

December 20, 2013

COMPANY: BABCOCK & WILCOX MPOWER, INC

DESIGN: B&W MPOWER™ SMALL MODULAR REACTOR DESIGN

SUBJECT: SUMMARY OF MAY 21-22, 2013, CLOSED MEETING WITH BABCOCK & WILCOX MPOWER, INC. REGARDING MPOWER REACTOR CORE, FUEL MECHANICAL DESIGN UPDATE, CONTAINMENT, AND NUCLEAR STEAM SUPPLY SYSTEM UPDATE

On May 21-22, 2013, a closed meeting was held between the U.S. Nuclear Regulatory Commission (NRC), and representatives of Babcock & Wilcox mPower, Inc. (B&W mPower), at NRC Headquarters, One White Flint North Building, 11555 Rockville Pike, Rockville, MD. The purpose of this closed meeting was to discuss mPower™ Reactor Core and Fuel Mechanical Design update, Containment Systems, and Nuclear Steam Supply System (NSSS) update.

B&W mPower began the two-day meeting with a discussion detailing the design of the mPower™ reactor core. B&W mPower described the key features associated with fuel assembly design, detailing their use of a 17x17 fuel assembly, guide and instrument tubes, and fuel rod positioning and enrichment. Additional presentation material provided examples of core assembly maps and control rod sequences. Following the core design detail presentation, B&W mPower explained how the core design translated into power distributions throughout core life and a summary of core operating cycle metrics.

The next portion of the meeting, B&W mPower explained their fuel mechanical design methods and features. The presentation provided specifics associated with the various components of the fuel assembly including guide tubes, upper and lower end fitting design, and cage threaded and weld joints. Following the fuel assembly mechanical design, the presentation then discussed design attributes associated with the fuel and burnable poison rods and assorted control components. B&W mPower concluded the first day with a discussion of analysis and testing that has been performed or planned for the fuel assembly mechanical design, fuel rod performance, fuel assembly seismic and loss-of-coolant accidents, and the fuel system test program.

During the second day of meetings, B&W mPower provided information on containment systems and an update of the NSSS. The containment systems presentation included information on the current containment functional design and associated systems, including the containment isolation system, combustible gas control system, and containment leak rate testing. B&W mPower began the presentation with a review of the plant layout and high-level containment details and then provided detailed layouts of containment at a variety of elevations. Following the introduction, B&W mPower detailed the containment functional design and specific limits such as peak pressure and temperature and how the containment is designed with withstand external effects during both normal operation and during postulated accidents. B&W mPower then described supporting containment systems in greater detail. Following the containment systems discussion, B&W mPower presented information related to their containment heat removal systems and design and analysis performed for containment

pressure and temperature. The staff provided feedback on the containment heat removal design and the importance of validating design analysis.

During the NSSS update presentation, B&W mPower provided an overview of the emergency core cooling (ECC) system and an update on the NSSS and supporting component designs. B&W mPower concluded that the reconfigured ADV design would improve both safety and reliability of the system. B&W mPower then discussed the operation and design of the ECC system and related design changes. B&W mPower concluded their presentations with an update to their approach to Generic Safety Issue – 191 (GSI-191). B&W mPower expressed their intent to submit a technical report on their approach to GSI-191 based on NRC feedback at a meeting on November 27, 2012. The GSI-191 technical report will include key topics such as design features, post-LOCA scenarios and long term cooling flow paths, and conformance to Regulatory Guide 1.82.

The meeting agendas and meeting attendees are included in Enclosures 1 and 2. B&W mPower, Inc.'s slide presentations are available through the Agencywide Document Access and Management System (ADAMS). The ADAMS accession number for the non-proprietary, redacted version of the Reactor Core, Fuel Mechanical Design slide presentation is ML13133A260 (Updated ML13148A248). The ADAMS accession number for the non-proprietary, redacted version of the NSSS Update slide presentation is ML13133A262 (Updated ML13148A245). The ADAMS accession number for the non-proprietary, redacted version of the Containment Systems slide presentation is ML13130A003 (Updated ML13148A246). ADAMS is the system that provides text and image files of NRC's public documents. Documents are available electronically at the NRC's Electronic Reading Room at <http://www.nrc.gov/reading-rm/adams.html>.

