of those allegations relating to possible misconduct by inspectors.

^{1/}A committee established by a 1957 amendment to the Atomic Energy Act, to advise the Atomic Energy Commission on safety studies and reactor license applications. The Committee now performs the same functions for NRC which took over AEC's licensing authority under the Energy Reorganization Act of 1974.

SCOPE AND STATUS OF NRC INVESTIGATION

NRC's investigation at North Anna was divided into four phases. Phase 1, an onsite investigation of units 1 and 2, was begun on August 26 and completed on October 20, 1976. The investigation team consisted of two headquarters personnel and five regional inspectors--two from NRC's region III in Chicago and three from region I in Philadelphia. These inspectors summarized 52 allegations from statements made by the three construction workers and later reinterviewed two of them to get their concurrence that the 52 allegations covered their areas of concern. The allegations related primarily to piping systems outside of the units 1 and 2 containment buildings which house the nuclear reactors.

NRC established three additional phases to the investigation to determine if work in other areas of the plant might also have been inadequate.

Phase 2 involved an inspection of the unit 1 reactor coolant pressure boundary piping--safety critical piping primarily within the containment building--and other safety related piping by the NRC team. To accomplish this phase, the inspectors' procedures were those typically used to inspect reactors under construction but were modified to permit greater physical inspection of the piping systems than is normally done. This phase was begun on September 21 and was completed on November 5, 1976. NRC spent a total of 4,000 staff-hours to conduct and manage phases 1 and 2 of the investigation and to evaluate its findings.

Phase 3, which was completed on unit 1 in February 1977, included observations of VEPCO and its contractor as they made preservice examinations. Specifically observed was the ultrasonic testing of safety related piping systems. Ultrasonic testing is a quality assurance technique used to examine these systems after their construction is completed. Instead of being made by the investigative team, however, this phase was performed by two inspectors--one from NRC headquarters and one from region IV (Dallas)--who have special qualifications in ultrasonic testing.

Phase 4 is an upgraded program to inspect selected components and systems during the preoperational testing of unit 1. It will be completed on a schedule that is compatible with the testing activities of VEPCO and its contractors --possibly some time in the spring of 1977.

Investigation of NRC misconduct

All allegations which involved possible NRC inspector misconduct related to the failure of region II inspectors to make required inspections and the possibility that they gave prior notification to VEPCO of upcoming inspections. These were referred to NRC's Office of Inspector and Auditor for evaluation. This group talked with officials of VEPCO and its contractor at the North Anna site and reviewed inspection reports, travel records, and other documents to determine if the region II inspectors made their scheduled onsite inspections in accordance with NRC procedures.

The Office of Inspector and Auditor issued a report on January 14, 1977, in which it concluded that NRC inspectors performed their work as required by the existing inspection criteria and that there was no evidence of inspector misconduct at the North Anna site. NRC has, therefore, decided that phase 4 of the investigation can be performed by region II inspectors rather than the special investigation team. During our review we did not find any evidence of inspector misconduct which should prevent region II inspectors from completing the investigation.

Findings of phases 1 and 2

On December 2, 1976, the Office of Inspection and Enforcement reported on the results of phases 1 and 2. The major part of the report was a summary of the investigation and a collection of the supporting documentation generated by the seven inspectors during these phases. Each of the inspectors signed the report attesting to its accuracy and completeness.

The NRC investigators found that 12 of the 52 allegations were substantiated, meaning that the alleged event

--did, in fact, occur,

--was contrary to regulatory requirements,
and

--had not been identified and properly
corrected by VEPCO's quality assurance
program.

In addition, eight allegations were classified as unresolved, which means that NRC needed more information--to be supplied by VEPCO--to assess the safety significance and corrective actions required.

Of the remaining 32 allegations, which NRC classified as unsubstantiated, 13 were true statements but did not meet NRC's definition of substantiated. That is, the alleged events did, in fact, occur but were either not contrary to regulatory requirements or else had already been identified and corrected by VEPCO's quality assurance program.

During phase 2 the inspectors found 20 other instances of noncompliance with regulatory requirements and an additional 14 instances that NRC had not yet resolved.

