



31 March, 2000  
LD-2000-0023

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, D.C. 20555

**SUBJECT: SUBMITTAL OF CENPD-398-P, "ADVANCED PHOENIX AND POLCA  
CODES FOR APPLICATION TO PRESSURIZED WATER REACTORS"  
{PROPRIETARY INFORMATION ENCLOSED}**

- Reference(s): 1) Letter, I. C. Rickard (ABB CENP) to U.S. NRC Document Control Desk,  
"Submittal of CENPD-390-P for Review and Acceptance", LD-99-023,  
April 15, 1999
- 2) CENPD-390-P, "The Advanced PHOENIX and POLCA Codes for Nuclear  
Design of Boiling Water Reactors", April 1999
- 3) ABB Atom Nuclear Design and Analysis Programs for Boiling Water Reactors:  
Programs Description and Qualification, BR 91-042-P-A (PROPRIETARY),  
BR 403-NP-A (NON-PROPRIETARY), May 1991

ABB C-E Nuclear Power, Inc. (ABB CENP) is pleased to submit topical report CENPD-398-P, Rev. 000, "Advanced PHOENIX and POLCA Codes for Application to Pressurized Water Reactors", for Nuclear Regulatory Commission (NRC) review and approval. In accordance with NUREG-0390, Enclosure 1-P provides 15 proprietary copies (Nos. 1 to 15) of CENPD-398-P, Rev. 000 for NRC use in support of this ABB CENP request. Also provided herewith, Enclosure 2, are twelve (12) required non-proprietary versions (i.e., CENPD-398-NP, Rev. 000).

CENPD-398-P, Rev. 000 represents the next step in the evolution of the PHOENIX and POLCA code series (i.e., its progression from Boiling Water Reactor to Pressurized Water Reactor application). Previously, ABB CENP submitted CENPD-390-P, Rev. 000, "The Advanced PHOENIX and POLCA Codes for Nuclear Design of Boiling Water Reactors", for NRC review and acceptance (Reference 2). The information contained in CENPD-390-P, Rev. 000, was itself an out-growth of the PHOENIX and POLCA computer codes previously reviewed and accepted by the NRC; as documented in Reference 3. PHOENIX is a two-dimensional multi-group transport theory code that is used to calculate lattice physics constants for fuel assemblies. POLCA is a two-group nodal code for the three-dimensional simulation of the nuclear and thermal-hydraulic conditions in cores.

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The content of CENPD-398-P, Rev. 000 draws heavily on its sister document CENPD-390-P, Rev. 000. The principal difference between the two being in the provision of PWR application data in CENPD-398-P, Rev. 000. The underlying theoretical equations and implementing methodologies are identical. ABB CENP believes, therefore, that the NRC may be able to expedite the review of CENPD-398-P, Rev. 000 by similarly drawing heavily on its near complete review of the sister document, CENPD-390-P, Rev. 000, whose review completion is scheduled for April 2000.

The first application of the PHOENIX/POLCA PWR code system documented in CENPD-398-P, Rev. 000 will be for monitoring and simulation purposes at the Baltimore Gas & Electric Co. (BGE) Calvert Cliffs Nuclear Power Plant Units 1 and 2 (CCNPP 1&2). Specifically, core power distribution monitoring, in-core detector simulation and normal operation power maneuvering simulations. These units are scheduled for reload cycle startups in April of 2002 and 2003 that will employ the new code system. ABB CENP respectfully requests, therefore, that the NRC review and acceptance be completed no later than April 2001. The early approval date is requested to allow for potential shuffling of in-core instrumentation types that will be dependent on the results of the NRC review.

ABB CENP has determined that information contained in CENPD-398-P, Rev. 000 is PROPRIETARY in nature. As such, ABB CENP requests that the information contained in CENPD-398-P, Rev. 000 be safeguarded and withheld from public disclosure pursuant to 10 CFR 2.790. The reasons for this determination are documented in the proprietary affidavit provided in Enclosure 3.

If you have any questions concerning this matter, please do not hesitate to call Chuck Molnar of my staff at (860) 285-5205.

Very truly yours,  
ABB C-E NUCLEAR POWER, INC.



Ian C. Rickard, Director  
Nuclear Licensing

Enclosure(s): As stated

xc: w/o Enclosures

J. S. Cushing (NRC)  
M. W. Dicus (BGE)  
D. J. Moeller (BGE)  
A. D. Penna (BGE)  
J. P. Steelman (BGE)

**ABB C-E NUCLEAR POWER, INC.**

**CENPD-398-NP, "ADVANCED PHOENIX AND  
POLCA CODES FOR APPLICATION TO  
PRESSURIZED WATER REACTORS"**

**MARCH 2000**

**ABB C-E NUCLEAR POWER, INC.**

**Proprietary Affidavit**

**AFFIDAVIT PURSUANT**

**TO 10 CFR 2.790**

I, Ian C. Rickard, depose and say that I am the Director, Nuclear Licensing, of ABB C-E Nuclear Power, Inc. (ABB CENP), 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 for withholding this information.

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

CENPD-398-P, "Advanced PHOENIX and POLCA Codes for Application to Pressurized Water Reactors", March 2000

This document has been appropriately designated as proprietary.


I have personal knowledge of the criteria and procedures utilized by of ABB CENP 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, is owned and has been held in confidence by ABB CENP. It consists of the analytic methodology associated with the PHOENIX and PLOCA computer codes and their application to Pressurized Water Reactors (PWRs).
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 ABB CENP.
3. The information is of a type customarily held in confidence by ABB CENP and not customarily disclosed to the public. ABB CENP 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 that 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 ABB CENP because:
  - a. A similar product is manufactured and sold by major pressurized and/or boiling water reactor competitors of ABB CENP.
  - b. Development of this information by ABB CENP required hundreds of thousands of dollars and tens of thousands of man-hours of effort. 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 develop analytic methodology the same as or similar to the PHOENIX and POLCA computer codes and their application to Pressurized Water Reactors (PWRs).
  - d. The information consists of the analytic methodology associated with the PHOENIX and PLOCA computer codes and their application to Pressurized Water Reactors (PWRs), 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 ABB CENP, take marketing or other actions to improve their product's position or impair the position of ABB CENP's product, and avoid developing similar data and analyses in support of their processes, methods or apparatus.
  - e. In pricing ABB CENP's products and services, significant research, development, engineering, analytical, manufacturing, licensing, quality assurance and other costs and expenses must be included. The ability of ABB CENP's competitors to utilize such information without similar expenditure of resources may enable them to sell at prices reflecting significantly lower costs.
  - f. Use of the information by competitors in the international marketplace would increase their ability to market nuclear steam supply systems, nuclear fuel, analyses or other support services by reducing the costs associated with their technology development. In addition, disclosure would have an adverse economic impact on ABB CENP's potential for obtaining or maintaining foreign licensees.

Further the deponent sayeth not.

  
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Ian C. Rickard  
Director, Nuclear Licensing

Sworn to before me

this 31st day of March, 2000

Catherine P. Mc Carthy  
Notary Public

My commission expires: 11/31/03