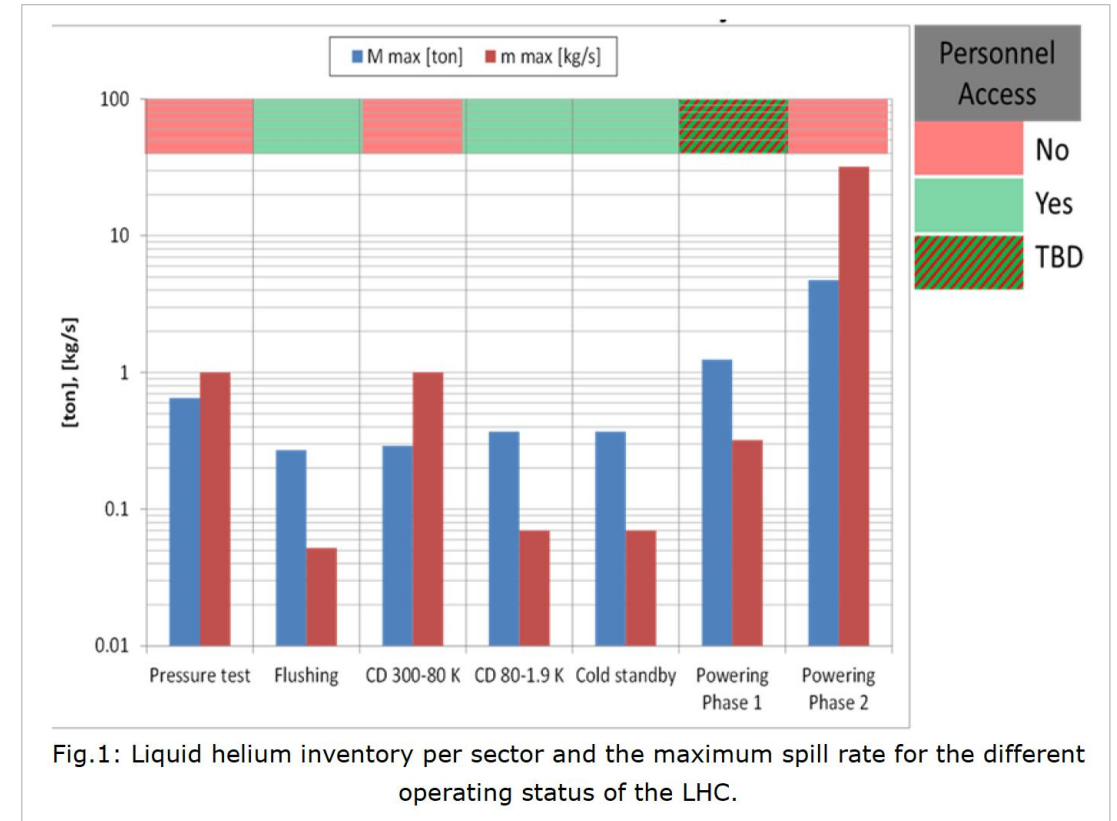


He spill WG, Rates & Inventory, EDMS#1410247

Helium spill tests performed to benchmark simulations, at various rates defined according to operating modes, with He spill WG recommendations to ATSMB for approval

- **< 100 g/s: Rupture of an instrumentation tube**
"Only a human mistake can provoke such a spill"
- **< 320 g/s: Hole due to 30kJ arc**
corresponding to "Powering Ph1a"
- **<1 kg/s: Rupture of a pipe or 100kJ arc (1kA)**
could happen during P_test, Cool-down 300-80K, Powering Ph1b (Ph2 arc at 12kA \Leftrightarrow 30kg/s)



Rmk: safe access to LHC when granted, with slow ODH propagation compatible with normal/walking evacuation

Specific cases already asked/envisaged

Chronological order

- **Warm-up before LS3:**
 - Possible work in LSS on room-temperature equipment by specific teams (VSC, x?)
- **Cool-down after LS3:**
 - Possible cool-down of arc with work in HL-LSS: New ODH at arc extremity, barriers?
- **Operation after LS3:**
 - **General:** extension of present recommendations, specific conditions & procedures
 - **Degraded ventilation conditions:** how would this impact LHC, specific case of HL-LHC?
 - **Specific for HL-triplets:**
 - **inspections:** less than 10 min, no work on magnets nor QXL: OK with LHe
 - **work for RP, VSC, Survey:** OK with LHe ?, except for adjustment of FRAS hard limits