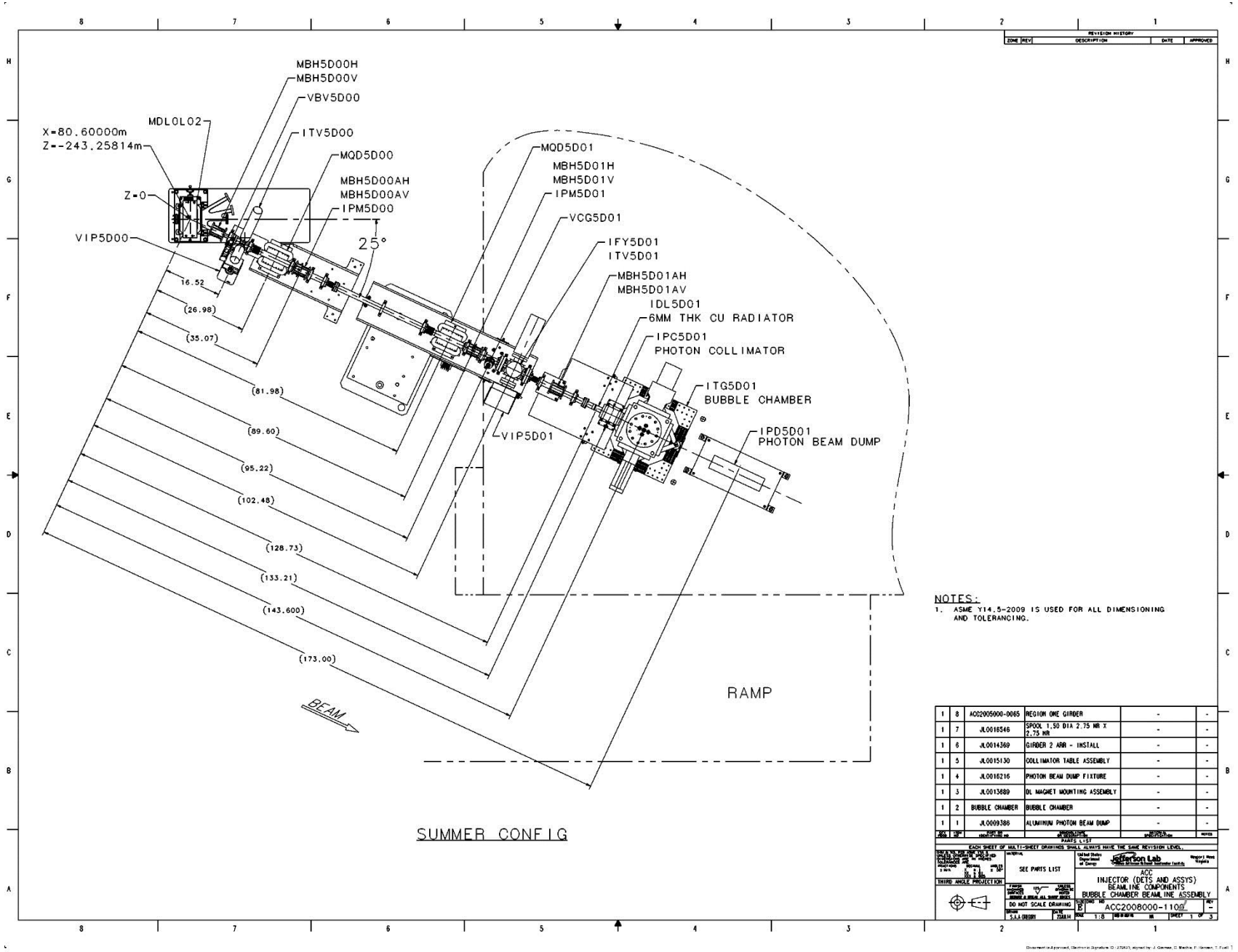
Bubble Chamber
Summer 2015

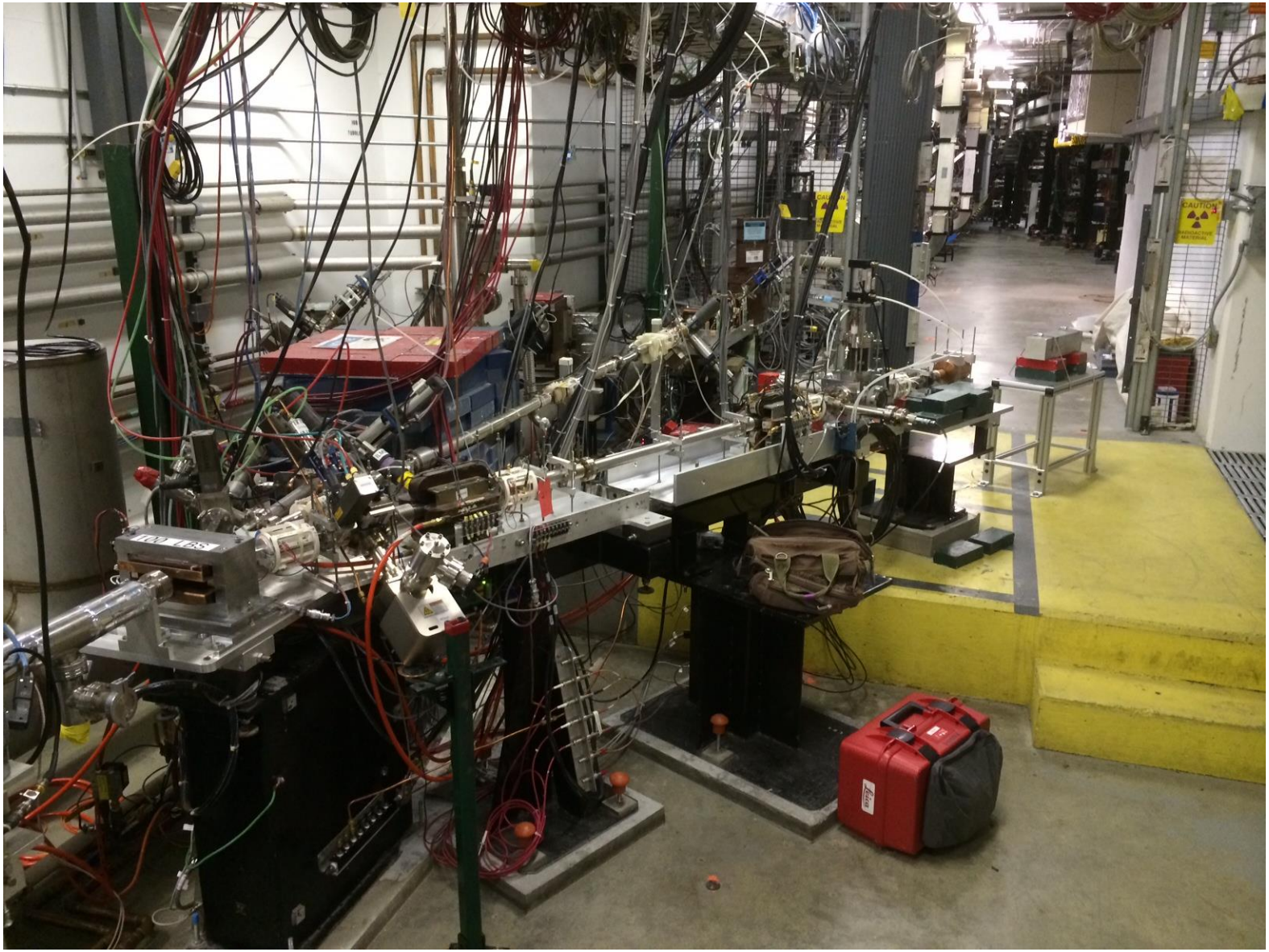