NRC concluded that there was no direct safety significance associated with the 12 substantiated allegations or with any of the phase 2 findings. This conclusion is based on NRC's firm belief that nuclear powerplants, in general, are conservatively designed and that, even if the items in question were to fail, the safety of the plant would not be compromised because independent backup equipment or systems would protect against a nuclear accident.

On the other hand, individual members of the investigation team told us that--compared with other plants observed in the course of their experience as NRC inspectors--the deficiencies found at North Anna place that plant at the lower end of the spectrum with regard to the quality of construction work. They expressed concern to us and NRC management about the nature and extent of deficiencies found, as well as the lack of experience of high-level quality assurance and construction management personnel at the plant.

NRC ACTION AGAINST VEPCO

Even though NRC officials believe there is not much direct safety significance to the individual items of non-compliance, they believe that, in total, the items indicate significant management deficiencies at the site. Specifically, NRC reported that:

- Onsite management and supervision of normal surveillance work in progress appeared to lack the vigor to insure that workers adhered to approved procedures, instructions, specifications and drawings.
- Onsite management did not give adequate attention to the disposition of identified nonconforming items or practices.

--Management's program for auditing the quality assurance program was deficient in that it did not detect the weaknesses NRC identified.

NRC therefore, required VEPCO not only to correct the specific items of noncompliance but also to strengthen its onsite management and quality assurance efforts to insure that such noncompliances do not occur in the future.

On December 6, 1976, NRC issued a notice of violation to VEPCO which gave the results of the investigation and asked VEPCO to document its proposed corrective action. It also included a "Notice of Proposed Imposition of Civil Penalties" for \$31,900 for specific items of noncompliance found during the investigation.

VEPCO responded to this notice on December 23, 1976, and, as was its option, presented reasons why NRC should not impose the civil penalties. As requested by NRC, the document also identified actions that VEPCO was taking to correct the deficiencies found at the plant and to strengthen its management efforts.

The NRC Office of Inspection and Enforcement was not completely satisfied with the response and on January 11, 1977, requested that VEPCO more fully document its plans to strengthen onsite management. VEPCO complied with this request on January 21, 1977.

NRC's letters to VEPCO did not direct that specific personnel changes be made to correct the identified management weaknesses, since it believes that personnel assignments in a licensee's organization are not the proper concern of a regulatory agency so long as the individuals selected meet generally acceptable background and experience criteria. NRC has, however, orally communicated to VEPCO management its concern about the performance of managers and plans to monitor and evaluate the effectiveness of organizational and personnel changes that VEPCO and its contractor make.

The Office of Inspection and Enforcement evaluated the VEPCO responses from the standpoint of the adequacy of the corrective action to be taken and whether the statements presented by VEPCO justified a reduction or dropping of the civil penalty action. The director of that Office notified VEPCO on February 2, 1977, that it had not presented any adequate reason why the civil penalties should not be imposed as presented with the December 6, 1976, notice of violation. The director therefore issued an order on VEPCO imposing civil penalties of \$31,900. He also asked some additional

questions concerning VEPCO's proposed corrective actions. NRC officials told us, however, that they were reasonably satisfied with VEPCO's responses but must verify that the proposed actions are properly implemented before it can issue a license to operate the plant, now scheduled for late spring or summer of this year.

VEPCO, faced with the option of paying the civil penalties or appealing to higher NRC authorities or the Federal courts, chose to pay the penalties. In its February 23, 1977, letter to NRC transmitting payment, VEPCO said it considered the civil penalties unnecessary, improper, and unwarranted but thought it in the best interests of VEPCO and its customers to pay the penalties rather than appeal. An appeal would probably have delayed NRC's issuance of an operating license.

REFERRAL OF ALLEGATIONS TO THE DEPARTMENT OF LABOR

Several of the allegations made by the construction workers related to possible labor violations. Specifically, it was alleged that union representatives at the North Anna site were being paid off by welders to accept them as qualified union members for employment. It was also alleged that various local union officers were selling "union books" to welders so they could qualify as experienced welders. "Union books" are documents which certify that the holder has reached a certain level of competence in his craft.

NRC's Office of Inspector and Auditor referred these allegations to the Department of Labor for investigation. As yet, Labor has not completed its investigation, but its representatives told us that these were rather common problems in the construction industry. Labor officials thought that it would be not only difficult to confirm the allegation but also very hard to successfully prosecute the offenders if the allegations were confirmed. Therefore, the investigation has not received a very high priority within the Department of Labor.

