

FRIB Nb_3Sn ECR ion source magnet: Schedule, Cost, and Progress monthly report

Tengming Shen for the Supercon team
Lawrence Berkeley National Laboratory
Jan 2025 report II

2025/01/27

- FRIB: Yoonhyuck Choi, Junwei Guo, Xiaoji Du, Dalu Zhang, Ting Xu, Guillaume Machicoane, Tomofumi Maruta, Jie Wei
- LBNL: Tengming Shen, Ye Yang, Philip Mallon, Ray Hafalia, Lianrong Xi, Mariusz Juchno, Paolo Ferracin, Soren Prestemon

The Indico site where the meeting slides can be downloaded: <https://conferences.lbl.gov/event/2055/>

Access key: FRIB

Past meetings slides are available at <https://conferences.lbl.gov/category/109/>



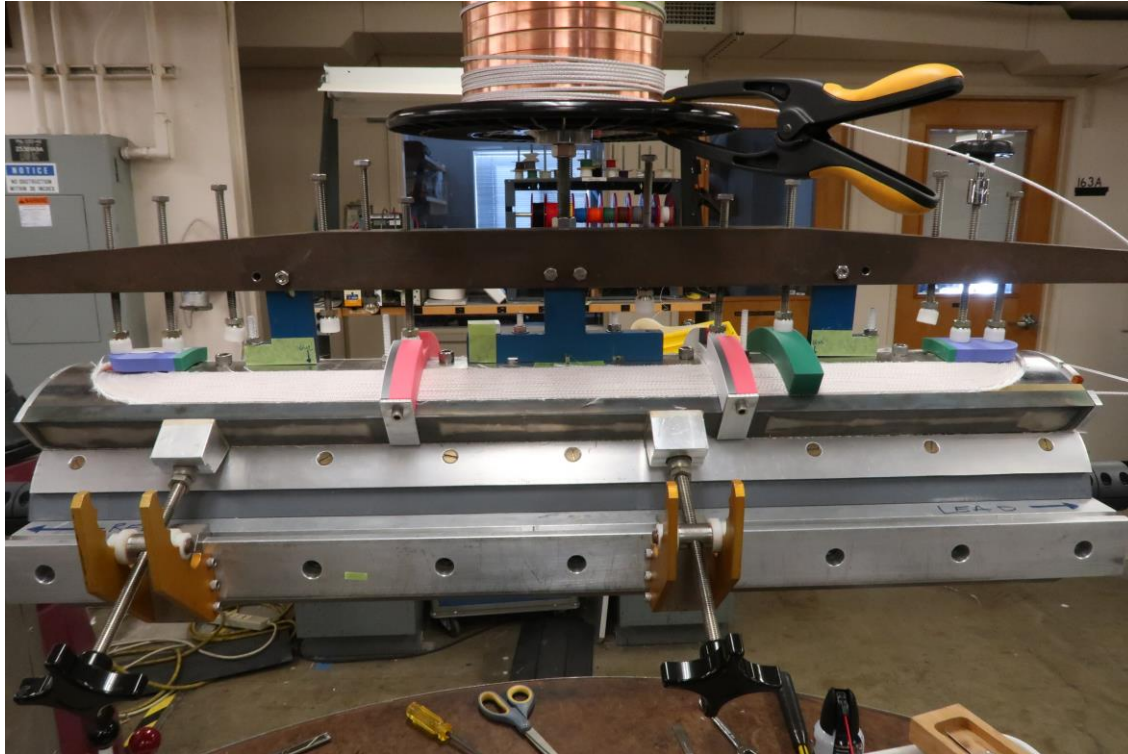
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- ~~○ Complete preparation of prototype coil for heat treatment:~~
- Heat treatment of prototype coil - ongoing
- Complete mirror magnet assembly component fabrication. Drawing being finalized and released. Getting quotes.
 - Axial rods.
 - Load pad.
 - Key and shim assemblies.