If you do not have access to ADAMS or have problems accessing the documents located in ADAMS, contact the NRC Public Document Room (PDR) staff at 1-800-397-4209, 301-415-4737, or pdr@nrc.gov.

Please direct any inquiries to me at 301-415-6091 or Joelle.Starefos@nrc.gov.

Sincerely,

/RA/

Joelle Starefos, Sr. Project Manager
Small Modular Reactors Licensing Branch 1
Division of Advanced Reactors and
Rulemaking
Office of New Reactors

Project No.: PROJ0776

Enclosures:

1. Agendas

2. List of attendees

cc w/encl: Distribution via Listserv

2. List of attendees

cc w/encl: Distribution via Listserv

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NRC-001

OFFICE	PM:DARR/SMRLB1	PM:DARR/SMRLB1
NAME	CSt.Peters	JStarefos
DATE	12/17/13	12/20/13

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AGENDA

AGENDA FOR THE CLOSED MEETING BETWEEN BABCOCK & WILCOX AND THE U.S. NUCLEAR REGULATORY COMMISSION (NRC) REGARDING THE MPOWER REACTOR CORE AND FUEL MECHANICAL DESIGN UPDATE

**MAY 21, 2013; 08:00AM-4:30PM
ONE WHITE FLINT NORTH, ROOM O-04B06
Rockville, MD 20852**

TIME	TOPIC	LEAD
8:00am- 8:15am	Opening and Introductions	NRC/B&W
8:15am-10:15am	Reactor Core and Fuel Mechanical Design Update	B&W
10:15am- 10:30am	Break	ALL
10:30am-12:00pm	Reactor Core and Fuel Mechanical Design Update	B&W
12:00pm-1:00pm	Lunch	ALL
1:00pm-2:45pm	Reactor Core and Fuel Mechanical Design Update	B&W
2:45pm-3:00pm	Break	ALL
3:00pm-4:30pm	Reactor Core and Fuel Mechanical Design Update	B&W
4:30pm	Adjourn	NRC

AGENDA

**AGENDA FOR THE CLOSED MEETING BETWEEN BABCOCK & WILCOX AND THE U.S.
NUCLEAR REGULATORY COMMISSION (NRC) REGARDING CONTAINMENT AND NSSS
UPDATE**

**MAY 22, 2013; 08:00AM-4:30PM
ONE WHITE FLINT NORTH, ROOM O-04B06
Rockville, MD 20852**

TIME	TOPIC	LEAD
8:00am- 8:15am	Opening and Introductions	NRC/B&W
8:15am-10:15am	Containment	B&W
10:15am- 10:30am	Break	ALL
10:30am-12:00pm	Containment	B&W
12:00pm-1:00pm	Lunch	ALL
1:00pm-2:45pm	NSSS Update	B&W
2:45pm-3:00pm	Break	ALL
3:00pm-4:30pm	NSSS Update	B&W
4:30pm	Adjourn	NRC

ATTENDANCE LIST

CLOSED Meeting Between Babcock and Wilcox and the NRC Regarding mPower™ Reactor Core and Fuel Mechanical Design Update

**May 21, 2013; 8:00a.m. – 4:30p.m
One White Flint North, O4-B06
Rockville, MD 20852**

<i>Name</i>	<i>Affiliation</i>
Eric Barringer	B&W mPower
Patrick Williams	B&W mPower
Jim Hoerner	B&W mPower
Barry Lecik	B&W mPower
Mir Dujin	B&W mPower
Steve Schilthelm	B&W mPower
JV Smith	Bechtel
Darrell Gardner	Generation mPower
Ted Feigenbaum	Generation mPower
Bill Russell	B&W mPower
Jim Saldarini	Bechtel
William Slagle	B&W mPower
Dudley Raine	B&W mPower
Sandra Sloan	B&W mPower
Michael Childerson	B&W mPower
Chester Poslusny	B&W mPower
John McKirgan	NRC/DSRA/SCVB
Joelle Starefos	NRC/DARR/SMRLB1
Tuan Le	NRC/DE/EMB
Ian Tseng	NRC/DE/EMB
Amrit Patel	NRC/DSRA/SRSB
Jeff Schmidt	NRC/DSRA/SRSB
Joe Donoghue	NRC/DSRA/SRSB
Ron LaVera	NRC/DSEA/RPAC
Carl Weber	NRC/DCIP/CIPB
John Budzynski	NRC/DSRA/SRSB
George Thomas	NRC/DSRA/SRSB

