

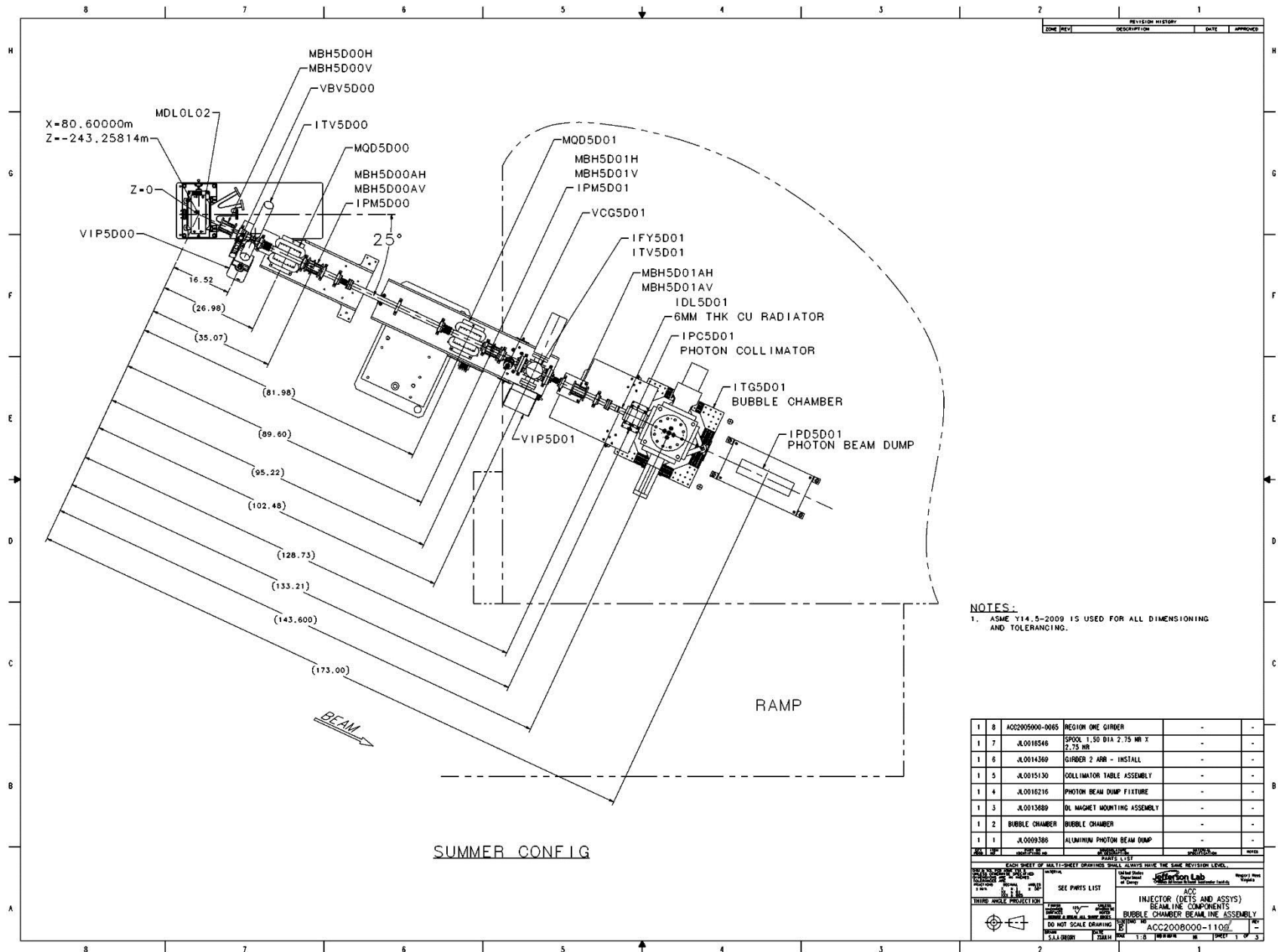
Bubble Chamber Summer 2015

Installation and Beam Test Schedule

July 8, 2015