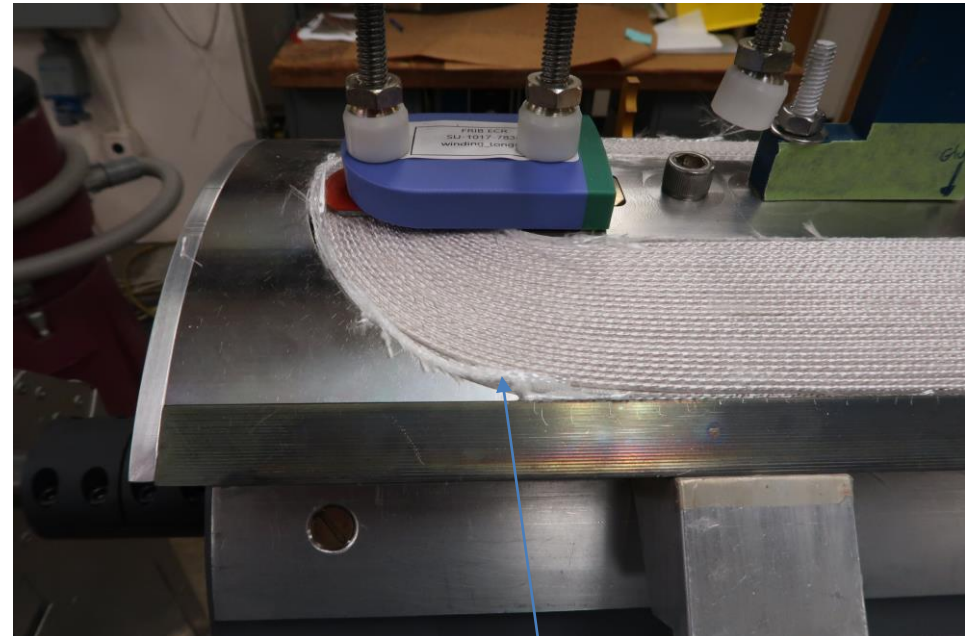
Prototype coil winding completed on 11/21/2024.



Coil being prepared for reaction

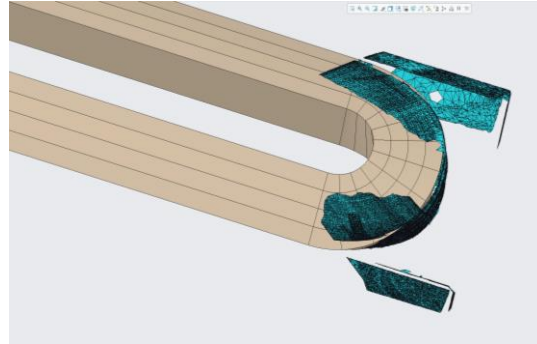


- Issue – practical winding meets perfect endshoes.
 - Gap between endshoes and coil appears.
 - Grinding SS more difficult than grinding Aluminum.



