Abstract Submitted
for the DPP13 Meeting of
The American Physical Society

Safety and diagnostic systems on the Liquid Lithium Test Stand (LLTS)[1] J.A. SCHWARTZ, M.A. JAWORSKI, R. ELLIS, R. KAITA, R. MOZULAY, Princeton Plasma Physics Lab — The Liquid Lithium Test Stand (LLTS) is a test bed for development of flowing liquid lithium systems for plasma-facing components at PPPL. LLTS is designed to test operation of liquid lithium under vacuum, including flowing, solidifying (such as would be the case at the end of plasma operations), and re-melting. Constructed of stainless steel, LLTS is a closed loop of pipe with two reservoirs and a pump, as well as diagnostics for temperature, flow rate, and pressure. Since liquid lithium is a highly reactive material, special care must be taken when designing such a system. These include a permanent-magnet MHD pump and MHD flow meter that have no mechanical components in direct contact with the liquid lithium. The LLTS also includes an expandable 24-channel leak-detector interlock system which cuts power to heaters and the pump if any lithium leaks from a pipe joint. Design for the interlock systems and flow meter are presented.

[1]This work is supported by US DOE Contract DE-AC02-09CH11466

Jacob Schwartz
Princeton Plasma Physics Lab

Date submitted: 12 Jul 2013 Electronic form version 1.4