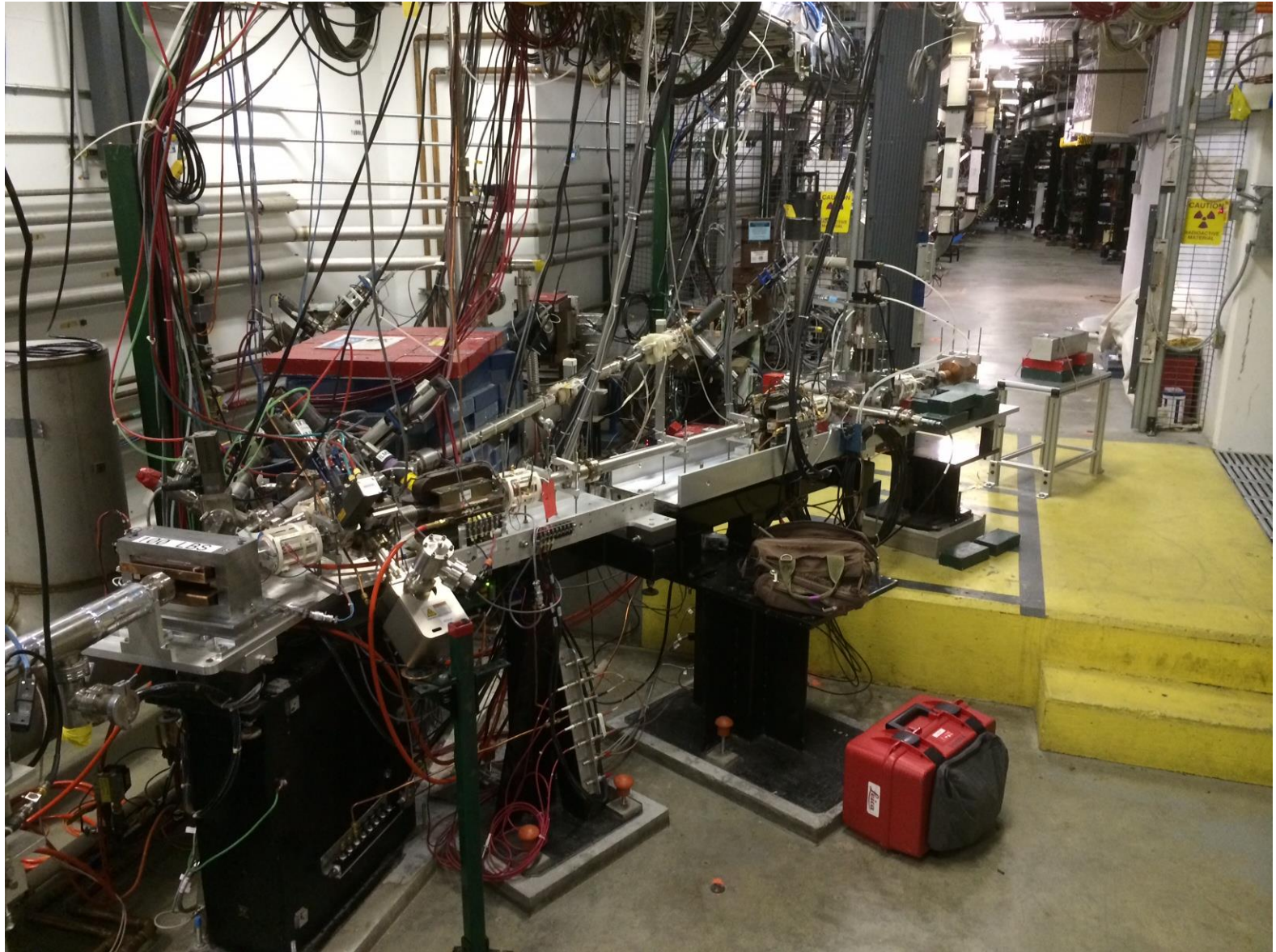
[https://wiki.jlab.org/ciswiki/index.php/Bubble Chamber](https://wiki.jlab.org/ciswiki/index.php/Bubble_Chamber)

