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 CONWAY, W.F. Arizona Public Service Co. (formerly Arizona Nuclear Power
 RECIP. NAME RECIPIENT AFFILIATION
 Document Control Branch (Document Control Desk) *See Reports*

SUBJECT: Forwards "Palo Verde Nuclear Generating Station Unit 2 SG
 Tube Rupture Analysis Rept," as result of task force review
 of 930314 SG tube rupture originally described in LER
 93-001-00. Encl partially withheld (ref 10CFR2.790(b)(1)).

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102-02569-WFC/JRP

July 18, 1993

**WILLIAM F. CONWAY
EXECUTIVE VICE PRESIDENT
NUCLEAR**

**U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
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Washington, DC 20555**

- Reference:
- 1) Letter 192-00337, dated April 13, 1993, from
J. M. Levine, Vice President, Nuclear Production, APS
to USNRC
 - 2) Letter 212-01016, dated June 2, 1993, from
W. F. Conway, Executive Vice President, Nuclear, APS
to USNRC
 - 3) Letter dated June 4, 1993, from B. H. Faulkenberry,
Regional Administrator, USNRC Region V, to W. F. Conway,
Executive Vice President, Nuclear, APS
 - 4) Letter dated June 25, 1993, from C. M. Trammell, Senior Project
Manager, Project Directorate V, Office of NRR, USNRC, to
W. F. Conway, Executive Vice President, Nuclear, APS

Dear Sirs:

**Subject: Palo Verde Nuclear Generating Station (PVNGS)
Unit 2
Docket No. STN 50-529
Steam Generator Confirmatory Action Letter
File: 93-056-026**

On March 14, 1993, Palo Verde Nuclear Generating Station (PVNGS), Unit 2 experienced a steam generator tube rupture. Details of this event were provided in Licensee Event Report 93-001-00, (Reference 1). Following this event, Arizona Public Service Company (APS) formed a task force to perform a comprehensive root cause of failure analysis and to develop an extensive inspection plan for both Unit 2 steam generators. The task force is composed of APS personnel and various industry personnel with vast experience in steam generator technology.

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APS has taken aggressive action to determine the root cause of the tube rupture, including 100% eddy current inspection in both steam generators using bobbin coil and approximately 35% eddy current inspection using motorized rotating pancake coil. This 35% represents 100% of the tubes identified in the area of concern and various random tube groups outside of the area of concern. In addition, APS has completed extensive laboratory analysis of the failed tube, as well as seven other tubes that were removed from steam generator #2.

Many conference calls have been conducted between APS and the NRC to discuss the status of the investigation. In addition, APS has met with the NRC on three occasions to provide the results of APS' activities. These conference calls and meetings have been helpful in communicating information as it was evolving.

APS has completed the eddy current inspections, the laboratory analysis and determination of the potential causes of the tube rupture. In accordance with APS letter dated June 2, 1993 (Reference 2), and NRC's Confirmatory Action Letter dated June 4, 1993 (Reference 3), enclosed for NRC review is a report which contains the results of APS' investigation into the root cause of the steam generator tube rupture, corrective actions, and the basis for restart of Unit 2. This report supersedes the preliminary information previously submitted to the staff under separate correspondence (see Enclosure 1).

In response to the NRC letter dated June 25, 1993 (Reference 4), APS is also evaluating additional failure scenarios including initiating events of a single tube rupture, multiple tube ruptures, and the potential for induced single and multiple tube ruptures due to secondary side depressurization transients. APS is using the guidance provided by the NRC in Draft NUREG-1477, for this evaluation. This additional information will be provided to the NRC under a separate cover letter in accordance with the schedule agreed to by APS and the NRC.

Based on the crack growth rate analysis which used the guidance provided in Regulatory Guide 1.121, APS proposes that the next Unit 2 steam generator tube inspection be performed prior to exceeding approximately six months of full power operation. The analysis for this determination can be found in Section X of the enclosed report.

A meeting has been tentatively scheduled for July 26, 1993, to respond to any additional NRC questions and to facilitate NRC review. APS requests NRC review of the enclosed report by August 2, 1993, in order to allow restart (Mode 2 entry) of Unit 2 on August 6, 1993.

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Following this meeting, APS will have completed the actions addressed in the NRC Confirmatory Action Letter.

Pursuant to Section 2.790(b)(1) of the regulations of the NRC, APS herewith submits an affidavit for consideration by the commission in determining whether information sought to be withheld from public disclosure, included in the attached report, should be withheld.

Should you have any questions, please contact Thomas R. Bradish at (602) 393-5421.

Sincerely,



WFC/TRB/JRP/bcf

Enclosures

- 1: Correspondence List
- 2: Unit 2 SG Tube Rupture Report

cc: B. H. Faulkenberry
C. M. Trammell
J. A. Sloan

AFFIDAVIT PURSUANT

TO 10 CFR 2.790

Combustion Engineering, Inc.)
State of Connecticut)
County of Hartford) SS.:

I, S. A. Toelle, depose and say that I am the Manager, Nuclear Licensing, of Combustion Engineering, Inc., duly authorized to make this affidavit, and have reviewed or caused to have reviewed the information which is identified as proprietary and referenced in the paragraph immediately below. I am submitting this affidavit in conjunction with the application of Arizona Public Service Company in conformance with the provisions of 10 CFR 2.790 of the Commission's regulations for withholding this information.

