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mPower Reactor ASME Overview

November 17, 2011 REDACTED VERSION



Outline

- ASME Presentations
- Reactor Overview
 - Recent design optimization (500 MWt)
- Summary



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mPower Overviews for ASME

- mPower Reactor Overviews for ASME
 - Keep ASME informed of mPower reactor design
- Recent Presentations
 - ASME Executive Committee on Strategy (8/11/11)
 - ASME 2011 SMR Symposium, Plenary Session (9/29/11)
- ASME Feedback
 - Encouraged B&W to continue apprising them of the design
 - Eager to resolve any potential ASME standards issues
 - Section XI interested in similar presentation



Design Optimization (500 MWt)

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- Design Optimization
 - → 425 MWt → 500 MWt
- Key Modifications

[CCI per Affidavit 4(a)-(d)]



B&W mPower Reactor

Design Chara	acteristics
Reactor Type	PWR
Power Level	500 MWt
Reactor Height	[
Reactor Diameter	
Reactor Dry Weight] [CCI per Affidavit 4(a)-(d)
Fuel Cycle	4 Years
Design Life	60 Years
RCP Quantity	[] [CCI per Affidavit 4(a)-(d)]
Rail Shippable	Factory built



B&W mPower Reactor

D	esign Characteristics
Integral Vessel	No large primary piping
Internal CRDMs	No rod ejection
Passively Safe	[[CCI per Affidavit 4(a)-(d)]
CRDM Quantity	
Fuel Assembly Quantity] [CCI per Affidavit 4(a)-(d)]
Fuel Assembly	17 x 17 fuel pin array
esign Pressure	[] [CCI per Affidavit 4(a)-(d)]
Design Temperature	
Mass Flow Rate] [CCI per Affidavit 4(a)-(d)]



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B&W mPower Reactor



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[CCI per Affidavit 4(a)-(d)]



Pressure Boundary





Reactor Component Breakdown





Pressurizer & Upper Plenum





Reactor Coolant Pumps

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Lower Vessel Assembly



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Preliminary Code Assessments

- Developing BOM for 500 MWt Reactor
 - Identifying applicable ASME code sections for each feature
 - Engaging ASME
- Design for in-service inspection
 - Utilizing B&W NE Services for independent review
 - Identifying ISI issues



Summary

- mPower Reactor Design is Maturing
 - Innovative design with typical PWR operating conditions
 - 608F hot leg, [] [CCI per Affidavit 4(a)-(d)]
 - Operating Pressure 2050 psia
- Engaging the NRC and ASME
 - Provide an appreciation of the mPower design
 - Obtain feedback
 - Section XI expressed interest in a design update
- Resolve issues as needed
 - To date, no Section III issues identified
 - Working with ASME to resolve some Section XI issues
 - e.g., reconcile 4 yr fuel cycle with 10 year ISI



Comments/Questions

