

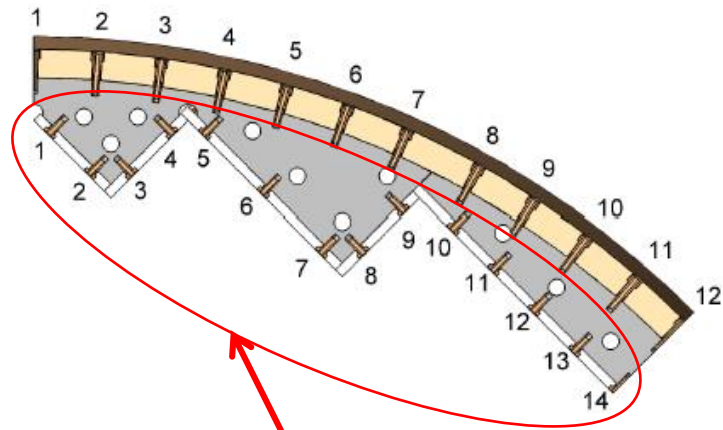
# AREVA

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

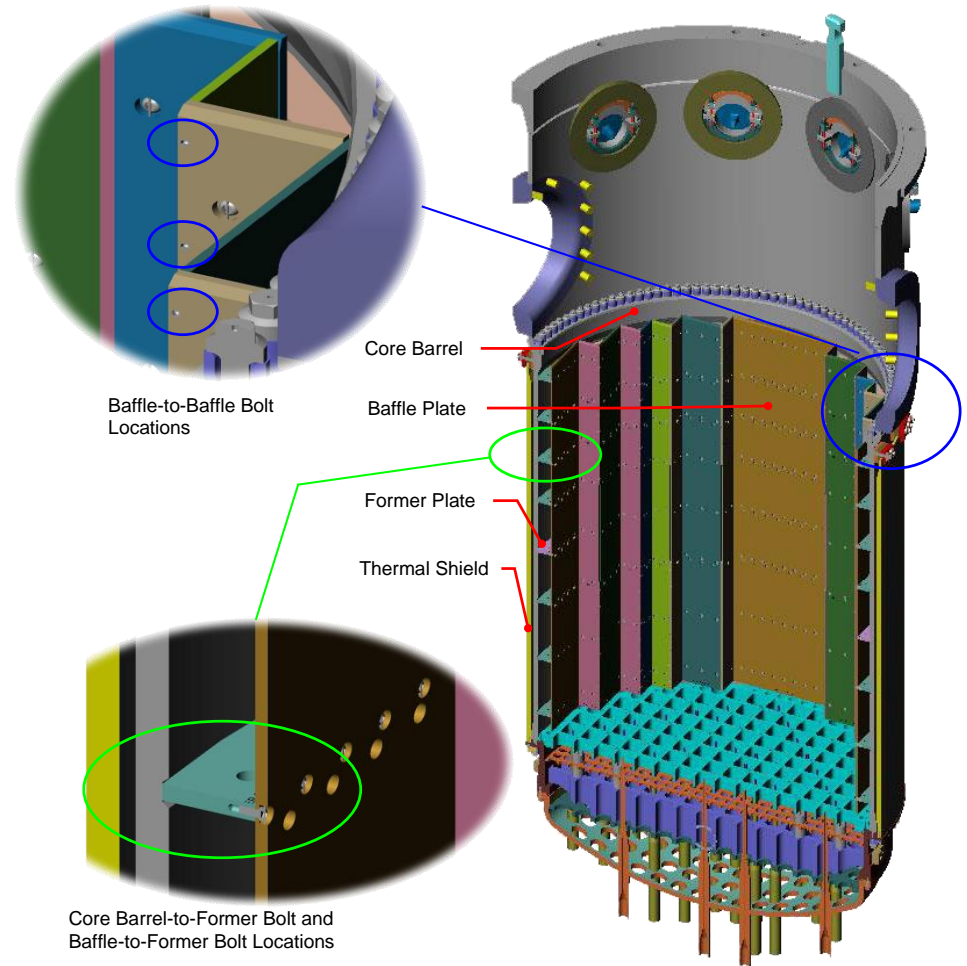
S. Fyfitch, AREVA Inc.



# B&W-Design Baffle-Former Assembly



**Baffle-to-Former Bolt Locations (1/8<sup>th</sup> core)**



# 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**

# 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**

# AREVA Customer Service Bulletin No. 16-02 (2/4)



## ► 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

# AREVA Customer Service Bulletin No. 16-02 (3/4)



## ▶ 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

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



- ▶ **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**



# QUESTIONS

