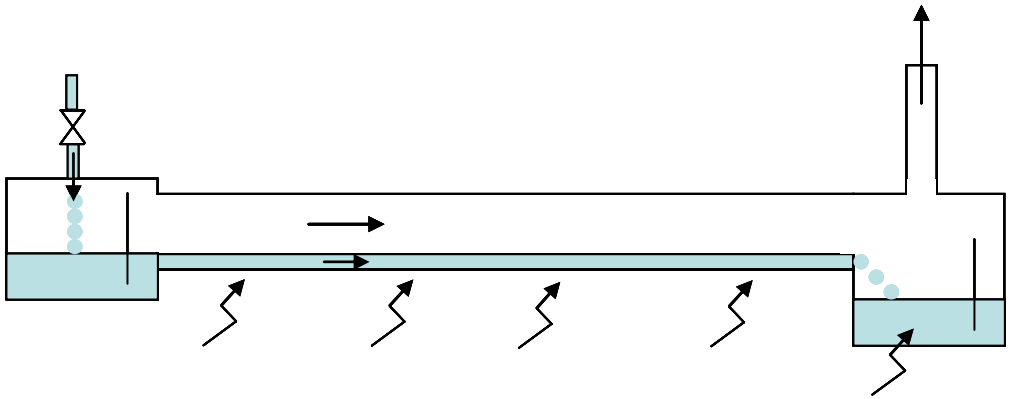
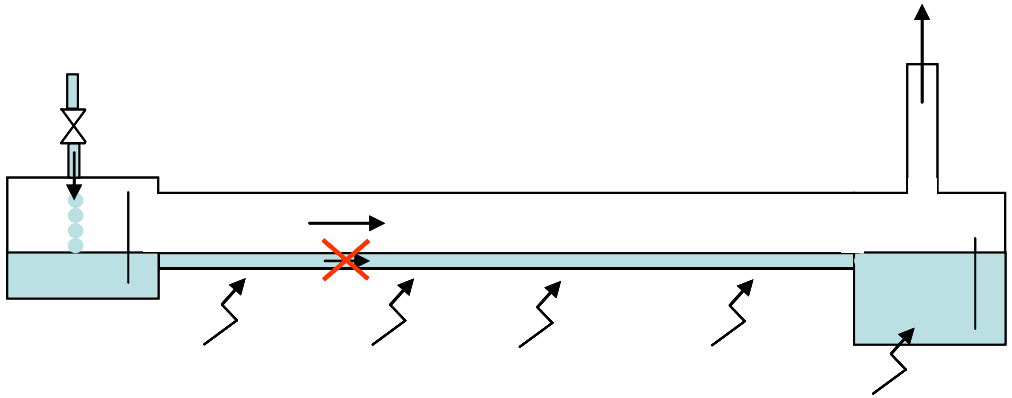
CEA/SBT experience on He II descending co-current Two-phase Flow

