Fermilab

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PXIE RFQ Mechanical Status

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PIP-II Meeting

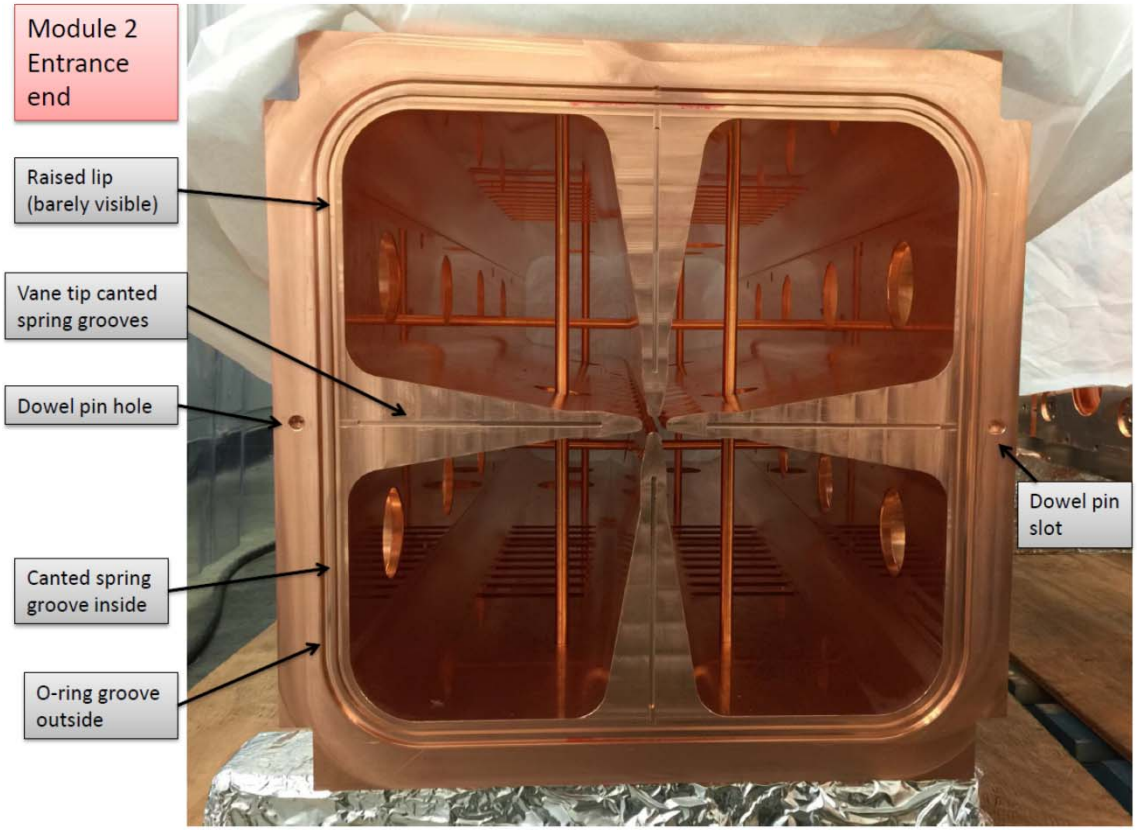
07 July 2015

RFQ Module Brazing

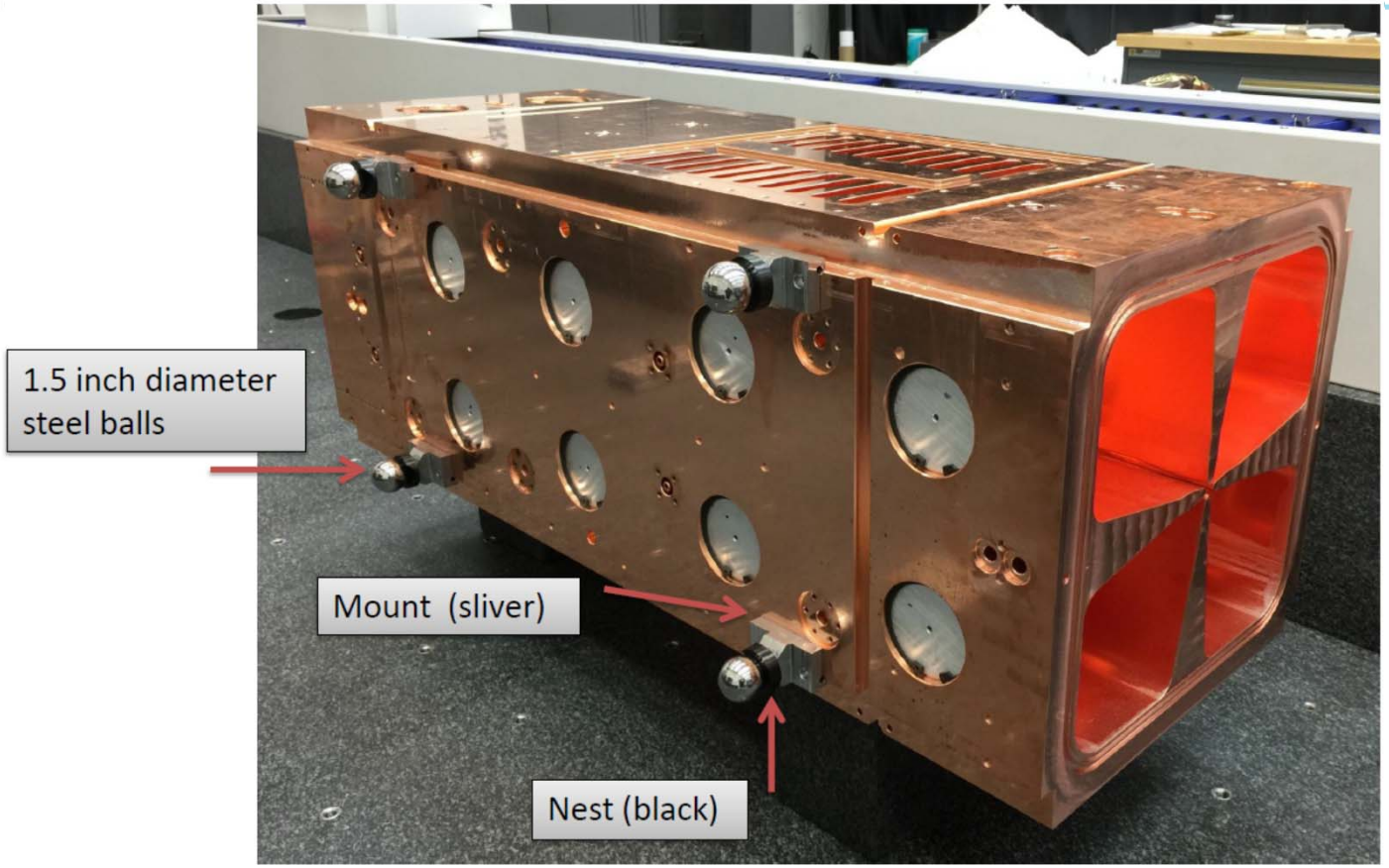
- Picture shows module status on Feb 19, 2015.
- First three modules (Modules 1-3) are brazed and leak tight.
- Three of the four modules required an extra braze to fix leaks (Modules 1,2, and 4)
- Modules stored in a portable clean room.

RFQ Module End-Wall Machining

- Final end, fine machining complete.
- Modules are cut to appropriate size.
- Groves for RF contact, o-ring, and alignment pin holes are machined.

