



1 DR 5 Kansas - Wolf Creek RE SECRETARIAT RECORD COPY
UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

April 6, 1984

MEMORANDUM FOR: Chairman Palladino
Commissioner Gilinsky
Commissioner Roberts
Commissioner Asselstine
Commissioner Bernthal

FROM: Carlton Kammerer, Director
Office of Congressional Affairs

SUBJECT: APRIL 6 LETTER FROM REP. GLICKMAN ON WOLF CREEK

Congressman Glickman's office has informed us that the attached might be made public today.

Attachment:
As stated

cc: EDO
OPA
OGC
OPE
SECY

cl
4-6-84

DAN GLICKMAN
FOURTH DISTRICT—KANSAS



2435 RAYBURN BUILDING
WASHINGTON, D.C. 20515
(202) 225-6216

U.S. COURT HOUSE
BOX 403—ROOM 224
WICHITA, KANSAS 67201
(316) 262-8386

302 WOLCOTT BUILDING
201 NORTH MAIN
HUTCHINSON, KANSAS 67501
(316) 669-8011

CHAIRMAN: SUBCOMMITTEE ON
TRANSPORTATION, AVIATION AND MATERIALS

MYRNE ROE
ADMINISTRATIVE ASSISTANT

SCOTT FLEMING
LEGISLATIVE DIRECTOR

PATRICK GARCIA
DISTRICT ADMINISTRATOR

CONGRESS OF THE UNITED STATES

HOUSE OF REPRESENTATIVES

WASHINGTON, D.C. 20515

April 6, 1984

Chairman Nunzio J. Palladino
Commissioner Victor Bilinsky
Commissioner Thomas M. Roberts
Commissioner James K. Asselstine
Commissioner Frederick Bernthal
Nuclear Regulatory Commission
1717 H Street, N.W.
Washington, D.C. 20555

Dear Commissioners:

I am writing to request information pertaining to the licensing of the Wolf Creek nuclear reactor in Burlington, Kansas.

I have learned from your April 4, 1984, "Weekly Information Report--Week Ending March 30, 1984" memorandum from T.A. Rehm to the Commissioners that the Bechtel Power Corporation has notified the NRC that certain cables at the Wolf Creek plant are apparently defective. The internal memorandum states that the apparent design deficiency affects approximately 50 valves at both Wolf Creek and the Callaway reactor in Fulton, Missouri, as the two plants are of similar design.

So that I may consider the seriousness of this situation, I would appreciate your response to the following:

1. What is the design, safety and quality assurance significance of the potentially defective cables?
2. Had this apparent design deficiency not been detected prior to licensing, what adverse consequences could have resulted?
3. The April 4, 1984, memorandum states that valves in the following systems "are affected" by the apparent design deficiency: S/G blowdown, essential service water and containment monitor isolation systems. Please explain the safety significance of these systems and identify what adverse consequences could have resulted from one or more valve failures.
4. Why was this apparent design deficiency not previously detected by either the licensee or the NRC?
5. What action will the NPC take to remedy this apparent problem?

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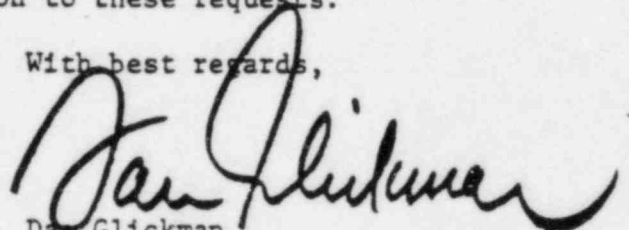
Commissioners
Nuclear Regulatory Commission
April 6, 1984
Page 2

I would also like to be provided with all documents including, but not limited to, internal staff memoranda, analyses, reports and correspondence with the Bechtel Power Corporation or the licensee.

On a related matter, recent news reports have stated that the Nuclear Regulatory Commission is conducting an investigation of allegations made by former workers at the Wolf Creek project about quality-control and documentation problems. An article appearing in the April 5, 1984, edition of the Wall Street Journal quotes agency officials as confirming that an investigation is underway. I would like to be kept fully and currently informed of the Commission's activities in this case and expect to receive a copy of the findings of this investigative effort as soon as it is complete.

Thank you, in advance, for your attention to these requests.

With best regards,



Dan Glickman
MEMBER OF CONGRESS

DG:sm

cc: Congressman Harold Volkmer
Michael Lennen, Chairman, Kansas
Corporation Commission
Congressman Morris Udall, Chairman
Committee on the Interior

STATE OF KANSAS

OFFICE OF THE GOVERNOR

State Capitol
Topeka 66612-1590

John Carlin Governor

April 13, 1984

Nunzio J. Palladino, Chairman
Nuclear Regulatory Commission
Room 1114 Matomic Building
1717 H Street, N.W.
Washington, D.C. 20555

Dear Mr. Palladino:

I wish to register strong objection to the cancellation by the Nuclear Regulatory Commission of its Caseload Forecast Panel inspection of the Wolf Creek Generating Station scheduled for this week. While I understand that the NRC generates this forecast for its own purposes you must also recognize the significance of the nuclear plant construction schedule assessments as an independent check against those prepared and released by the utilities constructing the plants.

In the case of the Wolf Creek Generating Station I regard the inspection just cancelled as especially critical. The plant is nearing its commercial operation date, reported to be spring of 1985 by the managing partner of the project, Kansas Gas and Electric Company. At the conclusion of the last review by the Caseload Forecast Panel, however, there was an eight-month variance between the NRC and utility estimates for commercial operation of the plant. According to published accounts the utilities estimate that an eight-month extension of the construction schedule would add approximately \$400 million to the current projected cost of \$2.67 billion.

Any increase in the cost of Wolf Creek -- which most Kansans already believe to be excessive -- would be cause for very serious concern not only for its implications for ratepayers but for the utilities as well. The utilities have little incentive to revise official schedule and cost estimates, making an independent review all the more important.

X10R8 Lic. Status

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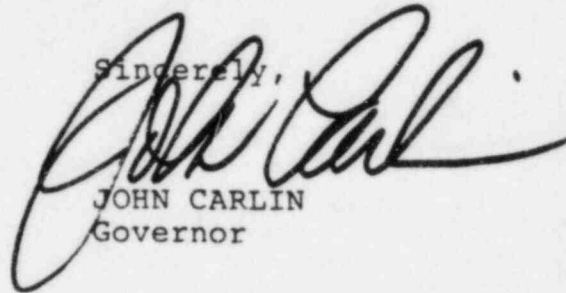
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Mr. Nunzio J. Palladino
April 13, 1984
Page Two

On behalf of the ratepayers of the Wolf Creek utilities and the people of Kansas, I urge you to reschedule the Caseload Forecast Panel inspection and to do so immediately. I ask further that you provide me directly with the NRC's completion estimates for major milestones remaining on the construction schedule for the Wolf Creek Generating Station.

