AREVA
Baffle-to-Former Bolt Customer Service Bulletin No. 16-02

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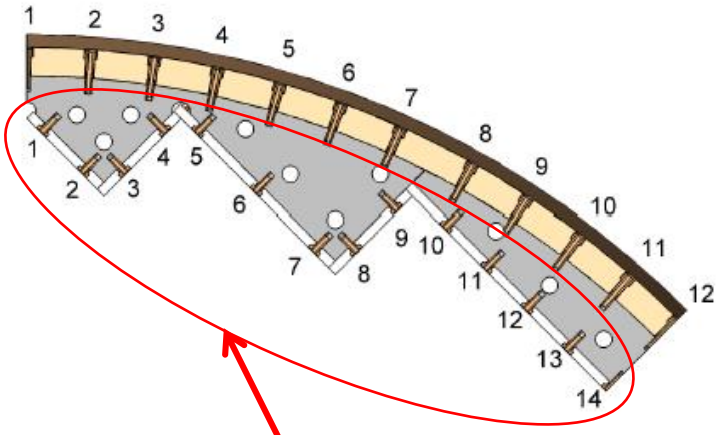
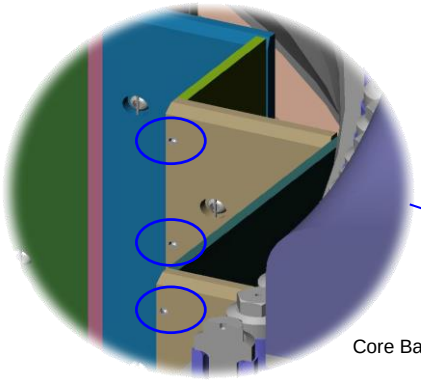
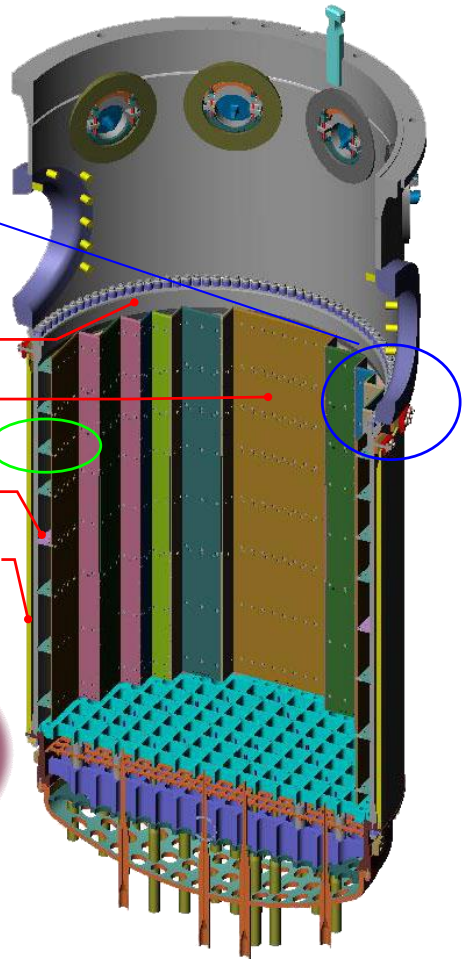
B&W-Design Baffle-Former Assembly

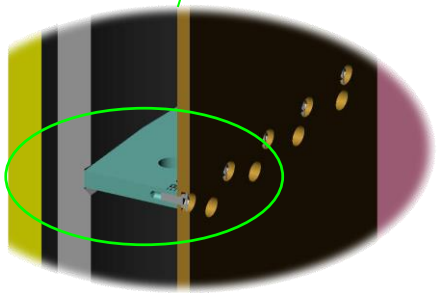


Baffle-to-Former Bolt Locations (1/8th core)



Baffle-to-Baffle Bolt Locations





Core Barrel-to-Former Bolt and Baffle-to-Former Bolt Locations

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B&W-Designed RV Internals Operating Experience

- **Four baffle-to-former bolt (BFB) UT examinations completed at B&W-designed units to date**
  - **One BFB out of 3,450 BFBs UT examined identified with crack-like indications**
  - **VT examinations of all 3,456 BFBs identified no relevant indications**
- **Concluded there is very high probability this was a random failure and not an indication of active degradation mechanism having initiated**

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AREVA Customer Service Bulletin No. 16-02 (1/4)

- **Customer Service Bulletin released July 14, 2016**
- **Subject:**
  - **Preliminary evaluation of relevance of recent BFB degradation at Westinghouse-designed 4-loop units to B&W-designed 177-FA units**
  - **Preliminary evaluation relative to risk to safety and operability of B&W-designed 177-FA units**

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- **Conclusions:**
  - **BFBs and baffle-to-baffle bolts (BBBs), regardless of RV internals design, are potentially susceptible to irradiation-assisted stress corrosion cracking (IASCC)**
    - Two primary factors affect IASCC
      - Accumulated fluence
      - Stress
    - Several key stress drivers for IASCC
      - Relatively high stress due to reactor coolant design configuration (downflow vs. upflow)
      - Bolting installation and design characteristics
        - Bolt fabrication process
        - Bolt length
        - Bolt head-to-shank design
        - Initial torque levels

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- **Conclusions (cont.):**
  - **Very unlikely that failure rate leading to unacceptable BFB configuration could occur before performing next MRP-227 examinations (initial or subsequent) at any B&W-designed 177-FA unit**
  - **Risk of observing OE similar to that seen at Westinghouse-designed units to date is low**

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- **These recommendations are provided until further evaluation and assessment of current issue is completed through PWROG and industry BFB Focus Group:**
  - **It is recommended that B&W-designed 177-FA units continue to follow BFB and BBB (and BFB and BBB locking devices/locking weld) inspection guidelines of MRP-227 and implement any future MRP guidance changes**
  - **It is also recommended that B&W-designed 177-FA units maintain increased awareness of telltale signs of BFB and BBB degradation through continuation of existing activities:**
    - Evaluating reactor coolant radioactivity levels during fuel cycle
    - Performing loose parts monitoring and foreign object search and removal (FOSAR) examinations as part of normal refueling activities
    - Performing visual examinations of peripheral fuel assemblies currently identified for assessment of fuel performance
- **Additional details are provided in Customer Service Bulletin**

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QUESTIONS

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