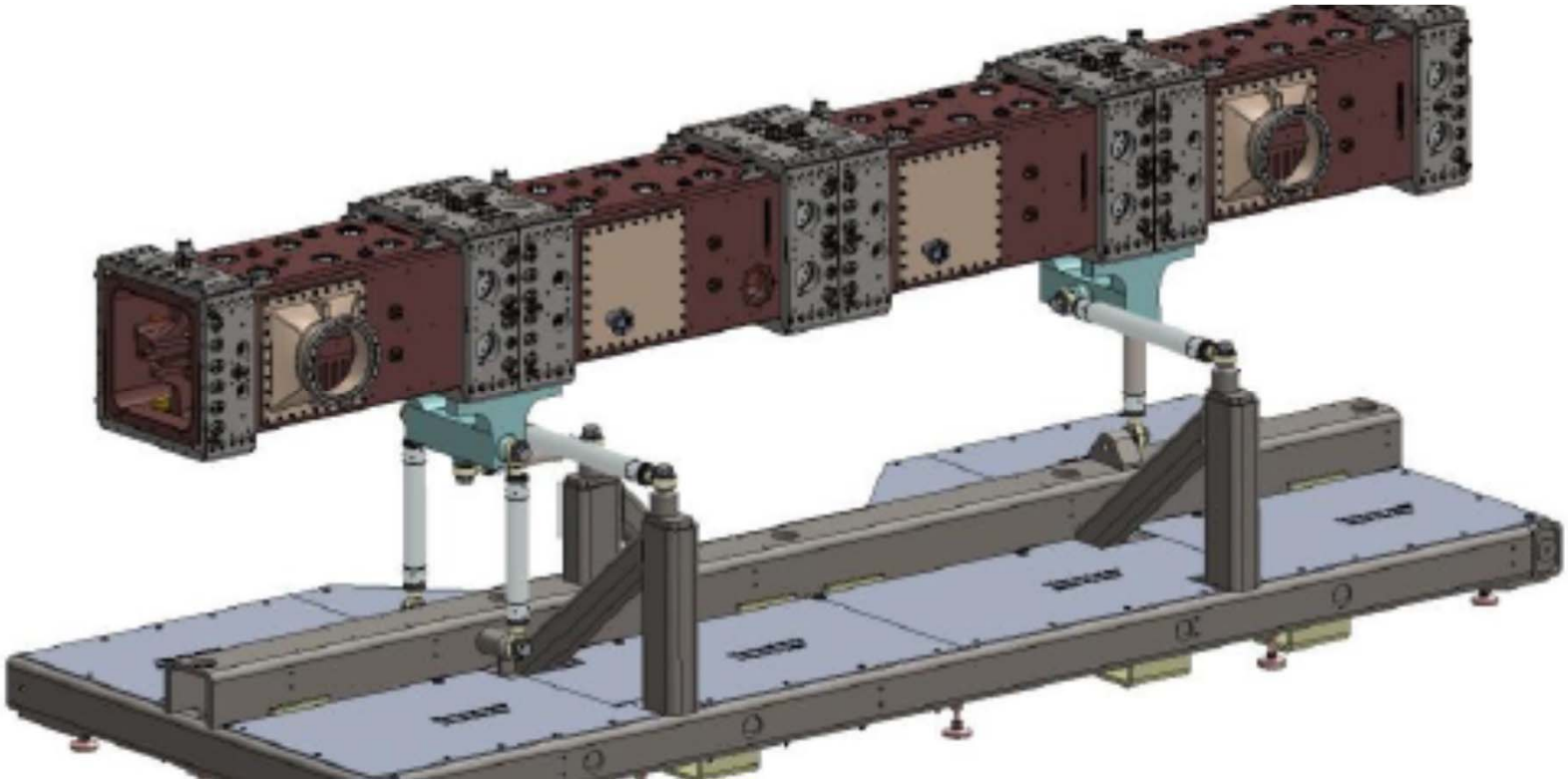


RFQ Module Alignment Features



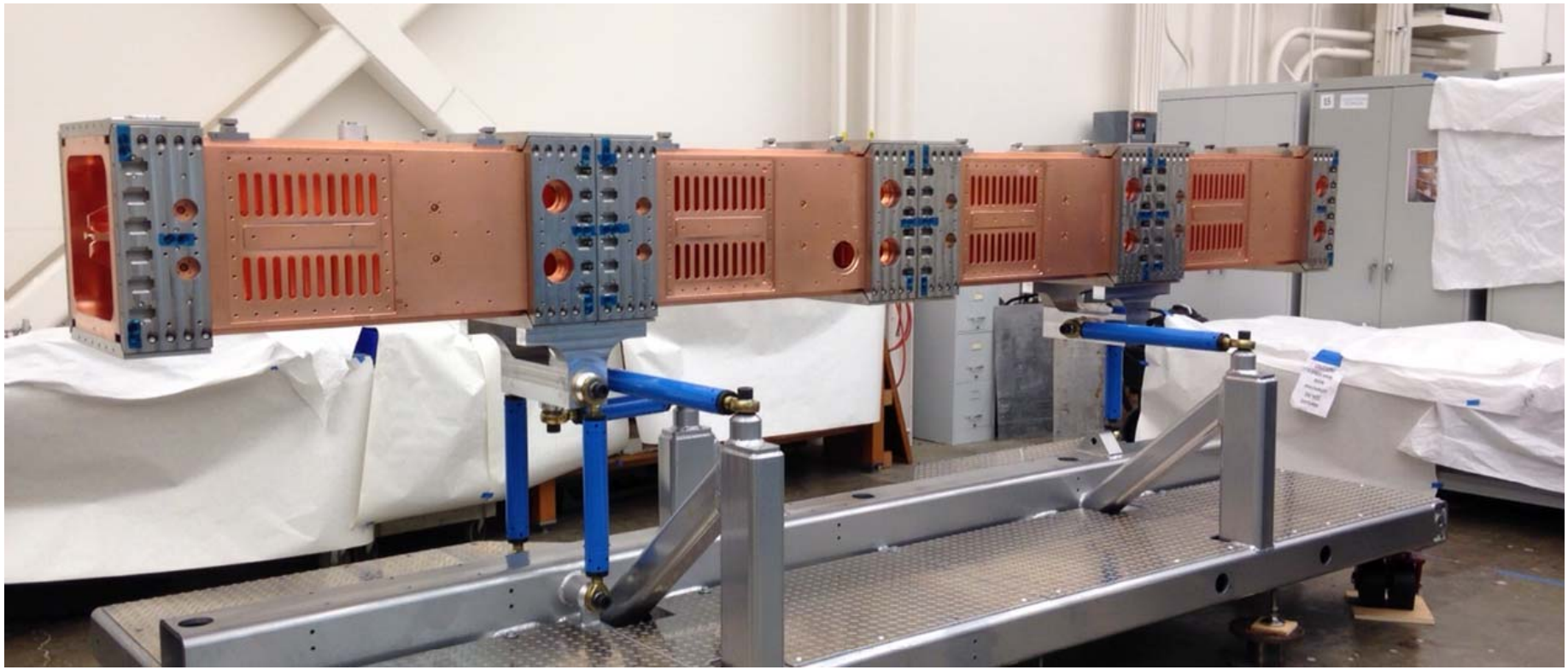
Picture showing module with tooling balls and their mounts and nests. Each module was measured and