Abstract Submitted for the DPP05 Meeting of The American Physical Society

High Density Plasma Beam Target Fusion: An Alternative form of Inertial Confinement to Ignition DAH YU CHENG, Cheng Technology & Services — A scaling law has been demonstrated for a plasma gun in a 30 m diameter space chamber. Using a specific combination of delay time between the gas valve opening and operation of a capacitor bank switch, and the capacitor bank's voltage, the deflagration gun (Ref. 1) is capable of producing high kinetic energy and at a high density beam. Using a convergent gun barrel it is possible to compress beam density by a factor of 100. A  $10^{17}$ /c.c.beam was obtained. If the kinetic energy is at 280 Kev (fusion threshold) Neutron flux up to  $5 \ge 10^{19}$  could be produced in a 1 micro-second period. This represents 500 MJ of energy yield. If the classical fusion energy data were in error by a factor of 100 that still would yield 5 MJ of fusion energy. Results obtained from experiments in the 30 m diameter space chamber have demonstrated such a capability using a 120 KV capacitor bank with 200 KJ of stored energy (Ref. 1). A very small scale experiment has demonstrated a yield of  $10^{15}$  neutrons using less than 10 kJ of capacitor energy. **References:** 

1. Cheng, D.Y. 1970 Plasma Deflagration and the Properties of a Coaxial Plasma Deflagration Gun. *Nuclear Fusion*, 10, pp. 305- 317

Dah Yu Cheng Cheng Technology & Services

Date submitted: 13 Jul 2005

Electronic form version 1.4