Your assistance in this matter is appreciated.

Sincerely,

A handwritten signature in dark ink, appearing to read "John Carlin", written over the typed name and title.

JOHN CARLIN
Governor

JC:dh

cc: Kansas Congressional
Delegation



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

June 4, 1984

The Honorable Dan Glickman
United States House of Representatives
Washington, DC 20515

Dear Congressman Glickman:

This letter is in response to your correspondence of April 13, 1984 concerning the cancellation of a Nuclear Regulatory Commission (NRC) caseload forecast meeting at the Wolf Creek Generating Station. The meeting was cancelled because the NRC engineering specialist most familiar with the caseload forecast process had resigned, effective April 28, 1984, and his efforts were needed to help finalize recent caseload estimates prior to his departure. The caseload visit to Wolf Creek was conducted on May 24, 1984.

The NRC performs the caseload forecast process solely for its internal resource planning purposes and will continue to utilize this process as required. As in the past, caseload forecast meetings will be publicly announced and the results will also be made available to the public. As in the past, caseload forecast meetings will be publicly announced and the results will also be made available to the public.

The Commission believes that the Caseload Forecast Panel serves a valuable function which should be continued.

Commissioner Gilinsky adds:

"I urge you to support this valuable function because it has been a step-child at the NRC and is in danger of being eliminated altogether. The Caseload Forecast Panel has, for several years, been the only reliable method we had to judge the credibility of the utilities' construction completion dates upon which we based our own licensing and inspection schedules. Bill Lovelace, the engineering specialist who has just resigned and who was the backbone of the Panel, relied upon inspection of construction sites rather than utility reports to estimate the progress of construction. The accuracy of his estimates often brought the NRC into conflict with those utilities which were still predicting much earlier completion dates. To avoid such conflict, the NRC halted the Panel's visits for a substantial part of 1982. And when the Panel was again allowed to operate, the agency tended to downplay their findings and use instead the utilities' construction completion dates for scheduling purposes. As a result, public utility commissions were equally uninformed. I expect that the failure in information during that crucial period will end up costing the public a great deal of money."

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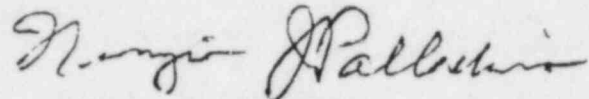
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The Honorable Dan Glickman

- 2 -

Commissioner Asselstine agrees with Commissioner Gilinsky that in the past, the Caseload Forecast Panel has not received the support within the NRC staff that its important function deserves and that, without assistance from the Commission itself and from outside the Agency, there is a danger that the effectiveness of the Panel could be weakened or lost.

Sincerely,

A handwritten signature in cursive script, appearing to read "Nunzio J. Palladino".

Nunzio J. Palladino



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

June 4, 1984

The Honorable Pat Roberts
United States House of Representatives
Washington, DC 20515

Dear Congressman Roberts:

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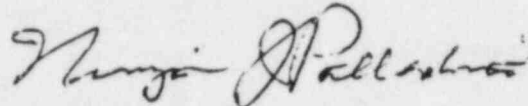
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The Honorable Pat Roberts

- 2 -

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Nunzio J. Palladino



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

June 4, 1984

The Honorable Jim Slattery
United States House of Representatives
Washington, DC 20515

Dear Congressman Slattery:

This letter is in response to your correspondence of April 13, 1984 concerning the cancellation of a Nuclear Regulatory Commission (NRC) caseload forecast meeting at the Wolf Creek Generating Station. The meeting was cancelled because the NRC engineering specialist most familiar with the caseload forecast process had resigned, effective April 28, 1984, and his efforts were needed to help finalize recent caseload estimates prior to his departure. The caseload visit to Wolf Creek was conducted on May 24, 1984.

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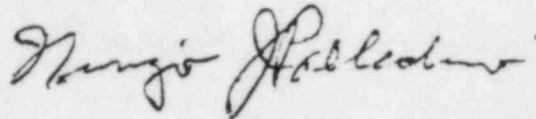
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The Honorable Jim Slattery

- 2 -

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Sincerely,

A handwritten signature in cursive script, reading "Nunzio J. Palladino". The signature is written in dark ink and is positioned above the printed name.

Nunzio J. Palladino



United States
Nuclear Regulatory Commission
Washington, D. C. 20555

Kingsley
JUN 05 1984

The Honorable Dan Glickman
United States House of Representatives
Washington, D. C. 20515

Dear Congressman Glickman:

This is in response to your letter of April 6, 1984 which requested information related to a design deficiency at Kansas Gas and Electric Company's (KG&E) Wolf Creek Generating Station located near Burlington, Kansas. The deficiency was discovered during construction of the Callaway Plant being constructed for the Union Electric Company near Fulton, Missouri.

The valves affected by this design deficiency are electrically operated valves installed on small piping systems used for monitoring and sampling purposes. As indicated in Enclosures 1 and 2, the electrical insulation on field cabling used on these valves was degraded by the heat generated by the operation of these valves. The applicant will replace the cable, prior to licensing, with cable designed to function in the higher temperature environment present in this application.

You identified five questions for which you requested a response. Your questions and the staff's answers are as follows:

Question 1.

"What is the design, safety and quality assurance significance of the potentially defective cables?"

Answer 1.

This cable provides the electrical power needed to operate valves that must operate to permit sampling and monitoring within the various systems identified in your letter. These valves are generally designed so that power must be provided to open the valve. The valve will close or remain closed if power is lost to the valve due to degraded insulation on the cable. The design error could cause a failure of these valves to operate with a resulting loss of the monitoring or sampling capability of the associated system.

The NRC staff does not view this specific instance of error in the design of a valve as significant vis-a-vis the design adequacy of Wolf Creek and Callaway plants. Although the design error went undetected in the design phase, the discovery of the problem during construction reflects positively on quality assurance. The potential safety significance of this error is discussed in response to Question 3.

Question 2.

"Had this apparent design deficiency not been detected prior to licensing, what adverse consequences could have resulted?"

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Answer 2.

