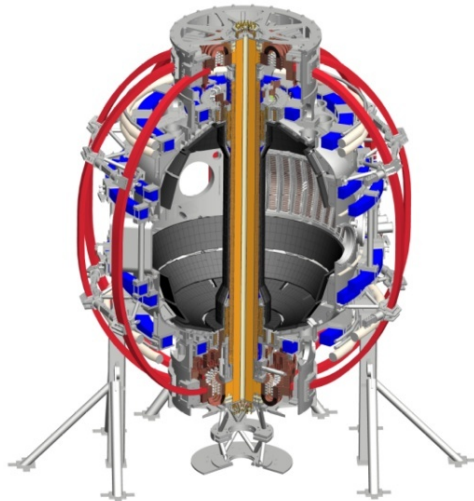


Response to PAC-35 Comments on NSTX-U RF Research in FY14-16

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Response to recommendations for RF research (I)

- Investigation of HHFW in inductive ramp-up discharges ASAP would be high leverage.
 - Agree, although coupling HHFW during inductive current ramp-up will probably be challenging.
- Better articulation ECH/EBW plan is needed. The gyrotron is pivotal, suggest borrowing a short pulse, ~ 0.5 s, gyrotron, this may be possible through collaboration.
 - Agree, a more detailed ECH/EBW plan will be provided at the next PAC meeting.
 - The baseline plan is funding constrained. The gyrotron is not the only expense, power supplies and other infrastructure to support the gyrotron are expensive.
 - Incremental funding would allow expedited procurement of the gyrotron at the end of FY15.
- Develop simulation and diagnostic capability (eg. magnetic probes) to address SOL losses. Identifying waves in simulation would influence future antenna changes.
 - Agree, we are improving simulation and diagnostic capability for the FY15 campaign to help to investigate SOL losses, but have not installed magnetic probes, these will be installed for the FY16 campaign.

- PAC comment
- Response to PAC

Response to recommendations for RF research (II)

- Need research plan to evaluate viable RF heating & CD scenarios in NSTX-U and ST-FNSF. Some HHFW heating examples but CD seems to be lagging.
 - Disagree, previous high f_{Ni} plasmas heated by HHFW in NSTX had mostly bootstrap, not direct RF CD. Modeling predicts the same for NSTX-U at higher B_T . We do not expect to spend significant run time optimizing direct RF CD.
- Develop a set of metrics to evaluate impact of boronization, Li injection, etc. on antenna performance. A maximum vacuum voltage of 25 kV is too low.
 - Agree, that is the plan. Hopefully what we learned from the RF test stand this year will result in a significant increase in maximum vacuum voltage standoff.
- PAC strongly recommends targeting RF simulation validation unique to NSTX-U (eg. HHFW interaction with fast ions). RF-edge plasma validation experiments should receive lower priority.
 - Disagree, fast-ion coupling and RF losses in the SOL both result in reduced bulk plasma RF heating and are therefore considered equally important.

- PAC comment
- Response to PAC