



Liquid Metal Test Systems at Sandia

ALPS Meeting

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T. Lutz, J. McDonald, T. Tanaka,
R. Nygren, M. Ulrickson

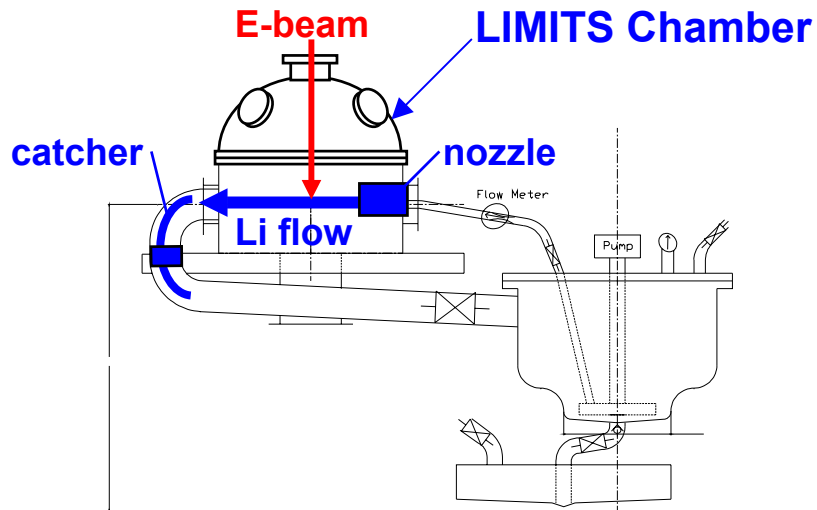
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LIMITS

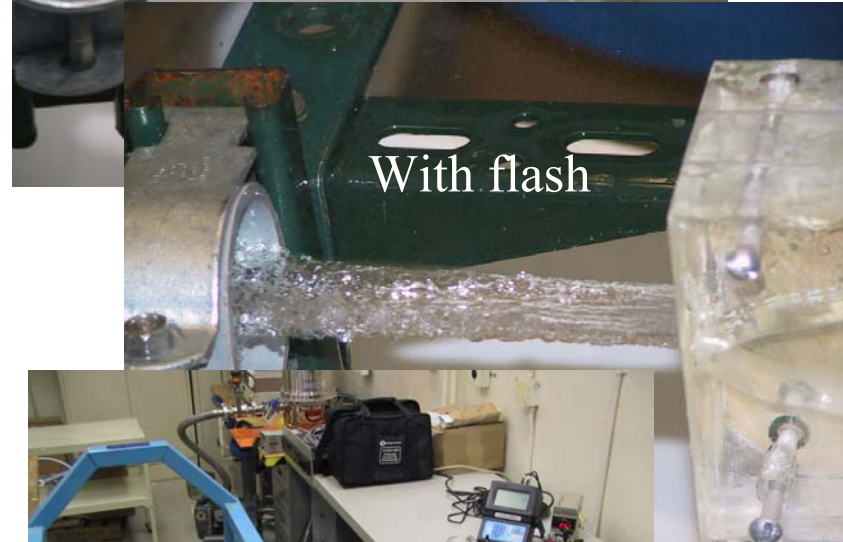
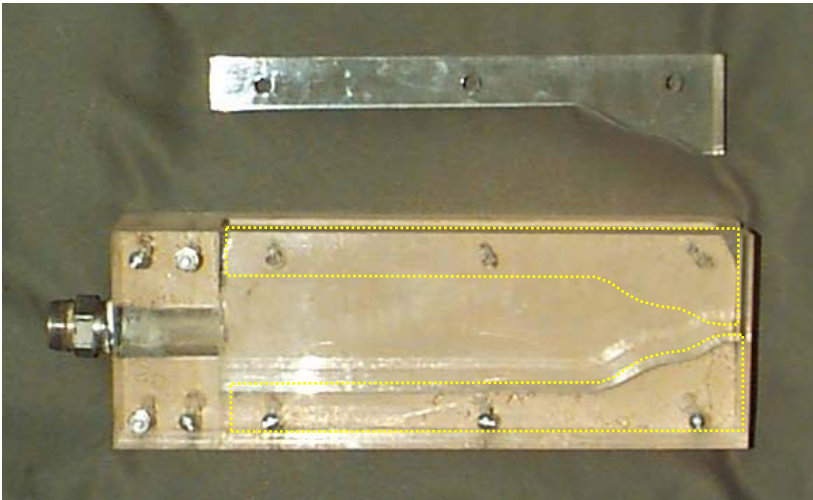
Proposed Li Loop for EBTS



