

Bechtel Power Corporation

Engineers — Constructors

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



June 30, 1983

Mr. James G. Keppler
Director, Region III
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Mr. Karl Seyfrit
Director, Region IV
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Suite 100, Parkway Central Plaza
611 Ryan Plaza
Arlington, Texas 76012

File: 0490.4
SNUPPS Project, Bechtel Job No. 10466
Report of Design Deficiency Under
10 CFR Part 21

Gentlemen:

In accordance with the requirements of 10 CFR Part 21, this is to confirm reporting by Bechtel by telephone to the Region III (Mr. H. Westcott) and Region IV (Mr. D. Honeycutt) Offices on June 27 and June 24, 1983, respectively.

The report concerns a deficiency in Bechtel's design of ac and dc control circuits for the Callaway (Region III) and Wolf Creek (Region IV) stations. The same deficiency was reported on June 23, 1983 by SNUPPS as a generic Significant Reportable Deficiency per 10 CFR 50.55(e) to Mr. H. Westcott (Region III) and Mr. J. Jaudon (Region IV).

Information concerning this deficiency has been furnished to other projects within this division, and to other Bechtel Power Corporation divisions for review. It should be noted that this problem was previously reported to the NRC in October 1980 by Pennsylvania Power & Light for the Bechtel San Francisco Power Division Susquehanna Station project. Should it be determined that this design deficiency is applicable to other Bechtel projects, this will be reported by the cognizant division directly to the cognizant Director(s) of the NRC Regional Office of Inspection and Enforcement, with a copy to you (if applicable).

JUL 5 1983

8307110244 830630
PDR ADDCK 05000482
S PDR

IE19

Bechtel Power Corporation

June 30, 1983

Mr. James G. Keppler
Director, Region III

Mr. Karl Seyfrit
Director, Region IV

Page 2 of 5

Following is specific information required by 10 CFR Part 21:

1. Name and address of the individual informing the Commission:

Mr. B. L. Meyers
Bechtel Power Corporation
15740 Shady Grove Road
Gaithersburg, Maryland 20877

2. Identification of the facilities which contain the defect:

Callaway
P.O. Box 198
Fulton, Missouri 65251

Wolf Creek
P.O. Box 146
Strawn, Kansas 66839

3. Identification of the firm constructing the facility that contains the defect:

Daniel International Corporation
Greenville, South Carolina

4. Nature of the defect and the safety hazard which could be created by such defect:

Description of Control Circuits and Deficiency

The SNUPPS 480 V MCCs utilize a separate control power transformer (CPT) for each individual motor starter control circuit. The power (VA) rating of each CPT varies with the rating of the controller to which it is applied, i.e., NEMA size 1, 2, 3, 4 or 5. The SNUPPS Class IE 4.16 kV switchgear and 480 volt load centers utilize a 125 V dc control power source from one of two class IE 125 V dc station batteries.

The SNUPPS ac control circuits utilize 14 AWG copper wire. Each CPT supplies its respective control load. The control load carried by each CPT is not identical for all CPTs, but generally consists of the associated motor controller and several types of auxiliary loads such as auxiliary relays and indicating lights. Together, the CPT rating, controller rating, control circuit conductor size, CPT auxiliary load and MCC voltage establish a maximum permissible length of each individual ac control circuit cable.

Bechtel Power Corporation

June 30, 1983

Mr. James G. Keppler
Director, Region III

Mr. Karl Seyfrit
Director, Region IV

Page 3 of 5

4. Continued.

The SNUPPS dc control circuits also utilize 14 AWG copper wire. Several indicating lights and auxiliary relays constitute a typical auxiliary load for each dc control circuit. Together, the switch-gear and load center control bus terminal voltage, circuit breaker closing current and minimum circuit breaker operating voltage establish a maximum permissible length of each dc control circuit cable.

Investigation and quantification of the maximum permissible control circuit lengths revealed that selected Class IE ac and dc control circuit lengths were excessive. Under conditions where the MCC bus voltage or station battery voltage was near its respective minimum design or end-of-duty cycle voltage, sufficient voltage to operate the controller or circuit breaker could not be guaranteed at the device terminals. The voltage drop across the control circuit that is produced when the controller or circuit breaker is energized, in combination with the parameters listed above, produces this situation. The result of the excessive circuit lengths is, given the above voltage conditions, that certain safety-related equipment may not function (or start) during an accident.

5. The date on which the information of such a defect was obtained:

The failure of a non-IE starter on a 480 V transformer to function during startup testing at the Callaway site caused Bechtel Engineering to re-evaluate design assumptions and previously completed control circuit calculations for appropriate conservatism. Bechtel's evaluation of the applicability under the provisions of 10 CFR 21 was concluded on June 23, 1983.

6. In the case of a basic component - the number and location of all such components:

The deficiency is in the design of the control circuits rather than with basic components.

Bechtel Power Corporation

June 30, 1983

Mr. James G. Keppler
Director, Region III

Mr. Karl Seyfrit
Director, Region IV

Page 4 of 5

7. The corrective action which has been taken, the name of the organization responsible for the action, and the length of time that has been, or will be taken to complete the action:

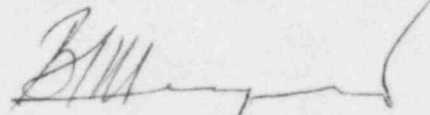
Bechtel Engineering has initiated appropriate design changes to the affected motor controller and power circuit breaker compartments. Depending upon the specific circuit requirement, Field Rework Plans have been developed to provide for the installation of either larger control power transformers (ac control circuits) or for interposing auxiliary relays (ac and dc control circuits). The larger transformers provide additional capacity to carry loads and to operate motor controllers with minimum permissible voltage. Where installation of a larger transformer is not feasible, interposing relays will be installed to cause the control circuit to operate an auxiliary relay instead of the controller.

Engineering will introduce a check in the design process to prevent future release of any control circuit until its engineered length is determined against established maximum control circuit length criteria.

8. Any advice related to the defect that has been, is being, or will be given to purchasers or licensees:

The SNUPPS organization, Union Electric and Kansas Gas & Electric have all been notified of this deficiency. As noted earlier, the details of this deficiency have also been furnished to other projects within this division and to other Bechtel Power Corporation divisions for coordination with other licensees, as applicable.

Sincerely yours,



Bernard L. Meyers
SNUPPS Project Manager

JKJ/jmd

cc: Mr. Victor Stello (3 copies)
Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Bechtel Power Corporation

June 30, 1983

Mr. James G. Keppler
Director, Region III

Mr. Karl Seyfrit
Director, Region IV

Page 5 of 5

cc: Mr. N. A. Petrick (1 copy)
Executive Director, SNUPPS
5 Choke Cherry Road
Rockville, Maryland 20850

Mr. S. J. Seiken (1 copy)
QA Manager, SNUPPS
5 Choke Cherry Road
Rockville, Maryland 20850

Mr. E. W. Creel (1 copy)
QA Manager
Kansas Gas & Electric Company
P. O. Box 208
Wichita, Kansas 67201

Mr. F. D. Field (1 copy)
QA Manager
Union Electric Company
P.O. Box 149
St. Louis, Missouri 63166