SNUPPS
Standardized Nuclear Unit
Power Plant System

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

November 26, 1980

SLNRC 80- 53 FILE: 0491.10.2/M-218
SUBJ: Bergen-Paterson Pipe Snubber Assemblies

Mr. Boyce Grier
Director, Region I
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, Pennylvania 19406

References: STN 50-482
STN 50-483
STN 50-486

Dear Mr. Grier:

On October 27, 1980, NRC Region I (Ms. C. Yusko) was informed by the SNUPPS QA Manager (Seiken) of generic design interferences between the Bergen-Paterson furnished pipe clamp assemblies and the mating snubber assemblies supplied by their subvendor, Pacific Scientific Company. As a consequence of these interferences, the final assembly cannot provide the 12° cone of movement necesary to accommodate anticipited thermal and seismic loads. Subsequent examination has reaffirmed earlier SNUPPS conclusions that the nature and scope of these interferences require reporting to the NRC pursuant to 10CFR 50.55(e) regulations.

Enclosed with this letter is a generic report covering the design interferences in the Bergen-Paterson snubbber assemblies, specifically Part 2540 (modified) units. This report provides a chronology of events associated with the discovery of the snubber interferences; summarizes safety implications associated with this deficiency and outlines a program of follow-up corrective actions planned and/or initiated to fully resolve this matter. The plan provides for design verification and checkout of Type 2540 snubber units currently scheduled for delivery to Callaway and Wolf Creek sites. Defective clamp assemblies identified by Bergen-Paterson as having been furnished to these sites will be tagged and later replaced.

Please note that the enclosed report is being treated as a final report under 10CFR 50.55(e) definition. The corrective action plan will be

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monitored by Bechtel and later by Callaway and Wolf Creek QA personnel. In the event additional actions are required, a supplemental report will be prepared and forwarded to the NRC. In the interim, any questions may be addressed to the undersigned.

Very truly yours,

S. J. Seiken
Quality Assurance Manager

SJS/mtk 1b1&2

Enclosure: Report on Bergen-Paterson Snubber Asssemblies

cc: Mr. J. A. Keppler, Director, Region III, USNRC
Mr. W. Wescott, Region III, USNRC
Mr. Karl Seyfrit, Director, Region IV, USNRC
Mr. Victor Stello, Jr., Director, Office of Inspection and Enforcement, USNRC, Washington D.C.
T. Vandel, Wolf Creek Resident Inspector, USNRC
W. Hansen, Callaway Resident Inspector, USNRC

10 CFR 50.55(e) REPORT

on

POTENTIAL BOLT HEAD - PIPE CLAMP INTERFERENCE

BERGEN - PATERSON PIPE SUPPORT STRUT

with

MECHANICAL SHOCK ARRESTOR SUPPLIED

to

SNUPPS UNITS

Bechtel Power Corporation

Gaithersburg, Maryland

November 26, 1980

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1.0 INTRODUCTION

In accordance with the requirements of 10CFR 50.55(e) this report is prepared to provide a summary of a generic deficiency related to clamp interferences which could hinder the full function of Bergen-Paterson pipe support strut assemblies containing Pacific Scientific mechanical shock arrestors (see attached sketch describing parts). Presently, the pipe support assemblies are designed to provide a 12° cone of movement to accomodate thermal and seismic loads.

This deficiency was initially reported to the NRC Region I Inspection and Enforcement by Bergen-Paterson in a 10CFR Part 21 report dated June 20, 1980. At that time, the deficiency was believed to be limited to two Part Nos. 2541-0.35 and 0.65 snubbers which had been delivered to the Wolf Creek and Callaway jobsites. The Architect/Engineer's evaluation of the support designs, which use the two identified snubbers, disclosed that no more than a 5° cone of movement was required. While these two snubbers would permit substantially less than the 12° cone called for in the purchase specifications, sufficient movement was available to accept the snubbers on "as-is" basis. Union Electric verbally informed the NRC on July 2, 1980 of the nature of this problem and followed up with a written report on July 30, 1980. Comparable reports were made by Kansas Gas and Electric on July 3, 1980 and August 4, 1980. The NRC was later notified by Union Electric on October 7, 1980 of the proposed resolution concerning the two units in question.

On October 21, 1980, the Callaway site identified additional interference problems with Part No. 2541, size -6 and -15 Bergen-Paterson assemblies. The supplier was notified of interferences and subsequently directed to examine all sizes of Part 2541 snubber assemblies scheduled for use with Pacific Scientific Mechanical shock arrestors to determine the scope and extent of these interferences. The supplier developed scale layouts of all sizes and configurations of the Part 2541 snubber/clamp assemblies for purposes of verifying in a 3 dimensional mode, functions and fit. From the layouts, Bergen-Paterson verified that a total of sixteen (16) Size -6, -15, and -120 delivered assemblies (8 per SNUPPS unit), when used in conjunction with various pipe sizes, contain interferences which may hinder the function of the units. These interferences were not detected previously because Bergen-Paterson's interference checks for 12° total movement were performed in only two directions rather than in a 3-dimensional "cone" configuration. When triaxial checking was performed, the presence of the interference was confirmed.

