Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

Collaborative Investigations on the Gas Dynamic Trap H.S. MCLEAN, B.I. COHEN, D.D. RYUTOV, LLNL, D.J. DEN HARTOG, UW-Madison, A.A. IVANOV, BINP — The Gas Dynamic Trap (GDT) may represent a practical compact fusion neutron source for materials testing. To explore this possibility we have proposed U.S. participation in experimental, theoretical, and computational studies of stability and energy transport on the Gas Dynamic Trap (GDT) experiment at the Budker Institute in Novosibirsk, Russia. Electron temperature is a critical parameter in the gas dynamic trap (GDT) for high beta operation but, in addition, fast-ion energy losses are governed by electron drag, which decreases with increased electron temperature. Higher fast-ion densities lead to higher neutron production in fusion neutron sources based on the GDT concept. Electron temperature profiles will be measured by fielding an expanded Thomson scattering diagnostic. Beta limit and stability studies will be facilitated primarily with internal magnetic field measurements via a Motional Stark Effect diagnostic. Computational studies will utilize the ICEPIC code, which contains an extensive set of physics capabilities. This work performed under the auspices of the U.S. DoE by LLNL under Contract DE-AC52-07NA27344.

H.S. McLean
LLNL

Date submitted: 16 Jul 2010 Electronic form version 1.4