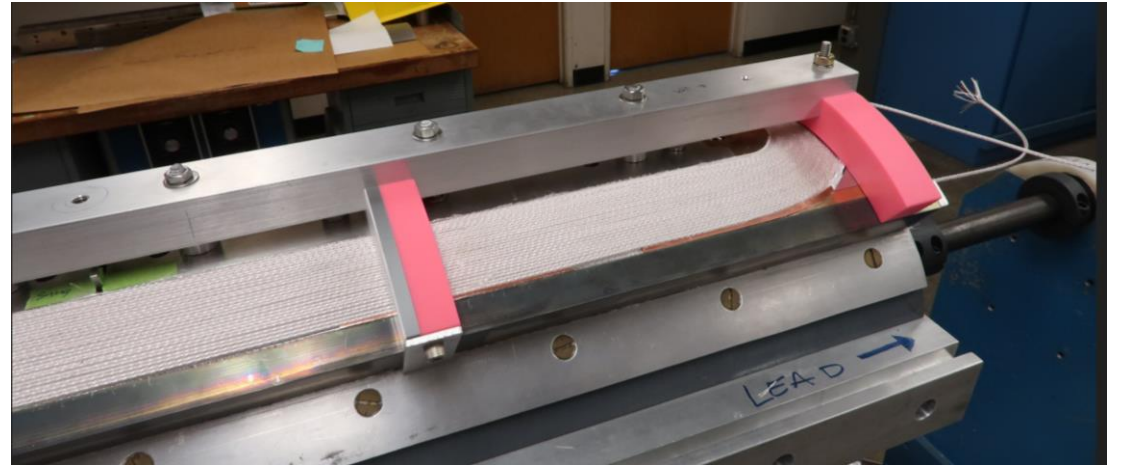
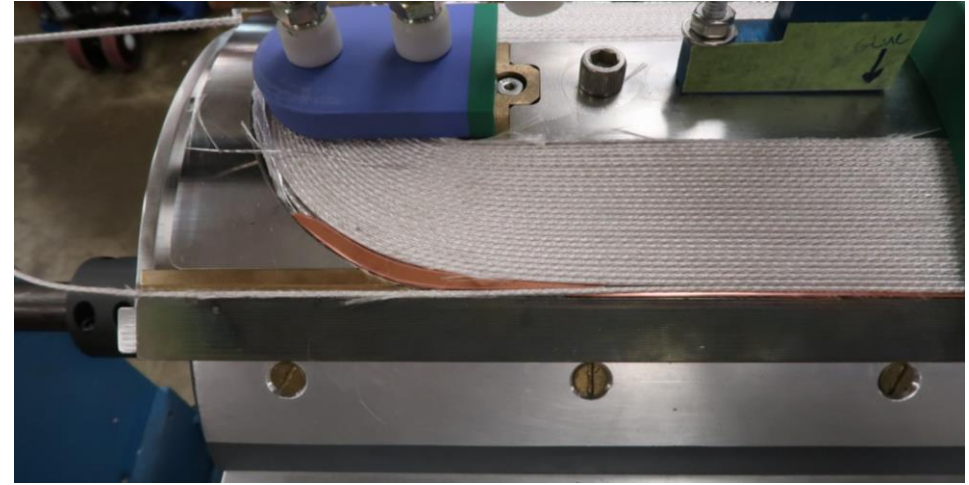
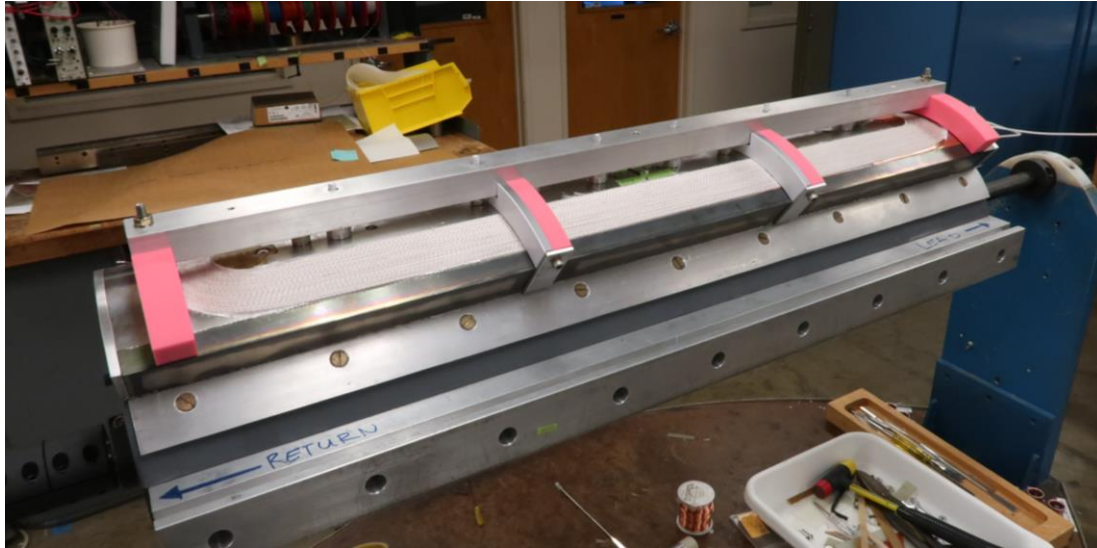
- Temporary solution: Add S-2 fiber glass.

