ORGANIZATION: BECHTEL POWER CORPORATION
GAITHERSBURG POWER DIVISION
GAITHERSBURG, MARYLAND

REPORT NO.: 99900519/83-01	INSPECTION DATE(S) 2/7-11/83	INSPECTION ON-SITE HOURS: 31

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PRINCIPAL PRODUCT: Architect Engineering Services.

NUCLEAR INDUSTRY ACTIVITY: The Gaithersburg Power Division has a total of 2810 employees of which 1448 are assigned to nuclear projects. Major projects include Callaway, Unit 1; Wolf Creek, Unit 1; and Grand Gulf, Unit 2. There are also modification/repair/service contracts on 16 additional reactor units.

ASSIGNED INSPECTOR: J. R. Costello — 3/24/83
J. R. Costello, Reactor Systems Section (RSS) — Date

OTHER INSPECTOR(S):

APPROVED BY: C. J. Hale — 3/29/83
C. J. Hale, Chief, RSS — Date

INSPECTION BASES AND SCOPE:

A. BASES: 10 CFR Part 50, Appendix B; and Grand Gulf PSAR, Chapter 17.

B. SCOPE: Design change control and followup on two 10 CFR Part 50.55(e)/ 10 CFR Part 21 reports from Grand Gulf: (1) failure of Hiller actuators upon gradual loss of air pressure, and (2) corroded terminal boards in Rosemount transmitters.

PLANT SITE APPLICABILITY:

Docket Nos. 50-416 and 50-417.

DESIGNATED ORIGINAL
Certified By Rheanne Clark

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GAITHERSBURG POWER DIVISION
GAITHERSBURG, MARYLAND

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A. VIOLATIONS:

None

B. NONCONFORMANCES:

1. Contrary to the requirements of Criterion V of 10 CFR Part 50, Appendix B and EDPI-4.62-12, one Field Change Notice (FCN) and two Field Change Requests (FCR's) were not completed within 60 days after receipt in Engineering.

2. Contrary to the requirements of Criterion V of 10 CFR Part 50, Appendix B and EDPI-4.62-12, nine FCN's and seven FCR's had been closed, but there were no entries in the logs to show that they had been closed.

C. UNRESOLVED ITEMS:

None

D. STATUS OF PREVIOUS INSPECTION FINDINGS:

(Closed) Nonconformance (82-02): Some Grand Gulf specifications did not identify the applicable dates, revisions, or addenda of technical codes and standards.

Remedial action has been completed on all of the safety-related specifications associated with open purchase orders. The inspector verified that Bechtel had completed their committed actions regarding applicable dates, revisions, or addenda of technical codes and standards.

To prevent recurrence of this problem, effective August 2, 1982, each new specification, when initially issued for the purchase of equipment, will identify the applicable dates, revisions, or addenda of technical codes and standards included in the specification.

E. OTHER FINDINGS OR COMMENTS:

1. Design Change Control - Applicable Preliminary Safety Analysis Report (SAR) commitments and Grand Gulf project procedures were examined to determine quality program commitments. To verify implementation of these commitments numerous FCN's, FCR's, and related documents were examined. Relative to the documents examined, two nonconformances were identified (see B above).

On the Grand Gulf project the form used to process both the FCN and FCR is called a Change Request/Notice. Many of the FCN's processed on this form are actually details necessary to complete fabrication/ construction and are tied to a specific drawing. These FCN's must be identified with the proper drawing to adequately define the as-built condition as they are not incorporated into drawing revisions. The FCN's are identified with the proper drawing in the Automated Document Control Register.

2. Followup of 10 CFR 50.55(e)/10 CFR 21 Reports From 82-03 Inspection -

a. Failure of Hiller Actuators - During preoperational testing (Grand Gulf, Unit 1) designed to simulate a gradual loss of air in accordance with position C.9 of Regulatory Guide 1.80, "Preoperational Testing of Instrument Air Systems," a large number of pneumatically operated isolation valves in the instrument air system failed to go to their fail-safe condition. This item was reported to NRC Region II by Mississippi Power and Light (MP&L).

During this inspection, it was determined that neither Regulatory Guide 1.80 (June 1974) nor Regulatory Guide 1.68.3 (April 1982) had been imposed on Bechtel by MP&L at the time of procurement.

A further review of documentation concerning Hiller actuators was conducted during the inspection. This review disclosed the following:

(1) Bechtel issued the original requirements for valve air operators for Grand Gulf on July 16, 1973. In this document it stated, "All cylinder operators shall be spring-loaded single acting, air-to-open or air-to-close, as indicated in the Valve Data Sheets. Seller may propose an alternate design subject to buyer approval. Basis for selection shall be included with proposal."

(2) The original concept in the specification was to use a spring-loaded valve closure mechanism; but due to space limitations, Bechtel accepted the seller's proposal to use a William Powell Company valve with a Hiller/Shaffer pneumatic actuator for valve closure. These actions occurred before the issuance of Regulatory Guide 1.80.