From NRC's viewpoint, it is not particularly important how a welder received his union papers. NRC requires that before a person can perform welds on safety-related equipment, whether he has union papers or not, he must perform a test weld which is subjected to a radiographic examination and a stress test to verify its quality. These tests are conducted by either the utility or the utility's construction contractor. If he passes the test, he is restricted to those welding procedures on which he was tested. We are

evaluating the effectiveness of this procedure in an ongoing review which is discussed on page 11.

CHAPTER 2

OBSERVATIONS, CONCLUSIONS,

AND RECOMMENDATIONS

During the onsite investigation and the subsequent evaluation, we either observed or monitored the Nuclear Regulatory Commission's activities until the investigation report was issued on December 2, 1976. We accompanied and observed the inspectors during all of the phase 1 investigation and part of phase 2. We attended meetings at headquarters and were made aware of the NRC process in evaluating the findings. We received full cooperation from NRC in all aspects of our review.

NRC INVESTIGATION TEAM

The investigation team at the North Anna site was very thorough and aggressive. The inspectors worked diligently and seemed to be motivated to determine the facts without being influenced by the magnitude or significance of the individual allegations. Communications between the NRC inspectors and the GAO representatives were excellent. The identity of the construction workers who made the allegations was zealously protected by NRC and GAO at all times.

LIMITATION OF NRC INVESTIGATION

Phases 2 and 3 of the investigation have, to date, included only unit 1, and phase 4 is scheduled for only unit 1. NRC officials believed it more important to concentrate on unit 1 since it is close to completion and to obtaining an operating license. Initially NRC officials said that similar inspection efforts would be made on unit 2 but by region II inspectors rather than the investigation team. An official has more recently said, however, that NRC will have to evaluate the situation as unit 2 reaches completion to determine if these upgraded inspection efforts are needed.

We believe that, since many of the allegations centered around unit 2 and since the same parties were involved in its construction, NRC should put at least as much effort into its inspection of unit 2 as it did unit 1.

SAFETY SIGNIFICANCE OF INVESTIGATION FINDINGS

NRC's conclusion that there is no--or at least very little--safety significance associated with any of the individual items of noncompliance is based upon the premise that, if the defects had gone undetected and led to equipment failures, independent backup equipment or systems would protect against a nuclear accident. The NRC licensing philosophy requires that nuclear powerplants be designed with redundant safety systems to prevent any type of credible major accident. This is one reason most experts consider the probability of a major nuclear accident to be very low.

Achievement of this redundancy and the level of quality that is desired, however, requires competent management of the design and construction of the powerplant and a highly motivated work force. It also requires that the criteria or standards established by NRC and the nuclear industry be closely adhered to during the plant's construction. Almost everything in a nuclear powerplant has some importance, and sloppiness or bad management even in little things can erode the safety margins built into the plant.

During its investigation, NRC found that the site construction and quality assurance management was weak, that the motivation of some construction workers toward high quality work was less than desirable, and that the established nuclear construction criteria was not, in some cases, being closely adhered to. This situation offers very little assurance that other problems--possibly more serious--do not exist at North Anna. In fact, NRC's expanded investigation was designed, in part, to determine the extent of the problems caused by the poor management.

In addition, in its internal analysis of the deficiencies, NRC concluded that if some of the items had not been found and corrected, there could have been a decrease in reliability in certain secondary, backup, or supporting components or systems. This could have prevented these systems from responding as anticipated in certain emergency situations and might have removed one layer of safety that is designed into a commercial nuclear powerplant. This information, however, was not presented in the investigation report or its attachments. NRC merely informed the public that the deficiencies found did not have any "direct safety significance." One of its officials said that the public might not fully understand the basis for NRC's judgment and might draw more serious conclusions from it than is warranted. He felt that the public only wanted to be informed of the safety consequences and is generally not interested in

how NRC arrives at its conclusion. We disagree. We believe that there are segments of the public who are interested in such evaluations and who should have ready access to them.

