

## Notes from AD&I Webex meeting, 11<sup>th</sup> April, 2012

### Participants

Nick Walker (chair), Akira Yamamoto, Benno List, John Carwardine (scribe), Ewan Paterson, Gerry Dugan, Hitoshi Hayano, Marc Ross, Mark Palmer, Sabine Riemann, Andrei Seryi, Tetsuo Shidara, Tom Markiewicz, Vic Kuchler, Wilhelm Bialowons, Kauro Yokoya

### Agenda

- Action Items update/review
- KILC parallel sessions update
- Approach to RDR Technical Systems
- Further planning for Detector Hall review at KILC

Slides are posted here:

<http://ilcagenda.linearcollider.org/conferenceDisplay.py?confId=5584>

### Action Items List (Nick, all)

A number of items have been added for CFS following the CERN CFS BTR. Also, two general action items have been added that should have already been on the list (intended as strong reminders): TDR draft text; TDR cost estimation.

CFS criteria tables are all in EDMS, but haven't been approved. PMs want to ensure all are correct before approving all in one go – to be done at KILC).

Vic: European drawings – will be ready by KILC.

Vic: Underground costs should be fairly stable, still going through the costs for the surface buildings.

Gerry: underground costs in the detector hall still have some differences between regions – start reconciling this in KILC.

### KILC Parallel Sessions

There will be a short GDE plenary session on Monday afternoon before going into parallel WG sessions for the second half of the afternoon.

Top-level schedules for the parallel working group sessions are posted on the KILC Indico site. Conveners should upload their WG programmes as soon as possible.

### Discussion on Approach to Technical Systems in TDR (Nick)

During the RDR, there was a matrix of Technical Systems and Area Systems Groups. We don't have explicit Tech Systems in our project structure or in the TDR, so how to reflect this in the TDR outline and writing effort? The general philosophy is to cover the technical system requirements in the individual Area Systems chapters.

Some Technical Systems are already explicitly called out in the TDR outline, e.g. the Main Linac chapter in TDR covers RF power, LLRF, Cryomodules, cavity package, cryogenics. However, there are cases where there is overlap with other areas, e.g. cryogenics is also required for Sources, RTML, and BDS. In these cases requirements should be documented in the respective area systems chapters and the Main Linac chapter should be referenced for the technical solutions.

In the RDR, Chapter 3 covers each of the respective technical systems. Generally, the descriptions in RDR are quite superficial and don't reflect the large amount of work done by each of the groups (information that should be contained in EDMS).

#### Magnets / PS

- RDR chapter include magnet designs, power supplies, support. Text was relatively generic, with no specific solutions.
- There is significant background information not included in the RDR, eg there is a very detailed spreadsheet from Bellomo/Spencer
  - Needs to be in EDMS technical design database.
- Component numbers and top-level requirements should be included in the TDR AS chapters.
- Special magnets should be described in the AS chapters in the TDR, e.g. BDS final doublet. Otherwise, the intention is not to include general designs of standard accelerator technology in the AS chapters.
- In the case of the DR, there has been a complete overhaul of the lattice, so numbers are quite different than the RDR. There has also been work done to completely overhaul the power supply system design (moving to a distributed raw DC buss rather than separate raw supplies for each magnet power converter). Expect all of this to be documented in the Damping Ring chapter.
- Open question: is there an effect on the magnets/power supply systems from the central region integration activities?

### Vacuum Systems

- RDR description was dominated by SCRF linac vacuum, which should go into the SCRF section of the TDR.
- Descriptions for other accelerator areas were relatively thin.
- Requirements and solutions should be put into the TDR AS chapters.

### Instrumentation

- The RDR chapter provided a general overview of instrumentation systems, types, general requirements, but specific details of requirements were already included in the various Area Systems.
- Requirements and numbers of items should be incorporated in the AS chapters.

### Controls

- This is a special case because the controls performs a global function
  - A separate section will be required for the TDR.
- Should review the front-end controls requirements for each of the Accelerator areas (numbers of channels mainly).

### Overall

- TDR authors – should review the relevant technical system sections of the RDR Chapter 3, especially numbers of devices and requirements.
- All AS chapters should include requirements and numbers of devices for the different technical systems.
- What we don't want is for AS chapters to have to describe the technical system design approaches or solutions, except where there are very special items.
- There is still potential value in having common chapters for some of the technical systems where we want to include general descriptions design approaches and principles, e.g. including high availability. One possible solution is to edit down the RDR chapter 3 and include it as an additional TDR chapter. The TEB should discuss this possibility at KILC2012.
- Further general discussions of the technical systems topic should be held at KILC during the joint sessions with TDR Editors

A discussion ensued on the technical design work and basis of estimates for the RDR Technical Systems. As it assumed that this will also be relevant for the TDR (mostly scaled to the TDR baseline and unit costs), it is important to make sure all of this

information/documentation is brought correctly into EDMS. The whereabouts of (some) of this documentation is in question. G. Dugan noted that he had links to the RDR cost spreadsheets that contained most of the design information. Dugan/List/Walker will try consolidate the documentation in a form that can easily be made available and useful to the TAG leaders / TDR authors. Links will be placed on the TDD website. (No cost information will be made publically available, but TAG leaders will have access via EDMS.)

### **Detector Hall Review at KILC (M. Ross)**

Will be on Wednesday during joint parallel session of BDS/MDI and CFS.

Purpose of the review:

- Conclude discussion on cost drivers
- Understand criteria for the key detector hall requirements.

Civil costs for the Detector Hall have apparently increased by 62% since RDR:

- Costing is based on unit-costs (underground volume) – unchanged since RDR
- We need to understand what has drive the cost increases.

CFS will present cost analyses for the civil criteria in each region (Vic, John O, Atsushi) – 20mins each.

T. Markiewicz:

- The agenda as it stands won't meet the needs for a cost review – should at least re-order the talks (Ross will discuss with Tauchi).
- Design work being done in Japan for the mountain region should be a primary topic for the review
  - There was no costing done during the RDR for the Japanese site.
  - MDI Group has been actively looking at underground assembly models for the Japanese mountain region site.

It is clear that the unit costs (unchanged for the Americas site estimate) and underground volumes need to be reviewed and understood. This is true for both the Japanese and US/EU solutions. Ross will follow up on the agenda and topics for the review.

### **Other**

Next meeting will be after KILC12

NJW/JC