Explore potential long-term solutions

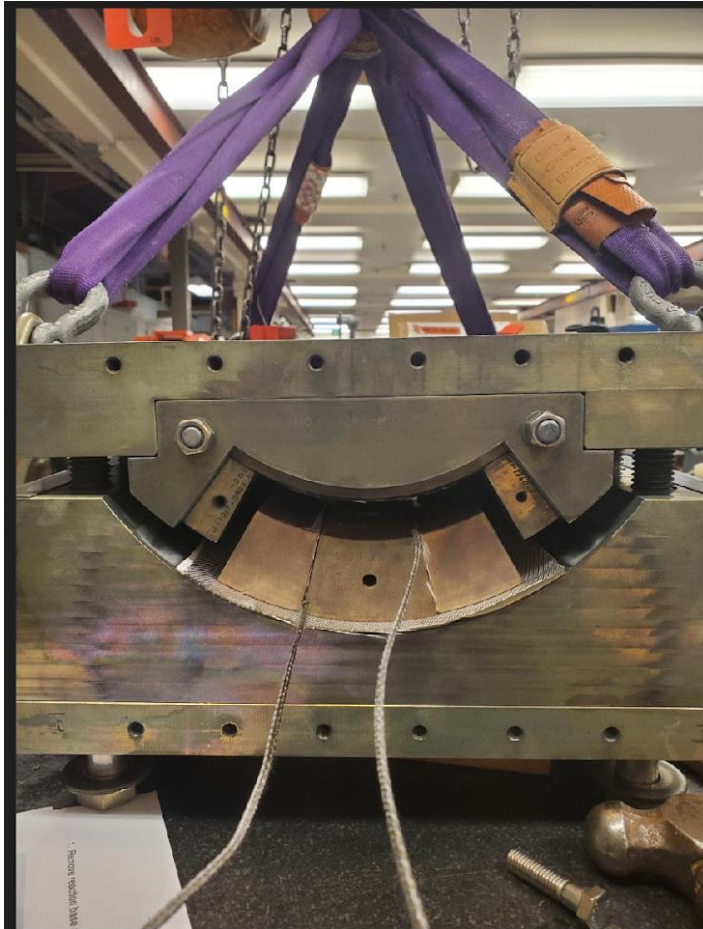


- Develop 3D models of end shoes from survey data for better fit?
- Yes.

