

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8412100250 DOC. DATE: 84/12/03 NOTARIZED: YES DOCKET #
 FACIL: STN-50-528 Palo Verde Nuclear Station, Unit 1, Arizona Public Service Co. 05000528
 AUTH. NAME: VAN BRUNT, E.E. AUTHOR AFFILIATION: Arizona Public Service Co.
 RECIP. NAME: KNIGHTON, G.W. RECIPIENT AFFILIATION: Licensing Branch 3

SUBJECT: Forwards proprietary & nonproprietary Phase I & II software verification test repts & core protection calculator/control element assembly calculator data base listing. Proprietary versions withheld (ref 10CFR2.790). *566 SUBJ*

DISTRIBUTION CODE: PB01D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 8+239
 TITLE: Proprietary Review Distribution - Pre OL *File for CER 217 Ptmp*

NOTES: Standardized plant.

05000528

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	NRR LB3 BC	1 0	NRR LB3 LA	1 0
	LICITRA, E. <i>#2</i>	1 1		
INTERNAL:	ACRS <i>#3 thru #13</i>	10 10	ELD/HDS3	1 0
	NRR DIR	1 0	REG FILE <i>#1</i>	1 1
	RGNS <i>#3</i>	1 1	RM/DDAMI/MIB	1 0
EXTERNAL:	LPDR	1 0	NRC PDR	1 0
	NTIS	1 0		

Add: NRR/C PB $\frac{Ltr}{2}$ $\frac{Encl}{2}$ *#14 & 15*
Prop + NP

W/holding granted per col req 7/22/86

*Change: BNL PDR } Non
 DMB NTIS } Prop
 FEMA NSIC } Only
 LPDR } IS Applicable*

*E. Licitra
 Extra Cys
 #16 thru #25*

TOTAL NUMBER OF COPIES REQUIRED: LTR

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Arizona Public Service Company

Director of Nuclear Reactor Regulation
Attention: Mr. George W. Knighton, Chief
Licensing Branch No. 3
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

December 3, 1984
ANPP-31282 TFQ/KLM

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Unit 1
Docket No. STN-50-528
PVNGS Unit 1 CPC/CEAC Software
File: 84-056-026; G.1.01.10

Dear Mr. Knighton:

Enclosed for your review are PVNGS Unit 1 Phase I and II Software Verification Test Reports and the CPC/CEAC Data Base listing documents for Core Protection Calculator (CPC) System Software Revision 01. The Revision 01 software incorporates the following modifications:

- (1) Flow constants due to Reactor Coolant Pump design modification.
- (2) DNBR setpoint change.
- (3) High Pressurizer Pressure setpoint change.
- (4) CEAC out-of-service penalty factor changes.
- (5) CEAC penalty factor changes for Rod Drop Desensitization.
- (6) EXECUTIVE changes for power-up and CEAC Display problems.

A brief description of and reason for each of these six changes are as follows:

- (1) Flow constants...

The flow constants incorporated in the CPC System Software were amended to reflect design modifications to the Reactor Coolant Pumps.

- (2) DNBR setpoint...

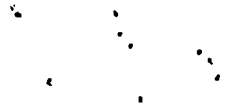
Enclosure 1-P to LD-82-054, "Statistical Combination of Uncertainties," was submitted by Combustion Engineering on the CESSAR docket to justify a lower DNBR setpoint. While the NRC reviewed this documentation, Revision 00 of the CPC System Software was formulated incorporating a conservative DNBR setpoint of 1.25. Subsequently, your review has been completed and a DNBR setpoint of 1.231 has been approved (see section 4.4.6.1(d) of NUREG-0852, Supplement No. 2). This approved value is incorporated into Revision 01 Modifications.

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PDR ADOCK 05000528
A

etc Each
Add: NRR/CPO 2 2
Prof + DP
Extra Cys M. Licitra

PS01
125P
15 DP

Change: BAN
DAB
FEMA
LPDR
POR
NTIS
NSIC
Non Prop
Only
if Applicable



100-1000



(3) High Pressurizer...

The high pressurizer pressure setpoint is contained in the CPC System Software to ensure that the Critical Heat Flux Correlation is utilized in its applicable pressure range. As delineated in CENPD-162-P-A (September, 1976), "C-E Critical Heat Flux", the applicable pressure range of the CE-1 correlation is 1785 psi to 2415 psi. The initial setpoint was set prohibitively low such that normal load follow operations could result in plant trips. A higher allowable pressure range (1861 psi to 2388 psi) is incorporated into the Revision 01 Software.

(4) CEAC out-of-service...

The Technical Specifications were adjusted to require a 15% power reduction within one hour of a CEA deviation event when the CEAC is Out-Of-Service (OOS). The one hour time delay permits off-line calculations of the OOS CEAC penalty factors for COLSS and the CPC's. This penalty factor accounts for the immediate power redistribution caused by the CEA deviation event. The 15% reduction in power accommodates any XENON related power redistributions. If both COLSS and CEAC are OOS, an additional penalty is provided to the CPC to ensure that adequate thermal margin is maintained. This software modification was made to ensure that the CPC software is consistent with the most recent Technical Specification submittals.