If this design deficiency had not been detected prior to licensing, the cable insulation would have continued to degrade under the high temperature environment present until the degradation was observed visually during a routine inspection of the valve or when the insulation failed and the valve malfunctioned. The potential consequences of valve failure during plant operation are discussed in response to Question 3.

Question 3.

"The April 4, 1984, memorandum states that valves in the following systems "are affected" by the apparent design deficiency: S/G blowdown, essential service water and containment monitor isolation systems. Please explain the safety significance of these systems and identify what adverse consequences could have resulted from one or more valve failures."

Answer 3(a).

The steam generator blowdown system is designed to control the secondary side water chemistry in the steam generator. This is accomplished by diverting a portion of the steam generator secondary water through a filter and demineralizer to remove impurities and then returning it to the secondary system. By maintaining a low level of impurities in the steam generator secondary coolant, the potential for corrosion of the steam generator tubes is reduced thereby lessening the probability of a steam generator tube rupture. A failure of a valve in the blowdown system will have no safety impact, because corrosion of steam generator tubes is a relatively slow process that would be detected by the steam generator tube inservice inspection program before the corrosion could reduce the tube wall thickness to the extent that a tube rupture could occur.

Answer 3(b).

The essential service water system removes heat from plant components that require cooling for safe shutdown of the reactor following a design basis accident. The essential service water system also provides emergency makeup to the spent fuel pool and component cooling water system, and is the backup water supply to the auxiliary feedwater system. The essential service water system has two redundant cooling water lines which assure that its function will be maintained even if one of the valves associated with its operation were to fail due to deterioration of unqualified cable.

The simultaneous failure of valves in both trains of the essential service water system caused by temperature related cable deterioration is not considered credible by the staff. The cable failure is a result of heating in the individual valves which is a function of both the ambient temperature at the valve and the heat generated by the valve operation. Because the temperatures developed at each valve location could differ due to length of operating time, local ventilation and fluid temperatures in the system there would be little chance that each valve would experience the same temperature history and fail simultaneously.

Answer 3(c).

The containment atmosphere is continuously monitored to assure that the concentrations of airborne radioactive materials, or combustible gases, are within established limits. To carry out this task, small monitoring lines pass through the containment to bring the monitored fluid outside the containment for measurement. These monitoring lines are equipped with containment monitor isolation valves which seal the sample line if it's not in use or if the containment must be sealed.

These monitors are in continuous service and the valves are designed to fail in a closed position if they were to lose power due to cable failure. The closure of these valves would cause the loss of the continuously monitored parameters that the systems are measuring. The loss of these readings would alert the operator, to the failure of one of these valves and would cause an investigation that would identify the possibility of failure of the remaining valves with the common design defect. As discussed in answer 3(b) simultaneous failure of redundant systems would not be expected so that the required monitoring capability would not be totally lost.

Question 4.

"Why was this apparent design deficiency not previously detected by either the licensee or the NRC?"

Answer 4.

The purpose of the NRC's construction inspection program is to verify, by means of inspections done on a sampling basis, that a nuclear facility, in this case the Wolf Creek facility, is constructed in accordance with NRC requirements and the applicant's commitments. The keystone of the NRC's inspection program is verification that the applicant has an adequate QA Program and that the QA Program is being effectively implemented. The NRC Program consists of (1) review of the applicant's QA Program, from the corporate QA manual to the basic work and inspection procedures, including the QA programs of the various site contractors; (2) observation, on a sampling basis, of the actual work and inspection activities in the field; and (3) review, again on a sampling basis, of the records which document both the work accomplished and the results of the QA/QC inspections and audits.

During the design and construction of a nuclear power plant it is neither unusual nor unexpected that design errors or equipment malfunctions are detected and corrected by the contractor. The NRC regulations require that the applicant maintain an effective quality assurance program that follows up each aspect of the plant's construction to assure that the facility and its constituent systems are constructed as designed and are properly inspected and tested to detect design or construction errors.

The intent of the NRC inspections is not to identify every deficiency in materials or workmanship, which is not practicable considering the resource limitations of the NRC, but to ensure that the QA program in effect at the site is identifying and requiring correction of significant construction deficiencies. This approach, coupled with the multiple levels of safety which are designed into the plant through redundancy of safety systems and containments and the margins of safety in structural design, is meant to ensure that any unidentified deficiencies in construction will not be of a significance, type, or quantity which will compromise the overall safety of the plant during future operation.

In the case of the Valcor solenoid valves a design error was made and was undetected at the design phase. However as shown in this event, there are additional layers of construction inspection and testing that can detect deviations that pass through the applicant's design verification process.

Question 5.

"What action will the NRC take to remedy this apparent problem?"

Answer 5.

The NRC Resident Inspector will inspect a representative sample of the reworked valves to evaluate the adequacy of the applicant's corrective action. He will review procurement records relating to the replacement cable and review the quality assurance documentation and work records related to the rework. Upon satisfactory resolution of any questions related to the field rework, the inspector will document the results of the review in a routine Inspection Report that will be provided to you for your information. The inspection effort will include review of the applicant's generic evaluation of other valves at Wolf Creek that may be affected by this deficiency.

The NRC Office of Inspection and Enforcement will evaluate this SNUPPS design deficiency that occurred at Callaway and Wolf Creek to determine whether there are any generic design implications that should be considered at other reactors.

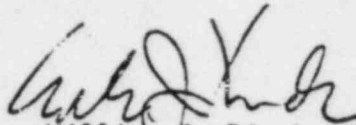
As you have requested, we have enclosed copies of all documents related to this deficiency. These are Bechtel Power Corporation's March 19, 1984 letter (Enclosure 1) SNUPPS April 18, 1984 final report (Enclosure 2) on this deficiency, SNUPPS May 10, 1984 Supplemental Deficiency Report (Enclosure 3). We will also provide you with any additional documentation that we receive relative to this matter.

The Honorable Dan Glickman

-5-

With regard to the investigation of allegations concerning quality control and documentation problems at Wolf Creek, we will provide you with a copy of the investigative report as soon as it is available.

Sincerely,

A handwritten signature in dark ink, appearing to read 'W. J. Dircks', written in a cursive style.

