

**Princeton Plasma Physics Laboratory
NSTX-U Machine Proposal**

Title: **TMB sequencing in support of XP1505**

OP-XMP-108	Revision: 0	Effective Date: Expiration Date: <i>(2 yrs. unless otherwise stipulated)</i>
-------------------	--------------------	--

Proposal Approvals

Responsible author: Charles Skinner <i>Charles Skinner</i>	Date 7/10/15
ATI (NSTX-U Physics Ops): <i>Dennis Mueller</i>	Date 7/13/15
RLM (NSTX-U Expt. Research Ops):	Date

Responsible Division: **Experimental Research Operations**

Procedure Requirements
designated by RLM

	NSTX Work Permit		T-MOD (OP-AD-03)
	Independent Review		ES&H Review

RESTRICTIONS AND MINOR MODIFICATIONS
Approved by RLM

REVIEWERS (designated by RLM)		
<u>Organization/Position</u>	<u>Name</u>	<u>Signature</u>
ATI	D. Mueller	<i>Dennis Mueller</i>
Test Director		
Independent Reviewer	W. Blanchard	W. Blanchard <small>Digitally signed by W. Blanchard DN: cn=W. Blanchard, o=PPPL, ou=Engineering, email=wblancha@pppl.gov, c=US Date: 2015.07.13 08:13:32 -0400</small>
NB system		
RF systems		
FCPC systems		
Diagnostics		

TRAINING (designated by RLM)			
Training required: No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> Instructor _____			
Personnel (group, job title or individual name)	Read Only	Instruction	Hands-On
RLM _____			

NSTX-U MACHINE PROPOSAL

TITLE: **TMB gas timing sequence for OPG 155**
AUTHORS: **Charles Skinner, William Blanchard**

No. **OP-XMP-108**
DATE: **8/7/15**

1. Overview:

This XMP supports XP1505 ‘Optimising Boronization’. It specifies MAPP and deposition monitor configuration and the TMB gas timing sequence for NSTX-U boronization using TMB GDC per OPG 155. No plasma discharges are involved.

2. Justification:

This XMP supports XP1505.

3. Plan:

- 1) Load the Materials Analysis Particle Probe with two ATJ, one TZM and one Au samples and pump down per D-NSTX-DG-789 ‘Materials Analysis Particle Probe (MAPP) pump down procedure’.
- 2) Perform baseline XPS analysis of MAPP samples per OP-DG-776.
- 3) Insert MAPP into NSTX-U vessel.
- 4) Open shutters for deposition monitors at Bay F bottom, Bay I and Bay B midplane and Bay E top (if not already open).
- 5) Run TMB GDC at lowest practical pressure and exhaust 1.5 g-TMB through the **Bay D** upper centerstack injector. Record conditions in Table 1
- 6) Run TMB GDC at lowest practical pressure and exhaust 1.5 g-TMB through the **Bay F** midplane injector. Record conditions in Table 1
- 7) Run TMB GDC at lowest practical pressure and exhaust 1.5 g-TMB through the **Bay C** lower injector. Record conditions in Table 1
- 8) Run TMB GDC at twice the lowest practical pressure and exhaust 1.5 g-TMB through the **Bay D** upper centerstack injector. Record conditions in Table 1
- 9) Run TMB GDC at twice the lowest practical pressure and exhaust 1.5 g-TMB through the **Bay F** midplane injector. Record conditions in Table 1
- 10) Run TMB GDC at twice the lowest practical pressure and exhaust 1.5 g-TMB through the **Bay C** lower injector. Record conditions in Table 1
- 11) Withdraw MAPP from NSTX-U vessel
- 12) Perform XPS analysis of exposed MAPP samples per OP-DG-776
- 13) Retrieve MAPP samples per D-NSTX-DG-789 ‘Materials Analysis Particle Probe (MAPP) pump down procedure’.

14) 4. Required machine, beam, ICRF and diagnostic capabilities:

All requirements are specified in OPG 155

5. Sign off at run time:

5.1 Permission to Proceed:

Physics Operations Head

5.2 Documentation of results:

Documentation of the results completed, attached to proposal and sent to Ops. Center with copies to Cognizant Physicist and Head of Physics Operations.

Cognizant Physicist/Test Director