System Test
Halted Run 3 Update

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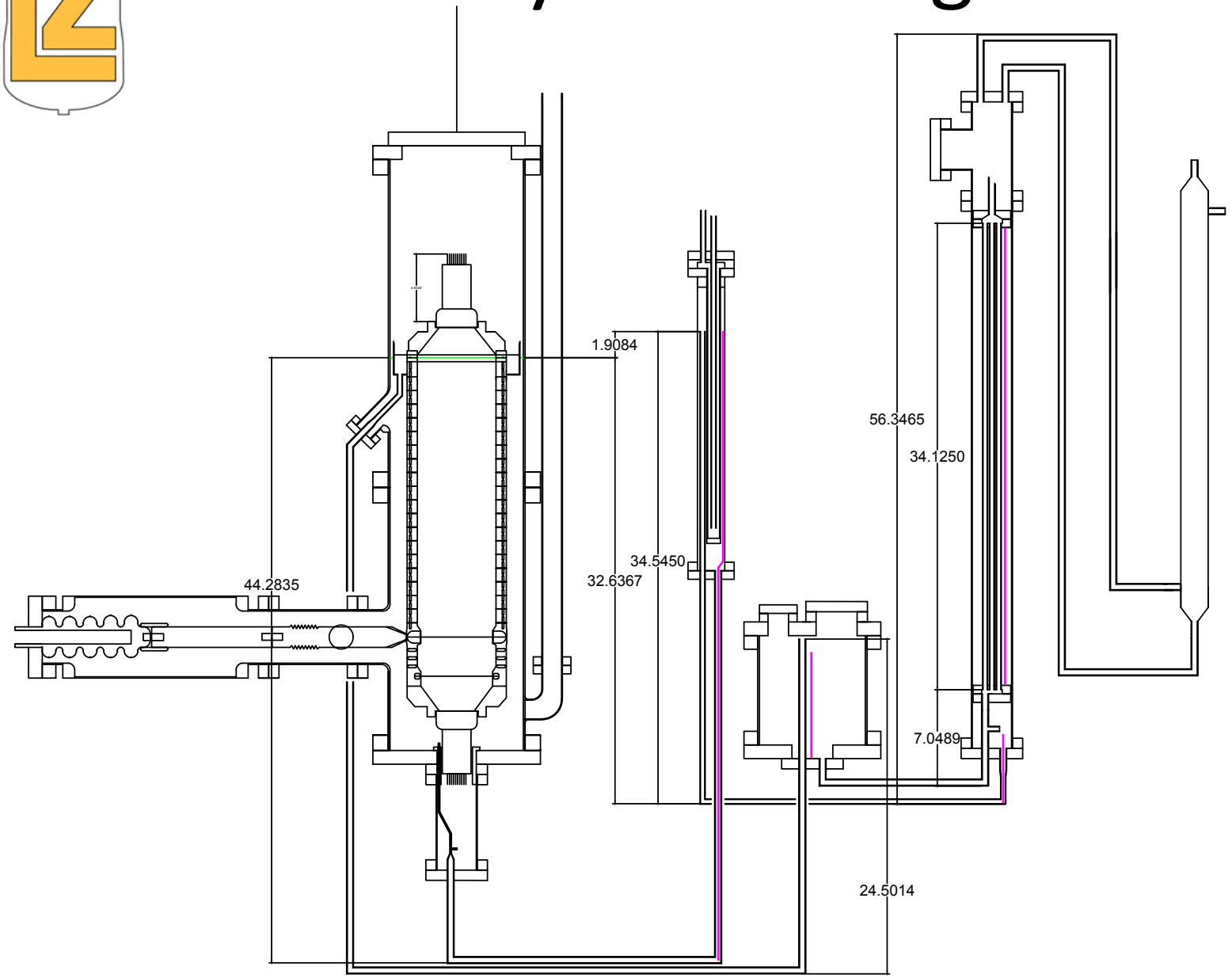
System Design



Run 3 Restart

- Using 2” R9288 PMTs
- Shortened TS lines after squirming in bellows near detector vessels
- Cooled with Xe gas
  - Weir Reservoir TS not operational
- Condensed
  - Top flange TS could not go into High Power mode
  - Subcooler worked well, 3x old flow rate: now 26 slpm! (and that was without top TS help!)
  - Overfilled TPC before liquid in the Weir reservoir

Recovery

- Without cooling in the Weir reservoir or enough from the top TS, vessel pressure rose
- Xe recovery began over weekend
- Initial attempt to fix TS (swapping gas and liquid lines) didn’t work
- Xe recovery completed since we will need top TS cooling and probably weir reservoir cooling for happy condensation

TS Suspicions: Confirmed

- Top TS
  - Squirming near LN dewar (not previous checked)
  - However, this partial operation is a new symptom that is unfamiliar to us
- Weir Reservoir
  - Squirming near LN dewar

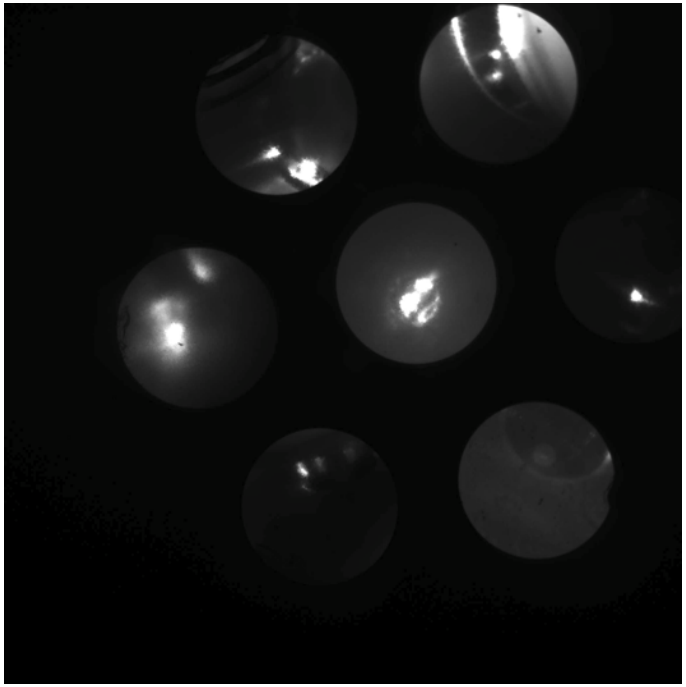
Pictures of old squirming for illustration

PMT story

- KB0045 worked at SLAC until cold, in cold gas saw high rates of light
- KB0067 worked at SLAC until cold, in cold gas saw trips and high rates of light
- KB0045 tested cold at Brown: everything looked great
- New suspicion is cable chosen at SLAC
  - Alphawire 9178B (RG-178) if Mil Spec then Vrms rated to 750 V, might be a little low
  - Doing tests with it with Jerry right now, might be hard to fully diagnose
  - Will probably change to a new cable when running with R11410s

Camera and LEDs

- All but 1 LED work, even in liquid
- Cold in gas have full ability to focus, but not in liquid
- Can see the liquid level rise during the fill



Random picture during filling

Going forward

- Tested TS operation this past weekend
  - Weir reservoir TS worked (only tested low power mode, should be good enough)
  - Top TS low power mode looked ok, but doesn't get flange to expected base temperature
  - Top TS high power mode worked
  - Will Try to start condensing today