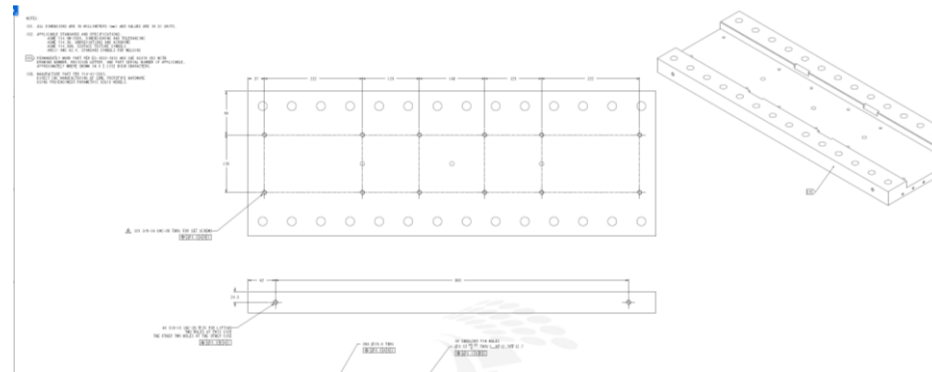




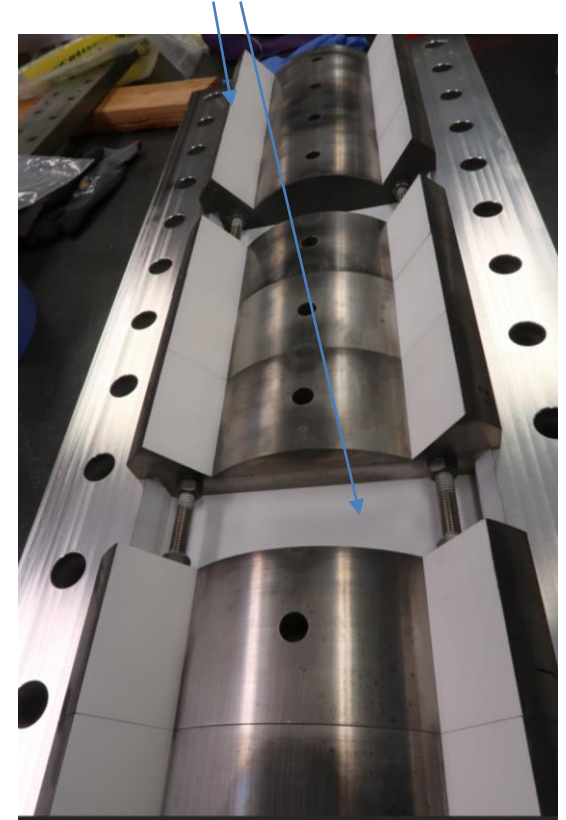
Apply lessons learned during the practice coil



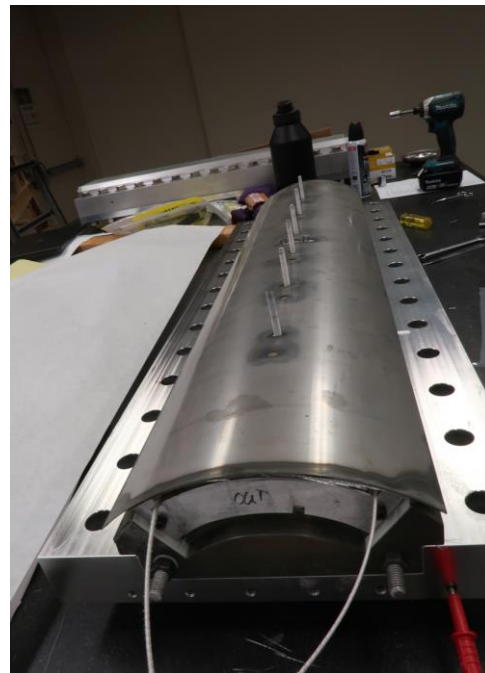
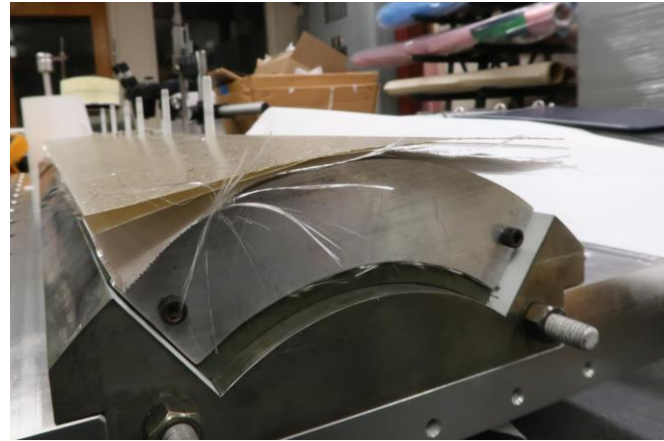
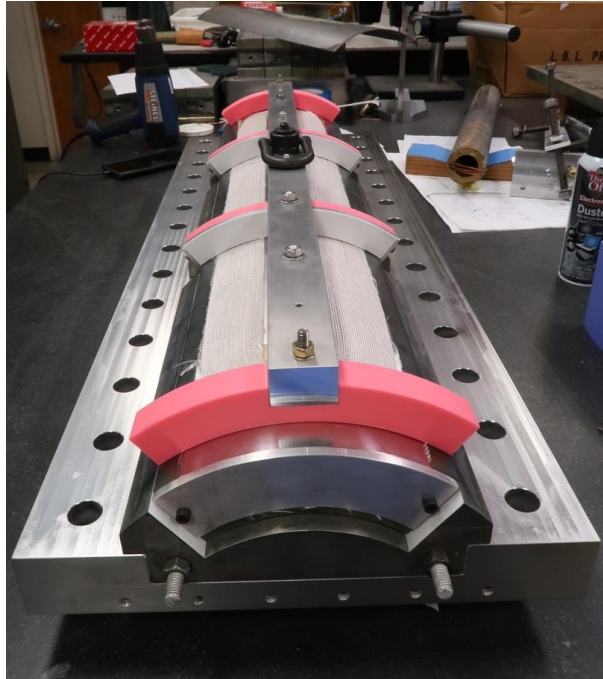
Reaction baseplate – add 12 setscrews holes.



