

**Princeton Plasma Physics Laboratory
Procedure**

Procedure Title: Control Of Workplace Cleanliness Around D-Site Experimental Areas

Number D/D-Site-OP-AD-24	Revision: 7	Effective Date: 2/10/15 Expiration Date: 2/10/18 (2 yr. unless otherwise stipulated)
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Procedure Approvals

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Responsible Department: Engineering and Infrastructure

**Procedure Requirements
designated by RLM**

LABWIDE:

Work Planning Form # _____ (ENG-032)	Lockout/Tagout (ESH-016)
Confined Space Permit (5008, Sec. 8, Chap 5)	Lift Procedure (ENG-021)
Master Equip. List Mod (MC-002/003)	ES&H Review (NEPA, IH, etc.)
RWP (HP-OP-20)	Independent Review
ATI Walkdown	Pre-job Brief
Post-job Brief	Hazard Analysis
Run Copy Required (performance of procedure must be documented and archived per ENG-030 page 10)	Special archiving requested for completed Run Copies: _____

D-SITE SPECIFIC:

D-Site Work Permit (OP-AD-09)	Door Permit (OP-G-93)
Work on Tritium Contaminated Systems (OP-AD-77)	Activity Certification Committee Review
Pre-job brief (ENG-030)	T-MOD (ENG-03)

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REVIEWERS (designated by RLM)

Accountable Technical Individual	A. vonHalle
Test Director	
Independent Reviewer	
D-Site Shift Supervisor	W. Blanchard, R. Camp, R. H. Carnevale, C. Gentile
NSTX-U	J. Winston
D-Site Caretaking	
Vacuum	
Tritium	
Quality Assurance/Quality Control.	
Maintenance and Operations Division	
Energy Conversion System/Motor Control System	
Heating Systems	
Environmental Restoration & Waste Management Division	
Construction Manager	E. Perry
Environmental, Safety, & Health	
Industrial Hygiene	
Health Physics	
Project Management	T. Stevenson

TRAINING (designated by RLM)

No training required _____ Instructor _____

Personnel (group, job title or individual name)	Read Only	Instruction Pre-job Briefing	Hands On
Users	✓		
NSTX Accessors	✓		

RLM **M. Williams** **Mike Williams**

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1.0 PURPOSE

- 1.1 The purpose of this procedure is to ensure, by administrative controls, the cleanliness of the National Spherical Torus Experiment (NSTX-U) at D-Site during installation, maintenance, inspection, and test operations. This procedure especially seeks to prevent accidental dropping of tools, materials, supplies, clothing, personal effects, liquids, or any other foreign object onto the machine and its associated equipment. It seeks to ensure that all supporting material and objects brought temporarily into machine areas for work are properly accounted for and removed following completion of the work.
- 1.2 The reasons for exercising this special control over workplace cleanliness around NSTX are:
 - 1.2.1 Small objects dropped from above the machine can fall into virtually inaccessible recesses around its upper surfaces, making retrieval very time consuming (hence costly) or impossible.
 - 1.2.2 Thorough cleaning of the exterior of the machine is difficult and may not be completely effective because of the virtual inaccessibility of some surfaces.
 - 1.2.3 Conductive objects such as metallic tools, parts, and fasteners which may accidentally lodge in inappropriate places can become current paths and introduce loop faults (inadvertent ground path circuits) between electrically isolated machine structures.
 - 1.2.4 When the machine is energized, unsecured magnetic objects can be pulled into critical areas with sufficiently great magnetic force to cause mechanical damage or loop faults.

2.0 SCOPE

- 2.1 This procedure applies generally to all work within the NSTX-U Test Cell and to the persons performing and controlling it. It applies especially to work around the exterior of the machine at its top, at the midplane, at the machine base, and on the various platforms.

3.0 REFERENCES

- 3.1 ENG-30, *PPPL Technical Procedures for Experimental Facilities*
- 3.2 ENG-032. *Work Planning Procedure*
- 3.3 HP-OP-12, *Radiological Work Permit Procedure*
- 3.4 ENG-036, *Control of Temporary Modifications*
- 3.5 OP-AD-09, *D-Site Work Permits*
- 3.6 OP-AD-39, *D-Site Conduct of Operations*
- 3.7 OP-AD-56. *Control of Equipment and System Status (chain of command)*

