Abstract Submitted
for the APR05 Meeting of
The American Physical Society

**Examination of Liner Stability During Magnetic Implosion Using Experiments and Simulations** WALTER ATCHISON, RICKEY FAEHL, Los Alamos National Laboratory, DON LEMONS, Department of Physics, Bethel College — The onset of Magneto-Raleigh-Taylor (MRT) instabilities in metal liners, when excessive current is applied, has been the limitation on use of these liners. In several experiments where melting of the liner was present the outside liner surface was observed to remained stable(B$\sim$0.5 to 1.3 MG). Analysis of this and other cases compared to MHD simulations enabled us to examine the effect of drive conditions on the instabilities. Variations of drive conditions, initial liner surface, and EOS show two factors that effect instability. While the nature of the instability still is fundamentally the acceleration of a fluid interface, a liquid/vapor phase change drastically accentuates growth. Observed cases that remained stable even after melting suggest there may be drive conditions that maintain the aluminum at conditions above the saturated liquid line and reduce or delay the MRT instabilities. We propose that gradient of force within the melted liner also impact these growth rates. We will present analysis, data, and simulations that examine these mechanisms that effect instability growth.

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Date submitted: 18 Jan 2005 Electronic form version 1.4