PROTECTION OF WORKERS MAKING ALLEGATIONS

VEPCO has publicly stated that it believes the allegations resulted from a conspiracy of some workers to sabotage the activities at North Anna and to delay or stop the licensing of the plant. It has, therefore, made an investigation to determine if a conspiracy existed and, if so, who was involved.

Although NRC does not believe that a conspiracy exists, officials have informed us that NRC does not have regulations in effect to protect the three workers from reprisals by VEPCO if their identities are made known. These officials said that the worker protection provisions of its regulations do not generally extend to workers at nuclear powerplant construction sites unless they are exposed to radiological hazards. Because many occurrences of potential safety significance at nuclear powerplant construction sites, such as those involved in the North Anna case, do not involve radiology, NRC does not believe its regulations extend legal protection to the construction workers.

The opportunity for individuals to notify NRC of poor construction practices is a very useful technique in NRC's overall cognizance of nuclear powerplant construction sites. We are aware that NRC has initiated action to amend its regulations to provide protection of such individuals from reprisals by their employers and believe this effort should be expedited.

LACK OF INDEPENDENCE IN TECHNICAL EVALUATIONS

NRC officials told us that the quality control system at North Anna was working. Field inspectors and auditors of VEPCO and its contractors were finding deficiencies in the plant and were reporting them to engineering and management officials. According to NRC, however, some of these identified deficiencies were not being properly reviewed and corrected by VEPCO and its contractor.

To obtain some reasonable assurance that all major deficiencies identified at the plant had been adequately corrected, NRC directed VEPCO to make four independent audits of past engineering judgments and events. By independent, NRC meant someone other than the person or group which made

the original analysis or judgment, not necessarily someone independent of the financial interests of the plant.

As an example, NRC found during its investigation that VEPCO had not properly followed up on one of its contractor's audits of a major pipe supplier. The audits indicated serious problems with the quality of welds made by this supplier in its shop, but neither VEPCO nor its contractor determined the extent of the problem. At NRC's direction, VEPCO made an extensive audit of this supplier and found no discrepancies in the quality of shop welds. NRC inspectors told us that they are not willing to accept the results of this VEPCO audit and may have to conduct an audit of their own at the supplier's facilities before they can be satisfied with VEPCO's audit results.

We believe that, considering VEPCO's identified weaknesses at North Anna and its interest in getting the plant ready to operate, NRC should require that--instead of VEPCO--an independent source, without any direct vested interest in the North Anna plant, audit past engineering judgments and events. Whether these audits are performed by NRC employees, an NRC contractor, or a VEPCO contractor scrutinized by NRC, is not as important, in our opinion, as the desirability of not having to rely on VEPCO to audit and evaluate its own records and past engineering judgments.

OUR REVIEW OF NRC'S INSPECTION AND ENFORCEMENT PROGRAM

In an ongoing assignment involving other nuclear power-plants under construction, we are reviewing the NRC inspection and enforcement program and its effectiveness in controlling construction site activities and assuring that plants are built to specifications. In this assignment, we will assess the NRC system for spotting construction deficiencies in light of the fact that NRC was not aware of the poor construction practices at North Anna until a worker stepped forward and volunteered the information.

RECOMMENDATIONS

We recommend that the Chairman of NRC direct the Office of Inspection and Enforcement to

- Expand phases 2, 3, and 4 of the North Anna investigation into unit 2.
- Require that the independent audits of past engineering judgments and events be made by experts who have no direct vested interest in

the North Anna plants. In this particular case, we do not believe that NRC, as a matter of policy, should rely on VEPCO to look for and find its own past errors. NRC should either make the audits itself or require that they be made by some independent group of experts.

--Issue a rule or regulation to protect individuals from reprisals by employers or others if those individuals notify NRC of their concern about the activities at the construction site.

NRC COMMENTS

In its April 21, 1977, comments on our draft report (see app. I), NRC said it believed that the differences in position between GAO and NRC were more a matter of degree rather than substance. One of these differences, however, related to NRC's disagreement with an observation we made that the NRC public documents did not give full recognition to the safety or potential safety significance of the investigation findings. NRC pointed out that we offered no basis for disagreeing with their technical judgments.

We believe that NRC misinterpreted our observation. We have not analyzed NRC's technical judgments and, therefore, are not in a position to disagree or agree with them. However, we believe that NRC should have provided the public with the reasons for its technical judgements. NRC merely reported without elaboration, that the deficiencies had no "direct safety significance."

