

## Microboone Circulation Conditions

October 31, 2007, RLS

Fluid	liquid argon
Vessel diameter	4 meters
Vessel length	12 meters
Shell heat load	13 W/m <sup>2</sup> (revised later)
Cage size	2.6x2.6 meters
Top & Bottom of cage	25mm diameter rods on 40 mm pitch
Sides of cage	perforated plate with 5mm diameter holes on 10mm pitch
Cooling pipe	1800mm above center along the length of the vessel
Electronics heat load	1250 watts spread along length
Electronics location	1400 mm above center along the length of the vessel

Fluid conditions, two variations

1. Argon is saturated at the top of the vessel liquid level 1600 mm above the center. The argon is saturated at 89.0K at the liquid/gas interface.
2. The vessel is completely filled with liquid argon. The liquid is subcooled with 21 psia at the top of the vessel. The temperature at the top of the vessel is 89.0K.

Question: What is the temperature distribution in the vessel under each condition?

