

August 11, 2009

MEMORANDUM TO: William D. Reckley, Branch Chief
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Advanced Reactor Program
Office of New Reactors

FROM: Thomas J. Kenyon, Senior Project Manager /RA/
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Advanced Reactor Program
Office of New Reactors

SUBJECT: SUMMARY OF PRE-APPLICATION KICK-OFF MEETING WITH
BABCOCK & WILCOX ON THE MPOWER REACTOR DESIGN AND
PROPOSED LICENSING ACTIVITIES

On July 7, 2009, staff from the U.S. Nuclear Regulatory Commission (NRC) met with representatives from the Babcock & Wilcox Company (B&W) to begin pre-application discussions on the mPower nuclear reactor design. This was the first technical meeting that the staff has had on the mPower design. Enclosures 1, 2, and 3 are the meeting agenda, attendees of the public meeting, and attendees of the closed portion of the meeting, respectively.

The meeting opened with a presentation on B&W's organization, a brief background on the development of the reactor design, and a high-level description of the reactor design. B&W's slide presentation can be obtained from the Commission's Public Document Room, at One White Flint North, 11555 Rockville Pike (first floor), Rockville, MD. It is also available electronically from the Public Electronic Reading Room found on the Internet at the following web address: <http://www.nrc.gov/reading-rm.html>. From this site, the public can gain access to the NRC's Agencywide Document Access and Management System (ADAMS), which provides text and image files of NRC's public documents in the Publicly Available Records (PARS) component of ADAMS. The ADAMS accession number for the presentation given during the public meeting is ML091910397.

In its opening remarks, B&W stated that the mPower design represents a revised approach to power production, in that it will provide a smaller, more affordable, and practical nuclear solution based on proven technology. Further, B&W indicated that they were trying to solve a particular known set of issues with nuclear power plants without creating a new set of issues. B&W then discussed their company's organization and industry partners that are affiliated with them. Representatives from the Tennessee Valley Authority and Dominion Nuclear indicated that they were in the process of evaluating the mPower design for inclusion in its power production infrastructure.

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B&W then provided an overview of the mPower design. Each 125 MWe reactor module consists of a self-contained assembly with the reactor core, reactor coolant pumps, and steam generators located in the reactor vessel. The mPower reactor employs control rods but no soluble boron for reactivity control. The reactor uses approximately one-half height light-water reactor (LWR) fuel rods (<5% enrichment) in a 17x17 array at 2000 psia. The reactor module uses a once-through steam generator and plans on a 5 year fuel cycle. The designer is still in the process of determining whether two modules will feed one turbine-generator through a common steam header.

B&W then discussed their proposed schedule, as follows:

- submit a design certification application in the fourth quarter of 2011
- submit a combined license application in 2013
- begin construction in 2015
- begin operations of the lead plant in 2018 – 2020

The NRC staff stated that B&W appeared to be applying an ambitious timeline based on review timelines for the large LWRs currently under review, and pointed out that the more the designer sought to push the envelope in the design, the more likely policy and key technical issues would be identified that could cause a delay in the proposed schedule. B&W indicated that they intended to avoid raising such issues with the mPower design. The designer indicated that they wanted to identify issues of concern early during a pre-application interaction with the staff through the submittal of topical reports. B&W indicated that they intend to follow the 10 CFR Part 52 licensing approach while minimizing exemptions to 10 CFR part 50 technical requirements. They suggested the staff could observe testing of the design at their test facilities.

B&W proposed to submit several topical reports addressing issues on the mPower design and meet approximately every three months to discuss the following topics:

- quality assurance
- human factors
- core design and analysis codes and methods
- reactivity control
- multi-mode control room design and staffing
- safety analysis
- testing program

The NRC staff stated that support for such pre-application reviews was limited by the availability of resources, and that its current reviews of combined license (COL) applications took priority over pre-application activities. The NRC staff was not involved in a lot of research and development activities, so B&W's commitment to avoid raising new issues with the mPower design was the appropriate direction to follow.

The staff indicated that when a submittal on a pre-application issue is submitted, it would look at the resources available to conduct the review to determine the level of support, if any, that could be assigned to it. The staff further indicated that it would try to support the pre-application

meetings, but may not be able to review the mPower submittals. With that in mind, B&W will need to prioritize the focus on those topical reports that are most important or are least resource intensive to the staff.

At the close of the meeting, B&W indicated that it felt that topics for upcoming meetings should be on testing and scaling analysis for the mPower design.

During the afternoon meeting, B&W discussed its new approach to the reactivity control systems for the mPower reactor in a session closed to the public because proprietary information was discussed. B&W stated that their approach will provide a passive approach to safety that meets the requirements of General Design Criteria 26, 27, and 29 and addresses 10 CFR 50.62. The ADAMS accession number for the non-proprietary version of the slide presentation is ML092030431, and the non-publicly-available proprietary version of the slides can be found at ML092030439.

Enclosures:
As stated

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**Meeting Agenda
Pre-Application Kickoff Meeting
mPower Reactor Design**

Tuesday, July 7, 2009
8:30 a.m. – 2:30 p.m.
NRC Church Street Building, Conference Room 6B01

<u>TIME</u>	<u>TOPIC</u>	<u>LEAD</u>
<i><u>The following discussions will be open to the public.</u></i>		
8:30 a.m. – 8:40 a.m.	Introduction and opening remarks	NRC/B&W
8:40 a.m. – 9:30 a.m.	Overview of B&W and Utility Support	B&W
9:30 a.m. – 10:30 a.m.	Introduction to mPower Design	B&W
10:30 a.m. – 10:45 a.m.	Break	
10:45 a.m. – 11:15 p.m.	Design status, licensing approach, and proposed schedule	B&W
11:15 a.m. – 11:30 a.m.	NRC feedback & next steps	All
11:30 a.m. – 11:45 p.m.	Opportunity for Public Comment	Public
11:45 p.m.	Adjourn	
<i><u>The following session will be closed to the public because proprietary information will be discussed.</u></i>		
1:00 p.m. – 2:00 p.m.	Special topics - Overall approach to safety - Reactivity control system	B&W
2:00 p.m. – 2:15 p.m.	NRC feedback	NRC
2:15 p.m. – 2:30 p.m.	Closing Statements	NRC/B&W
2:30 p.m.	Adjourn	

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