We offer observations, however, on two points made by NRC in its formal comments: (1) "the technical judgment of the NRC inspection team was that the individual items of noncompliance did not pose significant safety problems," and (2) "in NRC's view, the type of management deficiencies identified suggested that if the management practices were not corrected decisively, they might lead to events with actual safety significance."

Regarding the first point--when we discussed the investigation report with the NRC investigators, several of them did not know the technical basis for NRC headquarters' conclusion that the investigation findings had no direct safety significance. When two of them had time to review the basis, they expressed reservations or disagreement with that conclusion. In addition, several of the inspectors, while not disagreeing with the civil penalty action, were surprised

that a more harsh enforcement action was not taken in view of the number and types of noncompliances found at North Anna.

NRC's second point, we believe, tends to support our view because NRC is saying that the deficient management system at North Anna, if left uncorrected, could have lead to events with safety significance. We would like to emphasize that at the time of the investigation, unit 1 was 94 percent complete. How much of that completed work was done under the deficient management system has not been identified by NRC.

NRC also took exception to two of our recommendations. On our recommendation for a full investigation of unit 2, NRC said that it would augment the normal inspection to the extent necessary to provide assurance that the unit has been completed in accordance with requirements.

This approach might be acceptable if NRC had a normally aggressive inspection and audit approach on which to rely. Our observations so far, however, have indicated that the special investigation effort by NRC at North Anna was much more thorough and aggressive than NRC's regularly scheduled inspections. This is evidenced by the fact that most of the things found during the investigation had not been identified during the normal inspection effort. Therefore, considering that several items of noncompliance were found during the expanded investigation on unit 1, we still believe that similar inspections should be made on unit 2, possibly by the same investigation team.

NRC also disagreed with our recommendation that greater independence be obtained in the audit of past engineering judgments and events by VEPCO and its contractors. NRC said that it does not rely on VEPCO to perform the audits without "intensive overview" by its inspectors and that it would be inappropriate for NRC to make the 100 percent audit it had required of VEPCO or for NRC to hire a contractor to do this work. This position is based on NRC's belief that the licensee should bear the responsibility and cost of correcting past mistakes.

We agree that licensees should bear the cost and responsibility of correcting past mistakes, but we do not believe that VEPCO should, in this case, be given the responsibility to look for and find those mistakes. Because the investigation has already caused delays and because VEPCO thinks the findings are not very serious, we do not believe that VEPCO has any real incentive to find significant problems in the plants, especially if they could be costly to correct or might delay the issuance of an operating license. No

matter how extensive NRC's followup efforts, we find this philosophy less than desirable.

We are not questioning VEPCO's honesty; we merely point out an NRC policy with which we disagree. This reliance on licensees is ingrained into NRC's inspection programs and is something we intend to more fully document in our ongoing review of NRC's inspection and enforcement program.

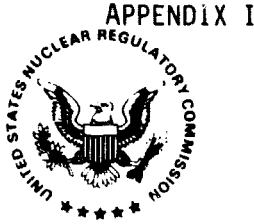
CHAPTER 3

SCOPE OF REVIEW

We obtained the information used in this report primarily by accompanying and observing the Nuclear Regulatory Commission's inspectors at the North Anna nuclear power-plants during most of their investigation. We also sat in on planning meetings at NRC headquarters, reviewed documents, reports, correspondence, and other records, and interviewed officials at

--NRC Headquarters, Bethesda, Maryland; and

--NRC Regional Offices, King of Prussia, Pennsylvania; Atlanta, Georgia; and Glen Ellyn, Illinois.



APPENDIX I

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

APR 21 1977

Mr. Monte Canfield, Jr.
Director
Energy and Materials Division
United States General Accounting Office
Washington, D. C. 20548

Dear Mr. Canfield:

We have reviewed a draft of the GAO report entitled "Comments on the Nuclear Regulatory Commission's Investigation of Poor Construction Practices at the North Anna Nuclear Power Plant Construction Site."

We note with satisfaction GAO's confirmation of the findings of the NRC Office of Inspector and Auditor regarding the lack of any evidence of misconduct of our inspection staff. We also appreciate GAO's comments regarding the diligence and professionalism of the NRC investigation team.

