



The PPPL Highlights for the week ending March 8, 2013, are as follows:

U.S. ITER FABRICATION (D. JOHNSON):

A Request For Proposals was issued for the ITER High Voltage Current Transformers, the High Voltage Potential Transformers, and the High Voltage Surge Arresters.

All Quality Plans and Procurement Descriptions associated with diagnostics Procurement Arrangements 5.5.P3.US.01 and 5.5.P4.US.01 have been submitted to the IO. These are for the upper ports 11 and 14, the upper cameras, equatorial port 9, the ECE diagnostic and the TIP diagnostic.

A Subcontract Proposal Review Panel was constituted for the Request for Proposals associated with the "Physics and Engineering Design Support and Diagnostic Hall Instrumentation Development for ITER Low-Field-Side Reflectometry (LFSR) Diagnostic System", and a Source Selection Plan was drafted.

Presentations were reviewed for the upcoming Peer Review at the ITER Organization (March 18) on a US proposal to modify the front-end design of the LFSR, based on successful results of a monostatic antenna configuration on DIII-D. In this configuration a single antenna can be used for both the launch and receive signals saving cost and space.

A web meeting was held between the PPPL port engineering team and the ITER Organization blanket team to consider where to locate, in the ducts surrounding the heating beam, housings for three of the five toroidal interferometer/polarimeter retroreflectors.

NSTX (M. ONO):

NSTX-U is in the Upgrade Project outage in FY 2013. NSTX Upgrade construction activities continued this week and are highlighted in the Engineering section below.

Preparations for plasma operations in the NSTX-U configuration continued with the ongoing assembly and testing of the new firing generators for the field coil power conversion (FCPC) system rectifiers. The second firing generator successfully completed bench tests in the Electronics Shop, and will now be installed in an FCPC rectifier for pre-operational testing.

Access to the NSTX test cell will be available only through previous arrangement with the Upgrade Work Control Center.

ADVANCED PROJECTS (H. NEILSON):

The Wendelstein 7-X collaboration achieved a key objective with the issuance of a shipping release for the fifth and final trim coil to the supplier, Everson Tesla. Additionally, the five input-output interface modules, which will be used to transfer information about the coils to the W7X central computing system, completed their fabrication phase at PPPL this week. The five units will now undergo testing before being packaged and shipped to the W7-X site later this month. A request for quotes for the five safety disconnect switches for the trim coil power supplies was issued by PPPL Procurement, with a due date of March 15. The switches will provide a safety disconnect between the power supplies and the coils as well as a safety ground connection. This marks the last major procurement for the trim coil project.

THEORY (A. BHATTACHARJEE):

A. Hakim presented an invited talk "Discontinuous Galerkin Algorithms for (Gyro) Kinetic Simulations of Turbulence in Plasmas" at the SIAM Computational Science and Engineering 2013 conference in Boston, Massachusetts. Latest kinetic simulation results from under-development code, Gkeyll, were presented. While at the conference, a collaborative effort to benchmark fluid aspects of the code against work done by Francois Waelbroeck and co-workers of the Institute of Fusion Studies in Texas (IFS) was begun. In this effort the transport of blobs in tokamak edge will be studied and compared to a code from IFS as well as BOUT++. Results from this work will be jointly presented at the Sherwood conference later this year.

ENGINEERING AND INFRASTRUCTURE (M. WILLIAMS):

NSTX Upgrade (R. Strykowski, E. Perry, L. Dudek, T. Stevenson):

Construction: Welding of the bay L nozzle and external stiffeners has been completed. The JK internal temporary stiffeners can now be removed and the JK leak check can proceed. The machining repair of the first of two TF outer legs has been completed on one end. Umbrella leg shim installation continues. All umbrella stiffeners have been re-machined, bolted in place and weld prepped. The welding of the first set of umbrella stiffeners has been completed. Modifications to the PF5 clamps on NSTX have been started.

CS Upgrade: The first TF bundle quadrant has been removed from the mold. The VPI appears to be of high quality with a few cosmetic flaws. The quadrant is being prepped for electrical tests, to occur early next week. The mold and VPI system is being cleaned and readied for the next quadrant VPI. A post job brief was held to discuss the lessons learned from the first VPI. The first OH mold bids have come in and appear to be of acceptable quality and within the expected price range. Samples for electron beam welding tests on Cu-Cr-Zr were received at the vendor. The development of the weld is scheduled for the week of March 18 with results expected by the end of that week. A drawing of the TF centerstack assembly fixture was generated and circulated for comments.