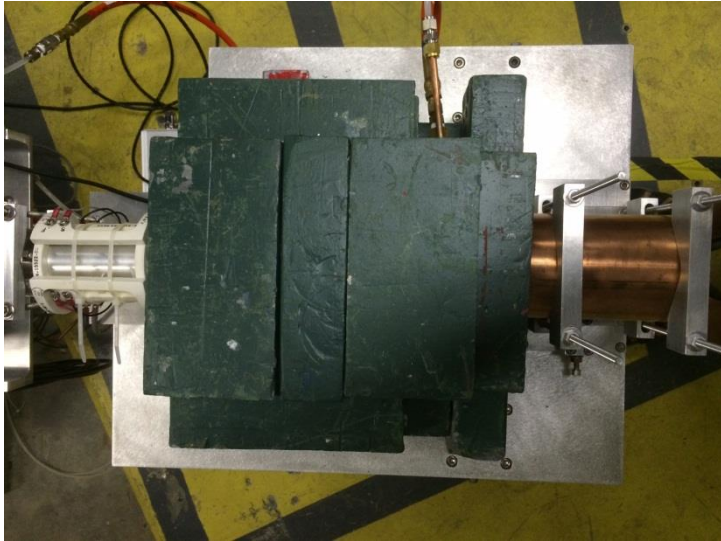
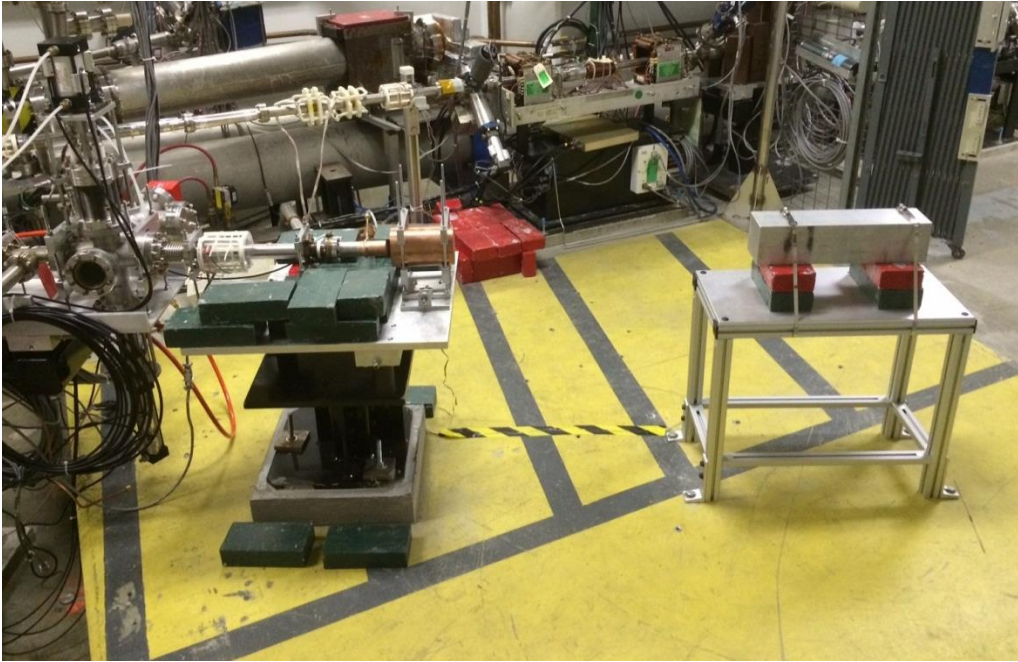
TEST BEAMLINE



NOTES:
 1. ASME Y14.5-2009 IS USED FOR ALL DIMENSIONING AND TOLERANCING.

1	8	ACC2005000-0065	REGION ONE GIRDER	-	-
1	7	JL0018546	SPOOL 1.50 DIA 2.75 MR X 2.75 MR	-	-
1	6	JL0014369	GIRDER 2 ARR - INSTALL	-	-
1	5	JL0015130	COLLIMATOR TABLE ASSEMBLY	-	-
1	4	JL0018216	PHOTON BEAM DUMP FIXTURE	-	-
1	3	JL0015889	DL MAGNET MOUNTING ASSEMBLY	-	-
1	2		BUBBLE CHAMBER	-	-
1	1	JL0009386	ALUMINUM PHOTON BEAM DUMP	-	-
REV DATE BY CHKD APPV DESC					
REVISION HISTORY					
DATE DESCRIPTION DATE APPROVE					
SEE PARTS LIST					
INJECTOR (DETS AND ASSYS) BEAMLINE COMPONENTS BUBBLE CHAMBER BEAMLINE ASSEMBLY ACC2008000-1100					
DO NOT SCALE DRAWING					
SCALE DATE BY CHKD APPV DESC					
1.8 1/8 TRW M TRW 1 3					