Installation and
Beam Test Schedule

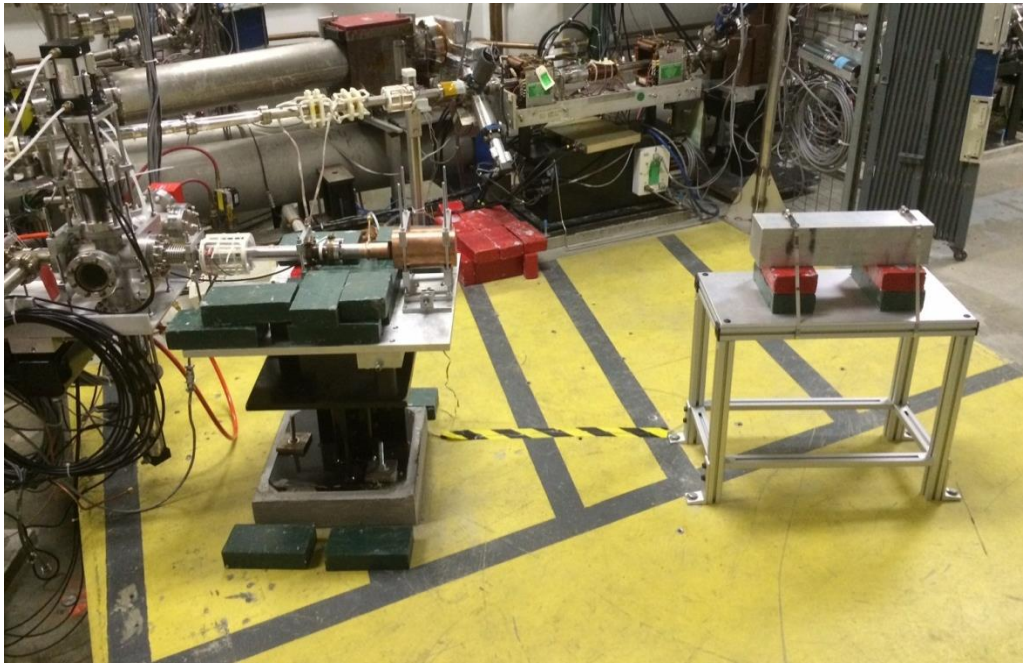
July 8, 2015