On the basis of these findings, a telecon 50.55(e) report of a generic design deficiency of Bergen-Paterson snubber assemblies was made by the SNUPPS QA Manager to the NRC Region I Office on October 24, 1980. The supplier, Bergen-Paterson, filed a follow up 10 CFR Part 21 report with the Commission on October 29, 1980. A list of identification numbers of the 16 assemblies that had been shipped to the SNUPPS sites has been compiled and the jobsites notified accordingly. These assemblies will be placed on hold. Other units in manufacture at Bergen-Paterson are also involved; holds have also been placed on these units.

2.0 DESCRIPTION OF REPORTABLE DEFICIENCY

The Bergen-Paterson snubber assemblies being supplied to the SNUPPS sites employ a Bergen-Paterson Part No. 2640 pipe clamp in combination with a Pacific Scientific end bracket assembly. Many of these snubber assemblies are employed in safety-related piping systems.

The Part 2541 snubber assemblies in question contain an interference between the pipe clamp end and snubber assembly in the end bracket assembly which does not permit the required 12° cone of movement under seismic and thermal loadings.

3.0 ANALYSIS OF SAFETY IMPLICATIONS

Snubbers that are employed in seismically designed piping systems must permit the pipe to move thermally in the direction of the support and provide a rigid restraint during a seismic event. The snubber must also permit motion of the piping transversely perpendicular to the end brackets. This is achieved by allowing a 12° cone of travel at both ends of the snubber, utilizing ball bushings.

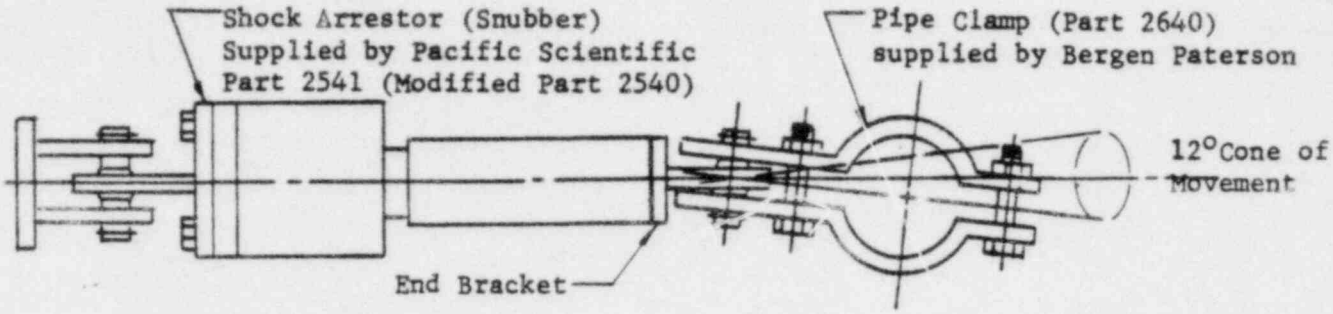
The snubbers in question permit 0° to 6° cone of movement of the clamp end versus the full 12° cone specified in Bergen-Paterson's Load Capacity Data Sheets. The restriction of pipe movement could overstress the pipe. The action of the clamp locking up with the snubber body could also overstress the snubber during piping movement.

4.0 CORRECTIVE ACTION

The interference in these snubber assemblies has been attributed to a breakdown in Bergen-Patterson's design control practices. The vendor is preparing detailed written procedures for use in performing interference checks of all new or modified snubber assemblies. Individuals designated to perform interference checks will receive training in the use of the new procedures. The Part 2541 assembly, as well as all other snubber assemblies, will continue to be checked for proper clearance and placement by means of three dimensional layouts. These additional controls will be in place at Bergen-Paterson by December 1, 1980.

The Part 2640 clamps will be modified to eliminate the interferences. Defective clamps identified by Bergen-Paterson as having been furnished to the sites will be tagged and later replaced. No further shipments of the affected sizes will be made until the Architect/Engineer has confirmed that the committed corrective actions required of Bergen Paterson have been taken and further independently verified design acceptability of all size units. Follow up site actions will also be taken to assure the required modifications and replacements are made.

5.0 BERGEN-PATERSON SNUBBER ASSEMBLY



Bechtel Power Corporation
Engineers—Constructors
15740 Shady Grove Road
Gaithersburg, Maryland 20760
301—258-3000

November 26, 1980

Mr. Nicholas A. Petrick
Executive Director, SNUPPS
5 Choke Cherry Road
Rockville, Maryland 20850

Dear Mr. Petrick:

BLQA-80/0009
File: M-218A/0490.3
10CFR50.55(e) Report Related to Interferences in Bergen-Paterson Snubber Assemblies - Final Version

Enclosed is the 50.55(e) report for the Bergen-Paterson interference problem. The version dated November 17, 1980 was reviewed with UE and KG & E Technical Committee representatives via telecon on November 24, 1980 and now incorporates their comments.

Should you have any questions, please let me know.

Sincerely,

John Kroehler, Jr

John Kroehler, Jr.
Project QA Manager

JKJ:jt

Enclosure: 10 CFR 50.55(e) Report

cc:	S. J. Seiken	SNUPPS	w/a
	E. W. Creel	KG&E	w/a
	W. G. Eales	KG&E	w/a
	F. D. Field	UE	w/a
	D. W. Capone	UE	w/a
	J. A. Bailey	KG&E	w/a