Apply Boron Nitride



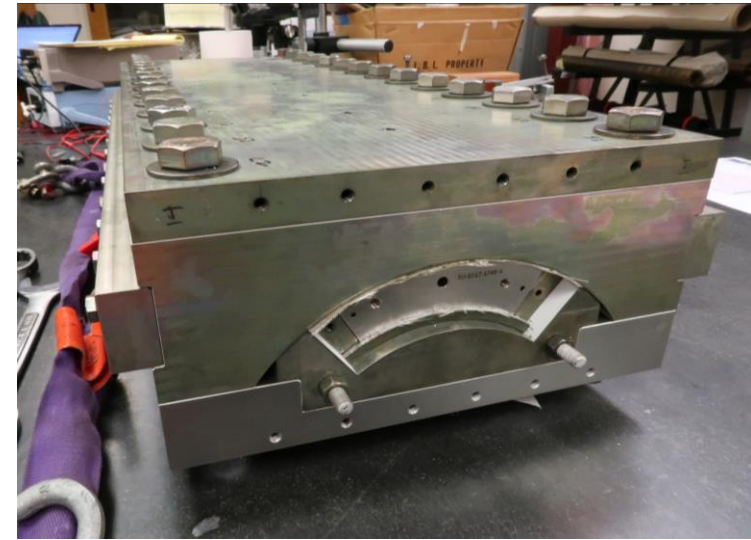
Preparation of prototype coil for heat treatment – leading into fixture and close the fixture



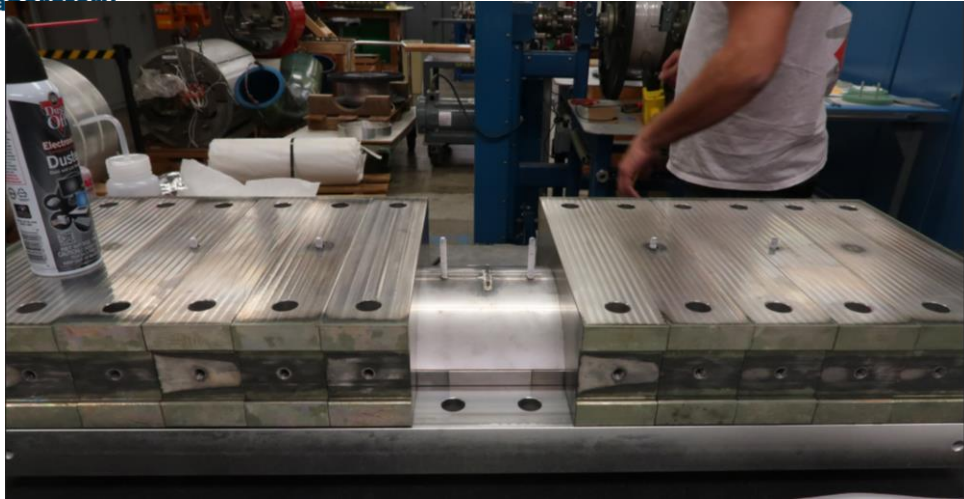
Fully closed.

Coil is electrically open to the fixture.