referenced to balls with CMM machine.

Solid Model of RFQ and Support Stand



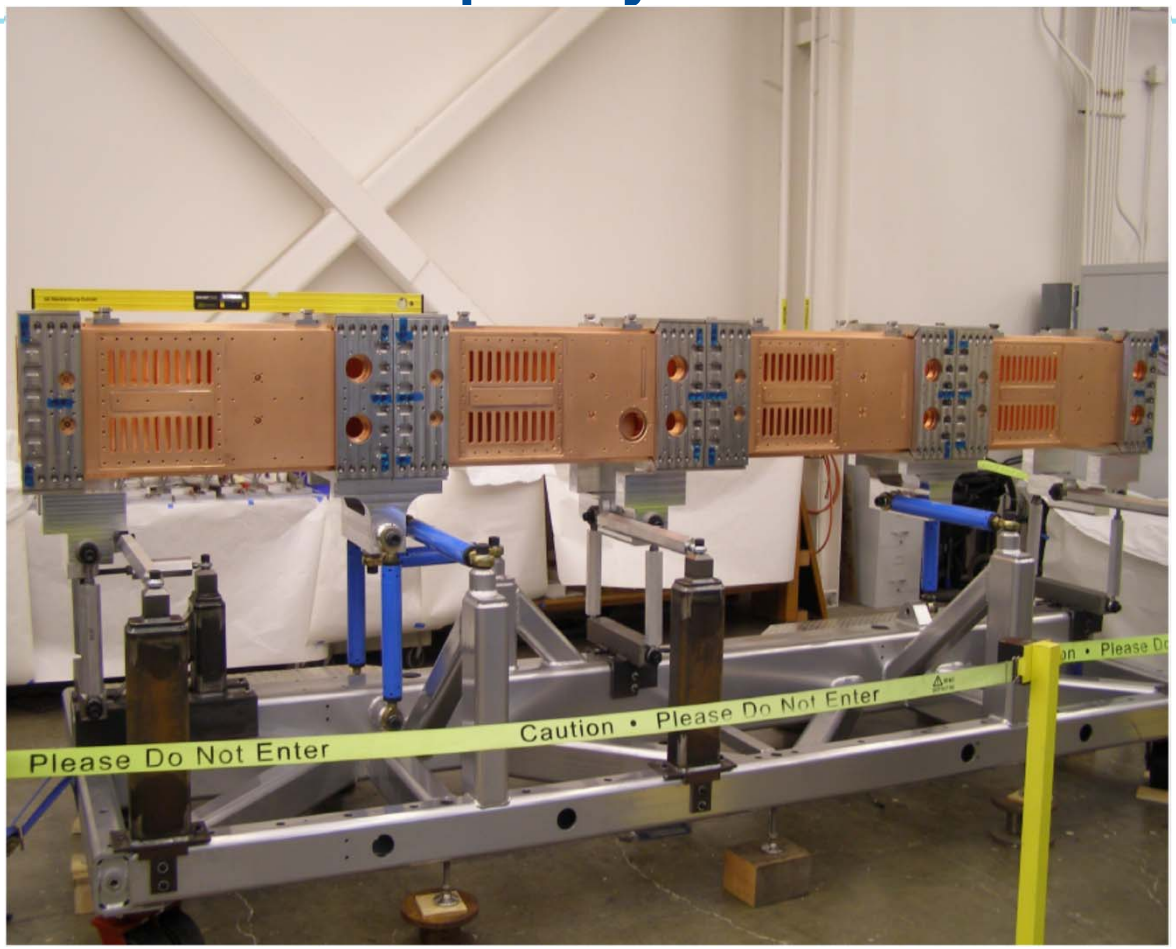
The picture above shows the solid model of the RFQ without end plates on the support stand.