We are concerned, however, by certain aspects of the GAO report which suggest a misunderstanding of the role of civil penalties in the NRC enforcement framework, and a consequent misconception regarding the significance for public health and safety of the items of noncompliance identified in the investigation. In addition, clarification of the philosophy underlying NRC's approach to inspection and enforcement activities appears desirable.

In particular, the GAO report states that "NRC's public statements on the North Anna investigation did not give, in our opinion, full recognition to the safety or potential safety significance of the investigation findings. NRC...considered the individual items of noncompliance to have some safety significance or it would not have fined VEPCO the extent that it did." 1/

The technical judgment of the NRC inspection team was that the individual items of noncompliance did not pose significant safety problems. It should be noted that the report does not indicate any technical basis for disagreeing with the NRC judgments regarding safety significance. Contrary to the assumption made by the GAO audit team, the NRC inspectors believed that civil penalties were warranted despite the absence of indications of serious safety problems.

1/ GAO note--these quotes no longer appear in the body of the report, NRC appeared to have misinterpreted our position on the safety significance of the individual items of noncompliance, so the wording was changed in the report to more precisely state our opinion.

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In NRC's view, the type of management deficiencies identified suggested that if deficient management practices were not corrected decisively, they might lead to events with actual safety significance. NRC by no means believes it must wait for events actually endangering public health and safety in order to assess civil penalties against a licensee.

Additionally, we note that GAO takes exception to the extent to which we have relied upon VEPCO's audit of past engineering judgments of nonconforming equipment or practices at the North Anna site. However, while we subject licensee audits to intensive overview by our inspectors and have recently completed just such an intensive review of VEPCO's activities in this matter - we believe that it would be inappropriate for NRC to perform the 100% audit we have required of VEPCO, or for NRC to hire a contractor to do this work (the first two alternatives identified by GAO as possibly acceptable degrees of independence). Our position is based on our belief that licensees should bear responsibility, and cost, of correcting past mistakes. We believe that an in-depth review of VEPCO's audits by the NRC will provide reasonable assurance that appropriate corrective actions have been taken regarding nonconformance items at the North Anna site. We believe that such an in-depth review by NRC provides a test of the completeness of licensee audits and would not be significantly improved by an independent contractor audit. NRC's criteria for independence of review and audit are set forth in Appendix B, 10 CFR 50. We believe that our action in this matter is consistent with these criteria.

We note GAO's concern about the depth of inspection activities contemplated for North Anna Unit 2. NRC's inspection activities at Unit 2 will be augmented to whatever extent is necessary to provide assurance that the unit has been completed in conformance with the design set forth in the Safety Analysis Report for this plant. We are not prepared at this stage to decide whether or not that assurance will require an effort comparable to that expended for Unit 1. However, if any doubt arises in the course of our inspections, an appropriate NRC inspection effort will be accomplished.


With regard to the concerns expressed concerning protection of workers against retaliation by their employers for bringing matters of concern to the attention of NRC, this issue is currently under intensive review by the NRC staff, with a view to providing the Commission with recommendations for more effective means of assuring protection for such workers, including any necessary legislation.

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We believe that the differences between GAO's positions and ours on this case are of degree rather than substance. We are pleased with the harmonious working level relationships that prevailed between our staffs, and will bend our efforts to make them an example for our future interactions.

Sincerely,


for Lee V. Gossick
Executive Director
for Operations

PRINCIPAL OFFICIALS
RESPONSIBLE FOR ADMINISTERING ACTIVITIES
DISCUSSED IN THIS REPORT

Tenure of Office
From **To**

NUCLEAR REGULATORY COMMISSION

CHAIRMAN:

Marcus A. Rowden	Apr. 1976	Present
William A. Anders	Jan. 1975	Apr. 1976

**EXECUTIVE DIRECTOR FOR
OPERATIONS:**

Lee V. Gossick	Jan. 1975	Present
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**DIRECTOR OF INSPECTION
AND ENFORCEMENT:**

Ernst Volgenau	Apr. 1976	Present
John G. Davis (Acting)	Jan. 1976	Apr. 1976
Donald F. Knuth	Jan. 1975	Jan. 1976