Project Managers' Report

March 2009

ILC Global Design Effort

With this issue of the Technical Design Phase Monthly Report, you will find summary notes for the Group's monthly meetings (Main Linac Technology - Superconducting RF, Conventional Facilities and Siting, and Accelerator Systems), and a report from the Cost and Schedule Group (Peter Garbincius). These meeting notes show progress made and plans for upcoming meetings and work. This monthly report complements the weekly ILC Newsline. Please see the 'Director's Corner' for important planning and policy communication.

The Project Managers: Marc Ross, Nick Walker and Akira Yamamoto
March 2009

Global Design Effort
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GDE Monthly Project Management Report for March 2009

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Project Manager's Report

Activities over the past month have been focused on preparing for the upcoming Accelerator Advisory Panel review at TILC09 in Tsukuba. This is an important review. It is our first major technical review since the RDR was released, and it comes at a time when we are working hard on Accelerator Design/Integration options and when we are beginning to direct our attention to a re-baselining one year from now that will define the accelerator design for the remainder of the Technical Design Phase.

In the US, the Americas Region Team are also preparing for their annual program review by the US Department of Energy, which will examine US activities over the past year and plans for the coming year.

In addition, the Project Managers will participate in the second 'Project Advisory Committee' (PAC) review to take place just following the PAC09 conference in Vancouver in early May. The first such review took place last October.
(http://ilcdoc.linearcollider.org/record/18064/files/PAC_Report.pdf)

In order to begin the work needed to prepare for the re-baseling, a face-to-face Design Integration meeting has been scheduled for May 28-29 at DESY. The timing of this meeting will allow us to consider feedback and recommendations from the AAP review committee.

The March 12th issue of Newsline was a thematic issue focused on various aspects of the electron cloud mitigation for the ILC including our most ambitious electron cloud studies program that is getting underway at Cornell on the NSF-supported CesrTA facility. Demonstrating mitigation of the electron clouds in the damping ring is one of the highest priority goals for the ILC in this Technical Design phase.

During the early part of March, the Project Managers visited five cavity fabrication companies worldwide in order to describe the Technical Design Phase R&D Plan and solicit their reports and comments and ask them about the issues surrounding their activities. We also wished to express our intention to establish communication channels to promote the development of a confident, reliable relationship. Our visits were facilitated in cooperative effort with the GDE regional and institutional leaders. We visited Advanced Energy Systems (US), Niowave / Roark (US), Accel (Germany), Zanon (Italy), and Mitsubishi Heavy Industries (Japan) in succession. We are grateful to our hosts for their generous hospitality and would like to extend our deep thanks to them and to the institutional managers who helped organise the visits. In order to establish a standard documentation package to be distributed to each company, we assembled this webpage.

Minutes of ML-SCRF Technology Meeting (090318)

Date & Time:
13:00-14:05 GMT, March 18, 2009, using WebEx.

Participants:
L. Lilje, H. Hayano, N. Ohuchi, T. Peterson, S. Fukuda, C. Adolphsen, A. Yamamoto, M. Ross, N. Walker, J. Carwardine, W. Bialowons, J. Kerby, E. Paterson, N. Toge, C. Pagani, S. Mishra, M. Champion, R. Kephart, T. Shidara

Presentation files are available at the following Indico site;
http://ilcagenda.linearcollider.org/conferenceDisplay.py?confId=3458

1) Report from Project Mangers (A. Yamamoto)
- Visiting mission to SCRF cavity manufacturers (AES, Niowave, ACCEL, ZANON, MHI) was completed.
- PMs are intensively preparing for AAP review at TILC09.

2) Brief Reports from GLs
- Cavity Technical Area Group (TAG) Status (L. Lilje)
- S0 Webex meeting was held yesterday, March 18.
  http://ilcagenda.linearcollider.org/conferenceDisplay.py?confId=3472
- Status reports from 3 regions were presented and preparations for AAP review and S0 parallel session were discussed.
- Cavity Integration TAG Status (H. Hayano)
- Response behavior of the piezo tuner is on going at STF in order to check the hysteresis problem.
- Magnetic shield effect in the cryomodule will be measured soon at STF.
- Two MHI cavities were tested at the STF VT stand. Both cavities reached at the field gradient of 27 MV/m at the 1st test, but reduced down to 20 MV/m level in the following tests.
- Cryomodule TAG Status (N. Ohuchi)
- Webex meetings on design works of S1-Global cryomodule and cryogenics are held biweekly.
  http://ilcagenda.linearcollider.org/categoryDisplay.py?categId=147
- Drawings of Module-C and the cold mass components by Zanon are completed at the 70% level.
- The working group is standing at the detail design stage, and assembly procedures and necessary tools should be discussed soon. For example, the KEK rail-guide system from clean room to assembly area is completely different from the DESY and FNAL system and KEK will prepare the cavity stands for DESY and FNAL cavities. The working group asks to assign contact persons who can provide information (including the detail CAD data) and participate in the S1-Global meeting from related laboratories.
  C: Jim commented that FNAL will provide necessary information on FNAL cavities soon. Lutz commented that Hans is the contact person for DESY cavities, and those will be the same ones with FNAL cavities.