Quasi-horizontal pipe

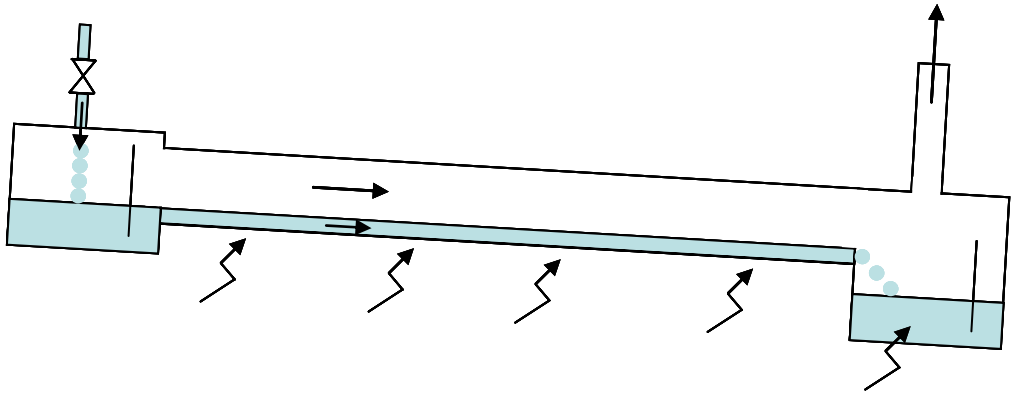


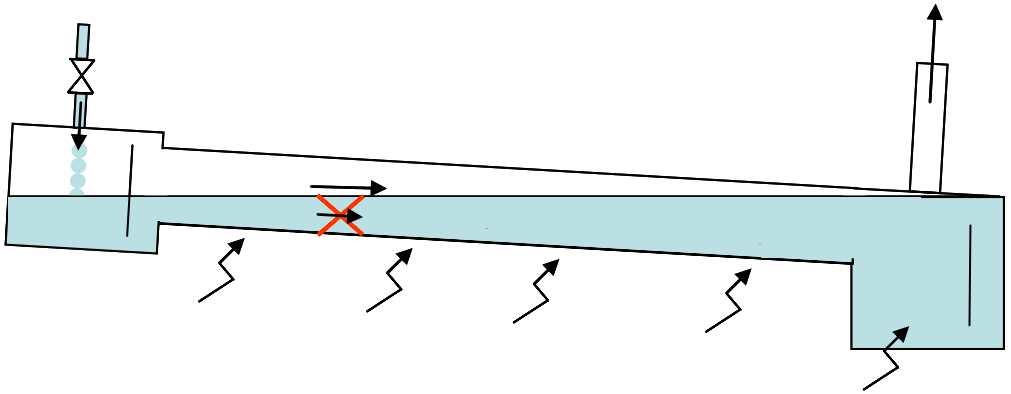
Two-phase flow configuration



« Saturated Bath configuration»
@ No time delay between JT valve and liquid level
@ Higher pressure losses due to higher liquid level in pipe

CEA/SBT experience on He II descending co-current Two-phase Flow





« Saturated Bath configuration»
@ limited slope available

CEA/SBT experience on He II descending co-current Two-phase Flow

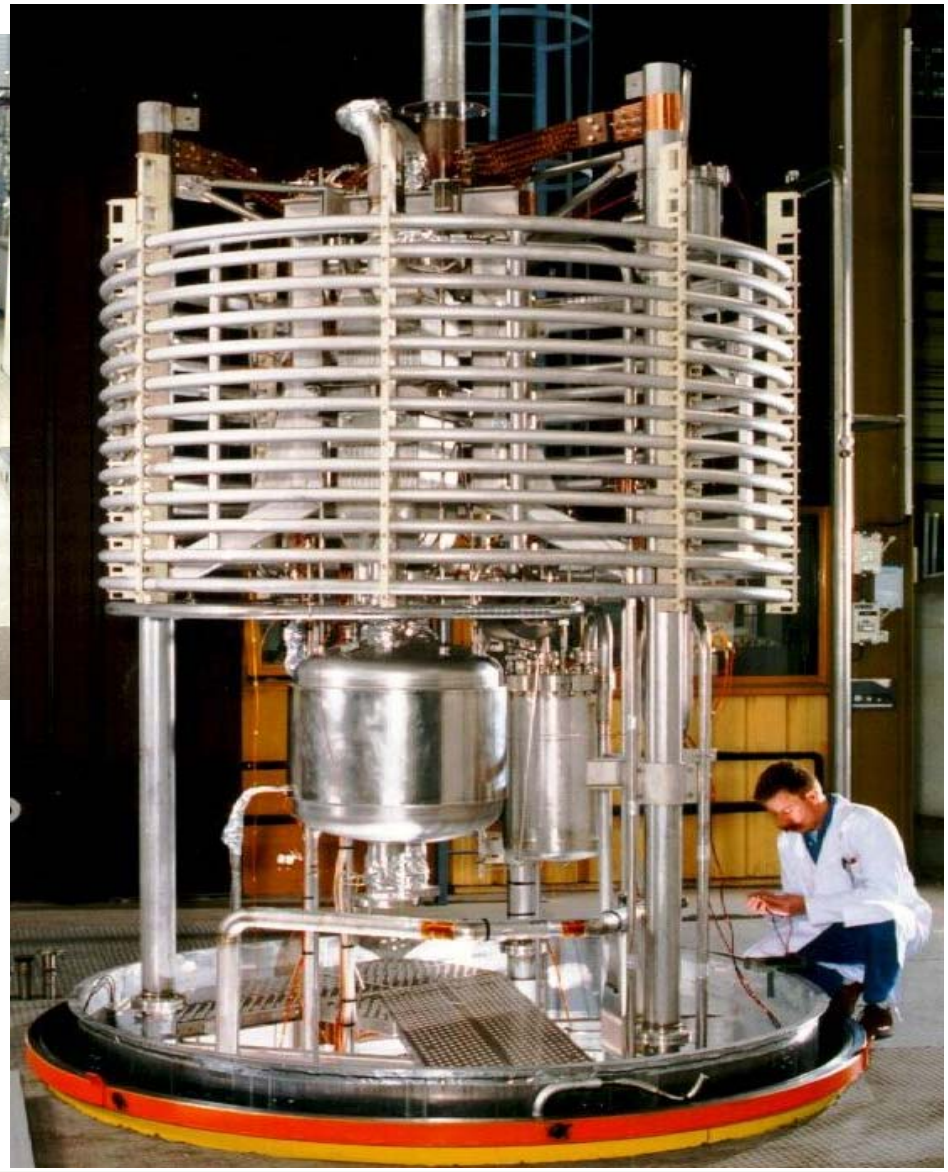
STUDIES ON HE II TWO-PHASE FLOW AS SUPPORT FOR LHC MAGNETS COOL DOWN
MAIN CHARACTERISTICS :

