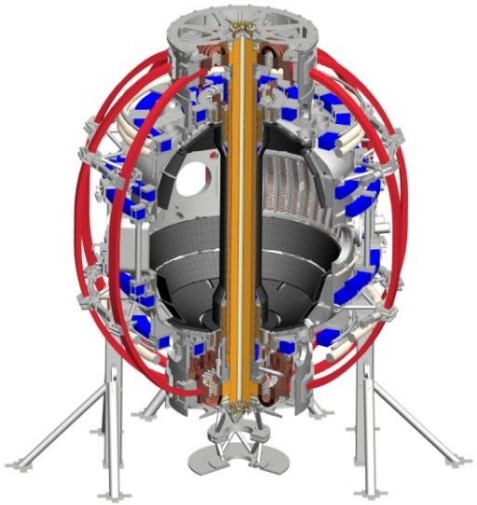
XP Prioritization

Materials & Plasma-facing components
Topical Science Group

NSTX-U Research Forum
PPPL
February 24-27, 2015



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FY2016 milestone R16-2 needs baseline data before high-Z upgrade

- Tile installation between FY15 and FY16 runs to support FY16 milestone
  - Having machine shops evaluate differences in cost for W vs. Mo
  - Targeting row-2 of NSTX-U with minimal divertor height changes
- Development of reference, high-Z discharge proposed at previous meeting alongside reference parameter scans
  - Only opportunity to get baseline data before upgrade this coming outage
- Reference shape will also provide closer strike-point to MAPP location for material transport and evolution studies

M&P parallel session summary

- 15 presentations provided to the group
  - Initial request for time was 14.5d, 8.5d with “minimums”
  - 1 hour open discussion held at the end to provide priorities and distribution
- Nearly all initial XPs were paired up resulting in multiple authors on each
- Final allocation provides split between R16-2 and M&P thrusts
  - Allocation provides 1.5d for R16-2, 2.5d for M&P thrusts 1&2
  - Allocation assumes XMP requests fulfilled with cross-cutting time

M&P Summary Table

#	Experimental Title	Author(s)	Priority	Topical area	Run time	Shape	B/Li	Scan	Comments
1	Heat transmission pathways and leading edge effects	Jaworski/ Gray	1	R16-2	1.5d	High-Z	B + Li	Pinj & div. puff	XMP req. for shape
2	Boronization Optimization	Skinner	1	M&P T-1	0.5d		B	MAPP + few shots	cross-cutting time assumed
3	BDOC, mixed material migration and IBA targets	Vlad/Nichols /Wright	1	M&P T-1,2	1d	High-Z	B + Li	none	throughout run
4	Understanding Li longevity	Scotti/Allain/ Bedoya	1	M&P T-1,2	1d	High-Z	Li	Li dep, Pinj, div puff	MAPP
5	Textured Mo (high-Z metal) surface study	Skinner	2	M&P T-1	0d	High-Z	Li	none	piggy-back
6	ELM effects on mixed material migration	Nichols	2	M&P T-2	0d	High-Z	Li	none	piggy-back ELMy
7	Behaviour of high-Z impurities…	Reinke	2	R16-2	0d	High-Z		Kr/Xe gas puff, HHFW	Consider in PCTF
8	Supporting Surface Science	Koel	-	M&P T-1,2	0d				Surface science

END

Self-reported categorization

- XMPs
  - Shape development (cross-cutting time)
  - B-zation optimization (need to determine if already accounted)
  - MAPP commission (cross-cutting ok NTC access)
- Milestone support XPs (2 day)
  - Establish heat transmission pathways... (Jaworski) 1.5d (split B and Li)
    - Leading edge power loading... (Gray)
  - Behaviour of high-Z impurities… (Reinke) better fit for FY17 but discuss in PCTF

Erosion-modeling-MAPP connections (2 day)

- Boundary diagnostic optimized... (Soukhanovskii) 1d (B and Li throughout run)
  - Nichols WallDYN ELM-free (0.5 of 1)
  - Ex-situ IBA of targets... (Wright) (piggy-back)
- Understanding longevity... (Scotti – Allain – Bedoya) 1d
  - Periodic evaluation of PFC... (Scotti) (piggy-back)
  - Connecting MAPP... (Scotti)
- B-zation optimization (Skinner) (if not XMP) .5d (other half from cross-cutting)
- ELM effects on mixed materials…(Nichols) (piggy-back)
- Surface Science (Koel) (piggy-back and support)
- Textured Mo surface (Skinner) (piggy-back low triangularity also shape dev. XMP)
- B-zation optimization (Skinner) (if not XMP) .5d (other half from cross-cutting)

Notional prioritization and logistics for MAPP

XP Priorities