(5) CEAC penalty...

No credit was taken for the single inward deviation CEAC penalty factors in the Revision 00 software. The Revision 01 software takes credit for these penalties and thus allows for some rod drops without a reactor trip. This modification of the CPC software is essentially the same as the one currently being reviewed by the NRC for San Onofre Nuclear Generating Station, Unit 2 and Unit 3.

(6) EXECUTIVE changes...

The CEAC display coding was modified to enhance the CRT grid display and the display of CEA deviation information.

The Executive system was modified to improve the internal testing process (CPC System Monitor Task), to improve the auto-restart process caused by a loss of power, and to stabilize the Operator's Module digital display.



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Mr. George W. Knighton
PVNGS Unit 1 CPC/CEAC Software

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Page 3

ANPP requests your review and acceptance of these test reports by February 1, 1985. Although these changes are not required for fuel load, approval by the above date would allow the Revision 01 software to be used throughout the pre-operational testing program and provide additional testing and confidence in the PVNGS Core Protection Calculator System. We will be available to provide any assistance necessary to expedite this review.

The attachments are as follows:

- (1) PVNGS-1 Cycle 1 CPC and CEAC Data Base Listing, CEN-251(V) P, Rev. 01, September 1984. Copies 00001-00025. & 15 NP copies;
- (2) PVNGS-1 CPC/CEAC System Phase II Software Verification Test Report, CEN-219(V)-P, Rev. 02, September 1984. Copies 00001-00025. & 15 NP copies;
- (3) PVNGS-1 CPC/CEAC System Phase I Software Verification Test Report, CEN-217(V)-P, Rev. 02, September 1984. Copies 00001-00025. & 15 NP copies;
- (4) Affidavit pursuant to 10CFR2.790.

The information enclosed is considered proprietary by Combustion Engineering and is described in and covered by the enclosed affidavit.

If you should have any questions, please contact me.

