



Project Managers' Report

May 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 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 Newslines. Please see the 'Director's Corner' for important planning and policy communication.

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

**Global Design Effort
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Monthly Report from Project Managers for May 2009

May 2009 was a very active month for the ILC, with the following events:

- Particle Accelerator Conference 2009 held in Vancouver (May 5-8),
- The 2nd review by ILC Project Advisory Panel held in Vancouver (May 9-10), and
- Accelerator Design & Integration Meeting held at DESY, Hamburg (May 28-29),

The progress of the ILC Technical Design and R&D Programs have been presented and discussed in the above meetings.

1. Particle Accelerator Conference 2009

More than 80 papers associated with the ILC Technical Design and R&D were presented at the Particle Accelerator Conference (PAC 2009). Nick Walker (representing the Project Managers) presented a plenary talk entitled “Progress toward the International Linear Collider”. The R&D overview and status were reviewed and extended R&D plans required in the Technical Design Phase 2 was discussed.

2. The ILC Project Advisory Panel

The 2nd ILC Project Advisory Panel was held on May 9-10, under supervision of the ILCSC. The overall R&D status and future plans were presented and discussed, focusing on the following subjects:

- GDE Overview
- R&D resources
- Superconducting RF
- Test Facilities: CesrTA, ATF, TTF2/FLASH, and ATF2
- Accelerator Design & Integration
- Cooperation with CLIC
- Accelerator Advisory Panel (AAP) review summary (held on April 17–21)

The PAC also reviewed progress on the Detectors.

The PAC was pleased by the progress made by the GDE since the first review (October 2008), paying particular credit to the rich on-going programs at the Test Beam Facilities. The PAC also made a special positive note of the summary of the AAP’s recent review at TILC09. The AAP review – an internal GDE technical review commissioned by the GDE Director – will provide additional input of the detailed technical program to the PAC review, which is fundamentally a management review. The PAC accepted the AAP’s report and endorsed this approach in the future.

The PAC was pleased to see the progress being made on the detector program led by the Research Director.

A final report from the PAC should be made public soon. The agenda and presentation material for the review can be found [here](#).

3. Accelerator Design & Integration Activities/meeting

Work towards the planned re-baseline of the ILC design has been a focus this month, with a special face-to-face TAG leaders meeting held at DESY on May 28-29. The main goals of the DESY meeting:

- Outline a PM-driven proposal for cost-driven modifications to the general layout of the (RDR) machine
- To walk-through each sub-system in an attempt to identify critical issues and (where possible) make Working Assumptions for further work.
- Re-establish an integrated design team, and specifically re-establish strong communication channels with the CFS group.

The two-day meeting concentrated the first day on the major cost drivers of the choice of accelerating gradient and on issues pertaining to the proposed single-tunnel configurations. Central to the latter was the discussion of the two possible solutions for the high-level RF – the surface klystron cluster concept, and the in-tunnel Distribute RF Source (DRFS) concept. The second day focused in the morning on Accelerator Systems (sources, damping rings, RTML, BDS and MDI). The afternoon saw a close-out and discussion session which consolidated the findings of the meeting and summarized a list of action items to be worked on for ALCPG.

The agenda and presentation material for the meeting can be found [here](#), while a detailed summary report can be found in ILC-EDMS [here](#).

On May 27, a special pre-meeting was arranged by the CAD-3D Visualization Team. The CAD-3D work is an important aspect of the AD&I activities, especially for the proposed central region integration, which includes the BDS, e- and e+ sources.

Minutes of ML-SCRF Technology Meeting (090520)

Date & Time:

13:00-14:20 GMT, May 20, 2009, via WebEx.

Participants:

R. Geng, H. Hayano, N. Ohuchi, T. Peterson, S. Fukuda, A. Yamamoto, M. Ross, J. Carwardine, J. Kerby, N. Toge, R. Kephart, R. Rimmer, T. Shidara, C. Ginsburg, W. Bialowons, E. Paterson, K. Yokoya

Presentation files are available at the following Indico site;

<http://ilcagenda.linearcollider.org/conferenceDisplay.py?confId=3593>

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

- Akira announced that Rongli Geng is replacing Lutz Lilje in the S0 coordination slot, as the Cavity (Process) Group Leader in ML-SCRF Technical Area. Many thanks to Lutz for his efforts on behalf of cavity development in the course of the past few years.

- AAP Report.

The AAP report was distributed with the announcement of this meeting. Marc showed Eckhard's report as presented. Beyond what is written on the slides, Marc noted that the last four reviews in of the overall program (AAP, PAC, ART, SRF) have all commented on the need to complete the cryomodule effort and keep priority on it. It's recommended that in the R&D phase plug compatibility is useful, but we need a quantitative method for evaluating the results (as score-card as it were), such that further design-unification effort can be made if necessary prepare for the production stage.

