

<b>PPPL</b>	<b>PRINCETON PLASMA PHYSICS LABORATORY</b>	<b>ORGANIZATION/ MISSION</b>	<b>No. O-008 Rev 3 page 1 of 4</b>
<b>Subject:</b>  <b>Engineering and Infrastructure Department</b>  <b>Organization and Mission</b>	<b>Effective Date:</b>  February 17, 2011	<b>Initiated by:</b>  Associate Director for Engineering and Infrastructure	
	<b>Supersedes:</b> Revision 2 Dated 12/20/07	<b>Approved:</b>  Director	

### **Introduction**

The Engineering and Infrastructure Department provides the engineering resources, technical infrastructure and facility services for the Laboratory's missions. Specifically, the Department:

- Provides recognized engineering leadership and unique technical contribution to the Laboratory, US and World fusion programs.
- Maintains the technical infrastructure to ensure a safe and economically viable environment for current and future experiments.
- Provides for safe and environmentally friendly operation of new and upgraded experiments, the continued maintenance and operation of the D-Site facility and the maintenance of Laboratory experimental facilities and equipment, which are not presently in use but could be of significant potential value in future activities.
- Ensures our facilities are effective, efficient and commensurate with the positive, creativity-inspiring and healthy work environment we want at the Laboratory
- Manages and minimizes waste products;
- Is committed to continually improving our most important resource - our staff - through technical training and employee development, complying with safety and environmental regulations, and protecting DOE and Princeton University property.

### **Department Organization**

The Department is organized functionally into four Divisions, one Office and one major Project:

- Mechanical Engineering Division
- Electrical Engineering Division
- Fabrication and Operations Division
- Facilities and Site Services Division
- Project Management Office
- NSTX Upgrade Project

## Responsibilities

### **The Mechanical Engineering Division is primarily responsible for:**

- Providing conceptual, preliminary and final designs and systems engineering services in support of new and upgraded experimental facilities.
- Developing the engineering designs and advancing the state-of-the-art for magnetic confinement plasma physics research devices.
- Performing engineering analysis including thermal, stress and electromagnetics.
- Developing and maintaining application codes for engineering design and analysis.
- Providing centrally managed Computer Aided Design (CAD) services using state of the art software, equipment and techniques.

### **The Electrical Engineering Division is primarily responsible for:**

- Operating, maintaining and upgrading AC Power distribution systems including emergency (diesel) and standby power supplies.
- Operating, maintaining and upgrading motor generator sets and ancillary equipment.
- Repair and calibration of electronic equipment.
- The design, development, operation and maintenance of electrical power conversion systems, radio frequency systems, neutral beam systems and other technologies used as plasma heating systems.

### **The Fabrication and Operations Division is primarily responsible for:**

- Providing shop services required for mechanical, electrical, materials test, brazing and welding, vacuum components testing, hardware assembly and machine operations.
- Providing management and oversight for the hoisting and rigging and welding programs.
- Providing construction engineering design and management.
- Providing engineering design, development, fabrication, maintenance and operations support for vacuum, cryogenic, water and diagnostic (mechanical) systems.

### **The Facilities and Site Services Division is primarily responsible for:**

- Designing and constructing new structures, modifying existing structures, and coordinating significant site improvements.

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- Engineering and planning of maintenance and operations for existing conventional facilities, including administration of the maintenance database.
- Maintaining, operating, inspecting, and repairing existing conventional facility systems and experimental support systems.
- Managing the site-wide efficient use of energy (electric/gas) and utility (water/sewer) services.
- Coordinating work space planning efforts.
- Providing housekeeping, grounds maintenance (snow removal and landscaping), trash removal, recycling and material handling services.
- Maintaining, operating, repairing and modifying security and fire detection, suppression and reporting systems.
- Providing support and service for telecommunications system, local and long distance equipment and lines, voice mail, billing, calling cards, cellular phones, pagers, 2-way radio systems, and home data lines.
- Providing management of cafeteria services.
- Managing the Laboratory's property system to record, track, control, and dispose of government owned assets in accordance with applicable regulations and best practices.
- Managing the Laboratory's fleet of vehicles and vehicular equipment.
- Conducting receiving, storage, and delivery operations.
- Providing spares, inventory control, and stores support.
- Providing packaging and transportation services.
- Providing the Laboratory's mail management services.

**The Project Management Office is primarily responsible for:**

- Establish a framework for PPPL project management and work planning processes and procedures.
- Provide oversight via the Work Planning Review Board, Design Review process, WAF Review and the Project Status Review Board.
- Mentor and advise projects to ensure compliance and consistency with Laboratory and DOE requirements.
- Provide initial and ongoing training for Cognizant Individuals and Responsible Line Managers.
- Conduct Lessons Learned Reviews to identify risks and opportunities for improvement.

**The NSTX Upgrade Project is primarily responsible for:**

- Upgrading NSTX magnetic field to 1 Tesla.
- Upgrading the NSTX Plasma Current to 2 Mega-amperes.
- Increasing the NSTX plasma pulse length to 5 Seconds
- Doubling the NSTX Neutral Beam Power to 10-15 Megawatts (pulse length dependent).