RFQ Assembled on Six Strut Support Stand



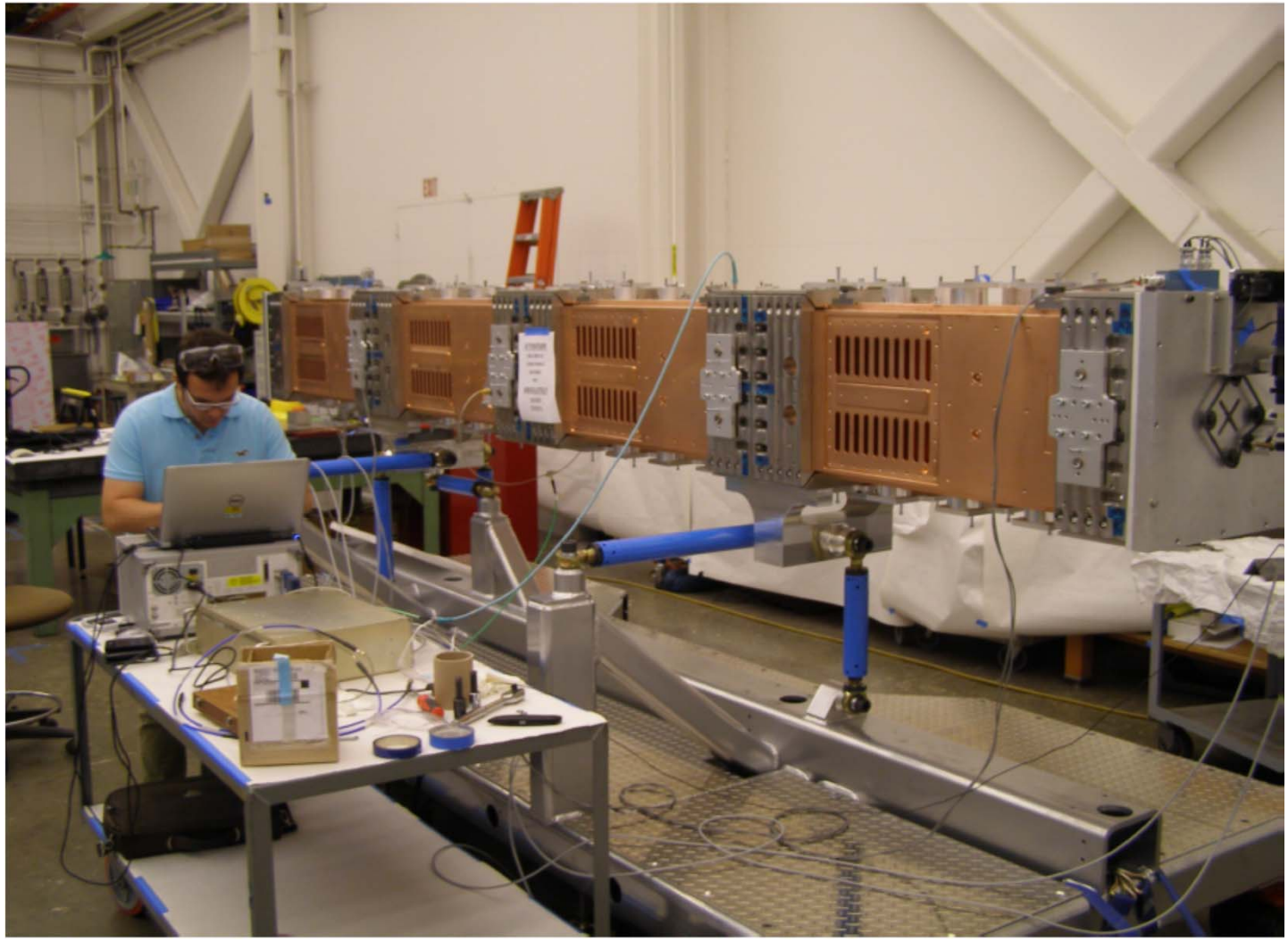
RFQ assembled and on final, six strut support design.

