

NSTX Weekly Report (Apr. 20, 2007)

FY 2007 NSTX plasma operations started on Feb. 19, 2007.

Planned: 10 weeks

Completed: 4.19 weeks (through Apr. 18, 2007)

Run Coordination (D. Gates, M. Bell)

Two experimental proposals were performed during this period.

On Monday April 16th, XP-725, entitled "Optimization of current generation with transient CHI" was run by R. Raman.

NSTX did not run on Tuesday April 17th due to the weather related laboratory closing.

On Wednesday, April 18th an additional half day of XP-725 was run in the morning. Good results were obtained with currents similar to previous years, in spite of the weather. A small capacitor bank size of 20mF (instead of 45mF used during 2006) produced close to the same closed flux current as that obtained in 2006, but at about half the absorber arc current of that obtained in 2006. The absorber arc current is considered to be undesirable since it serves no useful function and it can generate impurities. In the afternoon XP-726, entitled "Coupling a transient CHI plasma to OH" was run. For the first time on NSTX, a CHI plasma was used to initiate a plasma with an ohmic ramp-up. The CHI+OH plasma was 100kA - 50kA more than the 50kA. These startup scenarios will be optimized during the next CHI run with good wall conditions. Brian Nelson (U-Wash.) was on site to participate in these experiments. Tom Jarboe (U-Wash.) participated remotely.

Engineering Operations (A. von Halle, C. Neumever)

NSTX resumed operations this past week after a one week maintenance period, performing experiments on Transient Coaxial Helicity Injection (CHI), coupling a CHI discharge to ohmic heating, High Harmonic Fast Wave (HHFW) optimization at high field, and lithium deposition using the new LITER 1d. A new high speed camera was installed to record the CHI plasmas, and good progress was made on the CHI experimental proposals despite the weather related problems and lab closures early in the week. The HHFW systems also worked well and good progress was made on that experiment which utilized some neutral beam injection and the Motional Stark effect (MSE) diagnostic. The refurbished neutral beam ion source recently installed in the "B" position developed a problem in its arc chamber and will have to be removed and returned to the shop. Another spare is now being prepared for installation and conditioning, and neutral beam operations will continue in the meantime with the remaining two sources.

The NSTX test cell will be in restricted access during plasma operations this coming week. Access will be available from 5 to 10PM each evening.

Research Operations (M. Bell)

Boundary Physics Operations (H. Kugel)

- The fabrication LITER1d/unit-2 and its subsequent vacuum baking to 930°C were completed. (S.

Jurczynski)

- The LPI was removed from NSTX, and preparations are in progress for velocity measurements with candidate 304-SS sabots for selecting the optimum style for future experiments. (T. Czeizinger, D. Mansfield, G. Gettelfinger)