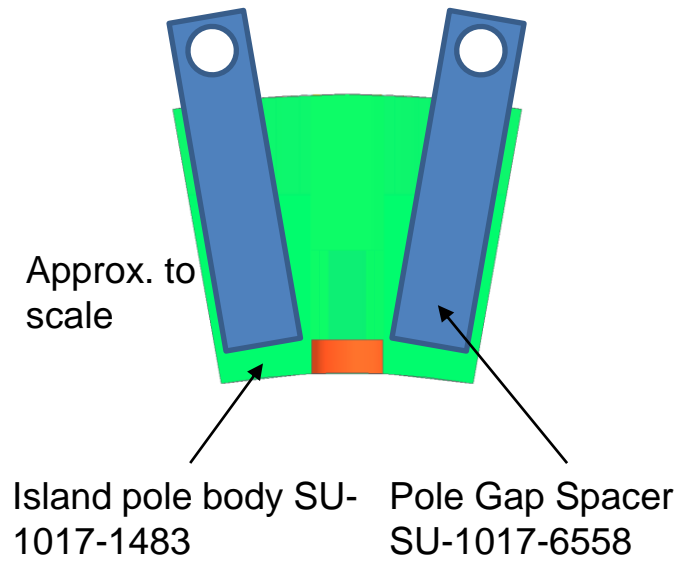
Coil resistance unchanged before and after closing the fixture.



**A 0.002" gap between
Reaction liner and OD block.**

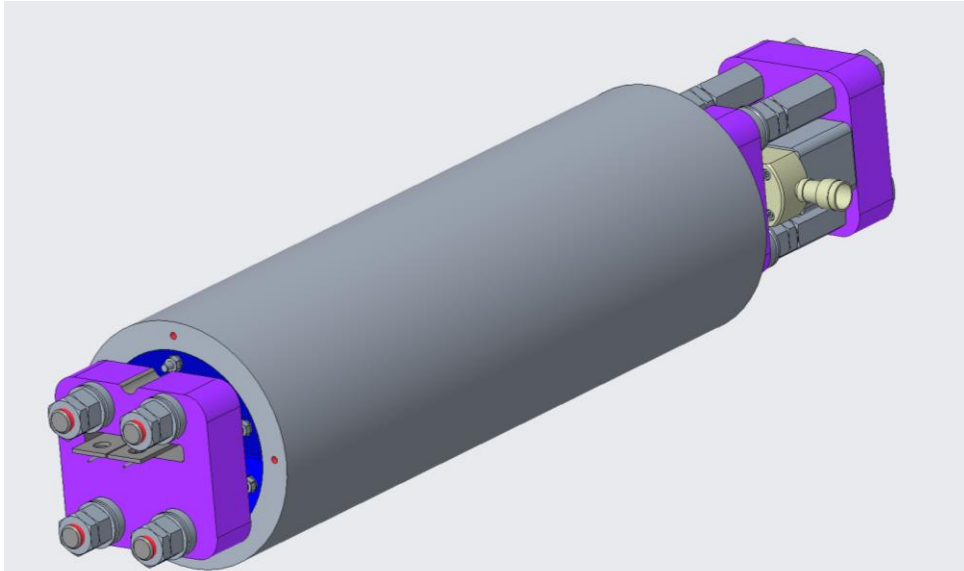


Difficult to remove the pole gap spacers.