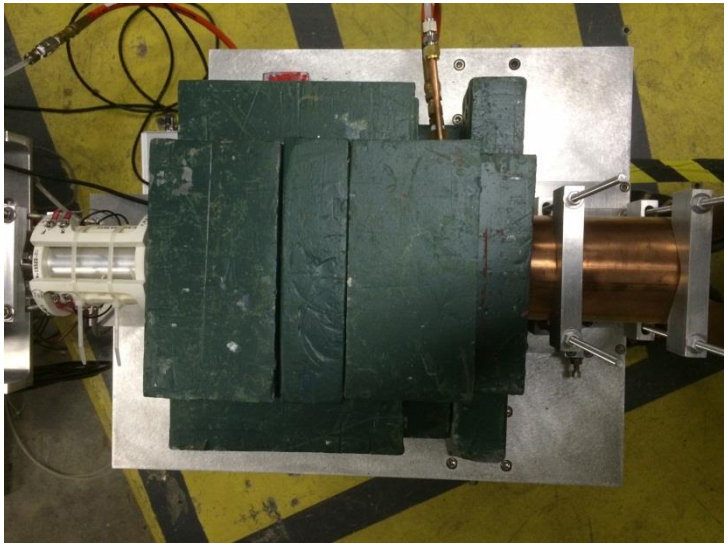
https://wiki.jlab.org/ciswiki/index.php/Bubble_Chamber