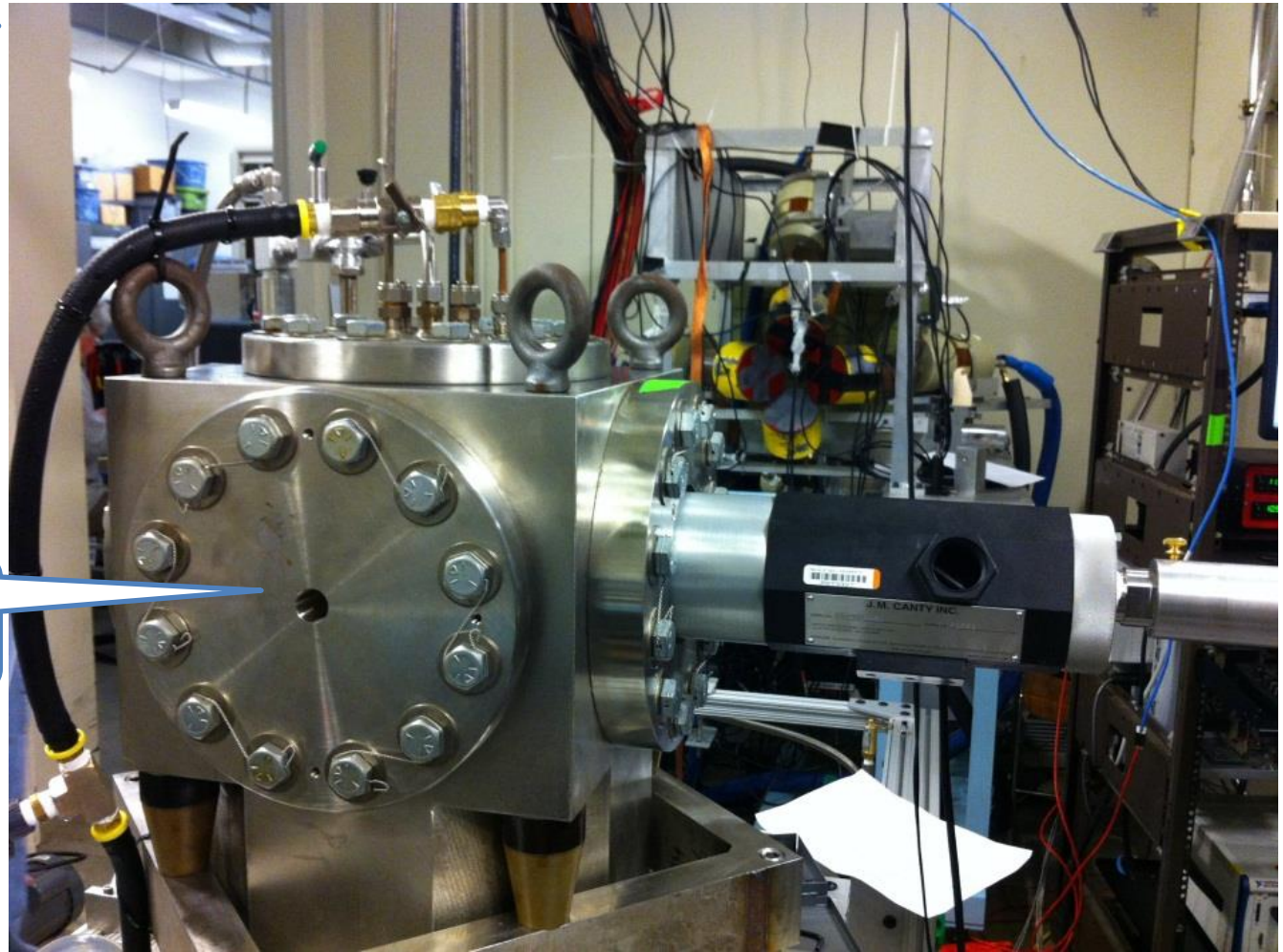




BUBBLE CHAMBER

Bubble Chamber
at Duke
April 2013

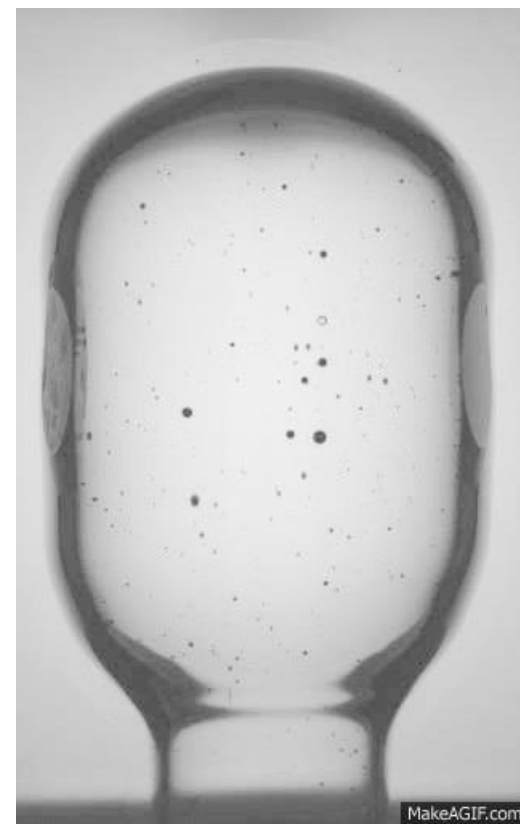
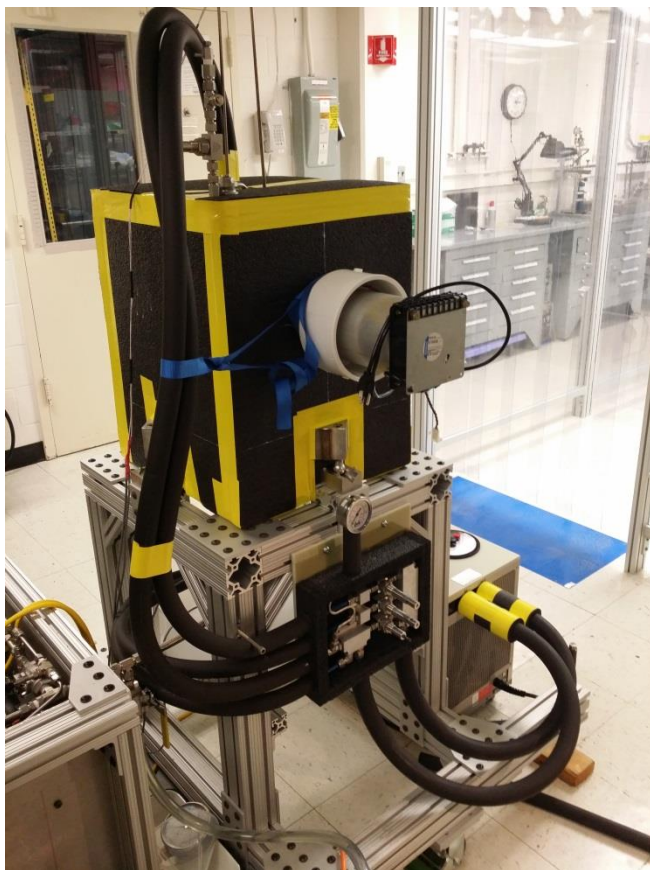
Photon Beam
Entrance



N₂O Bubble Chamber

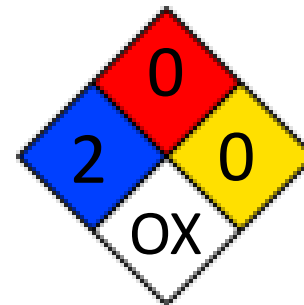
T = -10°C

P = 50 atm



BUBBLE CHAMBER SAFETY REVIEWS

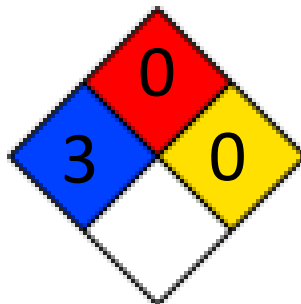
- Superheated liquid: N₂O, Nitrous oxide (laughing gas)
 - I. At room temperature, it is colorless, non-flammable gas, with slightly sweet odor and taste