Co-current two phase flow with slope ranging between -0.5 (ascending flow) to 2.8 % (descending flow)

Inner Diameter 40 mm : 86 m long helical line of 1.4 %
and 22 m long inclinable straigth line

Temperature and mass flow ranging respectively between 1.8 and 2 K and between 2 and 16 g/s

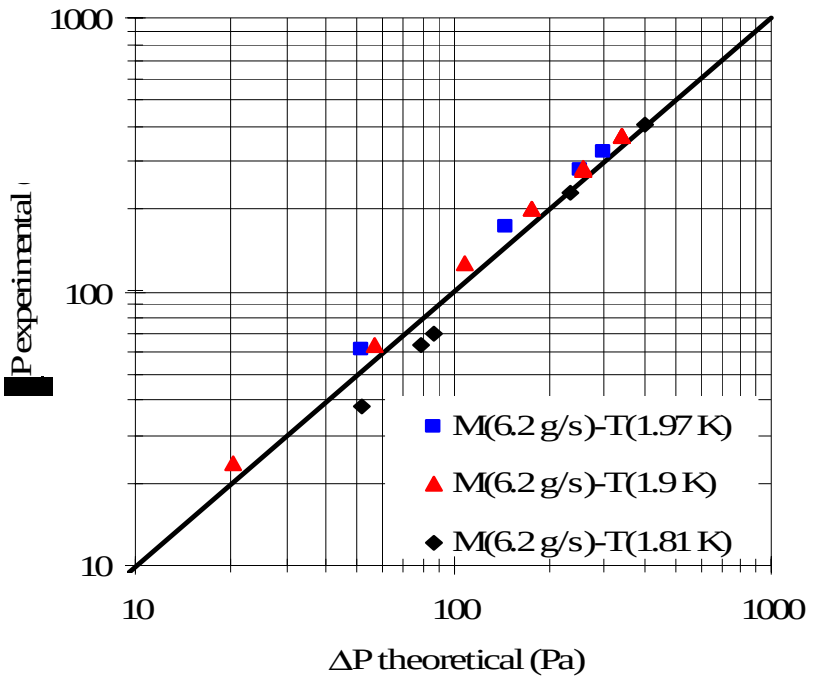
CEA/SBT experience on He II descending co-current Two-phase Flow



