

Draft: Minutes of ML-SCRF Technology Meeting (090722)

Date & Time:

13:00-14:15 GMT, July 22, 2009, via WebEx.

Participants:

A. Yamamoto, N. Walker, M. Ross, N. Toge, C. Adolphsen, P. Garbincius, S. Fukuda, N. Ohuchi, J. Carwardine, H. Hayano, J. Kerby, Y. Yamamoto, C. Ginsburg, R. Pierini, E. Patterson, C. Pagani, E. Elsen, R. Geng

Presentation files are available at the following Indico site;

<http://ilcagenda.linearcollider.org/conferenceDisplay.py?confId=3712>

1) Report from Project Mangers (A. Yamamoto, N. Walker, M. Ross)

- Nick reported on the AD&I progress. Since the May meeting at DESY, contact persons have been identified for the critical inputs to an overall update of the design and regular webex meetings used for communication. We are carrying two variants going forward, the single tunnel and the dual tunnel, with a critical aspect of the down select going to be determined by the overall anticipated availability. The last webex meeting focused on how the RF options would change the overall design, and this information is being fed to Peter Garbincius. The next AD&I webex is anticipated in 3 weeks, fixing dates in the summer remains a challenge with vacations, summer plans, etc. There will be a status report given at the ALCPG meeting, with a lightweight/outline version of the overall document. At Beijing in March 2010 a more full presentation will be made.
- Marc commented on the working of the availability task force that has been formed to put together a more rigorous basis for calculating the availability of the machine. The task force is divided into 3 sub-groups: Simulation (led by Tom Himel); Hardware (John Carwardine); Benchmark / 1st Principles (Tetsuo Shidara). Everyone is encouraged to review material posted on the Indico web site, and Marc notes that the contributions from Chris and Shigeki to date have been very welcome.
- Akira noted the recent FALC and KEK-ILC-SCRF reviews, and ran through the slides prepared for each. For the FALC review, the cavity gradient was of course a topic, and the plan for the cavity group was presented by Mike Harrison. The efforts of the group going forward are eagerly anticipated. The KEK-ILC-SCRF meeting had just completed, so conclusions were not readily available but the status of the cavity effort worldwide, and plans for industrialization of the cavity process were specifically covered. Akira notes that an explanation of the status of the cavity effort has been requested in time for the ILCSC in August, but further discussion will occur after Camille's presentation (below).
- Akira presented a summary of the SCRF / S1 Global discussions at Fermilab on July 15. Preliminary notes of the 3 meetings have been prepared and distributed by Jim Kerby, and initial comments received from many of the participants. The meetings were very fruitful, and progress on the S1 Global effort reported by Akira at the most recent GDE EC meeting.

2) Topics

- **Global Cavity Database Report (C. Ginsburg)**

Camille presented six slides (posted), showing the status of the database effort, the timeline for the database effort, and the forensic analysis of the slide previously shown in the spring relative to the preliminary slide generated for FALC. The discussion generated around the FALC preliminary 'plot 1' brought to light the need for the database effort, and for clear definition of the rules applied to generate the plots. Nobu commented on the need for statistical errors to be quoted with the plots, and that a means for dealing with the Q0 issue remains to be specified. Just after the meeting Nobu distributed some comments on the statistical analysis of the data. Rongli commented on how well the effort has been carried out to date, and thanked Camille and the team for the good start in collecting the data and in the effort to understand the variability in the processing and testing of cavities from different vendors and at different labs.

There is now a request that an updated slide and explanation be presented at the ILCSC meeting in August. It's noted that this is again ahead of the accepted Database group schedule, and coming out with a limited number of preliminary slides is doable but should be agreed upon in advance. Rongli will plan this discussion for the next S0 Cavity group webex, to be held 31 July.

- **HLLRF: Cluster System Status / Comparison (C. Adolphsen)**

Chris presented a spreadsheet showing an updated cost comparison of the various schemes (note this spreadsheet is not posted on the Indico website due to some sensitive numbers included in it). The absolute costs are a simplification of those computed for the RDR - it is the differences in cost of two options that are relevant. Chris also replaced the 'half bunch train' option with a 'same rf pulse width' option in which the klystron count is reduced 30% while the rf pulse width remains the same (and the number of bunches is halved). This option saves about the same amount as the half current case, but does not require running with longer rf pulses nor increasing the cryogenic capacity. Also, since the beam current decreases by only 30%, the LLRF system is easier to operate and would need less overhead than in the half current case. Finally, the local klystron and modulator cooling and electrical distribution would not need to be changed if the beam current were increased, only accommodations made for additional rf sources, which is fairly easy in the clustered klystron configuration (in the half current case, we would be adding more cooling and electrical capacity than would be required if the beam current were increased). Peter commented that the scheme makes sense as long as the equipment is on the surface, and confirms the tunnel would remain the same and the rf pipes etc remain unchanged as well.

- **HLRF: Distributed System Status (S. Fukuda)**

Shigeki presented the slides (posted) the scheme of which had been discussed w/ the availability task force in a webex on 8 July. For the sake of time the availability slides he included as an appendix but did not discuss during this meeting.

There were several comments on the slides. First Peter clarified that for instance on slide 6 the 65k\$ listed for a current single unit includes the permanent magnet, while the 23k\$ listed is the RDR "Target" or 'expected' cost when mass produced. When we get to comparing such values it's noted that we will have to be very careful with the numbers, escalation, etc. On slide 7 we need to again understand the scope of the technical item listed in the cost. On a more global scale at the end of the talk Ewan noted he liked the idea of a shielded box, but worried about long term creep of items suspended from the ceiling of the tunnel, Akira noted that XFEL does this with reinforcing rings imbedded in the tunnel such that creep should be OK. The question will be forwarded to the CF+S group for their consideration.

3) Other Notes

Carlo noted he is currently at DESY for the XFEL cornerstone ceremony, but had heard that PXFEL1 (cryomodule components from China) had recently been tested and reached 30MV/m average gradient, very close to the ILC S1 Global goal. The test has been extended 1 week to further investigate the performance of the system. Congratulations to our DESY colleagues on this success.

4) Further Plans and Meetings

The upcoming ML-SCRF webex meetings are scheduled for 21 Aug, 16 Sept, 14 Oct, 11 Nov, 9 Dec.

SRF09: Sept 21-25 (Berlin)

ALCPG09: Sept 29 – Oct 3 (Albuquerque)

AD&I 2: tentatively scheduled for early December (DESY?)

AAP Review #2: Jan. 6-8, 2010 (Oxford)

GDE meeting: March, 2010 (Beijing)

TTC: probably in April, 2010 (FNAL)

IPAC: 24 – 28 May, 2010 (Kyoto)

5) Next SCRF Meeting Schedule

- Next ML-SCRF WebEx meeting: 21 August, 13:00- GMT, with the main topic tentatively scheduled to be the status of the S1 Global effort.