(3) The original specification for the actuators required the valve to fail to a specified position upon a loss of instrument air, but did not specify the rate of depressurization. The specification was revised on August 9, 1982, to correct this omission for future procurements.

(4) During preoperational testing designed to simulate a slow loss of air in accordance with position C.9 of Regulatory Guide 1.80, a large number of Hiller/Shaffer actuators failed. This also occurred when the valves were tested according to Position C.8. (The testing of instrument air systems in accordance with Regulatory Guides 1.80, and subsequently 1.68.3, was made a commitment in the Grand Gulf Final SAR.)

(5) Regulatory Guide 1.80 pertained to the operability of safety-related air systems. The air system that served the Hiller/Shaffer actuators was nonsafety-related and would not require the tests specified in Regulatory Guide 1.80.

(6) William Powell Valve Company contracted with the Hiller Company for actuators supplied for this project. All stored air type actuator orders received by the Hiller Company for almost 20 years had been based on a loss-of-air failure mode assumed as a rapid and complete loss of instrument air supply due to breakage of an air supply line and were qualified by 100% factory testing.

The problem has been corrected by the addition of safety-related pressure switches to the system to sense air supply pressure to the valve; an IE Information Notice (82-25) was issued to the field on July 20, 1982, covering this problem.

This problem could have and perhaps should have been identified by Bechtel prior to preoperational testing onsite. However, at the time of specification issuance and procurement of these valves, a gradual loss-of-air failure mechanism was not recognized as a criterion for these fail-safe valve applications. Neither does it appear that Bechtel nor the valve and actuator vendors had reason to suspect that the valves would not function properly even if air pressure was

lost gradually. The revision of the Bechtel specification August 9, 1982, should preclude a recurrence of this problem.

b. Corroded Terminal Boards In Rosemount Transmitters - MP&L (Grand Gulf, Unit 1) reported to Region II that the terminal board areas of 29 pressure transmitters, level transmitters, and flow transmitters located inside the containment were found to be corroded.

A further review of documentation concerning corroded terminal boards in Rosemount Transmitters disclosed the following:

(1) Potentially Reportable Deficiency (PRD) - 82/23, Interim Report #4, "Corroded Terminal Boards," dated December 15, 1982, stated, in part, "A final report from an independent laboratory on the analysis of a corroded terminal board attributes the corrosion to the presence of moisture. As the transmitters were not supplied with a defect, we have concluded that the provisions of 10 CFR 21 are not applicable." PRD-82/23 final report, dated February 2, 1983, attributed the presence of moisture to leakage from two valves which entered the junction boxes and then the transmitters via the interconnecting conduit between the transmitter and the junction box.

(2) The report from the independent laboratory confirms the theory that the corrosion was due to the presence of water in the transmitters and not due to improper electroplating. The cause of the water in the transmitters appears to have been incorrect environmental sealing during installation. To preclude recurrence of this problem, transmitters are now installed in accordance with NUREG 0588 and Bechtel Drawing E-0730, "Class 1E Equipment Environmental Sealing."

(3) All of the Rosemount transmitters that had water in them or had corroded terminal boards have been restored to their original design criteria and have been sealed in accordance with NUREG 0588 and E-0730.

This does not appear to be a generic problem, but rather a specific installation problem.

Based on our review of this problem, no nonconformances or unresolved items were identified.

PERSONS CONTACTED

Company Bechtel / GPD

Dates 2/7-11/83

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Scope/Module 37996B / Design Change Control DOCUMENTS EXAMINED

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Grand Gulf

1	2	TITLE/SUBJECT	3	4
1	3	EDPI (Engineering Department Project Instruction) - 4.47-12, Drawing Change Notice (DCN)	11/19/82	1
2	3	EDPI - 4.34-12 Off Project Design Review; Design Control Check List (DCCL) And Design Review Notice (DRN)	6/15/82	0
3	3	EDPI - 4.62-12 Change Request/Notice (CR/N), Field Change Request (FCR) Field Change Notice (FCN	11/19/82	1
4	3	EDPI - 4.61-12 Nonconformance Reports And Deficiency Reports (NCR, DR)	6/15/82	0
5	3	EDPI - 4.63-12 Supplier Deviation Disposition Request (SDDR)	11/19/82	1
6	3	EDPI - 2.14-12 Project Engineering Resident Engineers	6/19/82	0
7	3	EDPI - 4.37-12 Design Calculations	6/15/82	0
8	3	EDPI - 4.46-12 Project Drawings	11/19/82	1
9	3	EDPI - 4.49-12 Project Specifications	11/19/82	1
10	3	EDPI - 5.2-12 Automated Document Control Register (ADCR)	6/15/82	0

Document Types:
1. Drawing
2. Specification
3. Procedure
4. QA Manual
5. Purchas Order
6. Internal Memo
7. Letter
8. Other (Specify-if necessary)

