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REGION V I&E

December 5, 1983
ANPP-28350-BSK/KCP

U. S. Nuclear Regulatory Commission
Region V
Creekside Oaks Office Park
1450 Maria Lane - Suite 210
Walnut Creek, CA 94596-5368

Attention: Mr. T. W. Bishop, Director
Division of Resident
Reactor Projects and Engineering Programs

Subject: Final Report - DER 83-37
A 50.55(e) Reportable Condition Relating to Missed Factory Operations on Unit 3 Steam Generator No. 2
File: 83-019-026; D.4.33.2

Reference: A) Telephone Conversation between A. D'Angelo and R. Tucker on June 28, 1983
B) ANPP-27368 dated July 22, 1983 (Interim Report)
C) ANPP-28160 dated November 2, 1983 (Time Extension)

Dear Sir:

Attached is our final written report of the Reportable Deficiency under 10CFR50.55(e), referenced above.

Very truly yours,

E. E. Van Brunt, Jr.
APS Vice President,
Nuclear Projects Management
ANPP Project Director

EEVB/KCP:sls
Attachment

cc: See Page Two

IE-27

1/1

cc: Richard DeYoung, Director
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U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

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Mr. C. Ferguson
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Windsor, Connecticut 06095

FINAL REPORT - REVISION ONE - DER 83-37
DEFICIENCY EVALUATION 50.55(e)
ARIZONA PUBLIC SERVICE COMPANY (APS)
PVNGS UNIT 3

I. DESCRIPTION OF DEFICIENCY

As committed by the corrective action of DER 81-43, the Unit 3 Steam Generators were inspected as follows:

a. Entry by Bechtel into the Unit 3 Steam Generator No. 2 disclosed Combustion Engineering (C-E) Chattanooga delivered the item with missed factory operations as documented by NCR ZC-010.

Dryer Region Upper Side

- o There are 12 nuts that do not have full thread engagement from the bolts that come up from the bottom of the dryer support beams.
- o The two steam outlet nozzles have low pressure taps that have stainless steel elbows seal welded to the I.D. of the nozzles. The welds are cracked approximately one-half way around each fitting.
- o Inspection of channel/beam fillet welds revealed 21 have crater cracking.
- o Approximately 50% have the lock washers used in bolting dryers to channels do not have solid backing behind the locking joint.
- o On one beam, piece #273-350IL, there is a 6" long cut that appears to be a false start on cutting the beam.
- o Approximately 50% of the nuts, piece #273-3503, that go between the dryer assemblies have been installed backwards.
- o Two bolts, piece 273-3514, were found not to be tight against the support beam.
- o While removing the steam separators, eight of the orifice plates were found to be loose.
- o Dryer deck area is not clean, appears debris was generated during fitup and welding of steam outlet piping.
- o Two steam dryer corner welds were found to be separated from base metal.

b. Inspection by Bechtel of the secondary side of the Unit 3 Steam Generator No. 1 disclosed the following discrepancies related to CE factory operations as documented by NCR ZC-012.

Dryer Deck

- Two arc strikes were found on the vessel wall. One strike approximately 1/4" in diameter. The other is an arc strike "trail" 1/16" wide approximately 3" long. Both are surface indications with no burn-in depth.
- Nine 1/2" hex nuts, PC# 273-3503 Section F-F on Dwg. 271-020, are not tack welded.
- Three arc strikes were found on the steam outlet nozzle projections. Maximum of 1/8" diameter with no depth.
- Some areas of the dryer deck were not clean. A large amount of burned paper was found under the steam outlet nozzles. This material was used during field welding of the steam piping.

Can Deck

- Inspection of the channel/beam fillet welds seam, #2006-271 revealed 36 with crater cracking. Also, one weld has cracking that extends the entire length of the weld.
- Nine dryer drain pipes are loose.
- Weld #1503-271 on PC #286-228, (feedwater "candy cane" coupling) is missing. The candy canes are loose at the coupling and will require tightening prior to making the tack weld.
- Approximately 50% of the lockwashers used in bolting dryers to channels will have to be rotated to have a solid backing behind the locking joint. In addition, several of the slotted holes have been enlarged leaving insufficient plate on which to seat the washer.
- One steam dryer weld (3206-273) was found separated.
- One Dwg. 79273-271-021, Detail "U", weld #2101-271 is missing.
- One area approximately 6" square of weld splatter located on vessel wall. The area is at the 180° end of the first beam inside the 90° manway.
- Dust and foreign material accumulation beneath the steam dryers.

