

B 05/02/08

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SUBJECT:

LTR 1 ENCL 1

FORWARDING CONSTRUCTION DEFICIENCY REPT CONCERNING SPOT WELDING OF STRUTS FOR  
SUBJECT FACILITY, CONTAINING BECHTEL ENGINEERING'S EVALUATION OF THIS REPT.

PLANT NAME: SUSQUEHANNA - UNIT 1  
SUSQUEHANNA - UNIT 2

REVIEWER INITIAL: XJM  
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\*\*\*\*\* DISTRIBUTION OF THIS MATERIAL IS AS FOLLOWS \*\*\*\*\*

CONSTRUCTION DEFICIENCY REPORT (10CFR50.55(E)).  
(DISTRIBUTION CODE B004)

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*MA 1*  
*SD*

\*\*\*\*\* THE END \*\*\*\*\*



[The text in this block is extremely faint and illegible. It appears to be a multi-paragraph document, possibly a letter or a report, but the characters are too light to be transcribed accurately.]



TWO NORTH NINTH STREET, ALLENTOWN, PA. 18101      PHONE: (215) 821-5151

NORMAN W. CURTIS  
Vice President-Engineering & Construction  
821-5381

April 26, 1978

Mr. Boyce H. Grier  
Director, Region I  
U. S. Nuclear Regulatory Commission  
631 Park Avenue  
King of Prussia, Pennsylvania 19406



SUSQUEHANNA STEAM ELECTRIC STATION  
INTERIM REPORT OF REPORTABLE DEFICIENCY  
REGARDING SPOT WELDING IN STRUT MATERIAL  
DOCKET NOS: 50-387, 50-388  
LICENSE NOS: CPPR-101, CPPR-102  
ERs 100450/100508                      FILE 840-4  
PLA-249

REGULATORY DOCKET FILE COPY

Dear Mr. Grier:

This relates to a reportable deficiency, under the provisions of 10CFR50.55(e), which was identified to Mr. A. Toth, NRC-Region I, by Mr. A. R. Sabol, PP&L, during a telephone conversation on 3/27/78. The deficiency involves inadequate spot welding of strut material used in field fabricated supports for safety related electrical raceways, HVAC ducts and instrumentation panels. It is concluded that the inadequate fusion of the spot welding may result in inadequate strength and, as such, represents a deficiency in construction (fabrication) which may adversely affect the safe operation of the plant under design loading conditions.

Bechtel Engineering's evaluation of the information available at present is contained in the attached "Interim Report on Spot Welding of Struts for Susquehanna Steam Electric Station Units 1 and 2".

We anticipate submittal of the required definitive report of the deficiency by 7/31/78.

Very truly yours,

*A. R. Sabol*  
N. W. Curtis  
Vice President-Engineering & Construction

781220084

Attachment  
CIM:mcb

PENNSYLVANIA POWER & LIGHT COMPANY

B004/5\*  
1/1



10/10/73

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Mr. B. H. Grier

- 2 -

April 26, 1978

cc: Mr. Ernst Volgenau (15)  
Director  
Office of Inspection & Enforcement  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Mr. G. McDonald, Director  
Office of Management Information and Program Control  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

APR 19 '78 085497

INTERIM REPORT  
ON  
SPOT WELDING OF STRUTS  
FOR  
SUSQUEHANNA STEAM ELECTRIC STATION  
UNITS 1 AND 2

Prepared by: *Arman Gaf*

Checked by: *J. W. Roberts*

Approved by:

Project Engineer *J. R. Schmidt / JRS*

Project Manager *M. K. Miller / KSA*

BECHTEL POWER CORPORATION

SAN FRANCISCO, CALIFORNIA

April 19, 1978

APR 19 '78 085497

INTERIM REPORT

ON

SPOT WELDING OF STRUTS

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ON

## SPOT WELDING OF STRUT MEMBERS

1.0 PURPOSE

The purpose of this interim report is to provide available information pursuant to 10CFR 50.55(e), concerning the deficiencies observed in spot welding of struts.

2.0 BACKGROUND

Strut members are light gage channels and are produced by cold rolling mild steel strip. The strut members used on Susquehanna Project are manufactured by Unistrut, Wayne, Michigan; Power Strut, Division of Van Huffel Tube Corporation, Warren, Ohio and B-Line, Systems Incorporated, Highland, Indiana. The basic member produced is a channel section. These channel sections are sometimes connected to each other in various configurations such as back to back, back to side, or side to side by using a welding process commercially known as spot welding or resistance welding. This process essentially consists of passing high current through the thicknesses of adjoining members resulting in metal to metal fusion.

The channel sections and/or built-up sections are used in field fabricated supports for safety related electrical raceways, HVAC ducts and instrumentation panels, and the governing specification or drawing is 8856-E-53, 8856-M-323-C and JG-16, respectively.

3.0 DESCRIPTION OF DEFICIENCY

Recently there have been a few instances on other nuclear projects where the spot welding was observed to be inadequate resulting in separation of the adjoining members. Therefore, on March 25 & 26, 1978, an inspection was performed on the Unistrut member P1004A and its equivalent by Power Strut and B-Line used in the installed electrical raceway and HVAC duct supports. The method of inspection consisted of 'sounding' the members with a ball peen hammer to detect separated spot welds and verification of the separation by insertion of a card between the members at the spot welds. The inspection results indicated a rather high incidence of spot welds with inadequate fusion. Therefore, project Quality Assurance (QA) issued Management Corrective Action Report (MCAR) 1-23 on March 28, 1978.



#### 4.0 ANALYSIS OF SAFETY IMPLICATIONS

Various combinations and configurations of channel struts have been used in the support systems. Individual members have been designed as composite sections for which the connection (spot welding used in this instance) between adjoining channels is essential to carry the postulated loads within established design margins. Thus, inadequate fusion at the spot welding may result in inadequate strength, and may adversely affect the safe operation of the plant under design loading conditions.

#### 5.0 CORRECTIVE ACTION

Presently, the deficiency has been observed only for the members with side plates spot welded to the side of a channel (Unistrut P-1004A or its Power Strut or B-Line equivalent). However, it appears that the deficiency may be generic and related to spot welding technique and/or procedure, irrespective of the configuration of the members or the manufacturer. Based upon above, the following action is planned:

##### 5.1 For installed supports.

Spot welded members will be evaluated based on inspection and/or testing of randomly selected representative samples. Members found to contain deficiencies will be either replaced or repaired. Repair procedures, if required, will be developed later.

##### 5.2 Strut members with side plates which are presently being installed.

On the assumption that spot welding may be totally ineffective, replacement of the equivalent weld capacity is being provided as an interim measure. This will continue until the scope of the problem is established, test results are evaluated and final repair procedure, if required, is instituted.

##### 5.3 For the strut members at the jobsite which have not yet been fabricated into supports.

This material will be inspected and tested, and will be repaired or returned to the manufacturer, if required.

## 5.4 Corrective action to prevent recurrence.

Surveys of the three manufacturing facilities will be conducted to evaluate current welding techniques and procedures and the adequacy of present quality assurance programs. Based upon the findings of these surveys, we will require the manufacturer to institute corrective actions to provide adequate assurance regarding the quality of spot welding.

6.0 REMARKS

Until sufficient data and information are gathered and a preliminary assessment based upon this data is made, a firm date for submittal of a final report can not be established. However, Bechtel expects that this report will be available in June, 1978.