TEST BEAMLINE



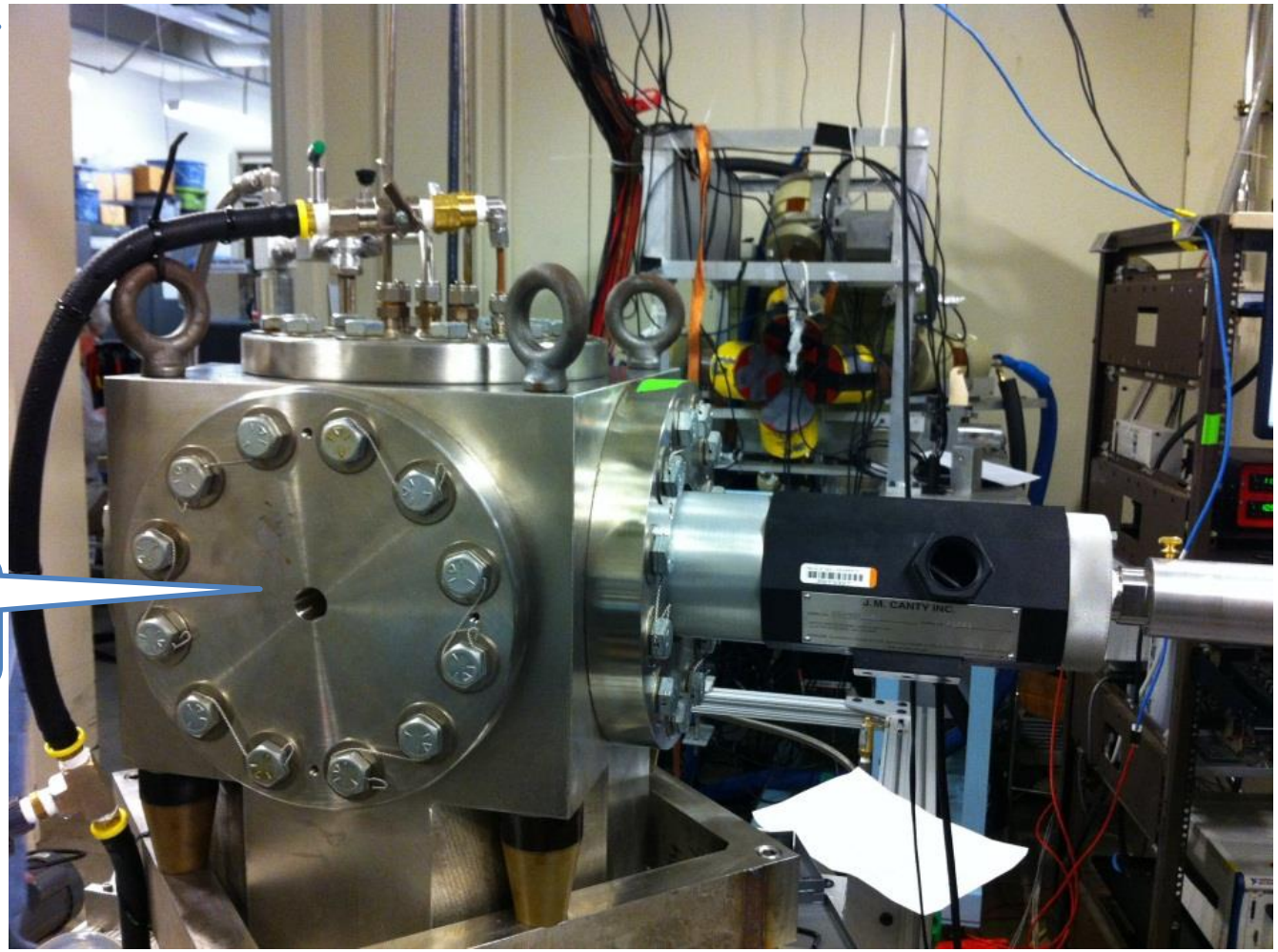

CAUTION





Bubble Chamber

Bubble Chamber
at Duke
April 2013

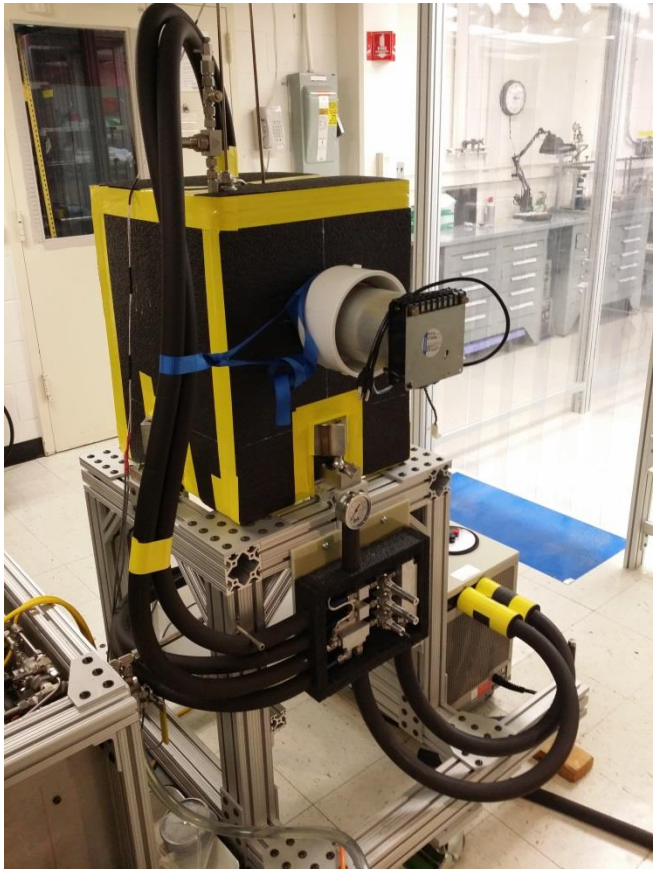


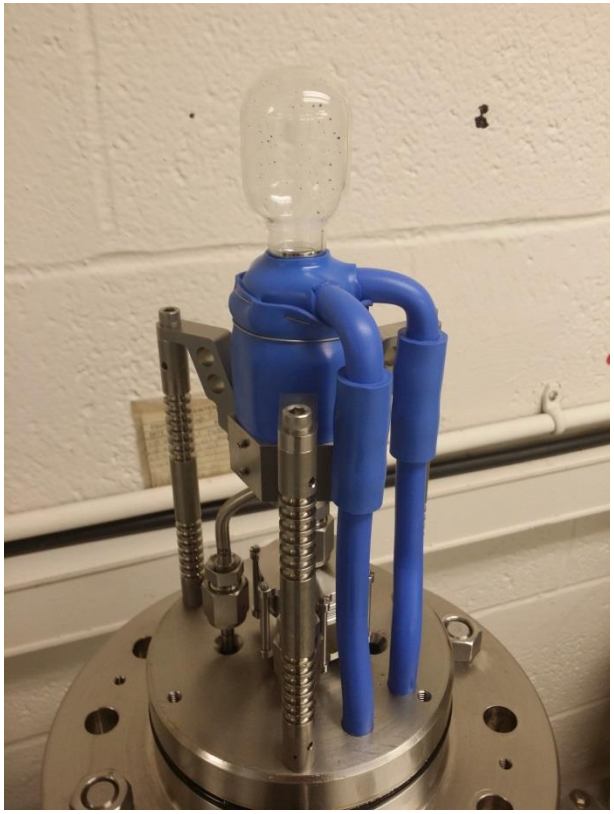
Photon Beam
Entrance