RFQ Assembled with Temporary Struts

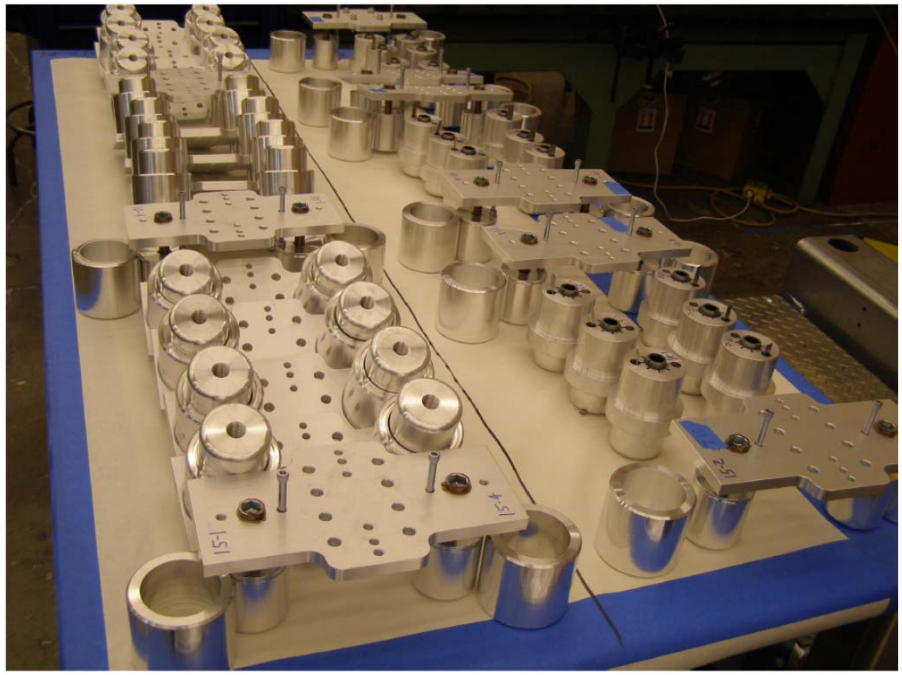


Temporary struts are used for assembly, disassembly, and shipping.