3) SCRF Session at AAP Review (A. Yamamoto)
- While the AAP review is not closed, attendance might be limited by the constraints of the available room space for AAP review. Participation of those not directly involved in the proceedings (i.e. those who are not panel members, speakers or organizers) is limited to 'observers' only.
- A document of AAP review introduction and charge, as well as the related presentation files (ex. CFS and FLASH) are available at the following site.
  http://ilcagenda.linearcollider.org/conferenceOtherViews.py?confId=3154&view=standard&showDate=all&showSession=1&detailLevel=contribution
- Outline of SCRF presentation at AAP review

Session 1 (April 19, AM)
9:00 Introduction by PM (A. Yamamoto)
9:10 [Path to finalizing cavity field gradient (S0)]
9:10 -R&Ds to improve the gradient (L. Lilje)
9:40 -Decision process (A. Yamamoto)
9:50 [Path towards industrialization (S1/S2)]
9:50 -Cavity integration (H. Hayano)
10:20 -Cryomodule (N. Ohuchi)

10:50 Coffee break
11:20 -Role of plug-compatibility
11:30 [Path towards industrialization (cont)]
11:30 -Cryogenics (T. Peterson)
11:45 -HLRF (S. Fukuda) =>might be extended a little by adjusting MLI slot.
12:00 -ML Integration: Beam Dynamics and Quadrupoles (C. Adolphsen)
12:30 Lunch
Session 2 (April. 19, PM)
14:00 [Lesson expected from system tests]
14:00 -STF at KEK (H. Hayano)
14:30 -NML at FNAL (M. Champion)
15:00 -Summary and Discussions (all subjects)
15:30 Adjourn

- Preparation of the Documents
  Tom had already prepared the presentation file for cryogenics, and other expected presenters are strongly requested to prepare their reports till March 27 and post them to the following SCRF site.
  http://ilcagenda.linearcollider.org/conferenceDisplay.py?confId=3451
  The final destination of these presentation files should be at the TILC09/AAP review site.
  http://ilcagenda.linearcollider.org/conferenceOtherViews.py?confId=3154&view=standard&showDate=all&showSession=1&detailLevel=contribution

4) SCRF Parallel Sessions at TILC09 (A. Yamamoto)

- Many GDE TAG leaders will be asked to present material to the review and their presentation time must be taken into account in the parallel session organization. Therefore, less time will be available for parallel sessions than there had been at previous GDE meetings.
- The primary goal of the TILC09 parallel sessions is to present and discuss the R & D and design activities now in progress in order to bring the latest results to the GDE community.
- The focus of the parallel sessions will be also on the re-baseline process (to be completed by early 2010). Parallel session conveners are asked to help to guide the re-baseline process by: 1) providing a forum for stakeholders to give input; 2) collecting their input and developing a summary for Project Managers and for the TILC09 closing plenary; and 3) evaluating current status, recommending and organizing further studies as proactively as possible. The key re-baseline activities and milestones are:

- Collecting input from the community - starts at TILC09
- Submitting preliminary recommendations - next GDE meeting (ALCPG09 - late September 2009)
- Reviewing and approving recommendations - February 2010

- There will be a special parallel session on Accelerator Design and Integration (co-convened by N. Walker and E. Paterson, and scheduled from 16:30 till 19:00 on Saturday, April 18), focus on the re-baseline options in particular on the optimization of the central injector complex. All TAG leaders are expected to participate this special joint session.
- SCRF Parallel Session Arrangement (tentative)

a) Cavity Gradient R&D (scope for progress in 2009 and re-baseline)
- Conveners: L. Lilje, H. Hayano, M. Champion, R. Geng
- Time slot: April 18, 9:00 – 12:00

b) Cavity Integration; tuner, coupler plug-compatibility
- Conveners: H. Hayano, (M. Champion), C. Pagani
- Time slot: April 18, 14:00 – 16:30

c) Cryomodule; S1-Global cryomodule
- Conveners: N. Ohuchi, D. Mitchell, P. Pierini
- Time slot: April 20, 9:00 – 12:30??