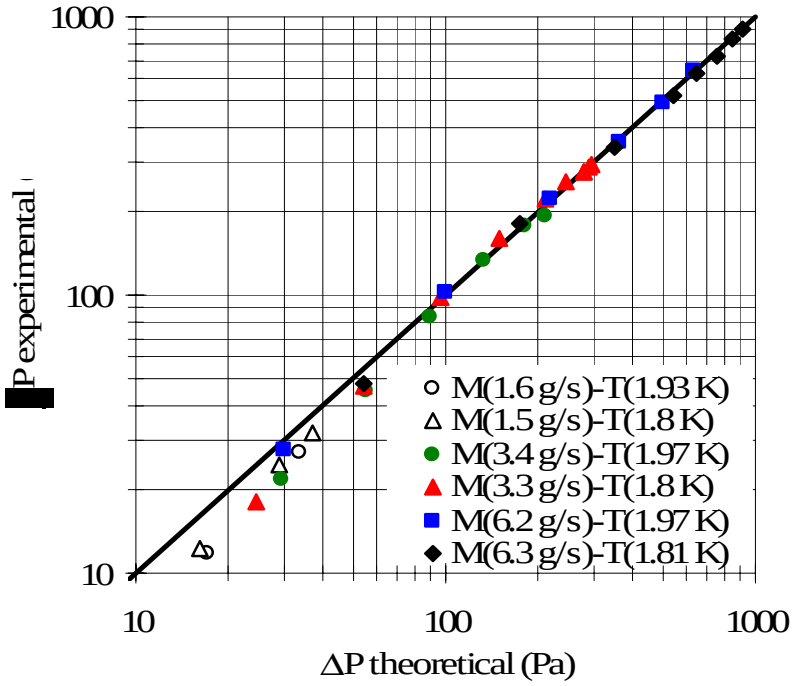
CEA/SBT experience on He II descending co-current Two-phase Flow

