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LPI Thresholds in Longer Scale Length Plasmas Driven by the Nike Laser* J. WEAVER, NRL, J. OH, Res. Support Instru. (RSI), L. PHILLIPS, NRL, B. AFEYAN, Polymath Res. Inc., J. SEELY, D. KEHNE, C. BROWN, S. OBENSCHAIN, V. SERLIN, A.J. SCHMITT, NRL, U. FELDMAN, ARTEP, G. HOLLAND, NIST, R.H. LEHMBERG, E. MCLEAN, C. MANKA, RSI — The Krypton-Fluoride (KrF) laser is an attractive driver for inertial confinement fusion due to its short wavelength (248nm), large bandwidth (1-3 THz), and beam smoothing by induced spatial incoherence. Experiments with the Nike KrF laser have demonstrated intensity thresholds for laser plasma instabilities (LPI) higher than reported for other high power lasers operating at longer wavelengths ($\geq$351 nm). The previous Nike experiments used short pulses (350 ps FWHM) and small spots ($<$260 μm FWHM) that created short density scale length plasmas (Ln$\sim$50-70 μm) from planar CH targets and demonstrated the onset of two-plasmon decay ($2\omega_p$) at laser intensities $\sim$2x10^{15}W/cm^2. This talk will present an overview of the current campaign that uses longer pulses (0.5-4.0 ns) to achieve greater density scale lengths (Ln$\sim$100-200 μm). X-rays, emission near $^1/_2\omega_o$ and $^3/_2\omega_o$ harmonics, and reflected laser light have been monitored for onset of $2\omega_p$. The longer density scale lengths will allow better comparison to results from other laser facilities. *Work supported by DoE/NNSA and ONR.

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