



babcock & wilcox nuclear energy

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PROJ 776

April 1, 2010

BW-JAH- 2010-212

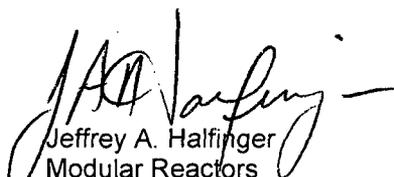
ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Response to NRC Regulatory Issue Summary 2010-03, "Licensing Submittal Information for Small Modular Reactor Designs"

Attached please find the Babcock & Wilcox Company (B&W) response to the subject NRC Regulatory Issue Summary 2010-03, "Licensing Submittal Information for Small Modular Reactor Designs," dated February 25, 2010.

B&W notified the U. S. Nuclear Regulatory Commission (NRC) on April 28, 2009 of its intent to submit an application for the Design Certification for the B&W *mPower*™ commercial Advanced Light Water Reactor, in accordance with the process defined in Title 10, Part 52, of the *Code of Federal Regulations*, "Licenses, Certifications, and Approvals for Nuclear Power Plants." B&W is continuing to advance the design, and is committed to submittal of an application for Design Certification for the B&W *mPower* reactor.

Questions concerning this submittal may be directed to T. J. Kim at 434-382-9791 (email: tjkim@babcock.com) or to Jeff Halfinger at 434-316-7507 (email: jahalfinger@babcock.com).


Jeffrey A. Halfinger
Modular Reactors
Program Director

JAH/

cc: Joelle L. Starefos, NRC, TWFN-6 E4
Stewart L. Magruder, Jr., NRC, TWFN-6 E4

Joelle Starefos Add to
Stewart Magruder ERIDS

YG01
NRD



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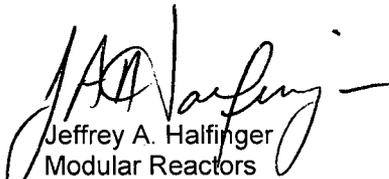
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Response To Regulatory Issue Summary 2010-003

DESIGN AND LICENSING SUBMITTAL INFORMATION

- **When (month and year) are applications planned for design-related applications and what NRC action will be requested (i.e., DC, DA, ML, or COL not referencing a DC or DA)?**

Babcock & Wilcox Company (B&W) intends to submit a Design Certification application for the B&W *mPower*TM reactor design. Based on our current program schedule, we anticipate the DCA submittal in 4th quarter of 2012.

- **Will the applicants be organized into DCWGs? If known, what is the membership of the DCWG and which party is the primary point of contact designated for each DCWG?**

A formal Design Centered Working Group has not yet been established for potential applicants for COL applications referencing the B&W *mPower*TM reactor design. However, a number of electric utility companies have expressed interest in the B&W *mPower*TM reactor design and design certification process, and have been participating with B&W in review of the design concept via an Industry Advisory Council. And four utilities including the Tennessee Valley Authority, First Energy Corporation, Oglethorpe Power Corporation, and another have entered into an agreement to form a consortium with B&W to support the design certification effort.

Within the framework of both the Consortium and the Industry Advisory Council, we have formed several working groups to provide a mechanism to solicit and incorporate the “end user’s perspective” during the design phase of the B&W *mPower*TM reactor development program. Four major electric utility companies participated in a recent Containment Working Group meeting held on March 25, 2010, at the B&W *mPower*TM reactor design engineering center in Lynchburg, Va.

We anticipate these working groups will evolve into the B&W *mPower*TM reactor-specific DCWG.

- **Have protocols been developed to provide coordinated responses for RAIs with generic applicability to a design center?**

Not yet applicable. See response to DCWG question.

- **Which applicant referencing the design will be designated as the reference COL (R-COL) applicant?**

Not yet applicable. See response to DCWG question.

- **When (month and year) will COL or ESP applications be submitted for review? In addition, what are the design, site location, and number of units at each site?**

Not yet applicable. See response to DCWG question. However, one of the consortium members has informed B&W of its tentative plans for submitting either an ESP application in 2012 or a COL application in 2013.

- **Are there vendors and/or consultants assisting in the preparation of the application(s)? If so, please describe roles and responsibilities for the design and licensing activities.**

The following companies are currently providing services to B&W:

- **Burns & Roe Enterprises, Inc.** – Balance of plant design;
- **Enercon Services, Inc.** – Licensing, design certification application development, and analytical services for accident and containment response analyses;
- **NovaTech** – Reactor systems analysis and design input, and accident and containment response analyses.

DESIGN, TESTING, AND APPLICATION PREPARATION

- **What is the current status of the development of the plant design (i.e., conceptual, preliminary, or finalizing)? Has a schedule been established for completing the design? If so, please describe.**

Conceptual design for the B&W *mPower* design is complete. Preliminary design is underway and will proceed in parallel with development of the design certification application. Final design activities may be advanced, as necessary, to support the design certification application and/or anticipated COL application(s).