Total pressure drop : comparison MODEL-EXPERIMENTS

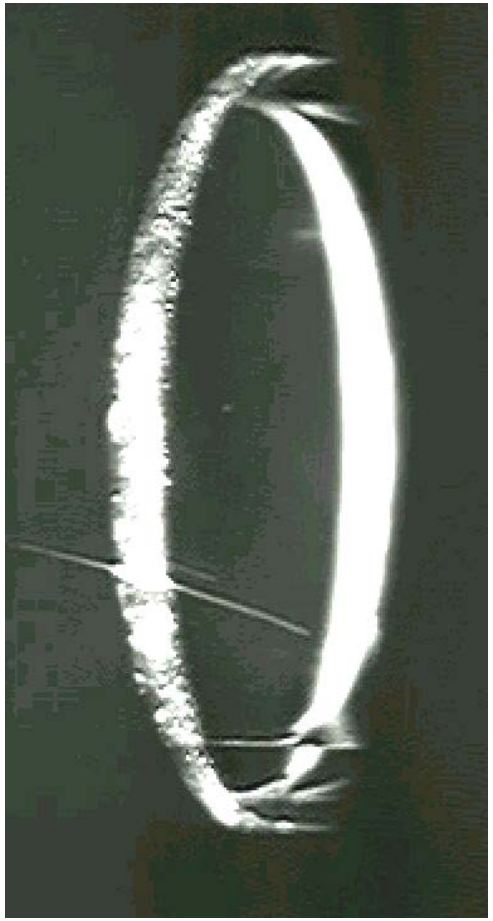
Linear heat load

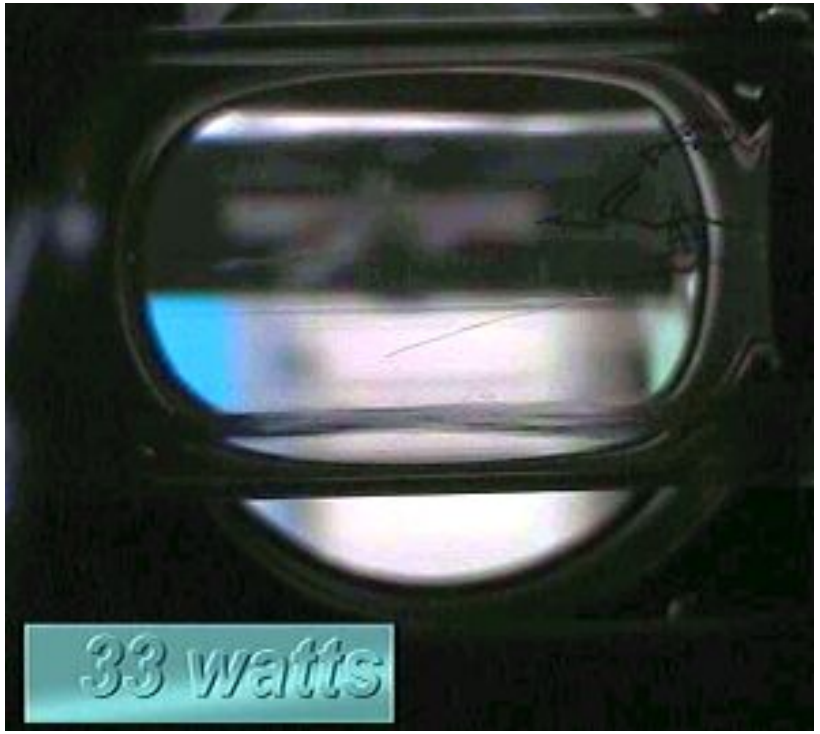


Adiabatic case

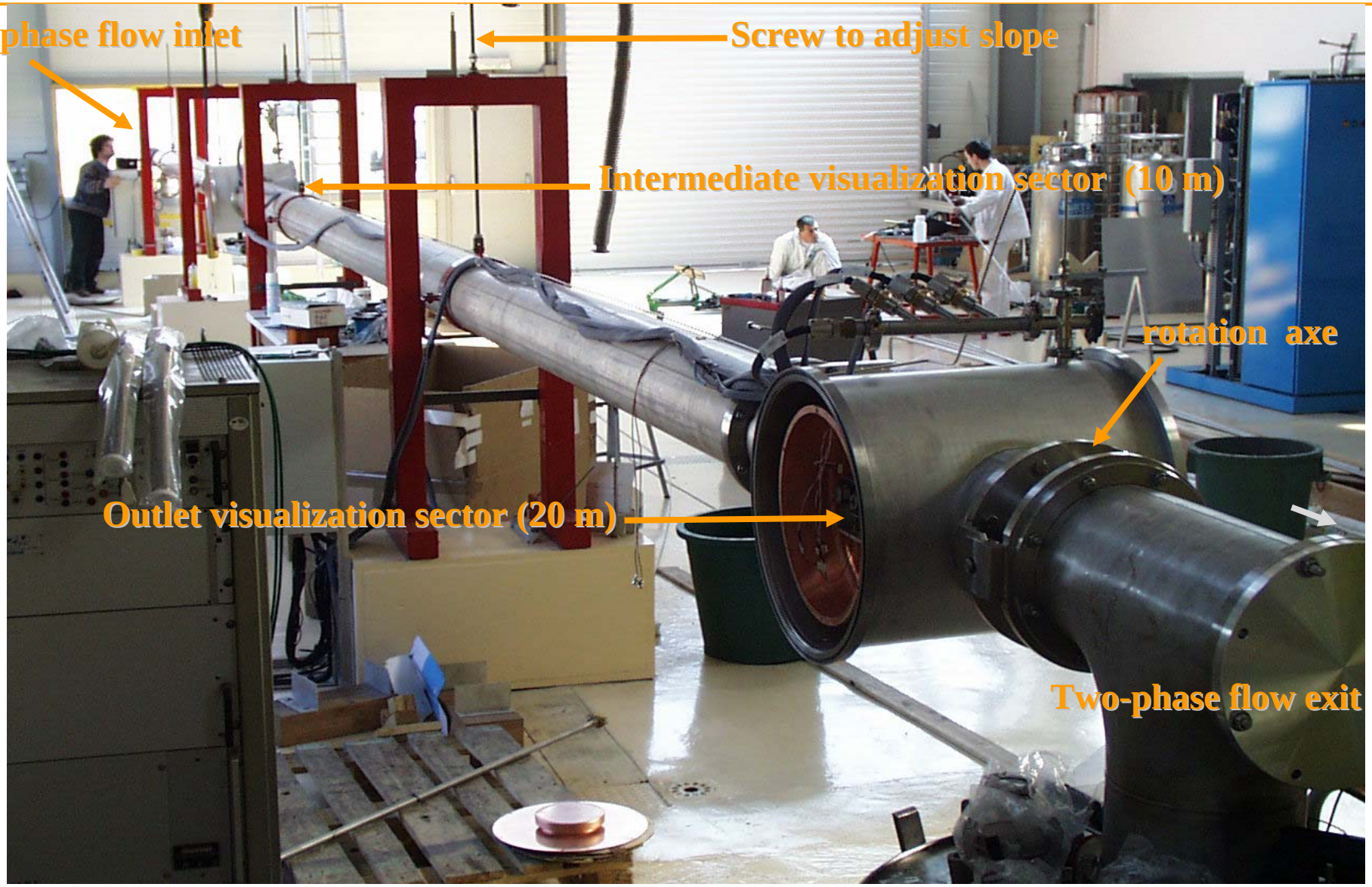


