



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

May 24, 1994

Docket Nos. 52-002 and 99900401

Mr. Charles B. Brinkman, Acting Director  
Nuclear Systems Licensing  
Combustion Engineering, Inc.  
1000 Prospect Hill Road  
Windsor, Connecticut 06095-0500

Dear Mr. Brinkman:

SUBJECT: NOTICE OF NONCONFORMANCE  
(NRC INSPECTION REPORT NO. 99900401/94-01)

This letter addresses the inspection of your facility at Windsor, Connecticut, conducted by Richard P. McIntyre, Billy H. Rogers, and Ronald K. Frahm of the Nuclear Regulatory Commission's (NRC's) Vendor Inspection Branch, Summer B. Sun of the Reactor Systems Branch, Joseph L. Staudenmeier of the Analytical Support Group, and Frederick R. Allenspach and Juan D. Peralta of the Performance and Quality Evaluation Branch on February 14 through 18, 1994. The details of the inspection were discussed with Regis A. Matzie, Vice President, Nuclear Systems Engineering and other members of the ABB Combustion Engineering Nuclear Systems (ABB-CE) staff during the inspection and at the exit meeting on February 18, 1994.

The purpose of the inspection was to determine if quality activities performed as part of the design of the System 80+ Advanced Light Water Reactor (ALWR) were conducted under the appropriate provisions of the ABB-CE 10 CFR Part 50, Appendix B, quality assurance program, as implemented by the most recent Quality Assurance Program Description (CENPD-210A, Revision 7A) that has been approved by the NRC and the "ABB-CENP System 80+ Quality Assurance Program Plan No. 18386-Q0-001," prepared for Department of Energy (DOE) Contract No. 92791.

The scope of the inspection included the review of ABB-CE Project Office Files for computer code input modeling and independent design verification for certain computer codes, and the review of certain ABB-CE Standard Safety Analysis Report (CESSAR-DC) Chapters 5, 6, 15, and 19 safety analyses calculations that will not be repeated if the Combined License (COL) applicant uses the certified design reference core fuel design, and the review of the safety depressurization system (SDS) system design calculations.

The results of the inspection indicate that ABB-CE had failed to adequately implement their QA program description in certain areas of the System 80+ design. Specifically, ABB-CE had not invoked the requirements of 10 CFR Part 50 Appendix B in purchase orders to its subcontractors Stone and Webster Engineering Corporation (SWEC), Duke Engineering and Services, Inc. (DESI),

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and ABB Impell Corporation for safety-related engineering services until fall of 1993. ABB-CE also had not performed any audits of SWEC to verify implementation of its QA program as related to work performed in support of System 80+. During the inspection ABB-CE stated that, although not specifically required by the purchase documents, most of the subcontractors' work was, in fact, performed under their Appendix B QA programs.

In addition, it was determined that ABB-CE had not performed independent design verification as described in the QA Topical Report and referenced in Chapter 17 of CESSAR-DC for the System 80+ design to date. Also, ABB-CE had not developed system design specifications. ABB-CE stated that independent design verification is to be performed and system design specifications are to be developed after the detailed design and contract award for a System 80+ plant from a U.S. utility. The inspectors did determine, based on the review of safety analyses and calculations, that, even though independent design verification had not been performed, the overall technical content of the calculations appeared to be well documented and technically adequate.

This issue was identified as an Unresolved Item during the exit meeting on February 18, 1994. Subsequent to the inspection, numerous conference calls and meetings were held with ABB-CE staff to discuss the NRC staff's concerns with ABB-CE's lack of independent verification of design calculations. In a letter dated April 26, 1994, ABB-CE described its proposed design verification process for design basis events. ABB-CE committed to perform design verification for the System 80+ Standard Plant for all non-repetitive safety analyses, both limiting and non-limiting, with the level of design verification being consistent with the safety significance of the analyses. Specifically, these non-repetitive safety analyses include all the design basis events analyses presented in chapters 5, 6, and 15; analyses that set safety-related design parameters, including those described in the Certified Design Material; and an Appendix 6B analysis performed to verify the System 80+ capability to safely handle a hypothetical small break LOCA-boron dilution event. The NRC staff finds the approach described in your April 26, 1994, letter acceptable and will review the implementation of your actions during a future inspection at ABB-CE.

Please provide us within 30 days from the date of this letter a written statement in accordance with the instructions in the enclosed Notice of Nonconformance. We will consider extending the response time if you can show good cause for us to do so.

The responses requested by this letter and the enclosed Notice of Nonconformance are not subject to the clearance procedures of the Office of Management and Budget as required by the Paperwork Reduction Act of 1980, Public Law No. 96-511.

Mr. Charles B. Brinkman

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In accordance with 10 CFR Part 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosures will be placed in the NRC's Public Document Room.

Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,

*Original Signed By*

R. W. Borchardt, Director  
Standardization Project Directorate  
Associate Directorate for Advanced Reactors  
and License Renewal  
Office of Nuclear Reactor Regulation

Enclosures:

1. Notice of Nonconformance
2. Inspection Report No. 99900403/93-01

cc: See next page

FOR DISTRIBUTION AND CONCURRENCE SEE NEXT PAGE

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OFFICE	VIB/DRIL <i>RPM</i>	VIB/DRIL <i>RPM</i>	VIB/DRIL	RPEB/DRIL	RSIB/DRIL
NAME	RMcIntyre	<del>BRogers</del>	RFrahm <i>R7</i>	FAllenspach	JPeralta <i>JP</i>
DATE	5/6/94	5/6/94	5/10/94	5/19/94	5/19/94
COPY DOC	<input checked="" type="checkbox"/> YES    NO	<input checked="" type="checkbox"/> YES    NO	<input checked="" type="checkbox"/> YES    NO	<input checked="" type="checkbox"/> YES    NO	<input checked="" type="checkbox"/> YES    NO

OFFICE	SRXB/DSS	VIB/DRIL <i>RPM</i>	VIB/DRIL	ASG/DSSA	SRXB/DSS <i>ste</i>	DRIL/NRR
NAME	SSun <i>SS</i>	UPotapovs	LNorrholm	JStaudenmeier <i>JS</i>	TCollins <i>TC</i>	RWessman <i>RW</i>
DATE	5/9/94	5/9/94	5/13/94	5/16/94	<i>CAC</i> 5/11/94	5/17/94
COPY DOC	<input checked="" type="checkbox"/> YES    NO	YES <input checked="" type="checkbox"/> NO	YES <input checked="" type="checkbox"/> NO	<input checked="" type="checkbox"/> YES    NO	YES <input checked="" type="checkbox"/> NO	YES <input checked="" type="checkbox"/> NO

OFFICE	DRIL/NRR <i>lm</i>	PDST/NRR
NAME	CERossi <i>CR</i>	WRBorchardt
DATE	<i>CR</i> 5/17/94	5/24/94
COPY DOC	YES    NO	<input checked="" type="checkbox"/> YES    NO

ABB-Combustion Engineering, Inc.

Docket Nos. 52-002 and  
99900401

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NOTICE OF NONCONFORMANCE

ABB-Combustion Engineering, Inc.  
Windsor, Connecticut

Docket Nos. 52-002  
99900401

Based on the results of a Nuclear Regulatory Commission (NRC) inspection conducted on February 14-18, 1994, it appears that certain of your activities were not conducted in accordance with NRC requirements.

- A. Criterion IV of Appendix B to 10 CFR Part 50, "Procurement Document Control," states in part that measures shall be established to assure that applicable regulatory requirements, design bases, and other requirements which are necessary to assure adequate quality are suitably included or referenced in the documents for procurement of material, equipment, and services.

Contrary to the above, ABB-Combustion Engineering Nuclear Systems (ABB-CE) failed to specify the applicable quality level, quality assurance program requirements, and 10 CFR Part 21 requirements on purchase order (PO) 9100100 to Duke Engineering Services, Incorporated, and PO 9201995 to ABB Impell Corporation, for safety-related engineering services performed from November 25, 1991, through December 23, 1993, and February 21, 1992, through November 12, 1992. In addition, ABB-CE failed to have a PO in place to Stone and Webster Engineering Corporation for safety-related engineering services performed from mid-1992 through September 1, 1993. (94-01-01)

- B. Criterion VII of Appendix B to 10 CFR Part 50, "Control of Purchased Material, Equipment and Services," states, in part, that measures shall be established to assure that purchased material, equipment, and services, whether purchased directly or through contractors and subcontractors, conform to the procurement documents and that the effectiveness of the control of quality by contractors and subcontractors shall be assessed at intervals consistent with the importance, complexity, and quantity of the product or services.

Contrary to the above, ABB-CE did not perform an audit to verify implementation of Stone and Webster Engineering Corporation's quality assurance program supporting the engineering services provided in accordance with ABB-CE purchase order 9309380 for the timeframe September 1, 1993, through the date of the inspection. (94-01-02)

Please provide a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555 with a copy to the Chief, Vendor Inspection Branch, Division of Reactor

Inspection and Licensee Performance, Office of Nuclear Reactor Regulation, within 30 days of the date of the letter transmitting this Notice of Nonconformance. This reply should be clearly marked as a "Reply to a Notice of Nonconformance" and should include for each nonconformance: (1) a description of steps that have been or will be taken to correct these items; (2) a description of steps that have been or will be taken to prevent recurrence; and (3) the dates your corrective actions and preventive measures were or will be completed.

Dated at Rockville, Maryland  
this \_\_\_\_\_ day of \_\_\_\_\_, 1994