Columns:
1. Sequential Item Number
2. Type of Document
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4. Revision (If applicabl

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1	2	TITLE/SUBJECT	3	4
11	8	FCN-C2-0133 (Dg C-2076)	9/3/82	-
12	8	FCN-C2-0124 (C-2079E)	8/24/82	-
13	8	FCN-C2-0173 (C-2075)	10/1/82	-
14	8	FCN-C2-0198 (C-2077)	10/12/82	-
15	8	FCN-C2-0203 (C-2081)	10/14/82	-
16	8	FCN-C2-0272 (C-2081)	11/11/82	-
17	8	FCN-C2-0338 (C-2075)	12/9/82	-
18	8	FCN-EC2-0040 (C-2417B)	7/29/82	-
19	8	FCN-EC2-0088 (C-2418A)	8/23/82	-
20	8	FCN-EC2-0170 (C-2417B)	10/22/82	-
21	8	FCN-EC2-0204 (C-0670)	12/2/82	-
22	8	FCN-HM-2-0022 (C-2430R)	9/9/82	-
23	8	FCN-HM-2-0025 (C-2430R)	9/9/82	-
24	8	FCN-M2-0025 (M-2866)	11/23/82	-
25	8	FCN-P2-0060 (9645-M-242.0-02)	9/9/82	-
26	8	FCN-P2-0073 (MS-07)	10/22/82	-

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1	2	TITLE/SUBJECT	3	4
27	8	FCN-PR2-0005 (M-2551B)	11/16/82	-
28	8	FCN-EC2-0022 (C-2416B)	7/28/82	-
29	8	FCN-EC2-0033 (C-2416B)	7/28/80	-
30	8	FCN-EC2-0051 (C-2416B)	8/6/80	-
31	8	FCN-C2-0180 (C-2082C)	10/1/82	-
32	8	FCR-C2-0028 (C-235B)	7/21/82	-
33	8	FCR-C2-0029 (C-2300E)	7/26/82	-
34	8	FCR-C2-0040 (C-2311)	10/19/82	-
35	8	FCR-EC2-0003 (C-2416B)	8/6/82	-
36	8	FCR-EC2-0004 (C-2416B)	8/12/82	-
37	8	FCR-P2-0013 (M-2312D)	9/13/82	-
38	8	FCR-M2-0019 (M-2865)	8/19/82	-
39	8	FCR-PS2-0070 (Q2B21G022 R17)	11/19/82	-
40	8	FCR-PS2-0076 (N2B21G022 R07)	11/9/82	-
41	8	FCR-PS2-0043 (N2P45G806 HIS)	8/24/82	-
42	8	FCR-PR2-0001 (M2548D)	10/19/82	-

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1	2	TITLE/SUBJECT	3	4
43	8	Document Control Register Job Order 09645-001 (Grand Gulf)	1/10/83	-
44	8	FCN Log Grand Gulf Nuclear Power Station Unit 2	—	-
45	8	FCR Log Grand Gulf Nuclear Power Station Unit 2	-	-
46	8	DCN # 4 (C-2070A)	4/6/79	-
47	8	DCN # 2 (C-2070B)	3/14/79	-
48	8	DCN # 1 (C-2125A)	2/28/79	-
49	8	DCN # 1 (C-2160B)	2/23/79	-
50	8	DCN # 2 (C-2391B)	7/10/79	-
51	8	DCN # 9 (C-2416B)	9/1/82	-
52	8	SDDR Action Item Log - Civil	—	-
53	8	" " " " - Mechanical	-	-
54	8	" " " " - Piping	—	-
55	8	NCR Log Grand Gulf Nuclear Power Station	—	-
56	8	Supplier Deviation Disposition Request Log, Grand Gulf Nuclear Power Station	—	-

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1	2	TITLE/SUBJECT	3	4
57	8	SDDR # M-618.1-559	4/9/81	-
58	8	SDDR # J-318.1-001	10/6/81	-
59	8	SDDR # J-359.1-001	5/26/81	-
60	8	SDDR # M-202.0-043	6/11/80	-
61	8	SDDR # M-242.2-015	1/3/79	-
62	8	SDDR # M-201.0-072	5/1/80	-
63	8	SDDR # M-018.0-015	2/13/80	-
64	8	NCR # 6429 (C103.0)	8/3/82	-
65	8	NCR # 6424 ~~(MS-02)~~ (E035.0-QS-4.4-1.2)	7/28/82	-
66	8	NCR # 6407 (MS-02)	6/16/82	-
67	8	NCR # 6392 (C-2075)	6/3/82	-
68	8	NCR # 4240 (C-2708)	10/18/79	-

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83-01

B-1
Rev. 3-12-75

ATTENDANCE LIST

COMPANY: Bechtel Power Corp. /GPO DOCKET NO. 99900519

Date: 2/11/83 ☐ Pre-Inspection Conference ☒ Post Inspection Conference

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