Matt Humberstone	NRC/DARR/SMRLB1
Courtney St. Peters	NRC/DARR/SMRLB1
Yanely Malave	NRC/DARR/SMRLB1
Jan Mazza	NRC/DARR/SMRLB1
Matt Thomas	NRC/DSRA/SRSB
James Gilmer	NRC/DSRA/SRSB
Ross Moore	NRC/DARR/SMRLB1

ATTENDANCE LIST

CLOSED Meeting Between Babcock and Wilcox and the NRC Regarding mPower™ Containment and NSSS Update

May 22, 2013; 8:00a.m. – 4:30p.m
One White Flint North, O4-B06
Rockville, MD 20852

<i>Name</i>	<i>Affiliation</i>
Peter Lee	NRC/NSIR/DSP
Courtney St. Peters	NRC/DARR/SMRLB1
Jan Mazza	NRC/DARR/SMRLB1
Yanely Malave	NRC/DARR/SMRLB1
Eric Williams	B&W mPower
Darrell Gardner	Generation mPower
Chester Poslusny	B&W mPower
Sandra Sloan	B&W mPower
Rajgopal Vijaykumar	Bechtel
Julie Jarvis	Bechtel
Jim Saldarini	Bechtel
JV Smith	Bechtel
Steven Kline	Bechtel
Bruce Smith	Bechtel
Jack Demitz	Bechtel
Len Skoblar	Bechtel
Allen Vieira	Bechtel
Dong Zheng	Bechtel
Ted Feigenbaum	Generation mPower
Dave Kanuch	B&W mPower
Steve Schilthelm	B&W mPower
John McKirgan	NRC/DSRA/SCVB
Michael Childerson	B&W mPower
Russ Wells	B&W mPower
Ron LaVera	NRC/DSEA/RPAC
Steve Pope	B&W mPower
Anne-Marie Gardy	NRC/DSRA/SCVB

Ryan Nolan	NRC/DSRA/BPFP
Carl Weber	NRC/DCIP/CIPB
Allen Notafrancesco	NRC/RES/FSCB
Matt Thomas	NRC/DSRA/SRSB
Clint Ashley	NRC/DSRA/SCV
Michelle Hart	NRC/DSEA/RPAC
Mark McBride	NRC/DSEA/RHMB
Imtiaz Madni	NRC/DSRA/SCVB
Syed Haider	NRC/DSRA/SCVB
James Gilmer	NRC/DSRA/SRSB
Raj Goel	NRC/DSRA/SCVB
Tuan Le	NRC/DE/EMB
Joelle Starefos	NRC/DARR/SMRLB1
Matt Humberstone	NRC/DARR/SMRLB1
Sergio Gonzalez	NRC/RES/DSA
Neil Ray	NRC/DE/CIB
Devender Reddy	NRC/DSRA/BPFP
Kerri Madden	B&W mPower
Ron Watson	B&W mPower
Chang-Yang Li	NRC/DSRA/BPTS
Robert Davis	NRC/DE/CIB
Thomas Scarbrough	NRC/DE/CIB
Yiu Law	NRC/DE/EMB
Jeff Schmidt	NRC/DSRA/SRSB
Sean Boyle	B&W mPower
Paul DiFilipo	B&W mPower
John Malloy	B&W mPower
Kate Haggerty	B&W mPower
Eric Williams	B&W mPower
George Thomas	NRC/DSRA/SRSB
Ross Moore	NRC/DARR/SMRLB1