

Minutes of the 8th December 2010 AD&I meeting

Agenda:

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| 1. CFS scope for BAW-2 | Vic Kuchler |
| 2. Configuration scope and meeting agenda for BAW-2 | Nick Walker |
| 3. Scope of physics and detector presentations | Jim Brau |

Presentation for 1 and 2 available on ILCagenda:

<http://ilcagenda-beta.linearcollider.org/conferenceDisplay.py?confId=4922>

1. CFS scope for BAW-2

- Vic presented the status of the work in preparation for BAW-2, in particular the low-power scenarios.
- Much good work has been done by Emil in collecting CFS requirements for the reduced beam power option (working closely with Chris N. and Shigeki F.)
- Current estimates indicate ~20% reduction in AC power for the main linacs (for both KCS and DRFS).
- Note that ML has been focus: power requirements for the primary e+ and e- sources and the BDS are assumed unchanged from the RDR.
- Reasonably complete set of data for KCS – the primary focus right now as here the CFS team has more information. DRFS still needs work.
- Upgrade (i.e. restoring 2600 bunches at later date): understanding what investments need to be made during initial construction to allow straightforward installation at a later date. Most savings are in low-level systems for processed water. High-level systems are likely not to change. Hence not a factor of 2 cost saving.
- Underground construction work, piping etc. would be spec'd for high-power. Certain pumps etc. could be upgraded / added during the upgrade (in response to question by Nick W.)
- Noted that ML now starts at 5 GeV (additional linac taken from RTML second-stage compressor).
- For comparison of low- versus high-power configurations, both contain the additional power overhead for new PDS and support for the gradient spread (Marc R. noted these were additional considerations beyond that discussed for the RDR). – In response to a question from Nick W.
- Tom H. asked whether the incremental cost of having full power from the start to upgrading later would be available. Assumption is there is a small cost penalty to pay for upgrade (total cost more expensive). Vic replied that such estimates should be available [*NJW comment: this assumes the cost of the upgrade will be estimated.*]. Vic noted the whole exercise was really one of trying to find an optimum of upfront cost reduction versus cost of a later upgrade.

- Tsunehiko O. made a comment concerning the increased RF required for the positron source. [*NJW comment – confused answers followed this, partly I believe because Omori-san’s comments/question was not clear or understood. I believe the issue is the increase in undulator length from 147m (RDR) to 210m (SB2009), and the assumed additional linac that is required to compensate the increased energy loss. This modification is driven by dropping the flux concentrator in favour of the more conservative QWT, and is not directly related to either low-p or the source relocation. However we should make sure all the numbers are consistent.*]

2. Scope for BAW-2 discussions and detailed agenda

- Nick W. presented the administrative complications caused by the 10Hz scenario for low Ecm, which effectively couples the low-p option to the source relocation.
- Four basic configurations can be studied, which would allow a clean understanding of the cost increments associated uniquely with each of two proposed themes.
- However, this generates a lot of work and makes life complicated. It is proposed to at least drop the 10Hz incremental costs for the high-power (i.e. RDR) solution. Only the incremental cost for the 10Hz solution based on the low-p configuration should be addressed.
- Scope of the presentations for BAW-2 was discussed, attempting to keep the two themes separated as much as possible.
- For low-p, the focus should be on the configuration for 500 GeV (maximum gradient at 5Hz). DR should 3.2km solution for 200ms damping time. HLRF need to discuss klystron/modulator counts for the reduced currents. Proposed path for upgrade should also be discussed.
- Question from Kaoru Y. on reported 2.2ms pulse width for DRFS. Other options are possible (over-coupling, proposed at KEK BAW). Marc R. noted that decisions needed to be made to allow CFS to move forward, and this was agreed a few weeks ago. Nick W. noted that for DRFS in conjunction with gradient spread, the fill times for the DRFS units would have a statistical spread. These numbers need to be finalized and presented at BAW-2.
- Second day for low-p focuses on physics and detector impact, including BDS/MDI issues. Andrei S. to consider a detailed programme for foreseen BDS 90' session. 90' also foreseen for Physics and Detector talks.
- Thursday and Friday deal with source relocation. First day (Thursday) currently foreseen for technical aspects – including 10Hz operation scenario.
- DR should discuss what is incrementally needed to support 10Hz operation for the 3.2km rings with 1300 bunches.
- HLRF should discuss how the efficiency scales with lower gradient, and supply estimates for the needed AC power at the Ecm lower than 300 GeV running at 10Hz, assuming 1300 bunches. (Answering a question from Tetsuo S., Nick noted that we focus on Ecm = 200, 230 and 250 GeV for the 10Hz running.)

- Finally Nick W. noted that the only remaining difference between the RDR and SB2009 source location with respect to physics is energy spread and polarization.

3. Physics and Detector presentations.

- There is currently 2.5 hours scheduled for physics and detector talks/discussions at the BAW (90' in low-p session, 60' in positron source).
- Jim B. reported that attendance at the BAW from the P&D groups looks good (as expected). He will ask the authors of the key physics studies to present their findings and comment on the SB2009 impact.
- With respect to separate talks just on source relocation impact, Jim was not sure. He felt that the 60' slot should go first on the Thursday. He also noted that the reduced energy spread at low Ecm afforded by the SB2009 assumption was beneficial for the Higgs studies.
- Jim will discuss the options with the P&D representatives and propose a detail schedule for the presentations before the holidays.

Nick noted that there is one last AD&I meeting scheduled before the BAW on **January 5**. We will probably use this meeting to discuss logistics and final planning for the workshop itself. **All speakers should attend this meeting.**

Ewan P. asked if we should request the talks be posted in advance so we have time to check consistency. This is clearly desirable but may prove difficult in practice.

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