In the AAP report, it is noted that electron loading and X-ray intensities should be monitored, but Bob Kephart asked about the measurement of x-rays, as everyone does it differently. Marc mentioned that the TTC will address this in the upcoming meeting, and we will talk about the cavity performance cuts later in the meeting.

DESY AD&I meeting

Marc introduced the outline of the meeting, the strategy, and the focus of the DESY meeting. It is to be about content, not process, as much as possible. All seven items represent substantial changes to the baseline, and we expect to have considerable discussion on the pros and cons of each. We need to develop a plan for how to complete the evaluation, and the associated documentation for each, in a timely manner. It is hoped each presenter will address the changes, the risk table, and the timeline as outlined in Nick's charge letter previously distributed.

Just for everyone's information: SB2009 → "Strawman Baseline 2009"

Nobu asked if the statements (or discussion records) from the AAP report w/ regards to the SB2009 items are now available for our consideration.

June 11-12 there will be an ILC-CLIC meeting to work on further coordination with CLIC. The PMs will not be able to attend the ATF meeting at KEK then due to the schedule conflict.

2) Report from Group Leaders

Rongli Geng—no new report except trying to coordinate w/ the person in charge for the cavity at each institution for the next cavity coordination meeting on June 2.

Hitoshi Hayano—after TILC09, many holidays and limited progress. At KEK procurement of cavities for phase 2 is beginning, and preparation of the high pressure code paperwork is proceeding.

Norihito Ohuchi—yesterday during the S1 global webex meeting the schedule from Zanon was shown, Module C will be complete and ready for shipping in mid-October. The timing of Norihito's visit to Zanon for installation of instrumentation is being discussed (most likely in the end of July).

Tom Peterson—Tom won't be at DESY next week, but questions have come up with site variations and the impact on cryogenics. Tom will prepare a document with assumptions that went into the RDR, and will update it with additional costs for transfer lines as a function of distance from the plant, etc.

Shigeki Fukuda—after TILC09 there has not been a HLRF meeting and no new information on tests from SLAC or on the new configuration. Chris is absent today due to travel. Akira notes that ½ of the ML meeting at DESY is on the HLRF and asks that preparations be made in advance of the meeting. Shigeki asks that we make a plan as to how we will evaluate the various designs over the next year.

3) Preparation for DESY meeting / Cavity Yield Discussion

- Akira ran through his slides setting the background for discussion...Hassan's slides, DESY report, XFEL report, Marc Ross plot, JLab (Rongli's) report and plot...,all the different ways cavity yields are presented. Akira notes that for instance in Marc's plot some cavities have been dropped for various reasons, and as we go to making firm decisions we must have a consistent, accurate, and agreed upon method for reviewing the data.
- Bob asked about the drop in the DESY / Marc plot at 20 MV/m, and what is known about it. Without going into specifics, Marc notes that they can identify almost every cavity from the data, but as we get more cavities in the system this becomes more and more difficult. Also that we need to be moving to production yield, not process yield, to prepare for being most cost-effective in the production stage.
- What we said was by 2010 wanted a process yield of 50%, and by 2012 wanted a production yield of 90%. There are the specific definitions from the R&D plan on p28. Marc and Akira note in Hassan's plot tight loop cavity processing are included, and Rongli notes the labs did what was asked, and there were cavities that had known defects that were re-processed, in part proving that EP couldn't clear up pits.
- Slide 29-30 is a summary by Akira's on how the data has been used so far. Rongli mentions that all cavities at JLab are included, but maybe we don't know the processing total (including Ichiro). The DESY data have the problem that many cavities were processed with a different recipe. The timeline for revising and updating our goal, and how we should that, we discussed.
- Akira has discussed w/ Rongli how to proceed for a definition of the process yield, but has learned through the actual work that it is hard to establish this because resetting the surface is dependent on every single step. Though approaching

a 'production yield', the quality of cavities from the vendors currently varies widely, and good vendors have a reasonable chance of success in one or two processing tries, while others still have more intrinsic difficulties. We need a scheme to increase our understanding, which starts with having an accurate picture of where we currently stand.

