Project Engineering and Design
for ePIC pfRICH cylindrical vessel outer shell

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on behalf of the Stony Brook team

Center for Frontiers in Nuclear Science

pfRICH meeting

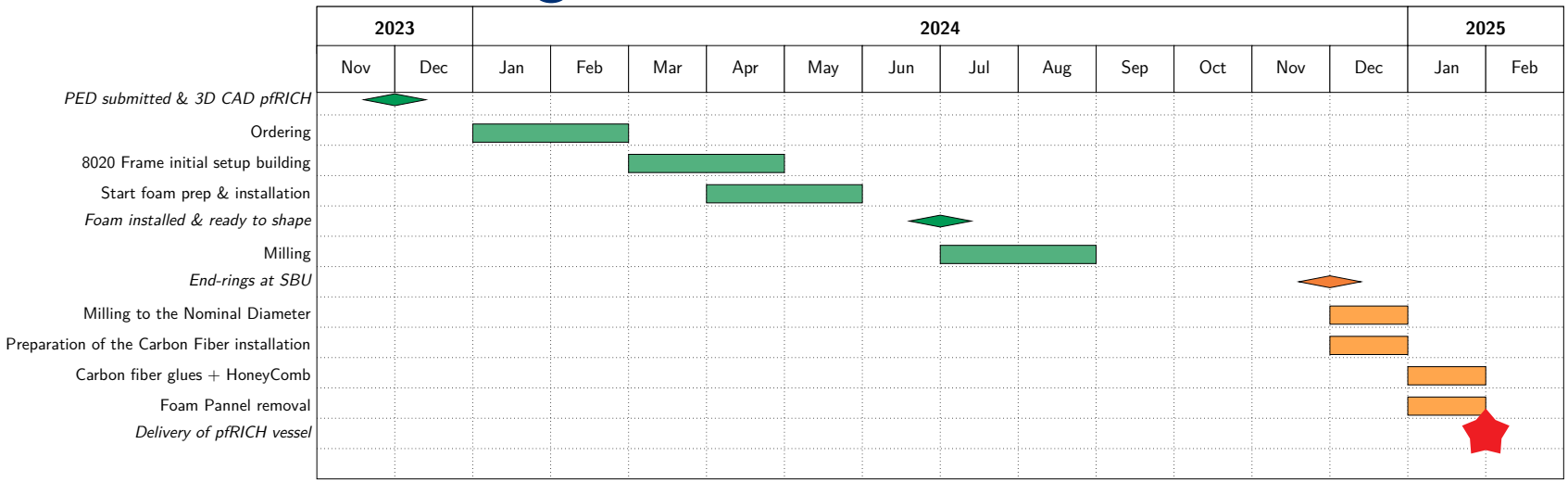
Brookhaven National Laboratory

Center for Frontiers in Nuclear Science

Vessel Construction Update

- **Milling Precision:** Achieved 0.1 mm circularity precision, visible in delivered mandrel. *Video:* Mandrel Video
- **End-Rings:**
  - First two end-rings (1 and 2) installed, one selected as "better" based on hand measurements at SBU.
  - Diameter variation up to 2-2.5 mm observed, gaps up to 0.5 mm can be filled with carbon fiber. *Video:* End-Ring Video
- **Current Issue:** Mandrel has better diameter precision than end-rings; end-rings are critical for structural integrity.
- **Concerns:** Hesitancy to combine high-precision (3rd) end-ring with one showing large variation (the best one at SBU).
- **Proposal:**
  - Send end-rings to Purdue for precise identification.
  - Construct a fourth end-ring for improved consistency.
- **Key Questions:**
  - How much additional time would this require?
  - What impact on the schedule?

pfRICH vessel building



- **Decision on End-Rings**:
  1. Use the initial "good" one and the 3rd end-ring.
  2. Use the 3rd and 4th end-rings (optimal option).
- If (1), the above schedule is correct;
  The 2 next steps:
  - Finalize milling to nominal diameter (ND = 1260.540 mm - 0.5 mm - glue).
  - Apply primer to smooth the foam surface and improve adhesion.
- If (2), determine the production time for the 4th end-ring.