Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Development of a thermal x-radiation source using "hot" hohlraums M.B. SCHNEIDER, LLNL, C. AUSTHREIM-SMITH**, H.A. BALDIS**, G.V. BROWN, H.-K. CHUNG, K. CONE**, S.B. HANSEN, D.E. HINKEL, A.B. LANGDON, R.W. LEE, M.J. MAY, LLNL, S.J. MOON, K. WIDMANN, B.K. YOUNG, **U.C. Davis — High temperature ("hot") hohlraums have been fielded at the NIF and OMEGA lasers. They reach high radiation temperatures by coupling a maximum amount of laser energy (10 kJ) into a small gold hohlraum (400-800 μm diameter) in a short time (1 nsec). They fill rapidly with plasma. Radiation temperatures of 370 eV have been measured in the laser entrance hole (LEH) region of these targets. However, since this LEH radiation is not thermal it cannot be used as a radiation drive for opacity or atomic physics packages. In addition, a physics package inside the hohlraum cannot be shielded from this radiation or protected from being crushed by the plasma filling. The radiation source we are developing uses the x-ray burnthrough of a thin wall of the hohlraum to heat a physics package. We report on the measured radiation drive of this source and the use of this source to heat a surrogate physics package (a "witness plate"). We characterize the radiative heating of the witness plate by measuring its thermal expansion and soft x-ray spectrum. This work was performed under the auspices of the U.S. Department of Energy by University of California Lawrence Livermore National Laboratory under Contract No. W-7405-ENG-48 and grant number DE-FG52-2005NA26017 (NLUF).

Marilyn B. Schneider
LLNL

Date submitted: 25 Jul 2006 Electronic form version 1.4