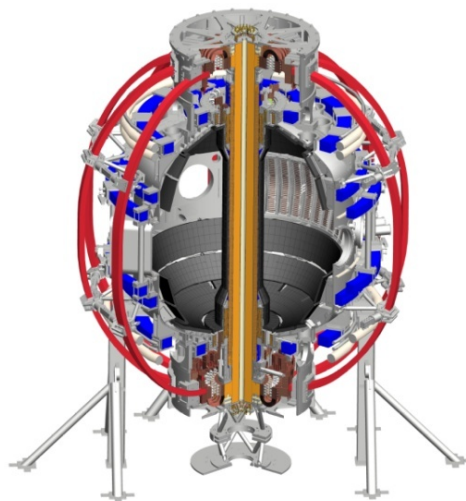


ASC

SPG

Coll of Wm & Mary
Columbia U
CompX
General Atomics
FIU
INL
Johns Hopkins U
LANL
LLNL
Lodestar
MIT
Lehigh U
Nova Photonics
ORNL
PPPL
Princeton U
Purdue U
SNL
Think Tank, Inc.
UC Davis
UC Irvine
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UCSD
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X Science LLC



Culham Sci Ctr
York U
Chubu U
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Ioffe Inst
TRINITI
Chonbuk Natl U
NFRI
KAIST
POSTECH
Seoul Natl U
ASIPP
CIEMAT
FOM Inst DIFFER
ENEA, Frascati
CEA, Cadarache
IPP, Jülich
IPP, Garching
ASCR, Czech Rep

ASC or Gerhardt Specific Items

- PAC33-1, PAC33-58: Emphasize non-inductive ramp-up
 - Already in the chapter in thrust #1, can mention it in the talk.
 - Aside: coupling then non-inductive initiation to the ramp-up is critical...low- I_p Ohmic plasma is a necessary but insufficient step.
- PAC33-7, PAC33-9: Mention HHFW for ASC
 - Already in chapter thrust #1, can mention in talk.
 - Not going to emphasize it.
- PAC33-10: Investigate core-edge consistency in integrated scenarios
 - Lots of text/slides on tile temperature limits, need for pumping scenarios w/ lithium and/or cryopump, SFD and rad. div. control development.
 - Maybe the key thing is to emphasize the impact of $H_{98} < 1$ on scenarios.
 - Easy to add in presentation as bullets.
- PAC33-11: Plan for full-discharge “ST-FNSF” scenario demonstrations...late in ...proposal period.
 - Presume that this means no solenoid induction for entire shot.
 - Non-disruptive W_{MHD} and I_p rampdowns w/o any solenoid action is another topic for research that NOT been addressed in any plans.
 - Ramp-up+Flat Top already in the text, can add a bullet in slides.
 - Unclear how creditable this really is (that in ~3 years of running we will get there).
- PAC33-12: Implement disruption detection algorithm on another tokamak.
 - Will mention ITPA/BPO interest in subject.
 - However, unwilling at present to commit to that activity.
- PAC33-54: Realtime *AE assessment for control usage.
 - Leave to Mario...too speculative for the ASC talk.
- Outstanding task: Must update research timeline graphic at the end of the chapter.
 - Q: Include separate timelines for “incremental” and “base” funding?

From the Post-PAC Debrief

ASC...

- ASC talk.
 - Probably a bit too long...don't want to add any material.
 - Minimal comments on ASC topics in PAC debrief slides.
 - Suggestion to incorporate HHFW in scenarios...thanks Randy.
 - Need to include incorporation of the non-inductive ramp-up.
 - Should make more clear in talk/chapter how the ASC research prepares for the full high-Z wall.
 - Should think more about the stated goals for ASC (see next slide).
- Incremental budget w/ focus on high-Z is compelling, but nevertheless represents a redirection of the program.
 - Have only 1 year at 1 T, 2MA with C PFCs, and no cryo-pump.
 - No time to exploit what we might learn w/ new diagnostics, further analysis... incremental \$\$ pays for people and M&S, but not time.
 - I'm not advocating against it, simply pointing out that it is a significant redirection of the mission.
 - And a bit odd that the "incremental" mission is so different than the "base" mission.
- Aside: I am not convinced that partially relaxed low- I_p Ohmic target provides the same target for NB ramp-up as a CHI- or gun-plasma.

Highest-Level Time Lines & Goals

- Goal 1: Physics basis for selecting the aspect ratio of FNSF by 2020 (or some such verbiage).
 - Does DOE, and do we, believe that this requires 100% non-inductive, stationary integration with FNSF-relevant PFCs?
 - Difficult to fulfill, since FNSF-relevant PFCs are so poorly defined.
 - Probably no conventional aspect ratio tokamak will be in a similar position (high-Z + 100% NI at high-beta).
 - Assuming that this means high-Z PFCs, is a full high-Z wall in ~2017/2018 compatible with meeting this need?
 - What is the full scope of research before 2017/2018 needed to prepare for this wall and rapidly develop capabilities?
- Goal 2: “...5-year plan with respect to how well it addresses the key physics issues needed to evaluate the potential of the ST to provide high-performance plasmas for use in a future fusion research facility”
 - Risk we cannot do this under any of the budget scenarios under consideration.
 - Would be a bit easier if we should shift the plan by 1 year.
 - Would DOE allow the plan to start in 2015?
 - Should we emphasize more the the PAC or review panel that we are not focusing on the complete integration in the present 5 YP.
 - Issue for ASC goals.