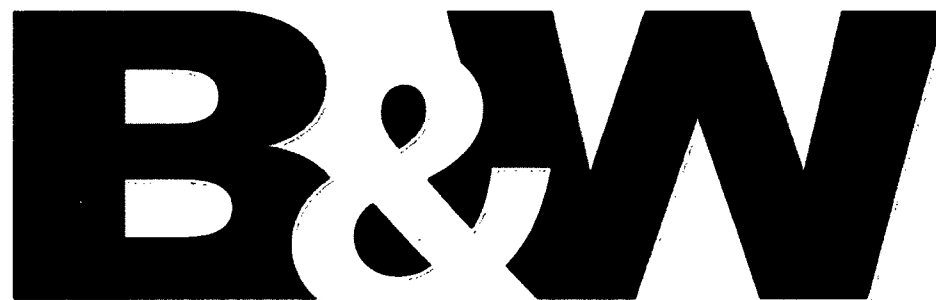


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***Update for the
B&W mPower Design***

B&W Nuclear Power Generation Group

October 27, 2009

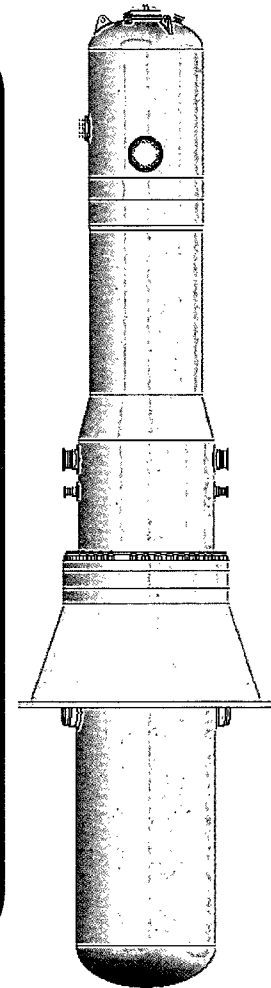
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B&W mPower Reactor

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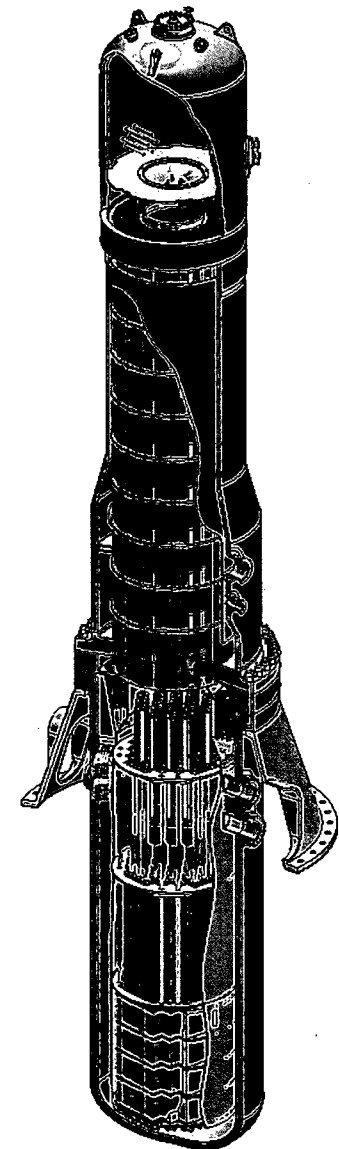


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Design Characteristics

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Design Characteristic	Value
Reactor Type	PWR
Thermal Power	425 MW
Reactor Coolant	[REDACTED]
Steam Conditions	[REDACTED]
Reactor Vessel	[REDACTED]
Fuel Assemblies	69 - 17x17 fuel assemblies [REDACTED]



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B&W mPower™ Reactor
General Design Criteria (GDC)
Conformance

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Approach to Evaluation

- **B&W mPower™ design status**
 - Moving from conceptual design to preliminary design
 - Evolutions in design philosophy are still occurring
- **Review of existing design to identify specific GDC conformance areas involving:**
 - Possible need for exemptions
 - Areas where additional discussion is warranted

Discussion Topics

- GDC conformance evaluation based on B&W *mPower*[™] design approach
 - Brief NRC Staff on B&W *mPower*[™] design GDC conformance
 - Categorization of GDCs
 - Discussion of several specific GDCs

GDC “Categorization”

- **Binning of GDCs**
 - Conformance - Full conformance planned
 - Possible Exemption – Request for exemption may be required

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Conformance Category Distribution

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GDC Conformance Summary

Criteria

I. Overall Requirements:

Conformance

Conformance

III. Protection and Reactivity Control Systems:

Conformance

IV. Fluid Systems:

Conformance

V. Reactor Containment:

Conformance

VI. Fuel and Radioactivity Control:

Conformance

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Specific GDCs for Discussion

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Conclusions

- This evaluation is based on the current state of the B&W *mPower*[™] design
 - Full Conformance is anticipated for most GDCs
 - One possible exemption identified
 - As design evolves, additional information will be available

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***B&W mPower™ Design Verification
Test Program***

October 27, 2009

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Design Verification Test Program

- Separate Effects Tests
 - Critical Heat Flux
 - Fuel Mechanical/Structural & Thermal-Hydraulic Tests
 - CRDM Operability & Lifetime Cycle Tests
 - Reactor Coolant Pump Tests
- B&W mPower™ Integral Systems Test Program

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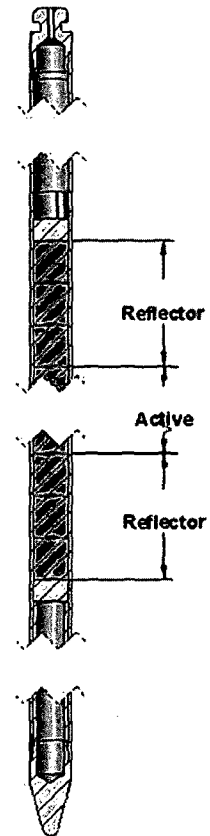
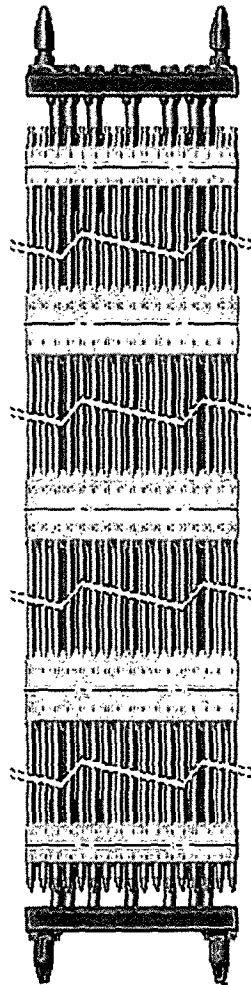
B&W mPower™ CHF Test

Objective

- Develop the CHF data base needed to design and license the B&W mPower™ core
- Appropriate power shapes
- B&W correlation

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Fuel Geometry



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B&W mPower™ Integral Systems Test Program

Integral Systems Test Objectives

- Scaled integral systems tests
- Steam generator and other component performance
- Computer code/model verification
- Licensing/Safety support
- Control and protection systems verification
- Simulator verification

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Summary

- B&W is developing a comprehensive design verification test program to support the DCA
- Current efforts are focused on core CHF and integral system performance
- Test program for components such as fuel mechanical design, pumps and control rod drives are being planned
- B&W to issue a test program topical report in September 2010