William J. Dircks
Executive Director
for Operations

Enclosures:

1. Ltr. to Richard DeYoung
dtd. March 19, 1984
2. Ltr. to J. Keppler and J. Collins
dtd. April 13, 1984
3. Ltr. to J. Keppler and J. Collins
dtd. May 10, 1984

Bechtel Power Corporation

Engineers — Constructors

15740 Shady Grove Road
Gaithersburg, Maryland 20877
301-258-3000



March 19, 1984

Mr. Richard DeYoung, Director
Office of Inspection & Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. DeYoung:

File: 0490.4
SNUPPS Project, Bechtel Job No. 10466
Design Deficiency in Field-Run Cables
to Valcor Solenoid Valves

On March 19, 1984, Mr. C. E. Rossi of your office was informed by Bechtel (John Kroehler) of a SNUPPS Project design deficiency reportable under 10 CFR 21. It involves the specification of cable intended for use at conductor temperatures not exceeding 90°C for normal operation for the connection of Valcor solenoid valves, whereas calculated terminal block temperatures would dictate the use of cable rated for 150°C service.

Approximately fifty valves each at the Callaway and Wolf Creek sites, currently installed in the Nuclear Sampling, Steam Generator Blowdown, Post Accident Sampling, Essential Service Water and Containment Monitor Isolation Systems, are affected by the deficiency.

A nonconformance report was written by the constructor, Daniel International, at the Callaway jobsite on March 1, 1984, and referred to Bechtel Project Engineering in Gaithersburg, Maryland, for evaluation on March 13, 1984, following an inspection of field-run cable to a Valcor solenoid valve installed in the Nuclear Sampling System. Inspection of the cable revealed that conductor insulation was excessively degraded.

As part of their investigation, Bechtel Engineering reviewed the internal temperatures of the solenoid housings against the temperature rating (90°C) of the field-run cable. Valves continuously energized or energized for an extended period of time (greater than one hour) will develop temperatures in the valve terminal block area of 250-220°F. At these temperatures, the 90°C (195°F) rated cable will degrade. Failure of the cable insulation may compromise the safety-related function of the valve.

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Bechtel Power Corporation

Mr. Richard DeYoung
Page 2

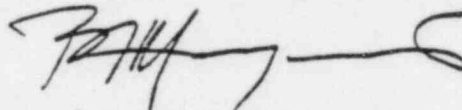
March 19, 1984

Currently, Bechtel is pursuing procurement of qualified, high-temperature cable from Valcor. The high-temperature cable will be used to make the connection from the valve housing to a junction box several feet remote from the valve. The incoming field cable will be spliced to the high temperature-cable in the junction box.

Mr. C. E. Rossi was informed that SNUPPS had already notified NRC Regions III and IV in accordance with the requirements for 10 CFR 50.55(e). He indicated that a separate 10 CFR 21 report would be necessary if the requirements for 10 CFR 21 reporting were not addressed in the 10 CFR 50.55(e) report.

Mr. Rossi was informed that although this deficiency was detected in the SNUPPS design, it resulted from a breakdown in the exchange of design information between engineering disciplines, and was not necessarily unique to the SNUPPS units. The Bechtel policy is to issue Management Corrective Action Reports (MCARs) to all other Bechtel nuclear projects whenever significant deficiencies are detected so that reviews for applicability can be performed. That practice will be observed for this deficiency.

Sincerely yours,



Bernard L. Meyers
Project Manager

JKS/jmd

cc: Mr. C. E. Rossi, Office of Inspection & Enforcement, USNRC, Washington, D.C.
Dr. T. E. Murley, Director, Region I, USNRC
Mr. J. A. Keppler, Director, Region III, USNRC
Mr. J. Collins, Director, Region IV, USNRC
Mr. N. A. Petrick, SNUPPS
Mr. S. J. Seiken, SNUPPS
Mr. E. W. Creel, Kansas Gas & Electric Company
Mr. F. D. Field, Union Electric Company

SNUPPS

Standardized Nuclear Unit
Power Plant System

5 Choke Cherry Road
Rockville, Maryland 20850
DO1-669-6010

April 13, 1984

SLNRC 84-065 FILE: 0491.10.2
SUBJ: Final Report: Field Run Cables
for Solenoid Valves (SDR 84-02)

Mr. James G. Keppler
Regional Administrator, Region III
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

APR - 1984

Mr. ~~John F. Collins~~
Regional Administrator, Region IV
U.S. Nuclear Regulatory Commission
Suite 1000, Parkway Central Plaza
Arlington, Texas 76012

Docket Nos. STN 50-482 and STN 50-483

Gentlemen:

Pursuant to the requirements of 10CFR50.55(e) Messrs. J. Konklin of NRC Region III and W. Johnson of NRC Region IV were informed via telecon on March 15, 1984, of a design deficiency in the selection of field run cable to Valcor solenoid valves. This deficiency is generic in nature and, as such, is applicable to Callaway and Wolf Creek plants. A written report on the deficiency is enclosed.

The enclosed report should be considered the final report on this matter. NRC will be informed of any significant developments, should they occur. Please do not hesitate to contact the undersigned or R. P. White of my staff should there be any questions concerning this report.

Very truly yours,

S. J. Seiken
S. J. Seiken
QA Manager

RPW/bds/lbl
Enclosure

cc: D. F. Schnell UE
G. L. Koester KGE
D. T. McPhee KCPL
W. S. Schum NRC/WC
J. H. Neisler NRC/CAL
B. H. Little NRC/CAL
R. C. DeYoung NRC/IE: HQ
J. E. Konklin NRC/IE: III
Record

8404260230 840413
PDR ADOCK 05000482
PDR

11 1037

10 CFR 50.55(e) REPORT
ON
FIELD WIRING DEFICIENCIES TO VALCOR
SOLENOID VALVES INSTALLED AT THE SNUPPS UNITS

BECHTEL POWER CORPORATION

Gaithersburg, Maryland

April 9, 1984

10 CFR 50.55(e) REPORT ON FIELD WIRING TO VALCOR SOLENOID VALVES

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- 1.0 INTRODUCTION
- 2.0 DESCRIPTION OF PROBLEM
- 3.0 SAFETY IMPACT
- 4.0 CAUSE OF DEFICIENCY
- 5.0 CORRECTIVE ACTION

1.0 INTRODUCTION

In accordance with the requirements of 10CFR50.55(a), this final report provides a summary of the deficiency related to improperly rated field wiring to Valcor solenoid valves installed at the Callaway and Wolf Creek jobsites.

This deficiency was initially reported by SNUPPS to Mr. J. Konklin and Mr. W. Johnson, NRC Regions III and IV respectively, by telephone on March 15, 1984. This deficiency has also been reported by Bechtel under 10CFR21 to Mr. C. E. Rossi, USNRC, on March 19, 1984.

This deficiency was first identified in the course of unrelated rework on one of the affected valves at which time degradation of an attached conductor was noted.

