OH Coil Cooling Tube Arc Failure
Path to re-assembly and Re-commissioning

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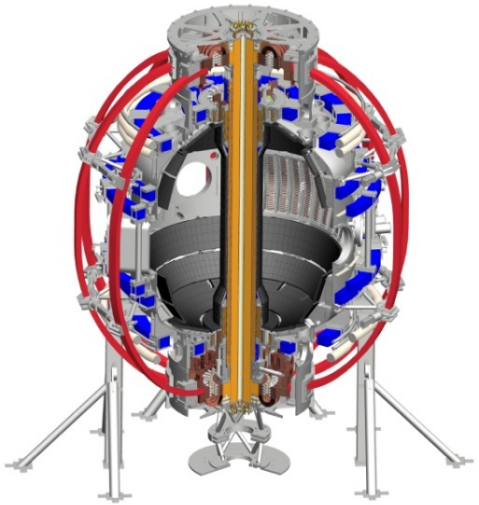


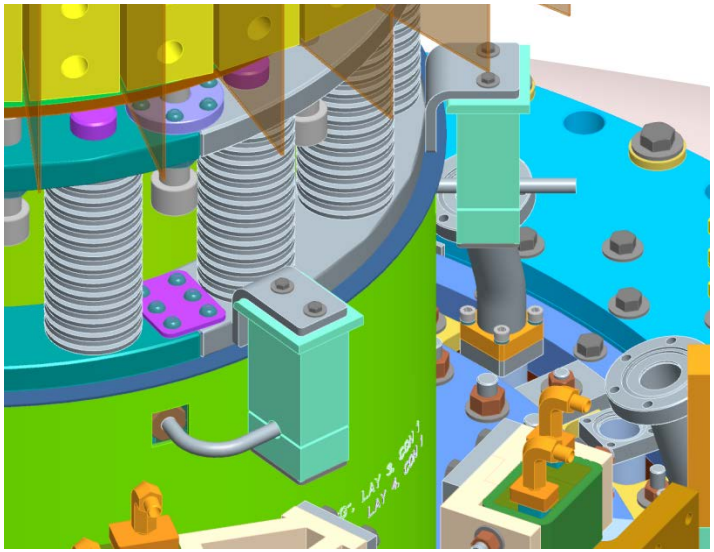
Team Meeting
2015/05/01

Improvements to design

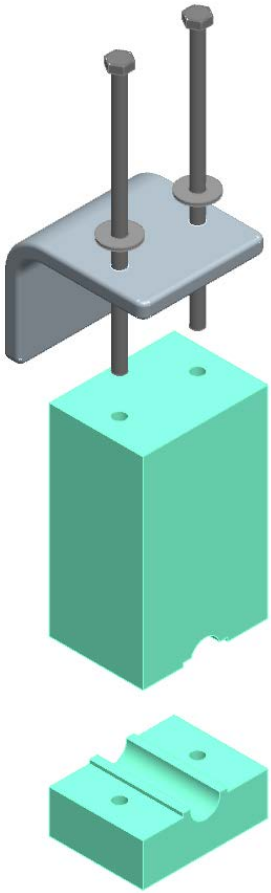
- Small changes will make a big difference.
  - **OH Ground layer's grounding braid was not secured and formed a conductive loop.**
  - *Rearrange the OH Ground Plane braid & clamp:*
    - braid does not form a conducting loop and is single point grounded to inner VV
    - Braid cannot break free from the clamp
    - Clamp has spring loaded fastening system that can "breathe" with the coil's thermal expansions
  - **OH Compression System was electrically floating.**
  - *Bond the OH Preload system to inner VV ground*
    - This will allow ground current monitoring system to shut things down in an off normal event.

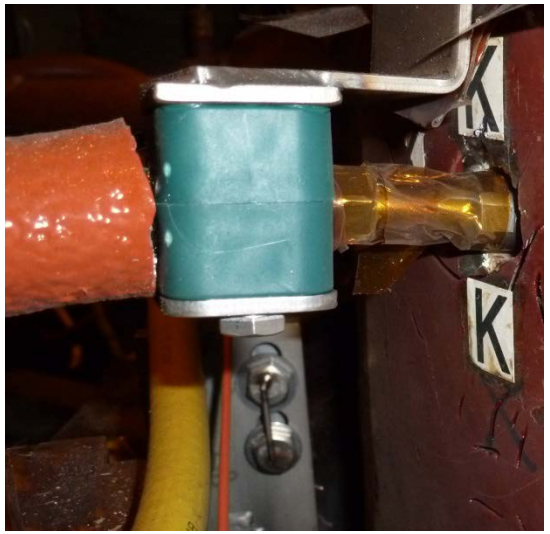
OH Cooling tube clamps

- Clamps reconfigured so that there is larger clearance between energized and grounded components
- New G-10 disk (the blue ring) Installed between the OH coil and the OH compression stack will provide better electrical standoff for both line-of-sight and tracking path length.
- Kapton tape will be applied on all the grounded metallic surfaces that face the cooling tubes



New cooling tube clamp





Extent of condition

- We plan to carefully inspect the NSTX-U to determine if:
  - Extent of affected area is larger that what is obviously apparent.
  - Any other non-grounded components exist

Re-commissioning the coils

- Disassembly and cleaning (almost complete).
- Hydrostatic pressure check of OH cooling passages (75% done)
- Megger the OH and TF (this weekend)
- Repair/replace damaged components.
- Install new cooling tube clamps, OH compression ring grounding cable(s) and OH ground braid/strap.
- Re-connect inner to outer TF conductors
- Mini bake out? Lots of water was spilt, however much time will have past. The microtherm may be dry enough to allow electrical tests to proceed. The megger will tell us if we need a mini bakeout
- Electrical tests
  - repeat appropriate sections of the coil PTPs that were run just prior to the ISTP.
    - Resistance checks
    - Megger (TF, OH, PF2)
    - Hi-pot (TF, OH, PF2)