d) HLRF; Cluster and Distributed RF source
- Conveners: S. Fukuda and C. Adolphsen, joint with CFS conveners
- Time slot: April 20, 9:00 – 12:00, +??

e) MLI; Quadrupole magnet alignment, low-energy cavity alignment
- Conveners: C. Adolphsen, joint with LET convener (K. Kubo)
- Time slot: April 20, 14:00 – 18:00??

5) SCRF Meeting Schedule

- Next SCRF WebEx meeting: April 13, 13:00- GMT. Note: Not usual Wednesday.
- GDE meeting and AAP (interim) review in Tsukuba; April 17 – 21, 2009.

- We would like to remind everybody that the deadline of TILC09 registration is April 2. Those who plan to attend the meeting, please go to the web page http://tilc09.kek.jp/registration.php. Those who need visa to Japan, please visit the site http://tilc09.kek.jp/visa.php.

CFS & Global Systems Webex Meeting
25 March 2009

Agenda
1. PM Report (M Ross)
2. CFS preparations for the AAP review (V. Kuchler)
3. Outline for FLASH 9mA program presentation to AAP (J. Carwardine)

Attendees
E. Paterson, N. Walker, J. Osborne, V. Kuchler, J. Carwardine, M. Ross, T. Shudara, N. Toge, P. Garbincius, A. Yamamoto

Meeting Summary

PM Report (Marc)

AAP (Accelerator Advisory Panel) Review
- Marc reinforced the importance of the upcoming AAP review at TILC09. The review agenda is organized around the main focus topics of the review, particularly with respect to re-baselining the machine in 2010.
- The early morning executive sessions are intended to provide time to respond to particular questions raised by the committee on the previous day's material.
- The review committee has been reviewing the posted background materials. So far the feedback from the committee has been positive.
- As a reminder, final presentations should be posted to the AAP site by April 14th.

TILC09 Meeting in April 09
- There will be an important design/integration working session on the Saturday following the afternoon sessions. TAGLs are particularly requested to attend this meeting.
- Parallel sessions have been organized around several topics. Scheduling the parallel sessions has been difficult because they cannot overlap with relevant sessions of the AAP, which must be given priority. Parallel session coordinators have been asked to focus on topics specifically relating to the Design/Integration activities and to discuss the machine re-baselining planned for 2010.
- CFS will necessarily be involved in several of the parallel sessions.

The annual US Department of Energy review of the Americas ILC program (ART) will be held at SLAC on April 29th and 30th.

A face-to-face Design Integration meeting has been scheduled for May 28-29 at DESY. The purpose of the meeting will be to begin the work needed in preparation for re-baselining the ILC accelerator in early 2010. The scope of the meeting will include but will not be limited to 'minimum machine' topics. A preliminary agenda has been posted and a first announcement has been sent out. TAGLs are urged to make every effort to attend this meeting.

CFS Preparations for the AAP review (Vic)

Vic summarized the organization and content of the presentations being prepared for the AAP review. There will be a strong focus on CFS during the AAP review, and a series of presentations are being planned to address the focus areas provided by the review panel. The CFS group has made some adjustments to the presentation topics requested by the committee in order to better align with the ongoing activities. Nevertheless, all the topics areas requested by the committee will be covered.

In addition to the AAP review, the CFS group will be heavily involved in several parallel sessions, in particular with the Main Linac sessions that will cover the different HLRF options and the Design/Integration working session.

TTF/FLASH 9mA Program report (John C)

John reviewed the draft slides on the TTF/FLASH 9mA program to be presented at the AAP review. The talk will describe the 9mA program in the context of the Cryomodule String test described in the R&D Plan, and will include some discussion on extrapolating results to the ILC Reference Design RF unit.

The FLASH talk will be the first of three on linac beam test facility programs.

The next CFS & Global Systems meeting will be held on April 25th.