- **What is the applicant's current status (i.e., planning, in progress, or complete) for the qualification of fuel and other major systems and components? Has a schedule been established for completing the qualification testing? If so, please describe.**

Test program planning is in progress. Most of the test programs are expected to begin in 2010:

- Control Rod Drive Mechanism Testing;
- Critical Heat Flux Correlation Testing;
- Fuel Separate Effects Testing;
- Integrated CRDM/Fuel Testing;
- Integrated Systems Testing;
- Reactor Coolant Pump Testing

Core design methodology, including core physics verification and fuel mechanical design methodology will be confirmed by a Topical Report currently scheduled for submittal in July 2010.

Core design thermal-hydraulics methodology will be confirmed as part of the CHF Topical.

- **What is the applicant's status (i.e., planning, in progress, or complete) in developing computer codes and models to perform design and licensing analyses? Has the applicant defined principal design criteria, licensing basis events, and other fundamental design/licensing relationships? Has a schedule been established for completing the design and licensing analyses? If so, please describe.**

B&W is planning to utilize internal B&W computer codes such as CASMO/Simulate for the reactor and fuel analyses. In addition, industry standard computer codes such as GOETHIC, RELAP, and TRACE will be used, as appropriate.

Principal design criteria, licensing basis events, and (as appropriate) other fundamental design/licensing relationships will be identified during the ongoing design work and preparation of the DCA. Design and licensing analyses will be completed in order to support the design certification application discussed above.

- **What is the applicant's status in designing, constructing, and using thermal-fluidic testing facilities and using such tests to validate computer models? Has a schedule been established for completing the thermal-fluidic testing? If so, please describe.**

An integrated systems test facility is being designed and developed; a vendor testing facility will be utilized for critical heat flux testing. As noted in the response to the qualification testing question, CHF testing is expected to begin in 2010, and integrated systems testing will begin in 2011. The planned integrated systems testing will be used (as needed) to validate the results of computer models for the B&W mPower reactor.

- **What is the applicant's status in defining system and component suppliers (including fuel), manufacturing processes, and other major factors that can influence design decisions? Has a schedule been established for identifying suppliers and key contractors? If so, please describe.**

Major primary system components (e.g., integral reactor vessel, steam generator, reactor internals including control rods and drives) will be provided from within the B&W family of companies. Whereas, it is expected that the reactor coolant pumps, the turbine-generator, and an integrated instrumentation and control system will be supplied by external entities. Identification of potential vendors is in progress, with decisions expected in 2010.

- **What is the applicant's status (i.e., planning, in progress, complete) for implementing a business model, including identifying and securing funding sources, for the completion of design, testing, and licensing activities?**

The B&W mPower project is an active, ongoing effort fully funded by B&W. Additional funding from other sources may be used going forward.

- **What are the applicant's current staffing levels (e.g., full time equivalent staff) working on the design and testing of the reactor design? Does the applicant have plans to increase staffing, and if so, please describe future staffing plans.**

Staffing for the B&W mPower project is currently in the range of 120 full-time equivalent (FTE) employees, including both B&W and principal contractors.

- **What are the applicant's current and future plans for the use of contractors to support plant design and testing (e.g., how many part-time and how many full-time contractors does or will the applicant employ)?**

The B&W mPower project design and licensing staff is an integrated team. The staffing levels quoted above indicate both B&W and subcontract support, both part-time and full-time employees.

WHITE PAPERS AND TECHNICAL/TOPICAL REPORTS

- **What are the applicant's plans regarding the submittal of white papers or technical/topical reports related to features of their design or the resolution of policy or technical issues? Has a schedule been established for submitting such reports? If so, please describe.**

B&W Letter BW-JAH-2009-209 to Dr. Michael E. Mayfield (NRC), dated December 17, 2009, provided a list of planned reports and tentative schedule for submitting the reports. Provided below is an updated list and tentative schedule. (We will inform the NRC staff as we periodically update our list of planned reports and schedule):

✓	QA Program Plan	March, 31, 2010 (actual submittal date)
-	mPower Design Description	April 2010 (target submittal date)
-	Critical Heat Flux Testing Plan	April 2010
-	Integrated Systems Testing Plan	June 2010
-	Core/Fuel Design Criteria & Analysis Methodology	July 2010
-	Accident Analysis Codes & Methodology	October 2010
-	CRDM Design/Testing Plan	October 2010
-	Multi-module Control Room & Operations Staffing	April 2011

- **For ESP applicants, will the applicant be seeking approval of either "proposed major features of the emergency plans" per 10 CFR 52.17(b)(2)(i), or "proposed complete and integrated emergency plans" per 10 CFR 52.17(b)(2)(ii)?**

Not applicable.