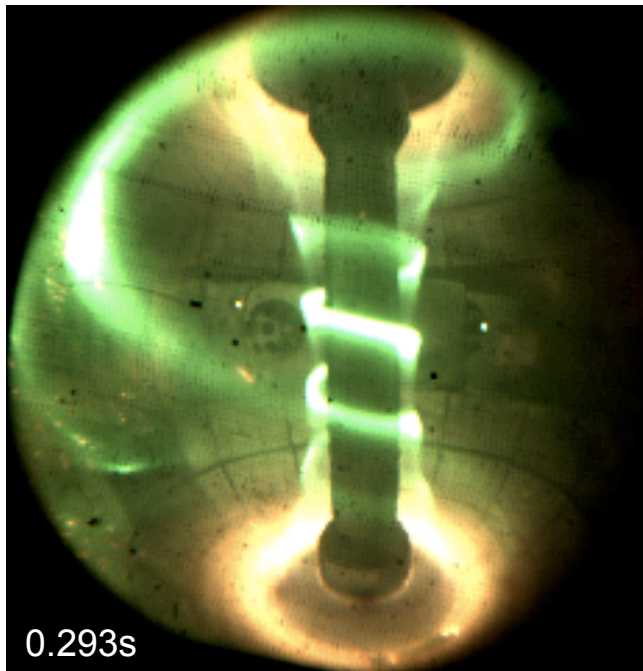


Status of HHFW antenna inspection for coatings, blobs, dust and particles prior to cleaning

- Clear during operations that lithium was coating surfaces and that extensive dust and particles were being formed
- Views of vessel shows lithium sheeting and particles on surfaces
- From afar antenna looks smooth
- Up close, antenna has blobs and particles deposited on antenna surfaces – straps, faraday shields and boron-nitride spacers
 - Undoubtedly contributed to arcing
 - Arc marks are also apparent on the faraday shield
 - plan to document this prior to removing antenna for cleaning
- Future tasks:
 - Remove antenna first week of January
 - Inspect feedthroughs and clean in place
 - Clean antenna parts and reinstall antenna in March

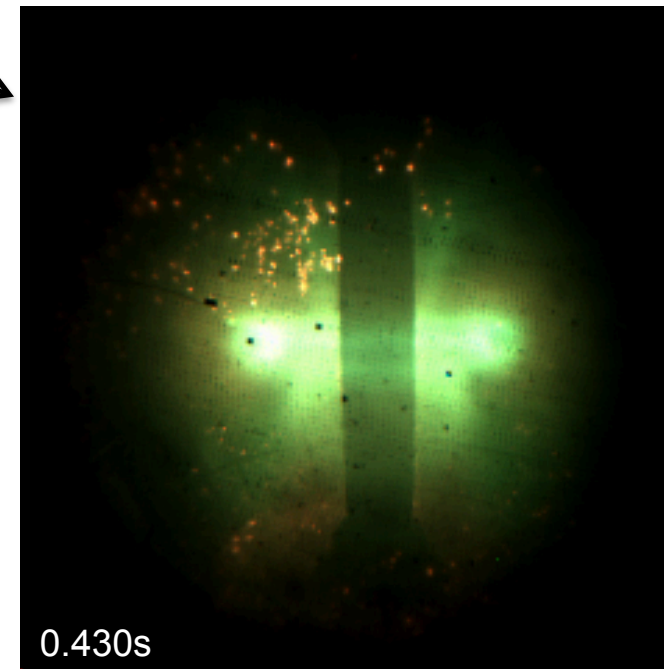
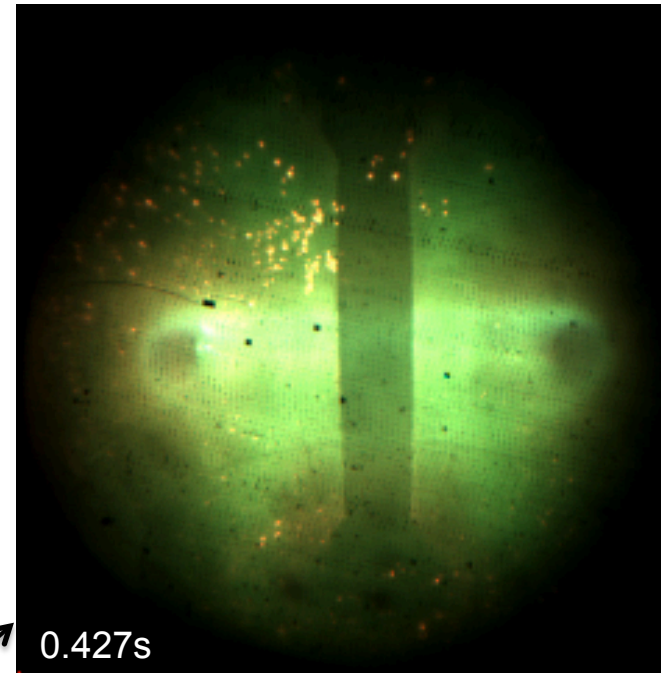
Lithium deposition affects HHFW antenna with coatings and dust projectiles