II. ANALYSIS OF SAFETY IMPLICATIONS

Bechtel requested assistance from C-E in evaluating and dispositioning these conditions. The attached C-E letter provides an evaluation for each defect and indicates that C-E considers the condition to be not reportable under the requirements of 10CFR50.55(e).

However, Bechtel has evaluated this condition as well as DER 81-43 as reportable under the requirements of 10CFR50.55(e) as a breakdown in the C-E Quality Assurance Program. The evidence has required the project to conduct an extensive and costly inspection program to assure that all the Steam Generators are properly assembled. Prudent and conservative judgement indicated that the conditions could not remain uncorrected and still have adequate assurace that the defects would not impair the safety functions of the equipment under any postulated condition.

III. CORRECTIVE ACTION

A. All the identified nonconformances found in Unit 3, will be considered as a extension of the corrective action required for DER 81-43. NCR's ZC-010 and ZC-012 will be dispositioned to repair defects as required.

B. A copy of this report will be transmitted to C-E for their information.

C-E Power Systems
Combustion Engineering, Inc.
1000 Prospect Hill Road
Windsor, Connecticut 06095

Tel 203/688-1911
Telex 99297

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8-10407
N-L-01
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ATTACHMENT TO DER 83-37

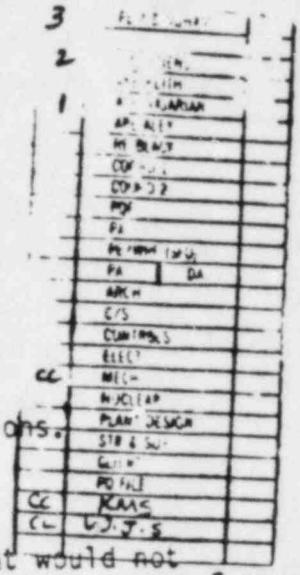
POWER SYSTEMS

V-CE- 19843
September 1, 1983

Mr. W. G. Bingham
Bechtel Power Corporation
12400 East Imperial Highway
Norwalk, CA 90650

RESPONSE TO (B/CE-E-45169)

Subject: DER 83-37, Rev. 0 and Rev. 1



cc R. W. WELCHER
cc K. J. STANLEY

Dear Mr. Bingham:

The subject DER's have been reviewed with the following conclusions.

Dryer Region Upper Side Steam Generator #2

1) The twelve (12) bolts that do not have full thread engagement would not jeopardize the structural integrity of the dryer supports.

2) The cracked seal welds do not impact the performance of the steam generator.

3) The cracked channel to beam fillet welds do not effect the dryer deck support integrity.

4) The dryers are all bolted together so that even if the dryer to channel bolts are loose the dryers can not move.

5) The cut in the support beam does not jeopardize the supports.

6) The holding ability of the bolt/nut assembly is not effected by reversing the nut.

7) The correct bolt number is 273-3514. The nut 273-3503 is tack welded to the bolt so it can not back off and become a loose part.

8) Proper operation of the steam separators does not require the orifice plates to be welded in place.

9) The area should be returned to the Class "C" cleanliness as shipped.

10) The slight steam by passing caused by the incomplete corner welds on the dryers will not effect the dryer performance.

Steam Generator #1 Dryer Deck

1) Since there was no burn-in depth the arc strikes will not cause any significant structural damage.

2) Even if the end angle to support plate is loose, the dryers can not move since they are bolted to each other and to the support channel.

3) See (1) above.

4) See (9) SG #2.

Can Deck

1) See (3) SG #2.

2) The loose dryer drain pipes will not effect the performance of the steam generator.

3) The loose candy-cane union will not effect the performance of the steam generator.

4) See (4) SG #2.

5) See (10) SG #2.

6) Leakage from around weld 2101-271 will not effect performance of the steam generator.

7) The weld splatter will not cause any structural damage.

8) See (9) SG #2.

Additional Comment

Any loose nuts or bolts from the can deck area will in all probability come to rest on the separator support plate. In the event that they miss the separator plate, they will fall into the tube sheet where they can be removed. If the upper portion of a candy-cane comes loose it is too large to enter the shell/baffle annulus. The union nut, if it comes loose, will fall to the top of the economizer box and come to rest.

In C-E's opinion, the deficiency is not reportable under 10CFR 50.55(e). C-E's evaluation was performed in accordance with our Quality Assurance of Design Manual as indicated by FAR No. 14473-86 (Unit 3). These documents are available for review at the C-E Windsor office.

Very truly yours,

C. Ferguson,
Project Manager

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V-PSP-884
F47577
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