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

- Buffer liquid: Mercury

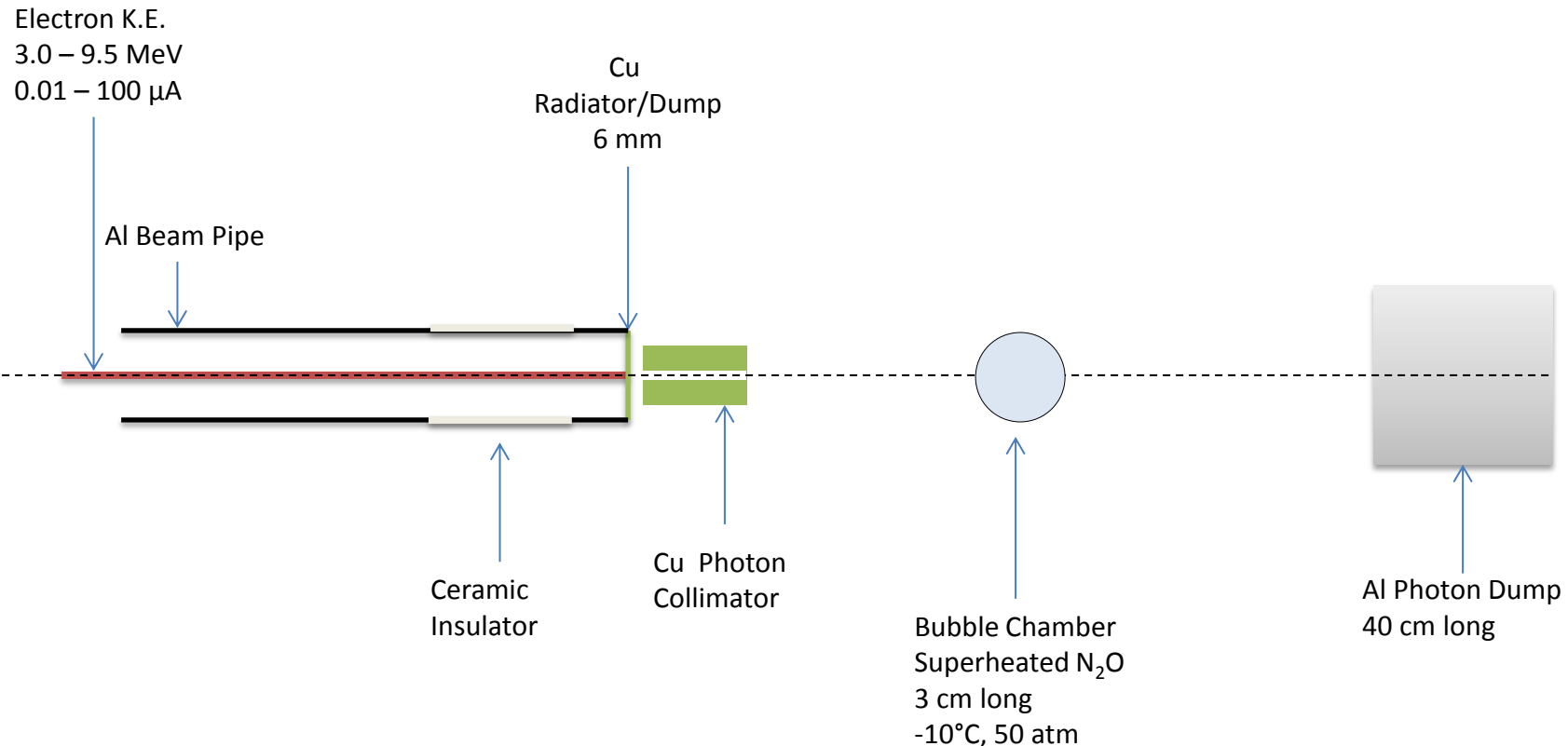
- I. Closed system
- II. Volume: 150 mL



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