NBI Upgrade: Calorimeter refurbishment and testing has been completed. Preparations are underway for its relocation to NTC BL2 next week. The Decon and removal of BL component

stands, equipment, and floor areas continues in the TTC paving the way for HVE relocations and Power cable tray installations. Preparation of parts for lifting HVE segments continues. Fabrication and leakchecking of LHe cryo line continues in the NB shop. LHe cryogenics line installation and welding on the TFTR Test Cell South wall continues. Leakchecking of installed cryo line is in progress on the TTC South wall catwalk. Fabrication continues on the NB/TVPS duct components in the Tech Shop. Work continues on the Armor backing plates. BL2 Cryogenics platform installation in the NTC is nearing completion. Work necessary to analyze and reinforce the SFLIP port area on midplane is in progress. Controls cable tray parts have been received. Turbomolecular pumps have been received making a full complement for NBI and TVPS. The monthly status meeting was held with all active jobs reporting earned value and progress. Management attended the monthly Integrated Project Team meeting this week reporting status and plans.

Office of Project Management (T. Stevenson):

The next Project Status Review Board and Work Planning Review Board have been scheduled for next week. System Engineer training has been completed. Followup with System Engineers is planned. Testing for WP 6.0 notifications was completed. Changes for Work Planning system 6.1 are in progress to address judgments of need and corrective actions. Planning for the upgrade to the online WP system has started with the gathering of requirements. Development of the COG/RLM online package continues. Several more topics were added based on recent input. An online package is planned.

Facilities and Site Services (M. Viola):

Engineering Services: The ESU Building Exterior Wall Upgrade Statement of Work was signed and the Construction Cost estimate was approved. These have now been sent to Procurement. A Statement of Work is being prepared to address the leak on the pedestrian bridge roof. Design work began on the TFTR Duct Restoration Project.

Fire Protection: Work continued on the fire protection audit follow-up.

Energy: Water tower testing methodology was revised to testing once per quarter rather than once a month. This action saves the laboratory about 300,000 gallons of potable water and over \$4,000.00 per year, as well as maintenance time.

Telecom: The Telecommunications Office, at the request of F. White, has responded to DOE's S&S Assessment Review. According to Fran White, the DOE Assessment Team was pleased with the telecommunications portion of the review and made no recommendations to improve the Telephone and Radio Communications at the Lab. However, the Telecommunications Officer requested that the review document add the following information regarding the radio communications: "The main consul can communicate with Princeton University, Princeton FD and PD, Plainsboro FD and PD, and Mercer FD dispatch centers via a dedicated radio channel."

Material Services: Property Management will be initiating the 2013 Other Accountable Inventory this week. Equipment that has been know for years as "SENSITIVE" (SE) property was renamed as "Other Accountable" property (OA) per DOE Order 580.1a. Material Services

and DOE/PSO have determined that the following equipment is considered "Other Accountable Property" - CPU's (all types), camera's, navigation systems, smart phones, and televisions.

BUSINESS OPERATIONS (E. WINKLER):

The Cost Guideline Summaries were revised and posted on the accounting website this week in the policies and procedures section. The purpose of this summary is to provide general guidance with respect to costs that are allowable and chargeable to the DOE contract and those costs which are unallowable.

R. Templon attended a meeting of the Procurement Evaluation and Re-engineering Team (PERT) held at the NNSA's Kansas City Plant. This meeting was limited to thirty participants. The agenda included: a presentation on the role of PERT from the DOE Contracting Officer's perspective; the re-definition of strategic sourcing contained in the Policy Flash on procurement cost savings calculations; a trend analysis of FY 2012 PERT review observations; a presentation on the annual CAPS purchasing benchmark survey of DOE facilities; a team lead training session; subcommittee sessions on revision of the Peer Review Handbook and DOE/NNSA policy initiatives assigned to PERT; a demonstration of the PERT's OMB Max website, where all review-sensitive documentation will be stored; and reports on best practices at INL and Sandia.

PPPL submitted the final Work for Others proposal package to provide engineering analysis and design support to Pohang University of Science and Technology to the DOE PSO for approval. The Principal Investigator is B. Ellis. The budget is \$30,000 for the six-month period of performance.

ENVIRONMENT, SAFETY, HEALTH & SECURITY (J. LEVINE):

Emergency Services Ambulance A166 responded to Plainsboro for three mutual aid assignments. Engine 66 responded to PPPL C-Site LSB for a false alarm stuck elevator.

