May 31, 2012

Notes to the Cryogenic system design for ILC, presented at the ILD workshop

http://ilcagenda.linearcollider.org/getFile.py/access?contribId=7&sessionId=4&resId=0&materialId=slides&confId=5496

1. SID prefers the Solution B, with a single compressor unit and three cold boxes, one for ILD, one for SID and one for the QF1+CC.

2. Solution B is closer to the cryogenic scheme developed so far by SID. This solution offers redundancy in case of failure of one of the three cold boxes. This assumes that at least the detector cold boxes or perhaps all three are tied together cryogenically. For this to happen the cold boxes should be fixed, mounted on the wall or in the alcove. In addition, to redundancy the other detector liquefier could be used to speed the magnet cooldown. If the coldboxes are tied together cryogenically, it is much more practical for both detector cold boxes to be on the same side of the hall. It may be easier to procure smaller liquefiers.

3. SID thought it easier to use one flexible cryogenic transfer line versus flexible warm helium supply and suction flexible lines and a flex LN2 line. Both approaches should be doable.

4. If the stationary cold box cannot be mounted on the wall, it could probably be placed in the maintenance alcove.

5. The cold boxes for each detector will feed a valve box, close (on board) of the detector, splitting the 4k Helium between the solenoid and the two 2K Helium refrigerators for the QD0.

6. The heat loads table for the QD0 and QF1 are not clear (Slide #6 .

7. Clearly the size and the length of flexible cryoline required by SID (ILD) match many commercially available solutions requiring very little R&D

8. The distribution box for SID is located on the top of the detector instead than on the platform. What is the role of the PS (slide #12)

9. From slide #14 it appears that only a single 2K refrigerator is considered for two QD0.

10. All QD0s, QF1s and CCs should be shown.

11. Slide #16: the list of the disadvantages of Plan B is clear, we do not see them as big problems.

12. Slide #17: it is not clear the dimensions of the TRT.

13. Both schemes show cold compressors. However, scheme B may not be able to use them because of the low flow rate. This could be a disadvantage for scheme B.