Shot 141988 $B_T = 4.5$ kG, $I_p = 0.9$ MA,
Helium, $P_{RF} = 1.9$ MW



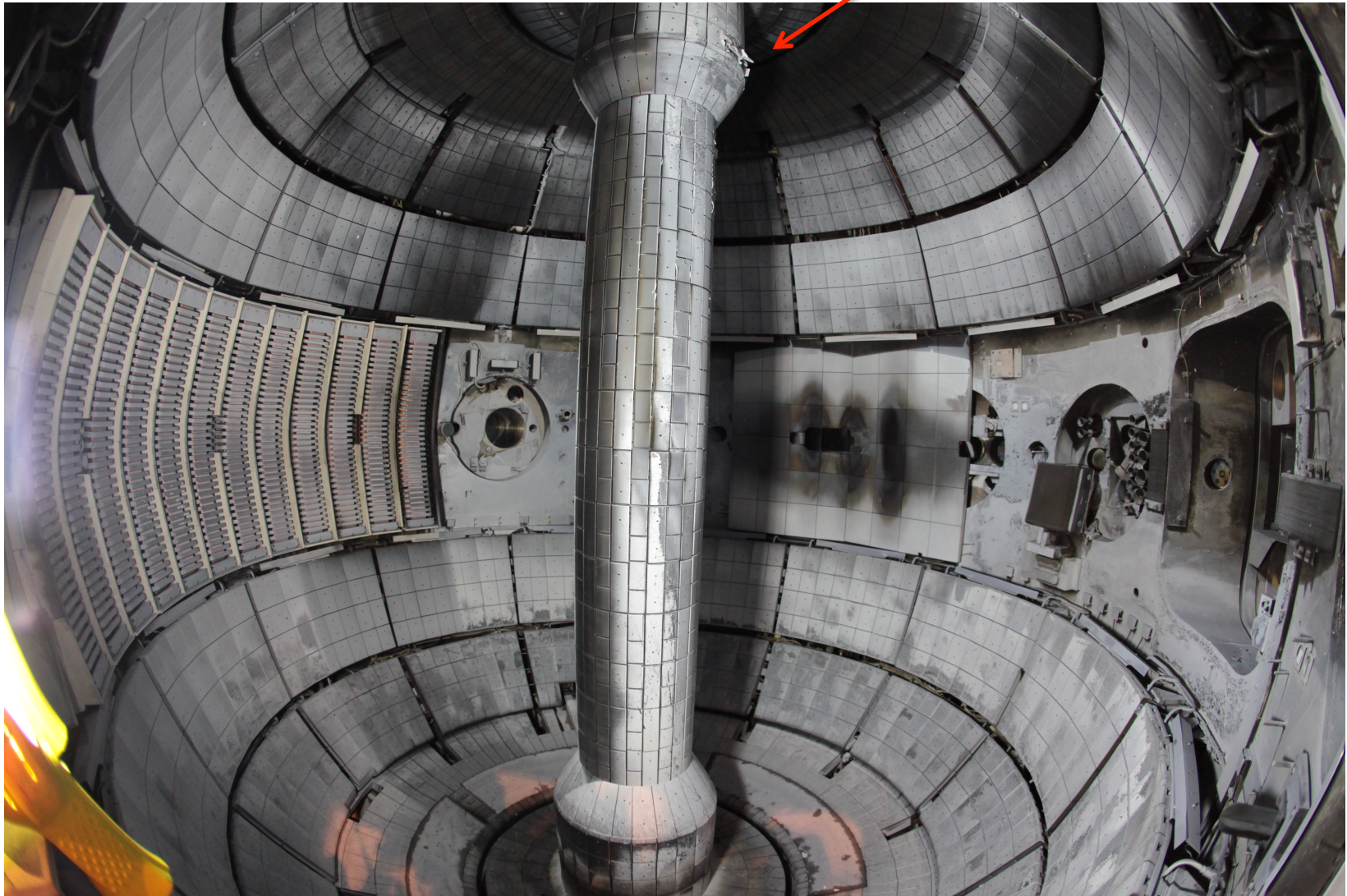
- Lithium projectiles at end of shot
 - Moving outward toward antenna