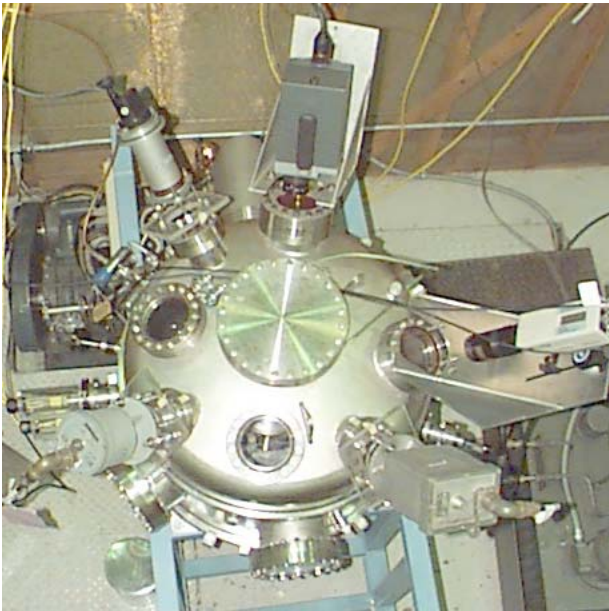
- Main pump (furnace) and two transfer vessels with spill containment received
- Modification and removal of EBTS complete
- Preparation of test system location in progress

Nozzle

- We started with a design by JAERI and Osaka U. for a Li loop for IFMIF testing.
- We made a polished Plexiglas model. (Reservoir was packed with tubes to provide flow straightening.)
- In our initial tests, streamlining with the nozzle cross section was lost in <10cm.
- Water system provides variable flow, velocity up to 10 m/sec.



LIMITS Experimental Diagnostics

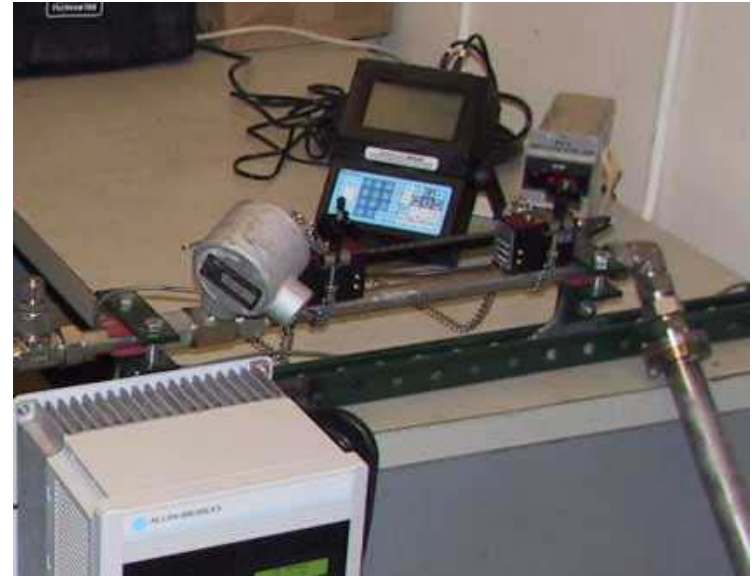


LIMITS Chamber - Top View

- Temperature
 - Thermocouples
 - Infrared devices
 - Pyrometers
 - Infrared Camera
- Visual
 - Color CCD camera

LIMITS Experimental Diagnostics

- Flow
 - ultrasonic transducers (liquid metal system)
 - turbine (nozzle development water system)





LIMITS Experimental Diagnostics

- Pressure
 - High temperature melt transducers
- Level
 - resistance probe?
 - Floats?
 - external inductance sensor?
- Impurity measurements
 - residual gas analyzer (on LIMITS)
 - resistance probes?
 - other?



LIMITS Experimental Diagnostics

- Surface deflection, distortion
 - visual image (CCD camera)
 - capacitance position sensors?
 - optical surface reflectance?
 - 1. Quantitative Schlieren Imaging
 - 2. Shadow graphs.
 - 3. Irradiance Transport.
 - 4. Scanning laser profilometers.
 - 5. Shack-Hartman Sensors.
 - 6. Structured Lighting Techniques.

Material Handling



- Glove box
 - modifications for load handling in progress
 - Argon control and monitoring system partially received

NaK Loop

- TOPAZ System
- transfer of ownership from Air Force complete (Free!)
- movement preparations in progress



- Electromagnetic Pump
- 1" diameter piping
- Maximum temperature 450°C