DOE/PSO approved the PPPL Site Security Plan dated January 1, 2013.

The recent audit of the laser safety program at PPPL indicated that specified requirements are not always met, and has resulted in the submission of a PAAA Report (NTS--PSO-PPPL-PPPL-2013-0001).

F. White briefed DOE/PSO on the DOE draft report, "PPPL Physical Protection System Risk Assessment," resulting from the assessment held in November 2012.

In accordance with EPIP 06, Natural Emergencies, an emergency planning meeting was held on March 5 to prepare for potential severe winter storms later in the week.

SPD issued five all staff e-mail messages regarding weather emergency notifications, winter weather expected on Wednesday, Eastern Wild Turkeys in the cafeteria courtyard, Daylight Savings Time: Change Your Clock / Change Your Smoke Alarm Batteries, and slippery conditions at PPPL.

Captains H. Caruso, K. Rhoades and D. Thompson completed their EMT Refresher training course. This refresher training is required every three years.

On March 9, J. Alkhateeb attended the first in a series of classes for NJ Fire Instructor I Certification at the Mercer County Fire Academy.

Platoon C completed advanced NightOwl operations training.

On March 8, a vendor was on site for annual inspection and service testing of all ESU ground ladders.

INFORMATION TECHNOLOGY (S. BAUMGARTNER):

A collaboration with GA for re-engineering and fabricating integrator boards has successfully been completed.

The prototype NSTX Reconfigurable Timing Unit has produced timing signals with reasonably good accuracy. Performance and software improvements are ongoing.

Several databases used for NSTX have been migrated off the to-be-retired SQL2000 server.

OFFICE OF COMMUNICATIONS: (K. MACPHERSON):

C. Cane and K. Silber worked with C. Augustine of Princeton University to create an automatic fail-over website mechanism in the event that www.pppl.gov, PPPL's main website, is unavailable.

J. Jackson DeVoe organized the following tours:

A group of Princeton University art students, who are visiting PPPL periodically this semester, were given a tour of NCSX by Al Von Halle on March 5.

Diane Sare, a third-party candidate for governor with the LaRouche Party and 17 others on March 6 with tours led by A. Dominguez and R. Camp. They viewed the PPPL video and toured the NSTX Control Room and Annex, as well as visiting the NCSX site and the lobby.

J. Greenwald worked with physicist S. Lazerson to produce a write-up of a Lazerson paper published in the journal Plasma Physics and Controlled Fusion. The story is to appear on both the PPPL and journal websites.

K. MacPherson and J. Greenwald participated in discussions of a "Five-Year Fusion Communications Plan." MacPherson assisted Tom Avril, a science reporter with the Philadelphia Inquirer, with background information on fusion.

E. Starkman took numerous photos including: portraits of A. Battacharjee, S. Gilani and R. Maingi; the CS Epoxy event; and sections of CS after it was baked; and wild turkeys in the PPPL courtyard.

BEST PRACTICES & EXTERNAL AFFAIRS (J. DELOOPER):

Approximately 320 individuals attended the Science on Saturday Program. Professor Joel Langer of Case Western Reserve University gave a talk on "A Short History of Length"

The following PPPL Reports were posted to the web:

Observation of Non-Maxwellian Electron Distributions in the NSTX Divertor PPPL-4854

Authors: M.A. Jaworski, et. al.

Submitted to: Journal of Nuclear Materials, (June 2012) and 20th Plasma-Surface Interactions Conference, Aachen, Germany, (May 2012)

Scrape-off Layer Flows With Pressure Gradient Scale Length \sim Pp PPPL-4855

Authors: Robert J. Goldston

Accepted to: Journal of Nuclear Materials, (January 2013)

On Variational Methods in the Physics of Plasma Waves PPPL-4856

Authors: I.Y. Dodin

Submitted to: Fusion of Science and Technology (March 2013) Presented at: 6th ITER International School (Ahmedabad, India, 2012)

DIRECTOR'S OFFICE (B. SOBEL):

On March 6, S. Prager held a working group meeting with the Information Technology (IT) staff. His goal is to meet with the various staffs throughout the Laboratory.

On March 6, Professor Iain Couzin, Princeton University, presented a colloquium entitled "From Democratic Consensus to Cannibalistic Hordes: The Principles of Collective Behavior".

M. Zarnstorff attended a meeting of the Chief Research Officers (CRO), held in Washington, DC, March 7-8.

This report is also available on the following web site:

<http://www-local.pppl.gov/director/highlights/2013/2013-highlights.htm>