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Wave Heating and Current Drive TSG: XMP for Recomissioning the HHFW System

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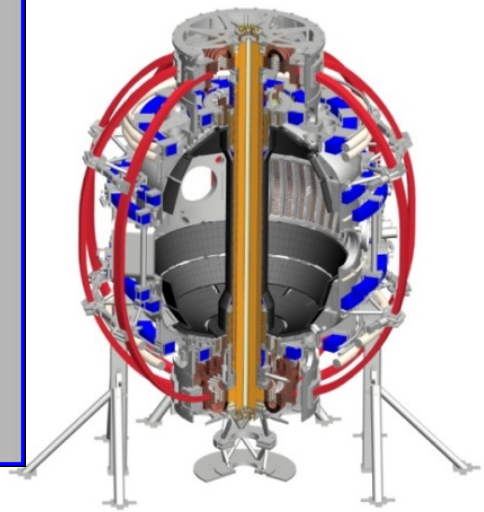
NSTX-U Pre-Forum Meeting 1

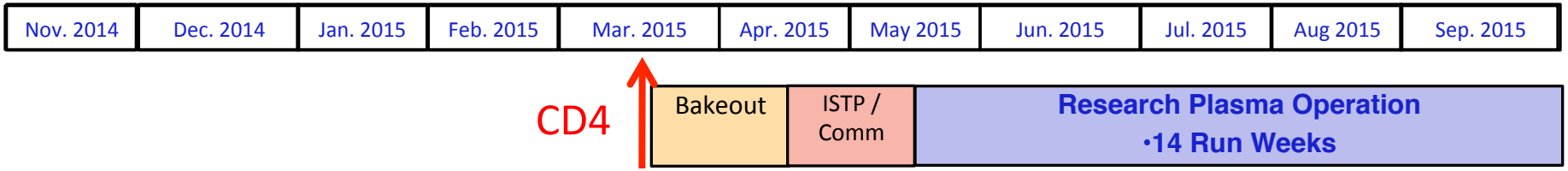
December 16th, 2014

PPPL



V1.0

Nominal HHFW commissioning schedule for FY2015



- **Complete transmission and matching hookups:**
  - Jan Finish loops
  - Feb Hookup to loops, set decouplers, match vac from RFE
- **Complete source assembly and testing**
  - Feb Complete source assembly and test into dummy load
  - March Labview updates for power/phase, EPICs system control
- **NSTX-U TC & RFE diagnostics re-commissioning**
  - March Into MDSplus
- **Conditioning of antenna**
  - April Vacuum conditioning
  - May Plasma conditioning
- **Prepare diagnostics for supporting HHFW studies**
  - May Complete coaxial Langmuir probe electronic hookups and connect to central computer (MDS plus)
  - May IR camera commissioning
  - May ORNL Reflectometer, probe, etc. reactivation
  - May RF probes at Bay J installation, hookup, commissioning

XMP026: Bring HHFW System online and operate into plasma

- Evaluate performance and condition antenna to maximum voltage
  - Verify phase and amplitude control, arc control, and plasma current inhibit
  - Compare voltage limits and performance in multiple plasma configurations
  - Monitor plasma heating utilizing magnetics and Thomson scattering
- Run XMP for two days followed by three days of HHFW experiments
- Need to evaluate heat load of 2nd NB on HHFW limiter
  - Both with and without applied HHFW power
- If possible, evaluate voltage standoff before and after lithium/boron conditioning

Preliminary outline of HHFW experiments

Lead Author(s)	Title	Collaborating TSG
G. Taylor	Low Plasma Current Fully Non-Inductive HHFW H-Mode	Solenoid-Free Start-Up
G. Taylor	HHFW Ramp Up of Inductively Initiated Plasma from 250 to 400 kA	
G. Taylor	HHFW Heating of CHI-initiated Plasma	Solenoid-Free Start-Up
J. Hosea **R. Perkins**	RF Heating at Divertor/SOL Regions	
N. Bertelli **M. Podesta** **B. LeBlanc**	HHFW Absorption in NBI-Heated Plasmas	Energetic Particles
J. Hosea **R. Perkins**	Study HHFW Power Coupling Versus ELM Activity	
J. Hosea	Turbulence Characteristics for HHFW Saturated Stored Energy versus RF Power	Transport and Turbulence
M. Podesta	Clamping of Edge Rotation by HHFW	