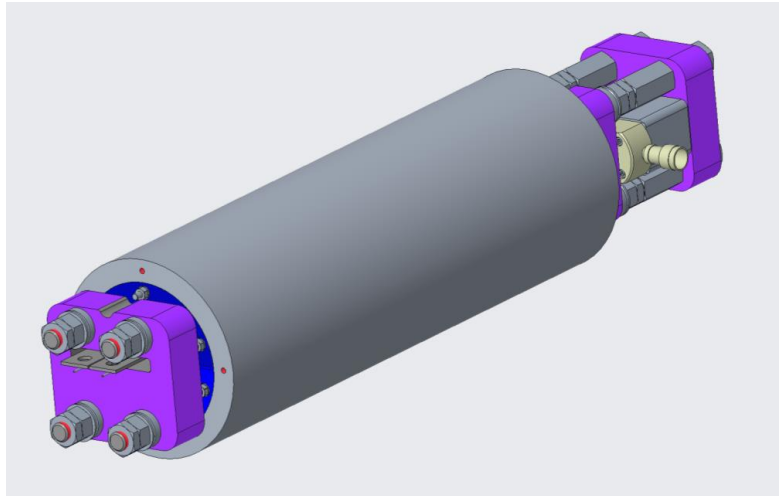


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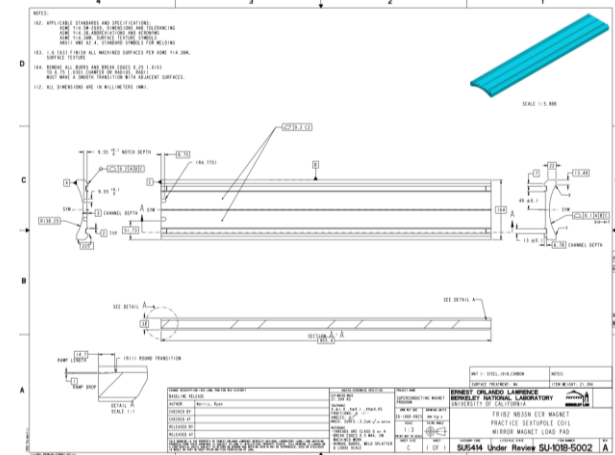
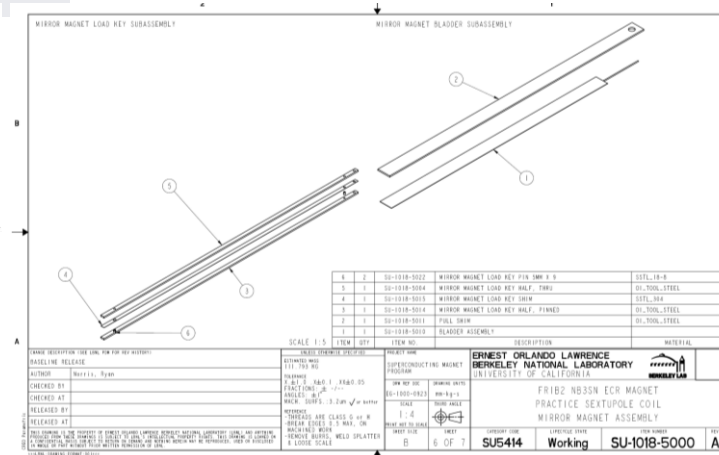
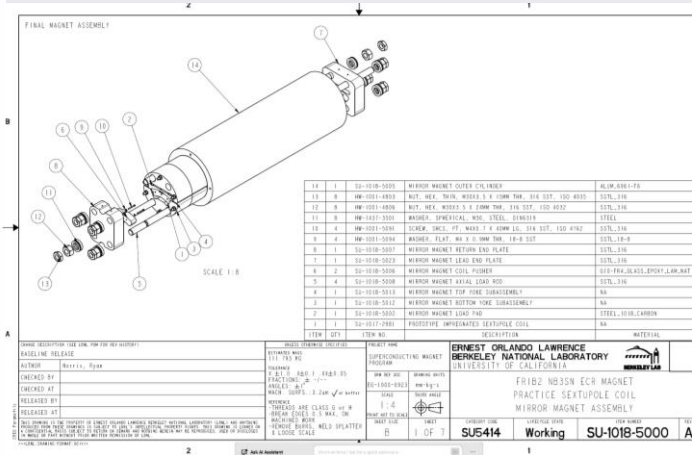
- Shell, upper yoke and bottom yoke received at LBNL.
- SS end plates, pushers, spacers are released for fabrication received at LBNL.



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- Drawings being finalized and released for fab: 1) load pad, 2) axial rods, 3) key and shim assemblies. Getting quotes.



- **Heat treatment of prototype coil.**
- **Preparation of prototype coil for impregnation.**
- **Complete mirror magnet assembly component fabrication.**
 - **Axial rods.**
 - **Load pad.**
 - **Key and shim assemblies.**