Agenda

- Proposed reversed fields campaign
- ET run strategy & XP scheduling for first 8 weeks of run
- Identify XPs that should run before lithium
- Schedule for reviewing ET XPs
- Discuss FY06 HHFW milestone

NSTX Wave-Particle ET Meeting
January 5, 2006

Proposed Reversed Fields Campaign

- Possible reversed field campaign after final maintenance break in May or early June discussed yesterday:

- reverse TF & I_p (2 days)
- magnetics calibration & coil ISTP (1day)
- test PCS (1day)
- contingency (1day)
- confinement study with reversed TF & I_p (2-3 days)
- profile modification study (0.5-1 day)
- QH-mode XP (0.5-1day)
- HHFW coupling with reversed TF & I_p (0.5 days)
- change TF back to normal direction
- HHFW coupling with reversed I_p (0.5 days)
- maintenance break to reverse I_p to normal (1.5 days)
(decide if to necessary to study HHFW with reversed TF)
- conduct ISTP & magnetics calibrations (1 day)

Wave-Particle XPs Identified for 2006 Run

NSTX 2006 Run Wave-Particle ET XPs

XP#	Lead Author(s)	XP Title	Request	Allocated	Priority	Schedule
	E. Fredrickson & C. Petty	TAE/EPM Impact on Fast Ion Transport (JNBI) & Displacement of NB Ions by MHD	2	1	1	E/M
	S. Diem & G. Taylor	Thermal EBW Emission and Oblique O-Mode Coupling Efficiency in L and H-Mode Plasmas	2	0.5+0.5	1	M & L
	W. Heidbrink, E. Fredrickson & N. Crocker	Fast-Ion Transport by Fishbone Instabilities & Documentation of TAE/EPM Fast Ion Losses	1	1	1	E/M
	E. Fredrickson	Direct Launch of CAE/GAE with RF Antenna	1	piggyback	2	M/L
	E. Fredrickson	Parameter Scaling of 'Angelfish' Instability	1	0.5	2	E/M
	R. Pinsker	Absorption of HHFW on Beam Ions in NSTX	2	1	2	E & L
	S. Bernabei	Search for HHFW Missing Power	2	1	1	E
	S. Bernabei	Reverse Bt and Btheta Fields	2	0.5+0.5	1	M
	J. Hosea	HHFW Power Deposition vs Phase and Wavelength Through Power Modulation	1+1	0.5+0.5	2	E & L
	J. Hosea	Magnetic Field Direction Effect on HHFW Coupling	1	1	2	E & L
	B. LeBlanc	HHFW into Reversed Shear Plasmas	1+1	1	2	M
	B. LeBlanc	High Te Plasma Scenarios with HHFW-Heating	1	1	2	L
			Total:	10.5		

- Which XPs should be run in first 8 weeks or before Li?
- How much XMP time do we need for HHFW?

Proposed ET XP Review Schedule

- First review high priority & early run XPs
- Propose ET XP Review meetings in January & February, with all meetings at 11 AM on Thursdays in LSB B252:

Lead Author(s)	XP Title	ET Review
E. Fredrickson & C. Petty	TAE/EPM Impact on Fast Ion Transport (JNBI) & Displacement of NB Ions by MHD	1/12/06
S. Diem & G. Taylor	Thermal EBW Emission and Oblique O-Mode Coupling Efficiency in L and H-Mode Plasmas	1/26/06
W. Heidbrink, E. Fredrickson & N. Crocker	Fast-Ion Transport by Fishbone Instabilities & Documentation of TAE/EPM Fast Ion Losses	1/12/06
E. Fredrickson	Direct Launch of CAE/GAE with RF Antenna	2/2/06
E. Fredrickson	Parameter Scaling of 'Angelfish' Instability	2/2/06
R. Pinsker	Absorption of HHFW on Beam Ions in NSTX	2/2/06
S. Bernabei	Search for HHFW Missing Power	1/19/06
S. Bernabei	Reverse Bt and Btheta Fields	1/19/06
J. Hosea	HHFW Power Deposition vs Phase and Wavelength Through Power Modulation	1/26/06
J. Hosea	Magnetic Field Direction Effect on HHFW Coupling	1/26/06
B. LeBlanc	HHFW into Reversed Shear Plasmas	2/9/06
B. LeBlanc	High Te Plasma Scenarios with HHFW-Heating	2/9/06

Prerequisites for FY06 HHFW Milestone

Milestone FY06-3 on Wave-P	*Characterize the interaction between the edge plasma region and the launched HHFW, and determine plasma conditions that permit efficient heating and current drive via HHFW*
[Dates; versions]	[12/21/05; version 1] No HHFW advocates attended the discussion. Input provided based on limited information from Kaye, Kaita, von Halle, Ono, Bell.
What needs to be **measured**?	Stored energy (total and electrons), ne & Te profiles, edge ion and electron temperatures, edge density profiles and fluctuations, edge neutral pressure, rf field strengths and spectra in edge region
What needs to be **analyzed**?	RF power deposition profiles, core heating efficiency, power to edge ions
What **diagnostic capabilities** are required?	TS system, edge rotation diagnostic, microwave reflectometer, fast reciprocating probe, fast ion gauges, Langmuir (electrostatic) probes, B-dot (RF) loops, visible & IR cameras on array,
What **new diagnostic** and **when available** for physics measurements?	Internal B-dot loops, IR camera viewing antenna array
What **operational capabilities** are required?	Reduce RF leakage RF propagation to the far side of torus, need internal RF probes Kaye: Better boundary control and discharge development (avoid MHD) Reversed field and reversed current operation.
What **new capabilities** and **when available** for experimental operation?	Kaita, von Halle: Elmer putting sensors near gaps to measure leakage – such as foil to cover up RF leakage, a big deal with hi-pot and safety issue. Peng: has there been any review on these suggested modifications? No one at meeting knows. Ono: can still run HHFW under certain conditions (high-k phasing only), as before. Bell: what is new since last year regarding HHFW operational capabilities? Ono: if lucky, external leakage will be identified and remedies would be possible next FY Ono: not clear when boundary control will be available
Given availability of the above, how many **run-days** and which **XP's**?	

Prerequisites for FY06 HHFW Milestone (cont.)

What would put achieving this milestone at **risk**, noting that unexpected physics may result?	RF-generated noise interfering with diagnostics and plasma control, discharges dominated by MHD-instabilities.
What **capabilities and schedule margins** are in place to **mitigate** each of the above risks?	
Unresolved issues and **schedules** of issue resolution	
Assessment and **recommendation**	Run Coordinator to pursue the RF ET leaders, HHFW stakeholders, and Project management to clarify plans (filing information identified in table) relating to this milestone, following up with the summary of action items issued by Phillips in November 22, 2005

01/05/06 - Phil Ryan's comments added in blue.