

Lithium Research TSG Strategy FY10

21 XP ideas total (excl. 5-6 days LLD commissioning)		Min run days	Max run days	Allocated run days
Particle control	5 XPs	3.5	6	
Impurity control	6 XPs	3	6.1	
Other	10 XPs	3.1	7	
Totals:	21	9.6	19.1	5.5 priority 1 2.5 priority 2

Good to see lots of fresh ideas from new students and post docs.

Expect to be nimble after first results from LLD commissioning.

Q. Demarcation between lithium research and other TSGs ?

A. LRTSG emphasis is on the 'M' in PMI:

LLD related issues

Li development e.g. dropper, evaporation into He, evaporation from LLD

XPs to diagnose sources of impurities

Tests/challenges of Li-related theory and modeling.

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21 XP ideas total (excl. 5-6 days LLD commissioning)		Min run days	Max run days	Allocated run days
Particle control	5 XPs	3.5	6	3 priority 1
Impurity control	6 XPs	3	6.1	2.5 priority 1
Other	10 XPs	3.1	7	2.5 priority 2
Totals:	21	9.6	19.1	5.5 priority 1 2.5 priority 2

Good to see lots of fresh ideas from new students and post docs.

Note some impurity related XPs in the ASC group.

1. Particle Control

1. Optimization of High-In Scenarios at Reduced Density (Gerhardt)
2. Qualification of LLD Operation at Various Levels of Plasma (Gerhardt)
3. High resolution measurements of modifications to edge parameters by lithium PFC coatings (Kallman)
4. D retention with LLD (Skinner)
5. Recycling and Pumping characterization of the LLD-1 module (Soukhanovskii)

Some had overlapping requirements (but not enough individual run time)

It was decided to combine the above into a group XP of 3 days

Meetings are planned to develop the shot list both before the run and after LLD commissioning.

2. Impurity Control

1. Study of Neoclassical Transport Mechanisms of High Z Impurities (Gray)
 - Piggyback if other high-Z gas injection.
2. Can Impurities be Purged from the Core by Allowing Early Elms with Shaping and Eliminating Later ELMs with Aerosol ? (Mansfield)
 - 0.75 day with #3
3. Understanding _ Eliminating High-Z Accumulation During ELM-Free H-Modes. (Mansfield)
 - Combine with #2.
4. Impurity Reduction by Diffusive Li Injection. (Skinner)
 - 0.75 day (some overlap with Dropper).
5. Core impurity density and radiated power reduction using variations in LLD divertor conditions. (Soukhanovskii)
 - 1 day.
6. Validation of DEGAS 2 Model for Li - He Diffusive Evaporation (Stotler)
 - Piggyback offline and with #4.

3. Other

1. Novel Concept for Measurement of Deposited Lithium Films on NSTX (Abrams)
 - No time requested.
2. Disruption Characteristics with a Warm LLD (Gerhardt)
 - More suited to Macroscopic Stability
3. Evaporating lithium into the SOL to reduce heat fluxes (Gray)
 - 0.5 days
4. Effective SOL particle lifetime and generation of SOLC and effects on edge. (Jaworski)
 - Combine with #10.
5. Experiments on the physics of hot spots. (Krashennikov)
 - piggyback.
6. LLD-1 Decommissioning (Kugel)
 - 0.5 days with #9.
7. Characterization of the LLD with a two-color infrared camera (McLean)
 - 0.5 days
8. Creation of a disruption database during LLD operation (McLean)
 - 0.5 days
9. Study of Li condensation in NSTX (McLean)
 - Combine with #6
10. Mapping of Te along Divertor Surfaces for Studying Lithium Effect on SOLC and ELMs (Takahashi)
 - 0.5 days

	max days request	min days request	priority 1	priority 2	Particle control	Impurity control	ITPA/ITER	R11-3	Title
LLD Commissioning:									
Kugel	6	5			✓			✓	LLD-1 Commissioning.rtf
Particle Control									
Gerhardt	1	0			✓		✓	✓	Aim: CDX level recycling coefficient ?
Gerhardt	1	1							Optimization of High-In Scenarios at Reduced Density.rtf
Kallman	1	0.5			✓			✓	Qualification of LLD Operation at Various Levels of Plasma
Skinner	2	1			✓			✓	High resolution measurements of modifications to edge pa
Soukhanovskii	1	1			✓			✓	D retention with LLD.rtf
total	6	3.5						✓	Recycling and Pumping characterization of the LLD-1 mod
	proposed total		3						
	actual total		3	0					3-day Group XP Stefan, Mike, Vlad, Charles, Josh, Micha
Impurity control									
Gray	1	0				✓		✓	Aim: Zeff < 2 @ 1s ?
Mansfield	1	0.5	0			✓		✓	Study of Neoclassical Transport Mechanisms of High Z Im
Mansfield	1	0.5	0.75			✓		✓	Can Impurities be Purged from the Core by Allowing Early
Skinner	2	1	0.75			✓	✓ (ELMs)	✓	Understanding _ Eliminating High-Z Accumulation During E
Soukhanovskii	1	1	1			✓		✓	Impurity Reduction by Diffusive Li Injection.rtf
Stotler	0.1	0				✓			Core impurity density and radiated power reduction using
total	6.1	3							Validation of DEGAS 2 Model for Li - He Diffusive Evaporat
	proposed total		2.5						
	actual total		2.5	0					
Other									
Abrams	0	0						✓	Aim: Understanding ?
Gerhardt	0.5	0							Novel Concept for Measurement of Deposited Lithium Film
Gray	2	1		0.5				✓	Disruption Characteristics with a Warm LLD
Jaworski	1	0.5		moved				✓	Evaporating lithium into the SOL to reduce heat fluxes.
Krasheninnikov	na	na		piggybac	na	na	na	na	Effective SOL particle lifetime and generation of SOLC and
Kugel	1	0.5		0.5				✓	Experiments on the physics of hot spots .rtf
McLean	1	0.5		0.5				✓	LLD-1 Decommissioning.rtf
McLean	0.5	0		0.5				✓	Characterization of the LLD with a two-color infrared cam
McLean	0.5	0.5		piggyback				✓	Creation of a disruption database during LLD operation.rtf
Takahashi	0.5	0.1		0.5				na	Study of Li condensation in NSTX .rtf
total	7	3.1							Mapping of Te along Divertor Surfaces for Studying Lithiur
	proposed total			2.5					
	actual total		0	2.5					Aim: Design LLD2 ?
GRAND TOTAL			5.5	2.5					