The information for which proprietary treatment is sought is contained in the following document:

Enclosure Section VI, "Thermal Hydraulic Model for Quality/Velocity Distribution," (Figures VI-c through VI-m, VI-2, and VI-3) dated July 1993.

This document has been appropriately designated as proprietary.

I have personal knowledge of the criteria and procedures utilized by Combustion Engineering in designating information as a trade secret, privileged or as confidential commercial or financial information.

Pursuant to the provisions of paragraph (b) (4) of Section 2.790 of the Commission's regulations, the following is furnished for

consideration by the Commission in determining whether the information sought to be withheld from public disclosure, included in the above referenced document, should be withheld.

1. The information sought to be withheld from public disclosure, which is owned and has been held in confidence by Combustion Engineering, is the thermal-hydraulic design parameters of the System 80® steam generators.
2. The information consists of test data or other similar data concerning a process, method or component, the application of which results in substantial competitive advantage to Combustion Engineering.
3. The information is of a type customarily held in confidence by Combustion Engineering and not customarily disclosed to the public. Combustion Engineering has a rational basis for determining the types of information customarily held in confidence by it and, in that connection, utilizes a system to determine when and whether to hold certain types of information in confidence. The details of the aforementioned system were provided to the Nuclear Regulatory Commission via letter DP-537 from F. M. Stern to Frank Schroeder dated December 2, 1974. This system was applied in determining that the subject document herein is proprietary.

4. The information is being transmitted to the Commission in confidence under the provisions of 10 CFR 2.790 with the understanding that it is to be received in confidence by the Commission.
5. The information, to the best of my knowledge and belief, is not available in public sources, and any disclosure to third parties has been made pursuant to regulatory provisions or proprietary agreements which provide for maintenance of the information in confidence.
6. Public disclosure of the information is likely to cause substantial harm to the competitive position of Combustion Engineering because:
 - a. A similar product is manufactured and sold by major pressurized water reactor competitors of Combustion Engineering.
 - b. Development of this information by C-E required tens of thousands of manhours and millions of dollars. To the best of my knowledge and belief, a competitor would have to undergo similar expense in generating equivalent information.
 - c. In order to acquire such information, a competitor would also require considerable time and inconvenience to determine the thermal-hydraulic design parameters of the System 80[®] steam generators.

- d. The information required significant effort and expense to obtain the licensing approvals necessary for application of the information. Avoidance of this expense would decrease a competitor's cost in applying the information and marketing the product to which the information is applicable.
- e. The information consists of the flow distribution and thermal-hydraulic performance of the System 80° steam generators, the application of which provides a competitive economic advantage. The availability of such information to competitors would enable them to modify their product to better compete with Combustion Engineering, take marketing or other actions to improve their product's position or impair the position of Combustion Engineering's product, and avoid developing similar data and analyses in support of their processes, methods or apparatus.
- f. In pricing Combustion Engineering's products and services, significant research, development, engineering, analytical, manufacturing, licensing, quality assurance and other costs and expenses must be included. The ability of Combustion Engineering's competitors to utilize such information without similar expenditure of resources may enable them to sell at prices reflecting significantly lower costs.
- g. Use of the information by competitors in the international marketplace would increase their ability to market nuclear steam supply systems by reducing the costs associated with

their technology development. In addition, disclosure would have an adverse economic impact on Combustion Engineering's potential for obtaining or maintaining foreign licensees.

Further the deponent sayeth not.

S. A. Toelle

S. A. Toelle
Manager
Nuclear Licensing

Sworn to before me
this 14th day of July, 1993

Laurie J. White
Notary Public

My commission expires: 3/31/94

ENCLOSURE 1
CORRESPONDENCE LIST

CORRESPONDENCE LIST

Letter 102-02567, dated July 13, 1993, from T. R. Bradish, Manager Nuclear Regulatory Affairs, APS, to USNRC.

Letter 102-02566, dated July 12, 1993, from T. R. Bradish, Manager Nuclear Regulatory Affairs, APS to USNRC.

Letter 102-02559, dated July 6, 1993, from T. R. Bradish, Manager Nuclear Regulatory Affairs, APS to USNRC.

Letter 102-02553, dated June 29, 1993, from T. R. Bradish, Manager Nuclear Regulatory Affairs, APS to USNRC.

Letter 102-02546, dated June 23, 1993, from T. R. Bradish, Manager Nuclear Regulatory Affairs, APS to USNRC.

Letter 102-02544, dated June 22, 1993, from T. R. Bradish, Manager Nuclear Regulatory Affairs, APS to USNRC.

Letter 102-02541, dated June 18, 1993, from T. R. Bradish, Manager Nuclear Regulatory Affairs, APS to USNRC.

Letter 102-02540, dated June 18, 1993, from T. R. Bradish, Manager Nuclear Regulatory Affairs, APS to USNRC.

Letter 102-02538, dated June 16, 1993, from T. R. Bradish, Manager Nuclear Regulatory Affairs, APS to USNRC.

Letter 102-02537, dated June 16, 1993, from T. R. Bradish, Manager Nuclear Regulatory Affairs, APS to USNRC.

Letter 102-02533, dated June 14, 1993, from T. R. Bradish, Manager Nuclear Regulatory Affairs, APS to USNRC.

Letter 102-02534, dated June 11, 1993, from T. R. Bradish, Manager Nuclear Regulatory Affairs, APS to USNRC.