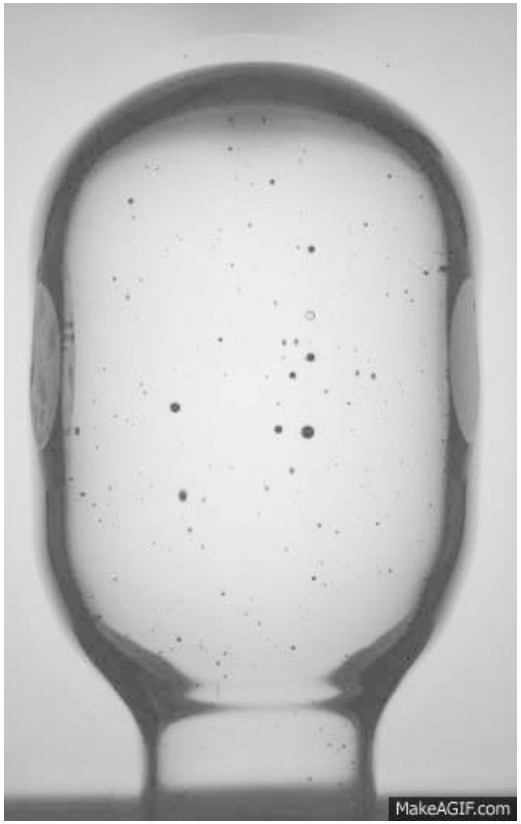
N_2O Bubble Chamber

T = -10˚C

P = 50 atm

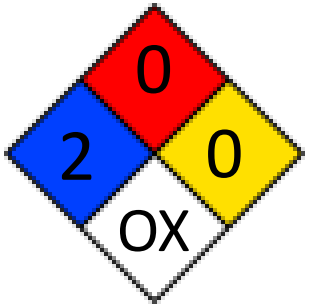






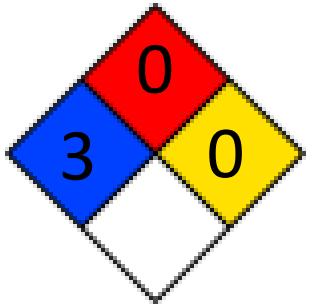
Bubble Chamber Safety Reviews

- Superheated liquid: N_2O, Nitrous oxide (laughing gas)
  I. At room temperature, it is colorless, non-flammable gas, with slightly sweet odor and taste



- High pressure system:
  I. Design Authority: Dave Meekins
  II. T = -10˚C, P = 50 atm