RFQ Bead Pull Setup



Final Pieces

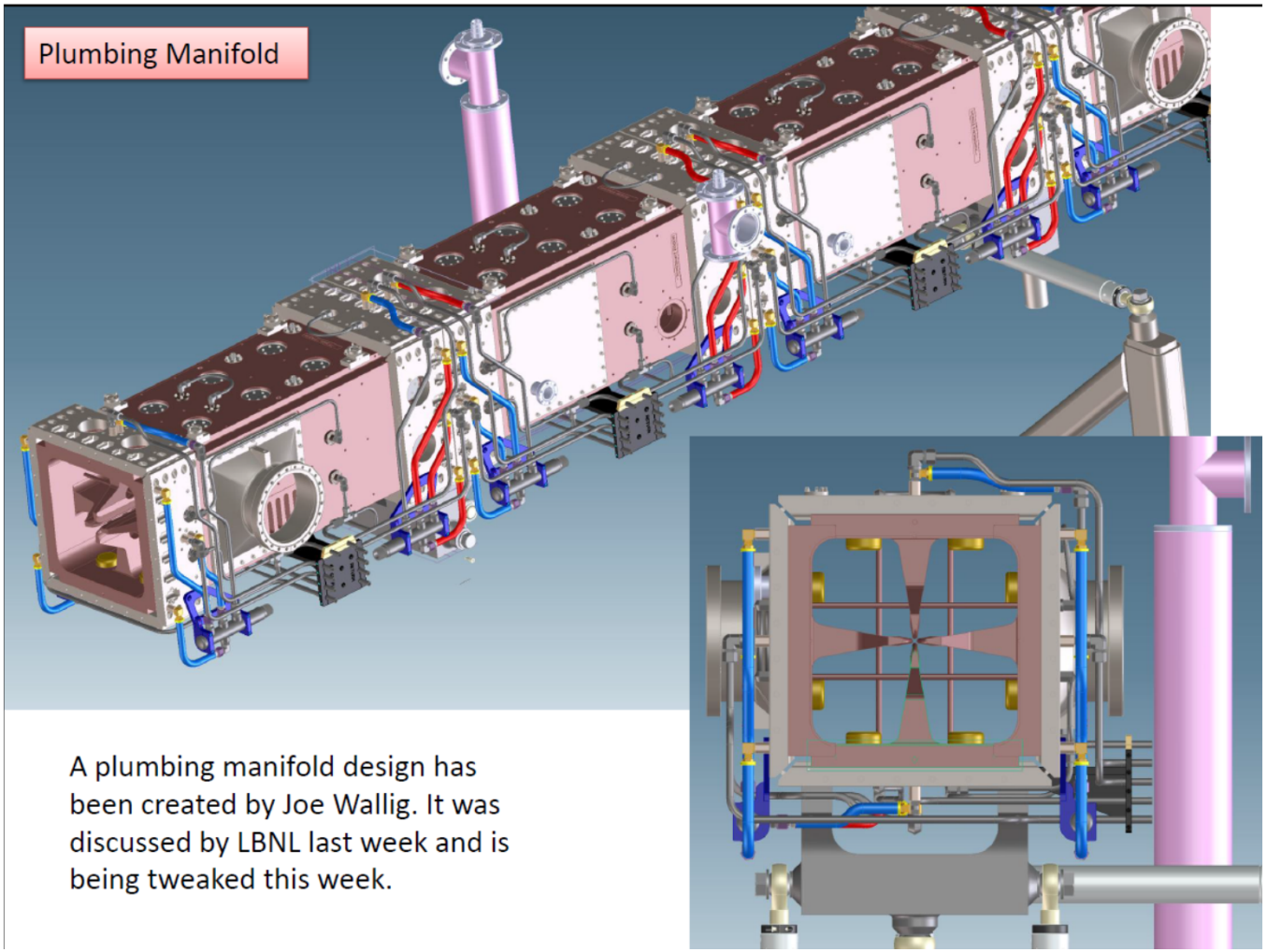


Temporary, adjustable tuners used in bead pull. Bead pull is complete and tuner depth has been recorded.

Final end plates' copper needs to be machined to depth dictated by bead pull data.

Module Plumbing Manifold

- Design of module water manifolds is complete.
- Picture shows final manifold design rotated 180° about beam axis.
- Manifold construction will begin after final bead pull.



Final LBNL Work and Delivery Schedule

Initial full length bead pull	6/22/2015	6/30/2015	LBNL & FNAL Phy. & Eng.	Complete
Measure temp tuners	7/1/2015	7/2/2015	Matt and Andrew	In progress
Machine copper slug tuners	7/6/2018	7/10/2015	Building 77 shops	Next
Verify slug tuners with bead pull	7/13/2015	7/14/2015	Tianhuan and Staples	
Machine Endplates	7/15/2015	7/20/2015	Building 77 shops	
Full length vacuum test	7/27/2015	7/31/2015	1-2 Technicians	
Install fixed slug tuners				
Install RF coupler/vacuum port blank offs				
Install end blank offs				
Install plumbing manifolds	7/14/2015	8/7/2015	1-2 Technicians	
Attach RFQ with Support Stand to the shipping frame	8/10/2015	8/10/2015	1-2 Technicians	
Final packing of PXIE Project items for FNAL	8/11/2015	8/11/2015	1-2 Technicians	
Ready for Shipping	8/12/2015	8/14/2015		

RFQ Input Coupler Status

- Four vacuum windows successfully brazed.
- Waiting for Mega's furnace to come on-line before brazing windows into coax section.
- Coax sections will get titanium coating after brazing is complete.
- Mega estimates delivery some time in August.