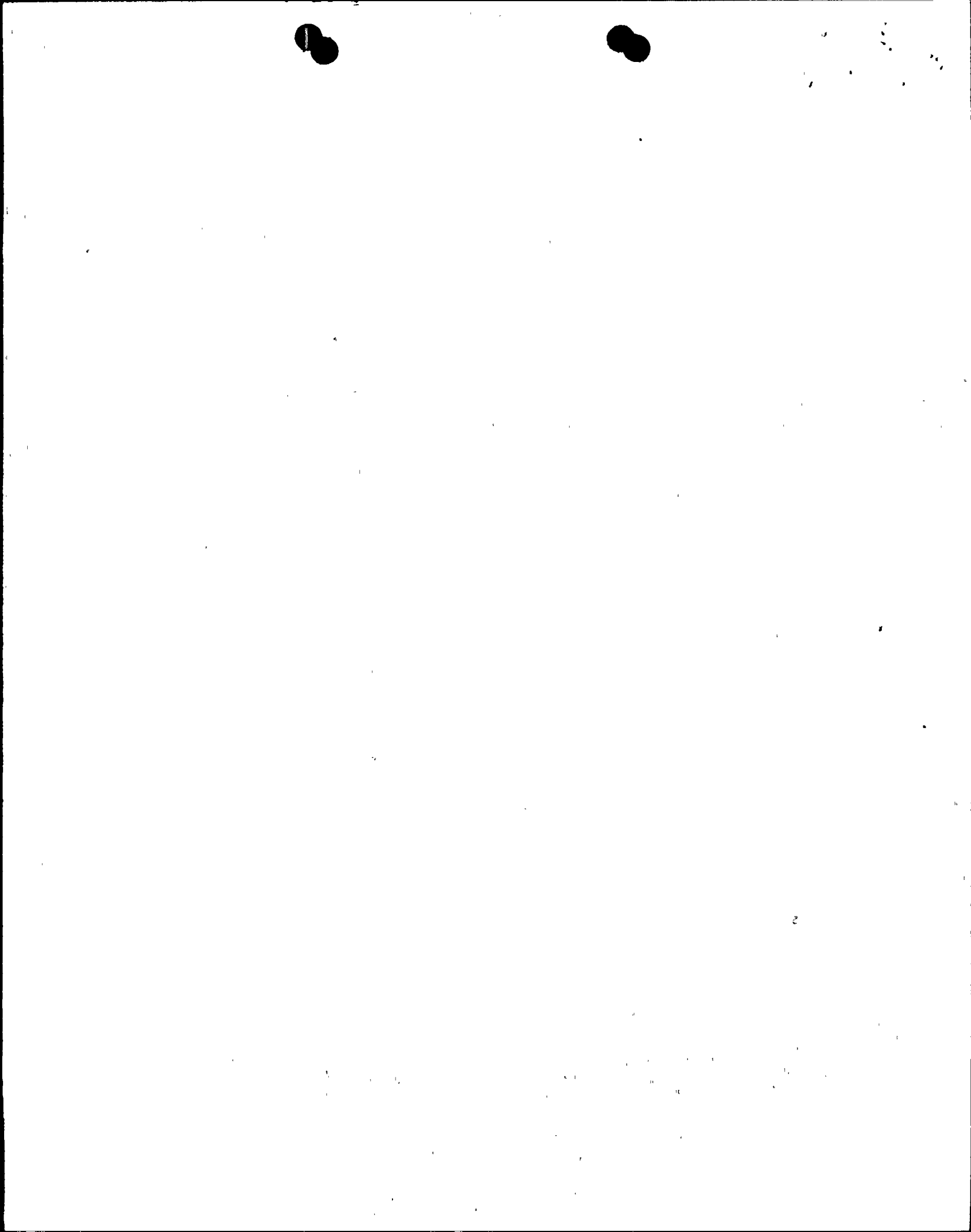
Very truly yours,



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

EEVBJr/KLM/no
Attachments


cc: E. A. Licitra
A. C. Gehr
R. P. Zimmerman



December 3, 1984
ANPP-31282

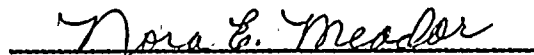
STATE OF ARIZONA)
) ss.
COUNTY OF MARICOPA)

I, Donald B. Karner, represent that I am Assistant Vice President, Nuclear Production of Arizona Public Service Company, that the foregoing document has been signed by me on behalf of Arizona Public Service Company with full authority to do so, that I have read such document and know its contents, and that to the best of my knowledge and belief, the statements made therein are true.



Donald B. Karner

Sworn to before me this 3rd day of December, 1984.



Notary Public

My Commission Expires:
My Commission Expires April 6, 1987

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AFFIDAVIT PURSUANT

TO 10 CFR 2.790

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

I, P. L. McGill, depose and say that I am the Vice President, Commercial, 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 conformance with the provisions of 10 CFR 2.790 of the Commission's regulations and in conjunction with the construction permit of Arizona Public Service Company for withholding this information.

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

CEN-217(V)-P, Revision 02, CPC/CEAC System Phase I Software Verification Test Report, September 1984.

CEN-251(V)-P, Revision 01, PVNGS-1 Cycle 1 CPC and CEAC Data Base Listing, September 1984.

CEN-219(V)-P, Revision 02, CPC/CEAC System Phase II Software Verification Test Report, September 1984.

These documents have 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.



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The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This ensures transparency and allows for easy verification of the data.

In the second section, the author outlines the various methods used to collect and analyze the data. This includes both manual and automated processes. The goal is to ensure that the information is both reliable and up-to-date.

The third part of the document provides a detailed breakdown of the results. It shows that there has been a significant increase in sales over the period covered. This is attributed to several factors, including improved marketing strategies and better customer service.

Finally, the document concludes with a series of recommendations for future actions. It suggests that the company should continue to invest in its marketing efforts and focus on building long-term relationships with its customers.

1. The information sought to be withheld from public disclosure is a description of the testing, quantitative data, test evaluation, and acceptance criteria for the CPS/CEAC system software, which is owned and has been held in confidence by Combustion Engineering.

2. The information consists of test data or other similar data concerning a process, method or component, the application of which results in a 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 are 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:

THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

PHYSICS 311

LECTURE 10

THE HARMONIC OSCILLATOR

1. Introduction

2. The Simple Harmonic Oscillator

3. The Quantum Harmonic Oscillator

4. The Anharmonic Oscillator

5. The Damped Harmonic Oscillator

6. The Driven Harmonic Oscillator

7. The Coupled Harmonic Oscillator

8. The Pendulum

9. The Spherical Pendulum

10. The Simple Pendulum

11. The Physical Pendulum

12. The Compound Pendulum

13. The Torsion Pendulum

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 man-hours of effort and hundreds of thousands 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 related to the development of a CPC/CEAC data base and testing of CPC/CEAC software.

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 a description of the testing, quantitative data, test evaluation, and acceptance criteria for the CPC/CEAC system software, 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

UNITED STATES DEPARTMENT OF JUSTICE

INVESTIGATION OF THE ACTS OF VIOLENCE COMMITTED BY THE KKK

REPORT OF THE SUBCOMMITTEE ON INVESTIGATION OF THE ACTS OF VIOLENCE COMMITTED BY THE KKK


HEARINGS

IN SENATE AND HOUSE OF REPRESENTATIVES

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 licenses.

Further the deponent sayeth not.



P. L. McGill
Vice President
Commercial

Sworn to before me

this *27th* day of *September* 1984



Notary Public

LYDIA A. SMITH, NOTARY PUBLIC

STATE OF CONNECTICUT No. 68542

COMMISSION EXPIRES MARCH 31, 1989



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