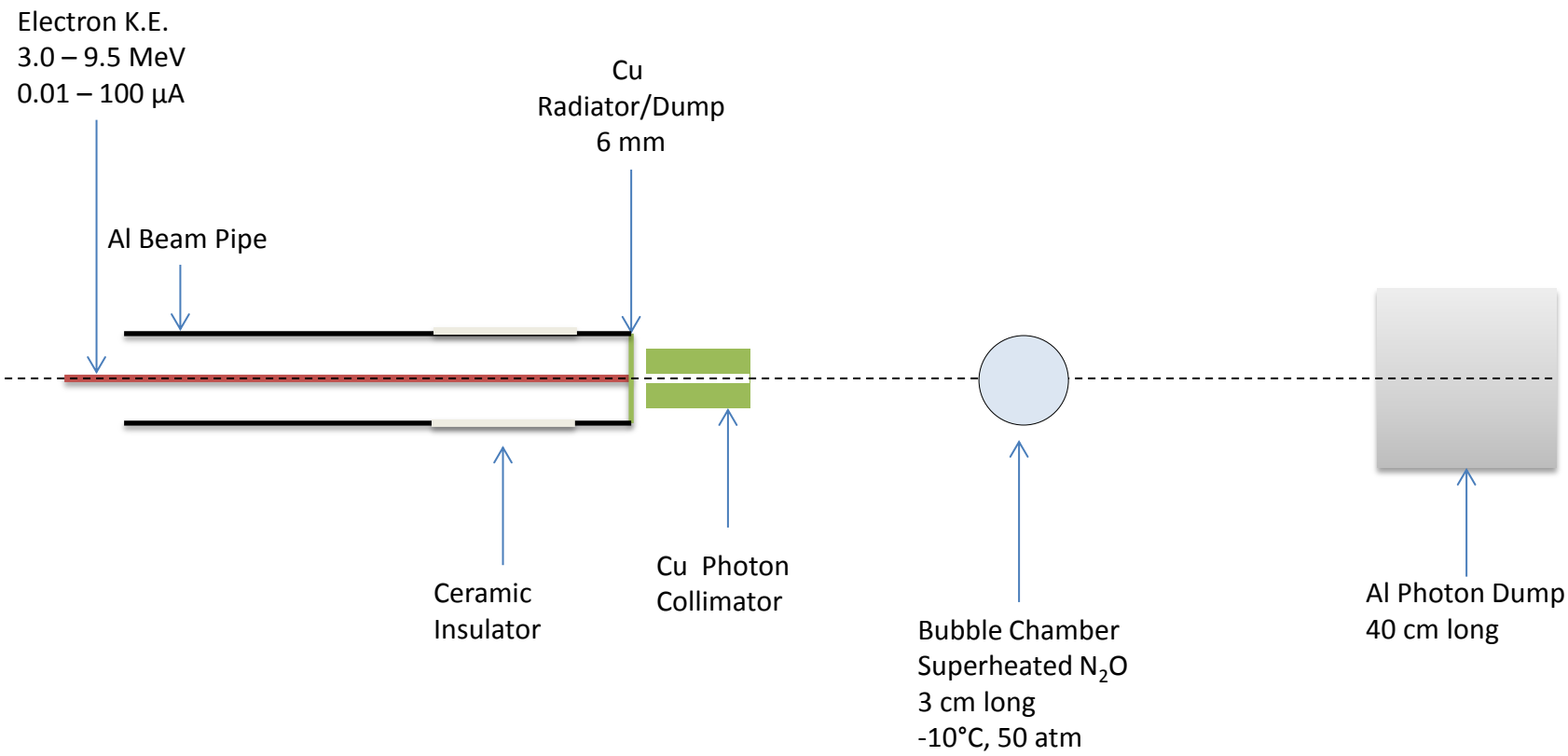
- Buffer liquid: Mercury
  I. Closed system
  II. Volume: 150 mL



- Electrical Review: 208 V custom-made electrical distribution box
- Temporary Operational Safety Procedure (TOSP)