16. Accelerator Systems WebEx Conference
06 March 2009, 14:00 GMT

Minutes (v1.0)

Attending: A. Brachmann, J. Carwardine, J. Clarke, P. Garbincius, S. Guiducci, K. Kubo, M. Kuriki, F. Lehner (minutes), T. Omori, M. Palmer, E. Paterson, A. Seryi, T. Shidara, N. Solyak, N. Toge, J. Urakawa, K. Yokoya, N. Walker

All slides are available on the indico site
http://ilcagenda.linearcollider.org/conferenceDisplay.py?confId=3429

1. PM Introduction and general announcements (Nick)

Nick welcomed the attendees. The most urgent business is preparing for TILC '09 and the AAP review. There will be no TAG reports at this meeting. Nick requested that written TAG summary reports are required for the monthly PM report. **These reports should be sent to Frank Lehner by 15 March.**

2. AAP review planning (Nick)

The detailed AAP review programme is now appearing on indico at
http://ilcagenda.linearcollider.org/conferenceOtherViews.py?confId=3154&view=standard&showDate=all&showSession=1&detailLevel=contribution

The CesrTA (M. Palmer) session is scheduled on Sat, 18 April and the session on ATF/ATF2 (A. Seryi) on Sunday, 19 April.

On Monday morning, 20 April the accelerator systems block is scheduled with 20-30‘ talks on electron source (A. Brachmann), positron source (J. Clarke), damping ring (S. Guiducci), RTML (N. Solyak), BDS (A. Seryi) and simulation/beam dynamics (K. Kubo).

In a couple of previously circulated emails to the AS TAG group Nick laid out the relevant part of the AAP charge and gave guidelines as well as indications of the scope of the talks:

The AAP review will focus on the R&D Plan, within the context of the charge distributed (basically for the accelerator systems the theme is 'Readiness in 2012'). As regards critical R&D items the key questions are where we are, where

we will be at TDP-1 and how does this influence the 2012 goals. The reviewers are looking beyond RDR, to what is new or changing. Given the above, status of critical R&D (including unresolved issues) should be emphasized. This should also include "design work" associated with (for example) the minimum machine. The presentations are short and will have to be strictly managed. The content AS TAG leaders wish to cover will to some extent define the background material (support material on web with more detail than the speakers have time to cover in the talk itself).

The deadline for draft presentations is **Sunday, 05 April**

Nick discussed briefly with all TAG leaders the current status of their preparation work.

The minutes note T. Omori's stated opinion that 30' timeslot for the positron source presentation is too short given the issues. Nick responded that this was all the time the AAP had allotted for this review, as the AS systems were not the focus.

3. TILC '09 parallel WG sessions and goals (Nick)

Nick started the discussion on parallel meetings (to AAP review), WG structures, programme schedule and goals. He requested that all AS TAG leaders should think about how much parallel time they think they can make use of. He emphasized that the parallel sessions have to be arranged not to conflict with the AAP review. First estimations on needed times were given in the conversations. A special "ILC design/integration" session convened by Nick and Ewan with minimum overlap to the review is foreseen on Saturday, 18 April from 16:30-19:00.

The PMs are currently in the process of drafting a document on charge/goals for the workshop. It will be distributed next week

4. Towards the Baseline Proposal (Nick)

Nick showed one slide summarizing the steps towards the baseline. One proposal under consideration is that the TAG leaders (plus additional members from the minimum machine group) together with PM office/integration scientist under the lead of the project managers will produce the new baseline proposal at the end of 2009, for review in early 2010. During TILC09 discussions should begin on the re-baseline process, and concrete short-term plans should be made. Special face-to-face meetings of this group (SLAC 11-12 May, *tbc*) and during ALCPG at Albuquerque (28.09-03.10.) will be scheduled. It is noted that the proposed dates for the interim SLAC meeting may be inconvenient KEK colleagues, and other alternative dates will be considered.

5. A.o.B.

The next AS-TAGL meeting is scheduled for:

- Wednesday, 01 April 2009 at 14:00 GMT **TBC** (please note daylight saving time in Europe and USA). Do we shift correspondingly? Japan: GMT+9; Pacific daylight time: GMT-7.

Action items:

- TAG status reports by 15 March
- Draft of AAP review talks by 05 April

Attachments

1. **Slides by Nick Walker**

Monthly Report (March 1-31, 2009) for Peter H. Garbinicus PHG_monthly_report_31march09.doc
Distributed March 31 to: M Ross, T Shidara, J Carwardine, W Bialowons, and F Lehner.

Triad's ILC Cost Estimating Tool (ICET):

J. Carwardine, T. Himel, T. Shidara, P. Garbincius, and Triad: S. Curtis, L. Lew, and K. Long

At the beginning of March, the contract with Triad was expanded by approximately 40% in order to continue work on ICET.

