



The PPPL Highlights for the week ending May 4, 2019, are as follows:

NSTX-U RECOVERY (R. HAWRYLUK) AND RESEARCH (S. KAYE)

Recovery (R. Hawryluk):

TF Bundle — Fabrication continued on samples for the material testing that will be performed at PPPL. PPPL completed the final machining and shipping of parts to an external vendor (CTD) for molds that are used to make the test samples that will be subject to tensile testing. The specifications for the CTD tensile testing and the CTD Coefficient of Thermal Expansion (CTE) and the Modulus testing were revised to account for the latest set of requirements. A contract was signed with Element Materials Technology to perform additional tests related to the fracture toughness of the TF insulation. Efforts continue on benchmarking the model that simulates delamination, and the alignment of that model with another high-fidelity model that evaluates stresses with greater resolution. Finally, a work approval form (WAF) for the overall TF Bundle task was completed and uploaded to Primavera, and a baseline change proposal (BCP) was initiated to include the scope in the baseline recovery project cost and schedule.

Commissioning — J. Malo traveled to Argonne National Laboratory as an observer for an Accelerator Readiness Review (ARR). The ARR process will be a crucial step in maintenance and run preparation for the NSTX-U Recovery Project to ensure and verify that NSTX-U is ready for commissioning and safe operations. The ARR process is part of the NSTX-U Accelerator Safety Order Implementation Plan (ASOIP), which includes Commissioning, Procedures, Training and Qualification (TQ), Activity Certification Committee (ACC), Accelerator Readiness Review (ARR), and Transition to Operations (TTO).

Center Stack Casing — A Recovery Project Team visited the Camden headquarters for Holtec International to meet with the Oak Ridge Technologies and Holtec International project team, who are fabricating the new Center Stack Casing (CSC). R. Hawryluk, G. Swider, M. Viola, C. Pagano, and T. Young met with the ORT/Holtec project team and toured the new manufacturing facility where the CSC will be assembled and machined. The Camden fabrication facility is used for manufacturing Holtec's heat exchangers and spent fuel canisters. From the overhead cranes to the computerized welding, cutting, and rolling equipment, the facility is state-of-the-art and has adequate capabilities for our work. The meeting of the two project teams was very fruitful in working through expectations and contract and technical details. M. Viola will be providing oversight of the fabrication.

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Center Stack First Wall — A peer review was held on May 1 for the Center Stack First Wall Angled Tiles. The review was held to confirm that the method that has been developed for fabricating test samples for the center stack tiles will be successful and satisfy all requirements. The review covered the materials, processes, and procedures that are planned for the sample fabrication, up to and including the cutting of laminates into individual shapes.

Research (S. Kaye):

M. Ono visited the Large Plasma Device (LAPD) group at UCLA on April 29. He toured the experimental facilities and discussed the on-going radio-frequency experiments with the LAPD researchers. He also gave the UCLA plasma seminar entitled, “Opportunities and Challenges of Plasma Waves for Magnetic Fusion.”

U.S. ITER FABRICATION (H. NEILSON)

In its continuing focus on integration with ITER’s Equatorial Port Plug 11, the Low Field Side Reflectometer (LFSR) team is collaborating with the UKAEA’s RACE (Remote Applications in Challenging Environments) facility on remote-handling issues as well as with the Russian Federation’s (RFDA) team responsible for port integration. Meetings with RACE this week achieved progress in refinement of design options for the LFSR antenna support block interface with the diagnostic shield module (DSM) structure. Pending the outcome of ongoing thermal investigations, an integration of these design options will occur in the near future and will support RFDA interface freeze milestones scheduled for later this month.

The LFSR team this week submitted a Remote Handling Compatibility Report for U.S. ITER review. The LFSR in-vessel equipment is located in the Equatorial Port 11. Removal or re-installation of radioactive equipment from the DSM, if required, would be performed in a hot cell using remote handling tools. The report documents the remote handling classification of the LFSR equipment, based on an assessment of the likely failure rate over the life of the machine. The classification determines the requirements for components, tools, and procedures to ensure compatibility with remote handling. Remote handling-related design activities are led by PPPL engineer A. Basile.



ADVANCED PROJECTS (D. GATES)

Stellarators (D. Gates)

In its collaboration on the Wendelstein 7-X (W7-X) Continuous Pellet Fueling System (CPFS) project, the Laboratory this week took delivery of programmable logic controller (PLC) equipment that will become part of the system to be installed at the W7-X site.

Siemens products were chosen so as to be compatible with the existing W7-X instrumentation and control infrastructure. PPPL engineer B. Smith is enrolled in a Siemens factory training course on the operating software, in preparation for developing the software for the CPFS application.

THEORY (S. HUDSON)

M.-G. Yoo won the “Young Scientist Award in Plasma Physics” by the Korean Physical Society.

COMMUNICATIONS & PUBLIC OUTREACH (A. ZWICKER)

Communications (L. Bernard)

The Office of Communications posted one press release to the PPPL website. It focused on the completion of a three-year upgrade to the Lithium Tokamak Experiment, known as LTX- β . The upgrade, funded by the DOE Office of Science, installed a neutral beam injector — on long-term loan from Tri Alpha Energy, now TAE Technologies — to heat, fuel and increase the density of the plasma. Other improvements are detailed. We also posted the story to the *Newswise* and *EurekAlert* press release distribution services.

DIRECTOR’S OFFICE (S. COWLEY)

PPPL’s participation in the DOE-wide Eagle Horizon emergency exercise on May 1 was successful. The EOC was activated; buildings were evacuated; there was a simulated loss of power; and an accountability drill was conducted.

This report is also available on the following web site:

<http://www.pppl.gov/publication-type/weekly-highlights>