4.0 RESPONSIBILITIES

- 4.1 **All workers, supervisors, and cleanliness monitors** working in the specified areas shall strive for workplace cleanliness, and shall adhere to the following practices:
 - 4.1.1 All workers shall comply with requirements of this procedure
 - 4.1.2 Work in the NSTX-U Test Cell and around and on top of experimental devices shall be conducted in accordance with sections 5.1 and 5.2 of this procedure.
 - 4.1.3 Tools, etc. used around the machine exterior shall be removed at the end of each work shift during scheduled experimental operating periods or if required by the Chief Operations Engineer (COE), D-Site Shift Supervisor (DSS) or NSTX-U Construction Manager and when the work is completed.
 - 4.1.4 Report to a supervisor immediately any object dropped or otherwise lost while working on top of the machine. Stop work until the dropped object is recovered.
 - 4.1.5 The fit of hard hats (required to be worn in the NSTX-U Test Cell) shall be secure enough to not fall off under work conditions.
 - 4.1.6 Guard against compromising general machine integrity, such as by disturbing connections for power, grounding, vacuum, instrumentation, cooling water, etc.
- 4.2 **A Machine Technician**, designated as a dedicated monitor of workplace cleanliness, shall be assigned to inspect work on or around the machine during work procedures and to police the cleanliness of work activities there if required by the DSS/COE/Construction Manager.

- 4.3 **The Cognizant Person** shall ensure that:
- 4.3.1 All installations to be performed in the NSTX-U Test Cell are covered by approved (signed) procedure documents or Attachment 1 of OP-AD-09.
 - 4.3.2 Work conduct follows the procedure document instructions.
 - 4.3.3 All tasks to be performed in the NSTX-U Test Cell are documented with properly prepared and authorized Work Permits.
 - 4.3.4 Workmanship is of high quality and does not compromise machine integrity, such as connections for power, grounding, vacuum, instrumentation, cooling water, etc.
 - 4.3.5 Upon completion of the work, all tools, etc. are removed and the workplace is left clean.
- 4.4 **The D-Site Shift Supervisor (DSS), Chief Operations Engineer (COE) or NSTX-U Construction Manager** is responsible to:
- 4.4.1. Request Machine Technicians or Quality Control Inspectors for the work station as required and described above.
 - 4.4.2 Periodically review ongoing NSTX-U Test Cell activities to encourage and enforce proper execution of this procedure.
 - 4.4.3 During NSTX-U maintenance weeks and/or outages, the D-Site Shift Supervisor or the NSTX-U Construction Manager shall decide on the number of Machine Technicians and Quality Control Inspectors required and supervise the administration of this procedure.
 - 4.4.4 During NSTX-U Run periods, the Chief Operations Engineer (COE) on duty shall decide on the number of Machine Technician and Quality Control Inspectors required and supervise the administration of this procedure.
- 4.5 **The Cognizant Engineer** for each task shall review the results, confirm the requirements of this procedure have been met, and approve completion by sign-off on the Work Permit.

5.0 PROCEDURE

5.1 Work Everywhere Inside the NSTX-U Test Cell

All work performed inside the NSTX-U Test Cell shall confirm to the following rules:

- 5.1.1 The lead person of a task shall have a copy of the currently valid approved (signed) procedure document (if one is applicable to the task to be performed).
- 5.1.2 All installations to be performed in the NSTX-U Test Cell are covered by approved (signed) procedure documents or Attachment 1 of OP-AD-09.
- 5.1.3 The lead person for a task shall document by signature on the Work Permit that he/she understands and will follow the requirements of this procedure while working on and around the machine.
- 5.1.4 Upon completion of a task, workers shall remove all tools and equipment from the workplace.
- 5.1.5 Notify a Quality Control Inspector, as applicable, when the work has been completed.
- 5.1.6 A Quality Control Inspector shall verify completion of the work by signature, as applicable, on the procedure document.
- 5.1.7 When work is complete, the lead person for a task shall document by signature on the Work Permit that the requirements of this procedure have been followed, and that the workplace has been left clean.
- 5.1.8 All work shall be performed in accordance with the requirements of the appropriate Radiological Work Permit(s) (RWP).
- 5.1.9 A Work Permit (Attachment 2 of OP-AD-09) shall be obtained and approved for all work in the NSTX Test Cell.

5.2 Work on top of the Machine

In addition to the rules of par. 5.1, the following rules apply to work performed at the top of the machine:

- 5.2.1 Workers shall remove all metallic and other droppable objects from their persons (pen and pencils, wrist watch, bracelets, necklaces, comb, coins, PPPL identification badge, etc.).
- 5.2.2 Thermo-luminescent Dosimeters (TLD's) shall be securely fastened. If self-reading dosimeters (SRD) are required by Health Physics, they shall be secured to the person by cord.
- 5.2.3 Work inside of the "upper umbrella structure" for NSTX-U is limited to those individuals approved by the Construction Manager or designee. A list of approved workers shall be posted at NSTX-U.