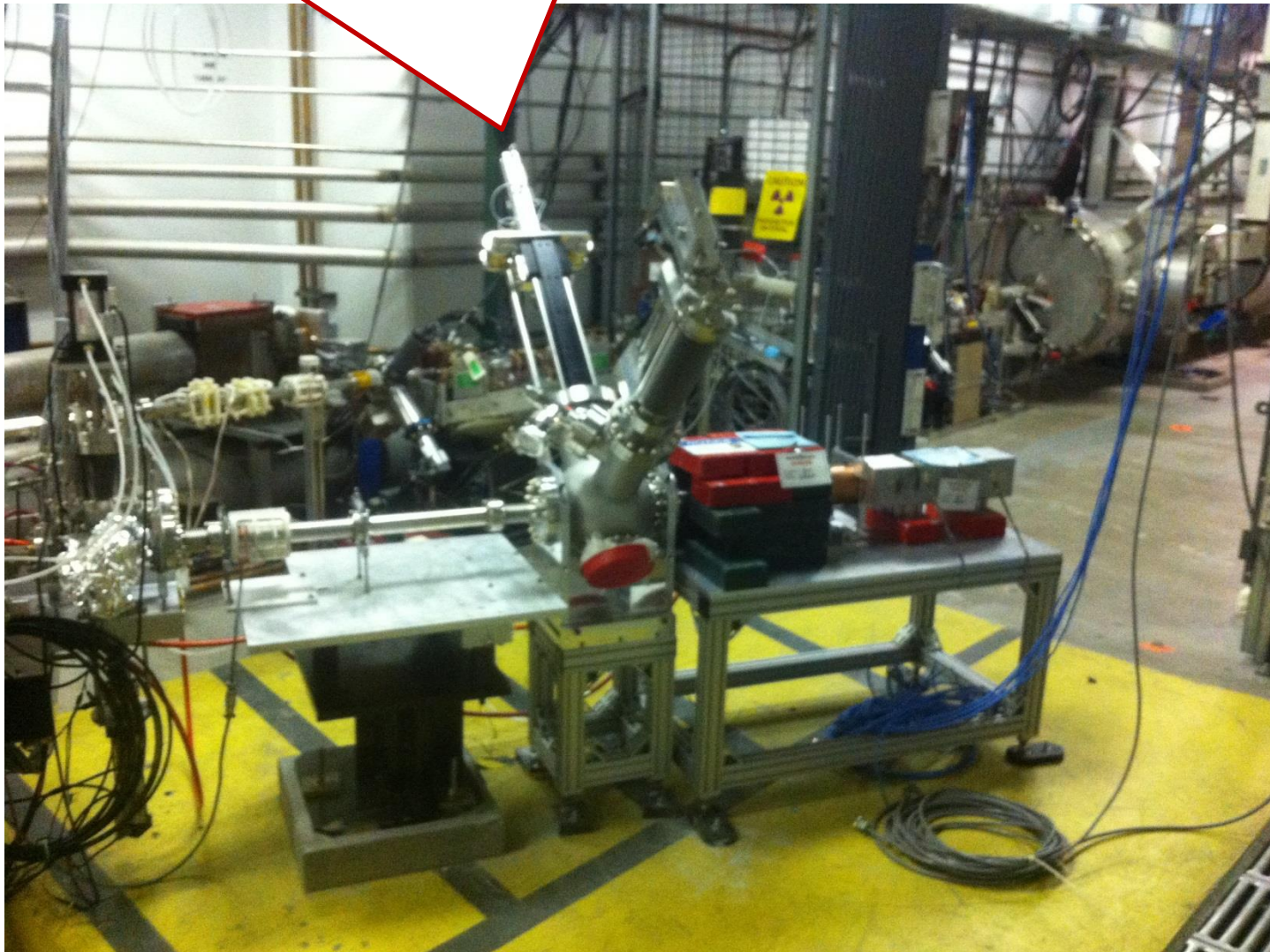
BEAM REQUIREMENT

- 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 $\frac{1}{4}$ 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