2.0 DESCRIPTION OF PROBLEM

Callaway NCR 2SN-9748-ET documented a deficiency involving degraded insulation on field cabling used to connect Valcor solenoid valves. Valcor solenoid valves are supplied with a terminal block internal to the valve body. The incoming field cables are connected directly to this terminal block. Investigation of the valve qualification documents revealed that the ambient temperatures inside the valve body can approach a maximum of 250-280°F when the valves are energized for an extended period of time. The actual ambient temperatures inside the valve body will vary for each valve depending upon the length of time the valve is energized and the fluid or air temperature of the associated piping system. The incoming field cable used to connect the valves into the plant control system has an insulation temperature rating of 90°C (194°F). Use of the 90°C rated field cabling in the high ambient temperature encountered inside the valve body will cause the cable insulation to degrade prematurely resulting in failure of the cable insulation which can ultimately compromise the safety function of the valve. This deficiency exists for both the Wolf Creek and Callaway Generating Stations.

3.0 SAFETY IMPACT

A total of 37 Class 1E valves supplied by Valcor at each jobsite are affected by this deficiency. An additional 6 non-class 1E valves are also affected. The valves are used in the following safety related systems:

- Containment Hydrogen Control
- Nuclear Sampling
- Steam Generator Blowdown
- Residual Heat Removal
- Containment Purge
- Fuel Building HVAC

Failure of the cable insulation due to temperatures above its design capabilities could prevent these valves from performing their safety function.

4.0 CAUSE OF DEFICIENCY

This deficiency resulted from a unique solenoid valve configuration wherein the incoming field cables are terminated inside a totally enclosed valve body housing a large energized solenoid. The configuration is such that the terminal boards are located within the valve body and above the solenoid. No means is provided to dissipate the heat generated by the solenoid. Valcor supplied drawings depicting valve and wiring details provided no information concerning the high ambient temperatures inside the valve body. The normal solenoid valve application is to have vendor supplied pigtailed routed from the valve body to a remotely located splice box. In such typical applications, the field wiring would not be subjected to the high ambient temperatures. The Architect Engineer did not recognize that high ambient temperatures would be encountered which could compromise the capability of the field run cabling and consequently did not utilize high temperature wire in the wiring design.

5.0 CORRECTIVE ACTION

Design changes have been implemented to replace the field wiring with qualified high temperature wiring with 200°C (392°F) rated insulation. The high temperature wire is used as a jumper from the terminal block inside the valve body to a splice box located approximately 5 to 10 feet remote from the valve. The incoming field cable is spliced into the high temperature wire in the splice box thus preventing the field cable from encountering the high temperatures inside the valve body. The necessary wiring changes will be installed at each jobsite prior to the time that the valves are required for their operational modes. The project is presently evaluating solenoid valves of other manufacturers utilized in the SNUPPS design to insure that other valves are not subject to the same deficiency. If additional solenoid valves are discovered to have the same deficiency, appropriate corrective action will be taken and a supplemental report issued.

SNUPPS

Standardized Nuclear Unit
Power Plant System

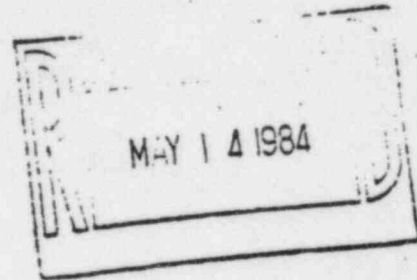
5 Choke Cherry Road
Rockville, Maryland 20850
(301) 869-8010

May 10, 1984

SLNRC 84-079 FILE: 0491.10.2
SUBJ: Supplemental Significant Deficiency
Report (SDR 84-02): Field Run Cables
for Solenoid Valves

Mr. James G. Keppler
Regional Administrator, Region III
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Mr. John T. Collins
Regional Administrator, Region IV
U.S. Nuclear Regulatory Commission
Suite 1000, Parkway Central Plaza
Arlington, Texas 76012



Docket Nos. STN 50-482 and STN 50-483

Reference: SLNRC 84-065, dtd. 4/13/84: Final Significant Deficiency
Report (SDR 84-02)

Gentlemen:

The reference letter provided a description of a generic deficiency relating to improperly rated field run cabling used to connect Valcor supplied solenoid valves in Class 1E and non-1E applications. As indicated in the reference, design changes have been implemented to replace the field run cabling with high temperature cabling qualified for the environment experienced in these solenoid valves. Field rework to affect the prescribed changes is currently underway at each SNUPPS job-site and will be completed within the time frame initially specified.

The reference letter report also indicated that other equipment would be examined for excessive heat rise at field termination locations and that a determination would be made whether deficiencies exist similar to those observed with the Valcor valve connections. The scope of the followup investigation included items of potential high heat rise such as diesel generator auxiliary equipment, hydrogen recombiners, selected pump motors, packaged air conditioning units, solenoid valves (other than Valcor) and certain electrically operated components and equipment furnished by the NSSS supplier. As a result of this investigation, similar deficiencies were identified for the following equipment:

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- 1) Target Rock Solenoids: A total of 20 Target Rock solenoids furnished under the NSSS scope of supply for use generically in safety-related systems have deficiencies similar to those described in the reference letter. Actions are presently underway to rework these units, replacing existing field cabling with qualified, high temperature wiring/connectors. All rework will be completed at each jobsite prior to the time that these valves are required for their operational modes.
- 2) ASCO Solenoids: Two (2) ASCO solenoid valves on each of 12 condenser dump valves (nonsafety-related) have been identified as having under-rated cabling connections (105°C max vs. 90°C available). The existing installation was reviewed for service at the higher; i.e. 105°C (Max), temperature and the conclusion reached that, as a minimum, continued service would be permissible at each SNUPPS plant up to the first refueling outage. Cables for the solenoids will be replaced on a schedule commensurate with each plant's maintenance and operational requirements.

In addition, one (1) ASCO solenoid valve on each of two (2) nonsafety-related Control Room HVAC heating/cooling water control valves will also require rework at each SNUPPS plant. Cables for these units will likewise be replaced on a schedule commensurate with each plant's maintenance and operational requirements.

This supplemental report closes out all items relating to the generic deficiency initially reported on behalf of the SNUPPS Utilities and should be considered the final report on this subject. If you have any questions regarding this matter, please do not hesitate to contact the undersigned.