- Lithium from top of antenna moving along magnetic field line



Vessel picture showing lithium coatings and sheeting

Sheeting here



Tile current Rogowski measurements hampered by insulating coating on tiles



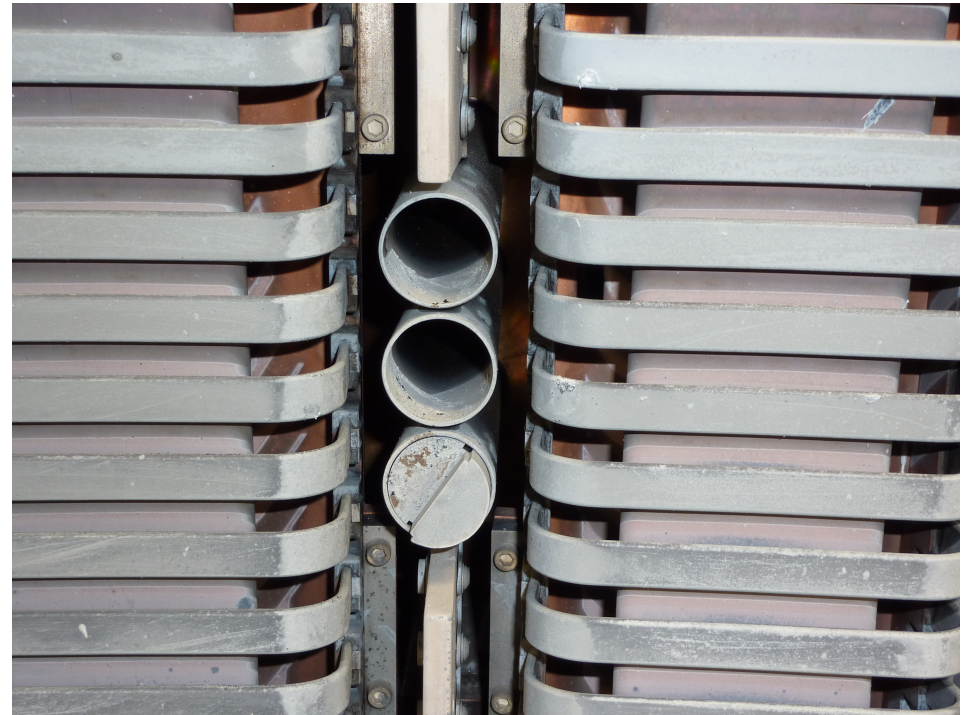
Antenna looks reasonably smooth from a distance

Note the darkened end BN bumpers, especially in ion direction



Closeup views show more damage to antenna

- Bottom right corner shows some arcing
- BN bumper is blackened
- Microwave reflectometer horn is coated with film



Clear arcing observed at top

- Top left and center Faraday shield top covers show large number of arc tracks



Globs of lithium are seen on structures – BN septa, straps and Faraday shield

- Blob on current strap is especially bad for arcing and such globs could explain the need to vacuum condition extensively
- Blobs on BN septa may be cause of bursts between antenna elements that most of the time did not result in arcs

