

Integration of the cryogenic line

Meeting minutes, 17/8/2016

Participants: F.Teixeira, P.Pepinster, S.Mehanneche, S.Claudet, J.Metselaar, F.Delsaux, M.Czech, G.Vandoni.

617 zone (crab-cavity test stand)



Figure 1
The U on the two raw water pipes at the tunnel vault is on top of the future crab cavity zone.

Figure 2: A closer view of the Omega



TE/CRG and EN/CV

Removal or displacement of the Omega on the 2 (raw) water pipes at the tunnel vault, requested by TE/CRG. See Figure 1 and 2. Without this and the cable tray, the warm pipes for cryogenics could be integrated inside the U-support of the cryogenic distribution line.

P.Pepinster thinks it is not a thermal dilatation compensator, as the raw water temperature is not very much different from ambient and varies in a small range. He will check the necessity of this Omega with B.Bannister and confirm whether it can be removed. (Action EN/CV)

Use of demineralized water instead of raw one, for the underground equipment. Cryogenics further confirms that it is not allowed to use demineralized water instead of raw one, as the pipework from the supplier's equipment does not withstand it. However, the flow required in 617 is very small: if necessary, it should be possible to pull another small pipe and not use the present, large, locked-out ones (condamnées). (Action EN/CV)

For the water cooling of the helium pumps, En/CV will displace and reuse the manifolds installed previously in BA4. TE/CRG would like to reinstall the pumps in EYETS. There should be a margin of 1m for the position of these pumps, avoiding the red plate (figure 3). (action EN/ACE: define the exact position of the pumps)



Figure 3 – Red steel plate at the floor in 617, to be inspected during the September TS

Integration of handling rails and local cryogenic equipment

Vertical position of the cryogenic line The operation of the new handling rails would benefit from some more margin if the cryogenic distribution line was displaced towards the vault by 2-3cm. This modification requires the cable tray at the vault to be displaced. Distance of the upper generatrix of the cryo line to the vault is presently 140mm, it should be possible to reduce it by 2-3cm. (Action TE/CRG).

The main cable tray, the one with the MKE red cables, should be cut locally to reduce its width, but only in the position of the transport beam. To discuss with EN/EL. (Action GV, SM)

The height of the beam on top of the service module must be compatible with removal of the valves for maintenance. The height reservation for maintenance above it for the valves is certainly not higher than the jumper. The envelope of the Service Module is not yet determined – J.Metselaar and K.Brodzinski should send the final integration model to Scharif, specifying also the required height reservation for valve maintenance. (Action TE/CRG)

Integration of the fixed support at the extremity of the cryogenic line. On the model, light blue is the part installed in EYETS, dark blue the part installed in YETS. The exact position of the extremity and its fix-point support can be displaced by 1m, in the beam upstream direction – towards valve box n.2. Integration will be corrected by Jos to avoid conflict with the new handling rails. (Action TE/CRG)

Local cryogenic equipment. Scharif has displaced valve box n.2., because the layout of the lines above it is not yet fixed. The valve-box may still move by $\pm 10\text{cm}$. The routing of flexible lines has been studied by Scharif for K.Brodzinski. Scharif will review this zone and notify Jos. The IT will be released in September, the supplier will be known beginning of October. (Action EN/ACE)

Installation of the cryogenic line. Details are to be discussed with the contractor, on site, during the upcoming Technical Stop. There should be 3 or 4 segments of 9-10m, with supports every 4m. The linear load of the cryogenic distribution line will not exceed 200kg/m. The segments may be lifted with lifting engines by EN/HE. The U-supports would have removable inferior bars, put back in place once the line segment is positioned. Warm pipes are lifted by hand. (Action GV and SC : Organization of the tunnel visit for the TS)

TA6 tunnel and alcove



Figure 4

Pipework at the wall in TA6, at the entrance to the SPS tunnel

GV asks that the feet of the cryoline supports are in the wall curb, even if this requires angled or curved mounting brackets. The impact on the floor must be null, to ensure quick approval of the underground

infrastructure modification. Displacement of the cryoline by 20cm towards the wall requires verification with the 3D optical scan and possibly on site for smaller components which the scan may not show precisely. The difficulty may come from pipework and manifolds at the entrance of the tunnel (see Figure 4) (Action GV to ask for a very short access / Action EN/ACE to verify with the 3D scans)

Potence de levage

It will not be possible to specify a stand-off lifting jib before knowing the exact layout of the cold-box and valve box n.1. However, the lifting jib will not be immediately necessary at installation in YETS2018, it can wait for LS2. Handling and maintenance in installation phase will be done with whatever comes in handy. GV will communicate this decision to C.Bertone who had proposed this equipment.

EN/CV for Cryogenics in the TA6 alcove

Interference between the cryoline and the compressed air buffer tank can be avoided if the tank is displaced by 20cm inwards, towards the alcove center. Action P.Pepinster to verify if this displacement can be done.

F.Teixeira and J.Metselaar will define together where the water headers for cryogenics have to be located. Connections from the headers to the equipment will be provided by TE/CRG. The piping arrives from the wall to the left of the freight lift (looking towards the tunnel) and crosses over to the left of the freight lift door. (Action EN/CV and TE/CRG)

Compressed air request was communicated by S.Claudet as global values for HiLumi, including the SPS. Action GV: extract the values and insert in the EN/CV User's request file. Every regulating valve positioner requires 1 to 2m³/h.

EN/HE handling equipment

J.Metseelaar needs from F.Delsaux the details of the handling rail at the ceiling of the TA6 alcove. Height under hook is approximatively 4m depending on the lifting hoist.

PA6 crane

The crane on top of PA6 is rated at 1.5 tons but has been downgraded to 1ton. TE/CRG should give EN/HE the maximum load they need here, for verification and proposal of solutions. Probably, less than one ton would be sufficient. EN/HE will reinstall here the crane of BA3, not used there, recovering the initial load capacity.