Very truly yours,


S. J. Seiken
QA Manager

SJS/dck/5a5

cc: D. F. Schnell	UE
G. L. Koester	KGE
D. T. McPhee	KCPL
W. S. Schum	NRC/WC
J. H. Neisler	NRC/CAL
B. H. Little	NRC/CAL
R. C. DeYoung	NRC/IE: HQ
J. E. Konklin	NRC/IE: III
Record	

Kan - Wolf
Congress of the United States
House of Representatives
Committee on Energy and Commerce
Room 2125, Rayburn House Office Building
Washington, D.C. 20515

SUBCOMMITTEE ON OVERSIGHT AND INVESTIGATIONS

January 9, 1985

The Honorable Nunzio Palladino
Chairman
Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Chairman:

In the course of fulfilling its legislative oversight responsibilities, the Subcommittee on Oversight and Investigations has been informed that Nuclear Regulatory Commission (NRC) inspections conducted in 1984 uncovered significant cases of noncompliance with requirements pertaining to structural welding at the Wolf Creek Generating Station. It is of concern to us that these problems were not found until construction of the Wolf Creek plant had been virtually completed. There are aspects of this matter which require further explanation. Accordingly, we would appreciate a prompt response to the following questions:

1. What actions are underway to determine whether a quality assurance breakdown, such as that which occurred in the structural welding program, did not extend to other aspects of design and construction of Wolf Creek?
2. Has NRC staff enumerated the specific causes of the failure to adhere to the requirements of American Welding Society (AWS) D1.1-75? If so, please provide the pertinent documents.
3. Have other utilities with plants under construction been granted exemptions from conformance to AWS D1.1? For those instances of plants under construction where exemptions were granted to permit conformance to less stringent requirements than those implicit in AWS D1.1, please provide all documents pertaining to the request and grant of such exemptions.

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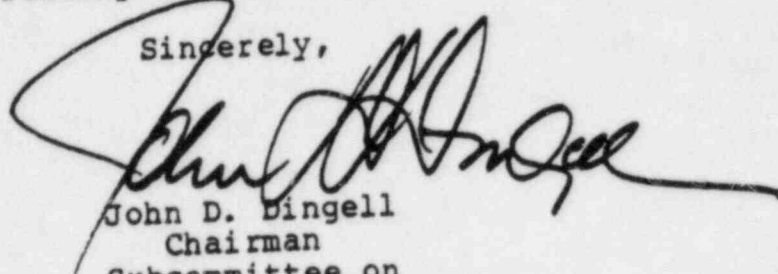
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The Honorable Nunzio Palladino
January 9, 1985
Page 2

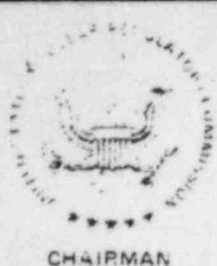
If the unavailability of documents pertaining to any element of this request prevents a full response prior to Tuesday, January 22, 1985, please provide by this date whatever documents are available along with an explanation as to why the other documents cannot be readily retrieved from the NRC files.

Sincerely,

A handwritten signature in dark ink, appearing to read "John D. Dingell", is written over the typed name.

John D. Dingell
Chairman
Subcommittee on
Oversight and Investigations

JDD:PScm



Kan-Wolf Creek
UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

~~CONFIDENTIAL~~ 23 Sec

The Honorable John D. Dingell
United States House of Representatives
Washington, D. C. 20515

Dear Congressman Dingell:

This is in response to your letter of January 9, 1985 which requested information related to structural steel welding at the Wolf Creek Generating Station located near Burlington, Kansas.

The NRC is concerned when a utility does not discover and take appropriate corrective action regarding deficiencies. However, the NRC inspection activity identified the deficiencies and required corrective action before the plant was ready for operation.

I have enclosed for your information copies of inspection reports, the enforcement action, and the Confirmation of Action Letter from NRC requiring action by the applicant in this matter.

By letter dated December 31, 1984, the Kansas Gas & Electric Company (KG&E) has submitted their final report providing the results of their reinspection of the Wolf Creek structural steel welding and identified the corrective actions that they had taken in response to the NRC staff's Confirmation of Action Letter (See Enclosure 3) on this issue. We have included this report (See Enclosure 5) for your information. The staff is reviewing the KG&E report and we will provide a copy of our inspection report as soon as it is available.

Also enclosed for your information is additional detailed background related to this issue and specific answers to each of your questions.

Sincerely,

Original signed by
Nunzio J. Palladino

Nunzio J. Palladino
Chairman

Enclosures: *-IN BP.*
See next page

cc: Rep. James T. Broyhill

(see previous concurrence sheet)

8501314528 23pp
DINGELL/ Wolf Creek

(all Commission offices have concurred with changes)

OFFICE	OCA	SECY	OCM	OCM	OCM		
SURNAME	FAY:gr	COMBS	<i>P. Polk</i>				
DATE	1/23/85	1/23/85	1/23/85	1/23/85	1/ /85	<i>clg</i>	



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

January 23, 1985

The Honorable John D. Dingell
United States House of Representatives
Washington, D. C. 20515

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Also enclosed for your information is additional detailed background related to this issue and specific answers to each of your questions.

Sincerely,

Nunzio J. Palladino
Chairman

Enclosures:
See next page

cc: Rep. James T. Broyhill

Enclosures:

1. Background Statement and Answers to Questions
2. Enforcement Action EA 84-107
3. Confirmatory Action Letter, dated 11/15/84
4. KG&E letter, dated 12/7/84 - Supplemental Information - Structural Steel Welding
5. KG&E letter, dated 12/31/84 - Enforcement Action 84-107 Response
6. Inspection Report 50-482/84-51
7. Inspection Report 50-482/84-22
8. SNUPPS Letter dated December 3, 1984, FSAR Requirements for Structural Steel Welding
9. Structural and Geotechnical Engineering Branch SSER Input (Draft)

ENCLOSURE 1

Background

During the period between 1978 and 1981, approximately 11,150 structural steel joints were fabricated to support safety related components or structures at Wolf Creek. The majority of these joints were bolted or shop welded together. About a quarter (2669 joints) of these structural steel welds were welded in the field in accordance with the provisions of American Welding Society (AWS) Code D.1.1. Between 1978 and 1982, a small sample (less than 1%) of these structural joints were selected by the NRC inspectors and inspected for compliance with the code and NRC requirements. No significant deviations or violations were observed in this sample.

The 1978-1982 version of the NRC inspection program for structural steel welds specified a relatively small percentage of welds to be physically inspected. In 1983, as part of a revision to the Office of Inspection & Enforcement (I&E) Construction Inspection Program, greater emphasis was placed on the direct inspection of hardware and a sample size of 30 to 60 structural steel welds for each weld contractor was established for direct inspection by NRC inspectors. Additionally, the 1983 program provides more explicit inspection requirements for the conduct of the physical inspection of welds.