CEA/SBT experience on He II descending co-current Two-phase Flow



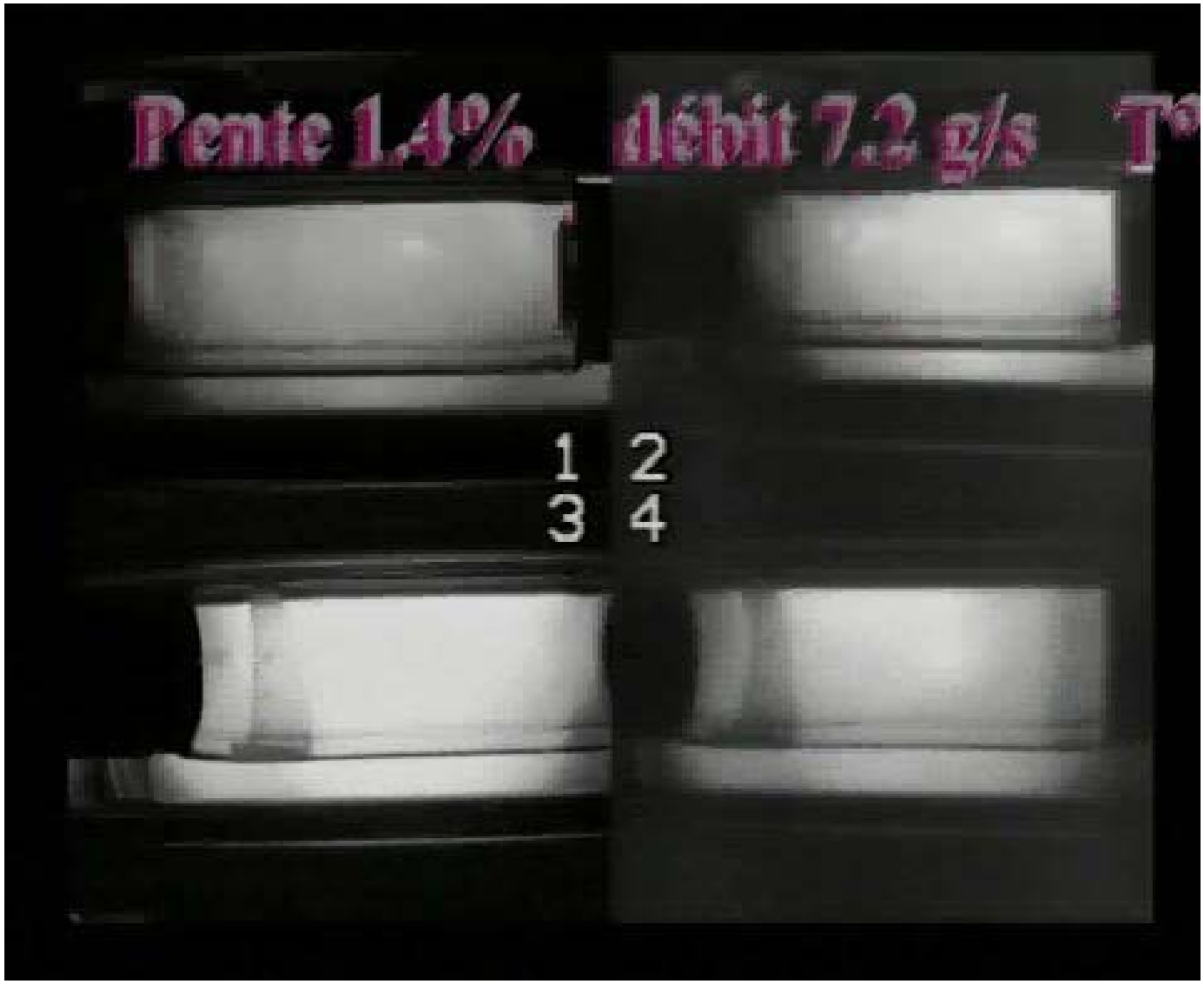


CEA/SBT experience on He II descending co-current Two-phase Flow

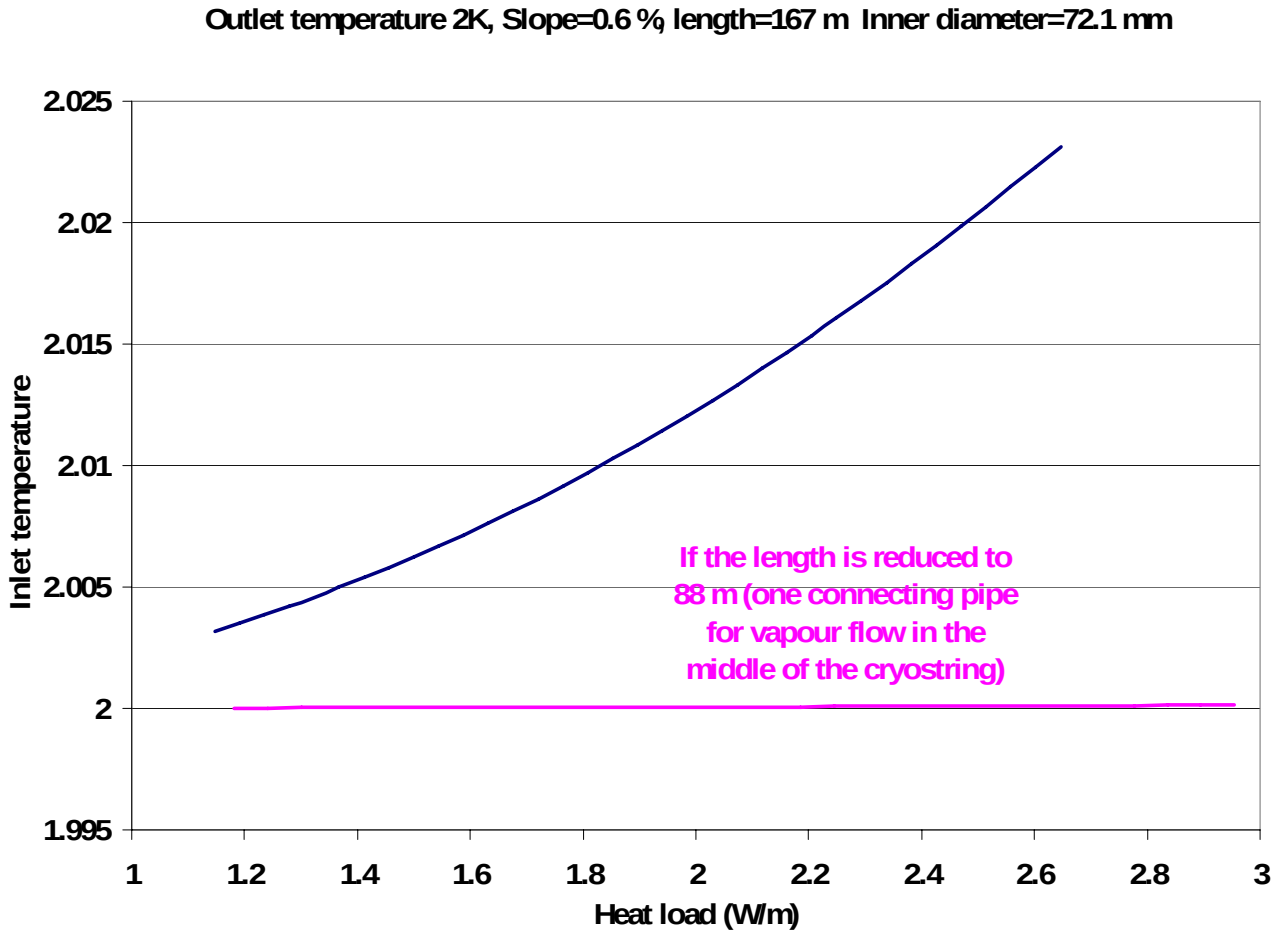


CEA/SBT experience on He II descending co-current Two-phase Flow

CEA/SBT experience on He II descending co-current Two-phase Flow



CEA/SBT experience on He II descending co-current Two-phase Flow



ILC inlet temperature prediction (two-phase flow pressure drop calculations)