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South-Pole Bang-Time X-Ray Diagnostic for the NIF D.H. EDGELL, J. MAGOON, T.C. SANGSTER, M.J. SHOUP III, C. STOECKL, Laboratory for Laser Energetics, U. of Rochester, A.G. MACPHEE, S. BURNS, J. CELESTE, M.J. ECKART, J.D. KILKENNY, J. KIMBROUGH, J. PARKER, T. THOMAS, LLNL — An x-ray bang-time diagnostic is essential for the National Ignition Facility (NIF) to compare implosions with simulations as part of ignition tuning. The south-pole bang-time (SPBT) x-ray diagnostic is located 3 m directly below target chamber center, viewing the implosion through the hohlraum laser entrance hole. SPBT consists of five chemical-vapor-deposition (CVD) diamond detectors with different sensitivities. Wavelength-selecting highly oriented pyrolytic graphite (HOPG) crystal mirrors increase the signal-to-background ratio. SPBT electronics are placed near the NIF target chamber, minimizing the cable lengths and their effects on the detector time response. The SPBT is designed to provide 30-ps accuracy on the bang-time measurement and to operate at neutron yields up to 10^{17}. Characterization of the detector components and assembly are presented along with data from NIF implosions. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC52-08NA28302.

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