In July 1984, the NRC established a task force to assure the overall inspection program at the Wolf Creek Station would be completed on a schedule consistent with the utility's projected fuel load date. As part of this inspection activity, a concern regarding the applicant's handling of certain Corrective Action Reports was raised. It was found from a review of applicant's corrective action reports that a sample of structural steel welds had shown that a high percentage of the welds failed to meet one or more of the weld quality requirements of AWS D1.1-75.

As a result, the enforcement action (EA 84-107, See Enclosure 2 - Applicant's Response, See Enclosures 4 and 5) was sent to the applicant requiring the implementation of a corrective action plan. The applicant reinspected 100% of the structurally significant structural steel welds associated with the field welded joints in order to provide the NRC staff with adequate assurance that all of the field welded structural steel was properly installed.

In response to the above reinspection, about 1466 joints were accepted without deviation, 1039 joints had deviations that were accepted in accordance with the provisions of AWS D.1.1 and the FSAR Revision (see Enclosures 8 and 9), and 164 joints were reworked. Of these, 81 were reworked to assure that design allowable stresses would not be exceeded, and 84 were reworked to install missing and correct underlength welds.

QUESTION 1

WHAT ACTIONS ARE UNDERWAY TO DETERMINE WHETHER A QUALITY ASSURANCE BREAKDOWN, SUCH AS THAT WHICH OCCURRED IN THE STRUCTURAL WELDING PROGRAM, DID NOT EXTEND TO OTHER ASPECTS OF DESIGN AND CONSTRUCTION OF WOLF CREEK?

ANSWER 1

IN JULY 1984, THE NRC ESTABLISHED A TASK FORCE TO ASSURE THE OVER-ALL INSPECTION PROGRAM AT THE WOLF CREEK STATION WOULD BE COMPLETED ON A SCHEDULE CONSISTENT WITH THE UTILITIES PROJECTED FUEL LOAD DATE. THIS EFFORT EXTENDED ACROSS MANY IMPORTANT ASPECTS OF THE DESIGN AND CONSTRUCTION OF WOLF CREEK AND WAS AN IN-DEPTH INSPECTION OF THE PLANT AS-BUILT CONDITIONS, AS DOCUMENTED IN QA RECORDS. THE INSPECTION OF AS-BUILT STRUCTURAL STEEL, INCLUDING WELDING, WAS INCLUDED WITHIN THIS PROGRAM. WITH THE RECOGNITION OF THE IDENTIFIED BREAKDOWN IN THE STRUCTURAL STEEL PROGRAM, THE NRC INSPECTORS WERE SENSITIVE TO ANY INDICATION OF SIGNIFICANT PROGRAMMATIC BREAKDOWN IN OTHER AREAS BEING INSPECTED. THE NRC INSPECTIONS REVEALED ONLY A SMALL NUMBER OF ADVERSE FINDINGS THAT REPRESENTED A SMALL NUMBER OF ISOLATED FAILURES AS OPPOSED TO A BREAKDOWN. THE INSPECTIONS DID NOT IDENTIFY ANY OTHER AREAS OF PROGRAM BREAKDOWN IN THE CONSTRUCTION OF WOLF CREEK.

AS PART OF THE TASK FORCE EFFORT, THE NRC STAFF CONDUCTED A SPECIAL CONSTRUCTION VERIFICATION INSPECTION AT WOLF CREEK. AS STATED IN THE INSPECTION REPORT (50-482/84-51, SEE ENCLOSURE 6) THERE WERE NO PERVASIVE BREAKDOWNS IN QA IDENTIFIED.

IN ADDITION, WE NOTE THAT THE NRC'S OFFICE OF INVESTIGATION HAS SEVERAL INVESTIGATIONS UNDERWAY WHOSE CONCLUSIONS WOULD PROVIDE INSIGHTS INTO THIS PROBLEM. THOSE INVESTIGATIONS RELATE TO A NUMBER OF ISSUES INCLUDING MISSING, FALSIFIED, OR ERRONEOUS QA RECORDS.

QUESTION 2

HAS THE NRC STAFF ENUMERATED THE SPECIFIC CAUSES OF THE FAILURE TO ADHERE TO THE REQUIREMENTS OF AMERICAN WELDING SOCIETY (AWS) D1.1-75? IF SO, PLEASE PROVIDE THE PERTINENT DOCUMENTS.

ANSWER 2

NRC INSPECTION REPORT 84-22 (SEE ENCLOSURE 7) AND ENFORCEMENT ACTION LETTER 84-107 (SEE ENCLOSURE 2) IDENTIFIED THE PRIMARY CAUSES FOR THIS BREAKDOWN AS THE APPLICANT'S FAILURE TO PROPERLY INSPECT THE WELDING AND TO APPROPRIATELY PERFORM THE NECESSARY STRUCTURAL STEEL WELDING CORRECTIVE ACTIONS IN RESPONSE TO DEVIATIONS IDENTIFIED IN CORRECTIVE ACTION REQUESTS.

QUESTION 3

HAVE OTHER UTILITIES WITH PLANTS UNDER CONSTRUCTION BEEN GRANTED EXEMPTIONS FROM CONFORMANCE TO AWS D1.1? FOR THOSE INSTANCES OF PLANTS UNDER CONSTRUCTION WHERE EXEMPTIONS WERE GRANTED TO PERMIT CONFORMANCES TO LESS STRINGENT REQUIREMENTS THAN THOSE IMPLICIT IN AWS D1.1, PLEASE PROVIDE ALL DOCUMENTS PERTAINING TO THE REQUEST AND GRANT OF SUCH EXEMPTIONS.

ANSWER 3

THE NRC HAS NOT "GRANTED" EXEMPTIONS FROM CONFORMANCE TO AWS D1.1. UNLIKE SECTION XI OF THE ASME CODE, AWS D1.1 IS NOT INCORPORATED BY REFERENCE IN 10 CFR PART 50. THEREFORE, THERE IS NO PROCEDURAL REQUIREMENT FOR THE COMMISSION TO GRANT EXEMPTION FROM THE D1.1 CODE. HOWEVER, THE STAFF RECEIVED A REQUEST (ENCLOSURE 8) BY THE WOLF CREEK APPLICANT TO AMEND THEIR FSAR SECTION 3.8.3.6.3.3 REGARDING THE USE OF AWS D1.1. THE STAFF ACCEPTED THE CHANGES, WHICH ARE TO BE DOCUMENTED IN AN UPCOMING SER SUPPLEMENT #5. (SEE ENCLOSURE 9). WHEN THERE MAY BE SOME QUESTION WITH REGARD TO A DEVIATION TAKEN TO ACCEPTANCE CRITERIA, AN AMENDMENT TO THE FSAR IS A COMMONLY USED PROCESS TO ASSURE THAT THE CONSTRUCTION OF THE PLANT AND THE FSAR ARE IN CONFORMANCE WITH EACH OTHER.