Regular WEBEX meetings were held with Triad on Tuesdays, March 3, 10, 17, 24, and 31. In addition, there were the following special webex meetings and telecons:

Thursday, March 5: J. Carwardine, T. Himel, P. Garbincius on file/folder/version structure and control.

Thursday, March 19: J. Carwardine, P. Garbincius on the ICET "Builder", top-down specification and automated linkages via the WBSBuild.xls configuration file, and adding or modifying links manually by modifying the Cost Estimating Module files. John also related discussions with Jens Kreutzkamp (DESY-EDMS) on the possible use of "named baselines" as a method of documenting the various files stored in EDMS which would be needed by ICET. Peter tried implementing a test "named baseline", but the question remains how to call out files for download to ICET workspace.

Wednesday, March 26: S. Curtis, P. Garbincius regarding the "rebuilding" procedures of ICET which involves using pre-existing Cost Estimating Modules. This modularity is useful in order to be able to build and test individual sections of the estimate, and to modify an existing estimate into a new machine configuration for studying cost impacts, etc. After this meeting, the conclusion of the ILC Team was that interfacing with EDMS has a higher priority, so we will defer work on the "rebuilder" for a while.

Triad sent new version ICET_V1.3 (16march09). Peter is becoming facile with using it and the associated database. Some minor problems requiring fixes in the next version were relayed to Triad.

Triad's ideas and plans for file and version management within EDMS and for the interface to download files from EDMS into the ICET workplace were discussed at the March 31 webex, which also included Jens Kreutzkamp and Daniel Szepielak from DESY-EDMS and Maura Barone from ILC-Fermilab. Jens and Daniel briefly outlined the features of two web-services which could be written and provided to meet the Triad needs. Larry and Kevin will provide a short, written description of specifically what they think they need these interfaces to do. It is expected that DESY-EDMS can provide these web-services interfaces to Triad within a quite short period.

CLIC-ILC Cost & Schedule Working Group:

G. Riddone, P. Lebrun, H. Braun (departing), J. Carwardine, T. Shidara, and P. Garbincius

A webex meeting was held on Thursday, March 19. There will be a face-to-face meeting at TILC09 on Sunday, April 19, in Tsukuba.

Peter presented a brief demonstration and examples of the current status of the ILC Cost Estimating Tool (ICET) being developed by the Triad project management consulting contractor. He distributed these materials to the CLIC members.

We discussed the status of the three common CLIC-ILC documents that we were considering. Unfortunately, there have not been many accomplishments.

Underground Safety: the CLIC-ILC Cost & Schedule Working Group is just an *observer* to the work being done by the CES and CF&S groups. Fabio Corsanego is actively working on this. Germana sent latest link: http://indico.cern.ch/conferenceDisplay.py?confId=44868 We will drop this topic from our charge.

Cost Estimating Methodology for Conventional (copper) Magnets: Hans and Peter started accumulating literature and estimates and identification of cost drivers. This activity will not really get started until the ILC magnet experts get involved. Marc Ross did not anticipate any ILC funding being available (for their salaries) at this time, so his recommendation was to defer this activity until later. He asked whether CERN magnet design and fabrication experts are available to work on this.

Methodology for Risk Management: This will be one of our major topics at TILC09. Our goal will be to produce at least a very detailed outline. We've already had presentations by Peter (ILC) and Frank Lehner (XFEL). Philippe will present the LHC experience. Philippe reminded us to include risks related to escalation and currency exchange rates, along with the uncertainties in a cost estimate. There are different approaches to both technical risk (register matrix of probability and severity) and cost risk and mitigation. The funding agencies of each region have different expectations and requirements. This will be interesting. Come prepared! I hope that we can converge.

Brian Foster has accepted our invitation to discuss with us at TILC09 on Sunday, April 19, the activities of his group on developing the governance and business model for the ILC. These plans will have direct influence our "risk" document.

About 75 minutes into the meeting, we were joined by J-P. Delahaye and M. Ross. Marc stated that Peter was asked to present a status report on CLIC-ILC activities and plans from both the Cost & Schedule and the CES-CFS Working Groups at the ILC/PAC in Vancouver, May 9-10, and that the CLIC members would be asked to provide similar status and plans at CLIC 'ACE' meeting at CERN, May 26-28. Jean-Pierre again encouraged us to prepare both the ILC and CLIC cost estimates in a manner which will allow direct comparison by the ***end of 2010***. (Marc noted that this was the first time this date was mentioned.)

Peter