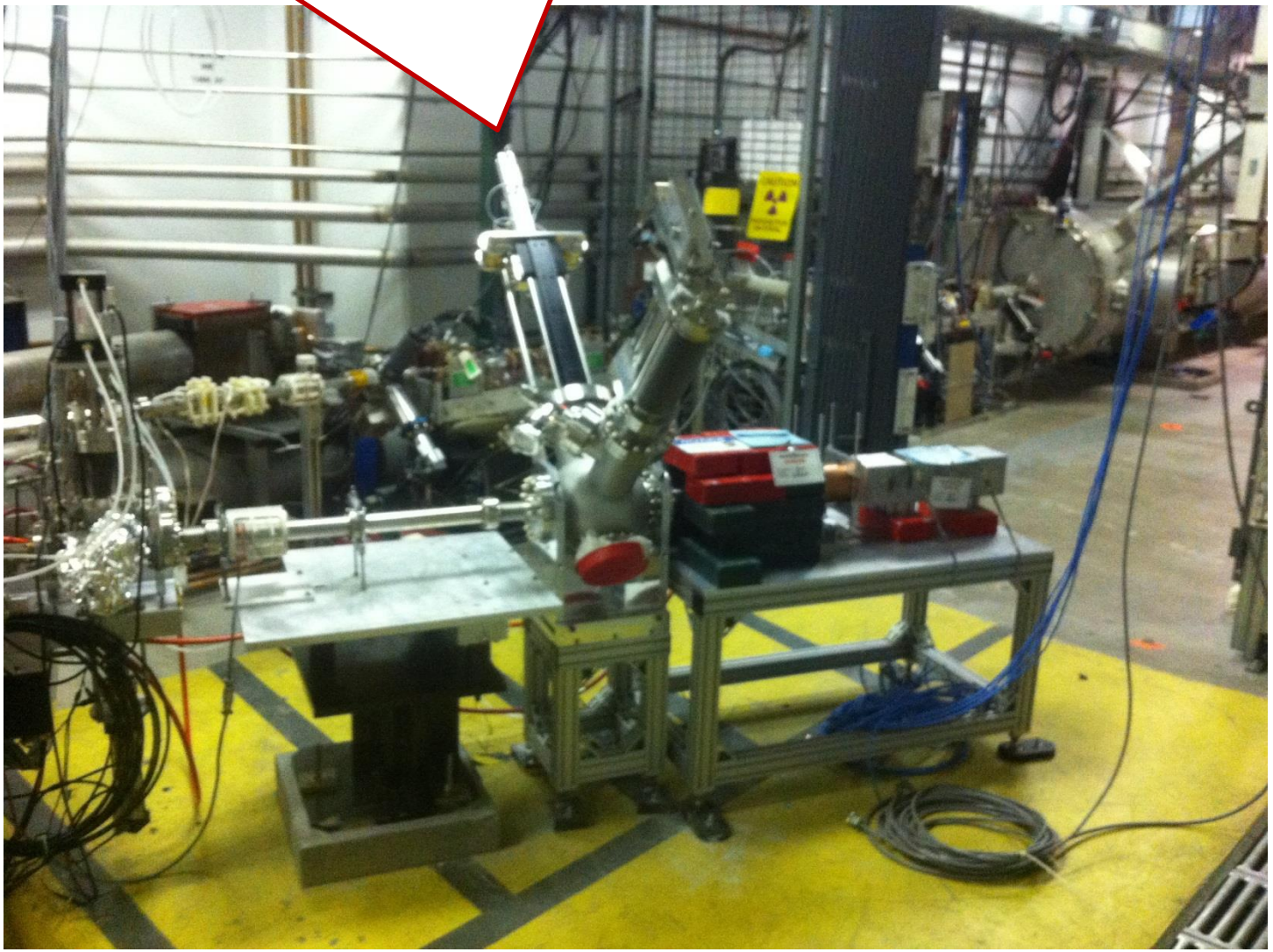
BEAM REQUIREMENT

- Use isotopic pure copper and aluminum
- Radiator/dump isolated and current in EPICS readback



Large Dynamic Range Diagnostic Station (LDRDS) was installed in 5D line for beam test in Spring and Summer

- Remove before Bubble Chamber installation



SCHEDULE

- July 29: Remove LDRDS and reassemble 5D line (Adderley + LDRDS crew)
- July 30 – 31: Survey and Alignment
- End-of-July: Bubble Chamber arrives JLab (shipping list and handling instructions will be provided), move to Injector tunnel (Install Group)
- August 3 – 5: Install Chamber in 5D line (Brad DiGiovine + Install Group)
- August 6 – 7: Safety review and inspection (Meekins + ESH&Q)
- August 10 – 11: Survey and Alignment
- August 12 – 30: Chamber ideal
- August 31 – September 11: Chamber active for engineering run
- September 12 – : Chamber ideal

Other Tasks

1. New laser shutter to terminate beam while Bubble Chamber is processing an event – Chamber will generate a TTL signal that will stay high for period with no beam (Hansknecht)

2. Thermal analysis of flange radiator/dump to increase administrative current limit from 10 µA CW to 100 µA CW (ME)

3. Identify OPS Liaison to Bubble Chamber

Beam Operations

- Beam Studies: August 10 – 15 (swing shift only)

  I. Momentum measurement (ATLis 13521)
  II. Increase ¼ Cryounit gradient (ATLis 13523)
  III. Measure beam charge at different currents (ATLis 13524)

- Engineering Run: August 31 – September 11 (day + swing shifts)

  - Run plan forthcoming