THE PROVISIONS OF AWS D1.1 ALLOW MANY DEVIATIONS, SUBJECT TO THE APPROVAL OF THE ENGINEER, WHO IS DEFINED IN AWS D1.1 AS THE DULY DESIGNATED PERSON WHO ACTS FOR AND IN BEHALF OF THE OWNER ON ALL MATTERS WITHIN THE SCOPE OF THIS CODE. AWS D1.1 IS USUALLY INVOKED THROUGH A GENERAL STRUCTURAL BUILDING CODE THAT IS COMMITTED TO BY AN APPLICANT IN HIS FSAR.

FOR EXAMPLE, THE MOST COMMON STRUCTURAL CODE USED AT NUCLEAR POWER PLANTS IS THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION'S (AISC'S) "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS."

THE AISC SPECIFICATION PROVIDES SOME RULES REGARDING WELDING, BUT REFERS TO THE AWS D1.1 CODE FOR WELDING PROCEDURES, QUALIFICATIONS AND OTHER REQUIREMENTS. AWS D1.1 DEFINES WORKMANSHIP STANDARDS FOR THE WELDERS, PROVIDES INSTRUCTIONS TO WELDING SUPERVISORS AND ACCEPTANCE CRITERIA FOR THE FINAL WELDS WHICH ARE CHECKED BY INSPECTORS. FURTHER, THE AISC QUALITY CRITERIA DOCUMENT, "QUALITY CRITERIA AND INSPECTION STANDARDS" IS OFTEN USED AS A SUPPLEMENT TO THE AISC SPECIFICATION TO PROVIDE PRACTICAL AND ACCEPTABLE GUIDANCE ON THE USE OF THE AISC SPECIFICATION AND AWS D1.1. IT ALLOWS EXCEPTIONS TO SOME OF THE PROVISIONS OF AWS D1.1; E.G., THE QUALITY CRITERIA DOCUMENT STATES:

"THE HUMAN ELEMENT IS INVOLVED IN ALL PHASES OF STRUCTURAL DESIGN AND FABRICATION; THEREFORE, IT IS NOT SURPRISING THAT AN UNINTENTIONAL DEVIATION FROM A DRAWING OR SPECIFICATION CAN OCCUR. NOT ALL ERRORS OR DEVIATIONS NEED TO BE ALTERED OR REPAIRED; MANY COULD BE ACCEPTED WITHOUT CHANGE, WITH NO PENALTY TO THE STRUCTURE OR ITS END USE. THERE ARE TIMES WHEN REPAIR WORK CREATES HIGHER RESIDUAL STRESSES AND DOES MORE HARM THAN GOOD. IN GENERAL, IT SHOULD BE THE ENGINEER'S DECISION WHETHER OR NOT THE DEVIATION IS HARMFUL TO THE END USE OF THE PRODUCT."

THEREFORE, WHEN DESIGNING AND CONSTRUCTING STRUCTURES TO THE AISC SPECIFICATION, IT IS NECESSARY FOR THE ENGINEER AND THE OWNER TO DEFINE THE APPROPRIATE WELDING ACCEPTANCE CRITERIA FOR THE WORK TO BE PERFORMED. THERE ARE SOME INSTANCES WHERE IT IS NECESSARY TO MODIFY THE AWS D1.1 ACCEPTANCE CRITERIA IN ORDER TO BE PRACTICAL AND MEANINGFUL FOR USE IN INSPECTING STRUCTURES DESIGNED IN ACCORDANCE WITH THE AISC SPECIFICATION. MODIFICATION TO ACCEPTANCE CRITERIA OF AWS D1.1 IS PERMITTED WITHIN THE PROVISIONS OF BOTH AISC SPECIFICATION AND AWS CODE, AND NRC APPROVAL IS NOT REQUIRED. THE APPLICANT IS, HOWEVER, REQUIRED TO DOCUMENT AND MAINTAIN ON FILE ALL DEVIATIONS TAKEN TO AWS D1.1 ACCEPTANCE CRITERIA.

IN SUMMARY, THE NRC DOES NOT NEED TO GRANT AN EXEMPTION TO MEET ITS REGULATIONS TO WOLF CREEK OR ANY OTHER PLANT UNDER CONSTRUCTION BECAUSE OF THEIR FAILURE TO MEET AWS D.1.1. INSTEAD, AS PERMITTED BY THE CODE, THE ENGINEER IS AUTHORIZED TO GRANT DEVIATIONS TO THE CODE. HOWEVER, FOR WOLF CREEK, THE APPLICANT DID PROPOSE AN AMENDMENT TO THE FSAR DESCRIBING A DEVIATION TO AWS D.1.1 WHICH WAS ACCEPTED BY THE NRC STAFF.

Congress of the United States
House of Representatives
Committee on Energy and Commerce
Room 2125, Rayburn House Office Building
Washington, D.C. 20515

SUBCOMMITTEE ON OVERSIGHT AND INVESTIGATIONS

January 9, 1985

The Honorable Nunzio Palladino
Chairman
Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Chairman:

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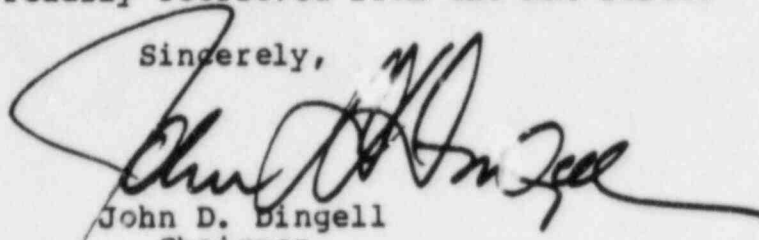
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The Honorable Nunzio Palladino
January 9, 1985
Page 2

If the unavailability of documents pertaining to any element of this request prevents a full response prior to Tuesday, January 22, 1985, please provide by this date whatever documents are available along with an explanation as to why the other documents cannot be readily retrieved from the NRC files.

Sincerely,

A handwritten signature in dark ink, appearing to read "John D. Dingell", written over the typed name.

John D. Dingell
Chairman
Subcommittee on
Oversight and Investigations

JDD:PScm