

Meeting on He circuits and Cryo Valves for LHC ACS cryo-modules
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Following up of points (specially 1) 5) of meeting ACR-RF-SC on cryo and safety issues for the ACS system held 12/03/2004.

1) Proximity of Quench valve outputs and LHe gauges on dome:

There is a risk of ice forming on the QV outputs putting pressure on the gauge tube or connector, causing damage and total loss of He.

Solutions:

- a.** Suppress LHe level gauges on the two middle cavities, where the quench valves are to be fitted.
- b.** Redesign dome with double walled tube for He outlet (i.e. no icing on outer wall)
- c.** Put double wall on bayonet extension into cavity (no dome redesign needed)

2) Arrangement/distribution of valves:

- a.** Use second quench valve (protection valve) in place of 2.5 bar rupture disc. Both normal quench (2 bar) and protection valves are fitted on same two middle cavity He outlets.
Note Quench valves discharge through tubes, passing through RUX45 roof, to the QUI vent line (He not recovered). The protection valve releases to the tunnel.
- b.** Single (larger) protection valve on one end cavity. Dimension to be determined.

3) Warm Recovery Line:

Its main function would be to permit operation of the cavities with unstable Line D pressure, e.g. during magnet commissioning. The integration has been done. The complete study should be done, including material selection. An interlock would be needed if the heater capacity was less than the estimated 10 kW to handle maximum return flow. A decision to install could be delayed till after sector 78 experience, but the time to install - 6 months according to new planning proposal - would be tight.

4) Quench and protection valve dimensions should be verified by Cryo specialists

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