- Akira / Rongli have discussed how to proceed, and proposed that Camille be involved with this task as the task force leader in cooperation with a specific person in charge from each major institution, and everyone agrees. We remain in the situation where we need to maximize our understanding, suggesting R&D on a case by case basis as Rongli described, but we need to come up with a compact clear way to describe where we are today. These two will be at odds. For field emission (FE), we retreat the cavity with ultrasonic cleaning and HPR, this sometimes removes the FE limit (there is no extra EP cycle). It's not clear whether we can EP with the helium tank on...DESY might believe no, Cornell might believe yes. Bob notes we might set a standard 'reset' point, like tumbling, should a cavity fail.
- Camille notes we tried to make a database, but it failed in the past. So it does take a team, and people need to be available ILC management considers this a priority. Marc notes that he and Camille are familiar w/ DESY, and in the US most of the cavities will come through JLab/ FNAL. The Asian effort is probably only 10 cavities or so. We confirm that we need the specific person in charge at each lab to verify and report the data.
- The PMs are requested to report on the progress of this discussion at the EC meeting at CERN June 11.

4) Other business

Rongli asks for a clarification on what the goal of the DESY meeting is...Akira says that having an accurate description of our current cavity status will be critical to making the gradient decision / projection for 2012, and working through and setting up the personnel for the database at the DESY meeting are the critical points.

Jim notes in the review schedule presented, with the AAP in early January, and report writing in December, we are effectively excluding 4-5 months where the cavity testing would be expected to be most active. The reviews may drive us to a decision earlier than most of the technical data will be available.

5) SCRF Meeting Schedule

- Next SCRF WebEx meeting: June 24, 13:00- GMT.
- TTC at LAL/Orsay, June 16-19.

18. Accelerator Systems WebEx Conference

6 May 2009, 13:00 GMT

Minutes (v0.0)

Attending: F.Lehner, A.Yamamoto, J.M.Paterson, M.Ross, M.Palmer, N.Toge, W.Bialowons, J.Clarke, S.Guiducci, T.Himel, T.Omori

All slides are available on the indico site

<http://ilcagenda.linearcollider.org/conferenceDisplay.py?confId=3564>

1. Opening (J.M. Paterson)

Paterson opened the meeting by stating that Walker is unavailable today and that we go through quick reports from area systems and go over the agenda to go through at the May DESY meeting.

2. Short status report by TAGLs

Positron (J.Clarke):

Clarke reported on the recent progress part of which has been reported at TILC09:

- Status of undulator testing at CI was reported at PAC09. Commissioning work is in progress.
- Data collection is in progress for the Eddy current issues on the positron target system. The data collection will take a couple of more weeks and comparison will be made on the effects of the spokes on the Eddy current between the data and simulation.
- Harrison (NA regional director) has put aside some budget for studies of the flux concentrator. Cornell and Livermore will develop research plans and they will be discussed within the e+ system meeting soon.

CesrTA (M.Palmer, slides available):

- The next experiment at CesrTA will start on May 12, and studies will be performed on 5GeV optics with wigglers turned-on, X-ray BSM, 4ns feedback systems electronics, BPM systems, LEP and electron cloud.
- The final major upgrade down will take place from June 16 through July 23. During this time, installation will be made on the new EC chambers, electron beam XSR-BSM, solenoid winding in some drift regions and instrumentation together with machine maintenance..
- There will be a meeting at PAC09 to review EC simulation and measurement strategies.
- Follow-up meeting on all these will be held at Cornell on June 25-26.

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- Preparation is in progress for AAP presentation.

DRs (S.Guiducci, slides available):

- Guiducci debriefed the group on DR-related activities other than those ongoing at CesrTA by quickly going through the presentations given at TILC09. Many of them will be published as contributions to PAC09.
- Q: any written report on the vacuum design work at done by CI presented at PAC09? A: Only a short summary from a March Webex exists. Should ask Wolski.

3. DESY Meeting in May (J.M. Paterson, slides available)

Paterson (JMP) summarized the plans for the DESY meeting scheduled this month.

- The meeting is called “Accelerator Design and Integration Meeting” (AD&I), and the overall schedule remains the same as previously announced, i.e. May 28-29 at DESY in Hamburg. The agenda information is available at <http://ilcagenda.linearcollider.org/conferenceDisplay.py?confId=3526>
- The goal of this meeting is to achieve consensus agreement on as many questions as possible or to agree on the schedule for others where more time is needed.
- PMs and JMP will discuss the critical questions to address during PAC09 and will circulate the question list to TAGLs next week.
- Reciprocally, PMs and JMP seek inputs on critical questions to be addressed at the DESY meeting. Deadline: End of Friday, May 8. For this JMP circulated his powerpoint file right after this meeting.
- The current proto-agenda for the two-days May 28 (ML and CF/S) and 29 (sources, DRs, RTMLs, BDS, integration and cost) appear already rather tight. The TAGLs are asked not to worry too much about the exact agenda contents while the structure of the meeting is basically fixed for now.
- May 27 (the day before) is allocated for a pre-meeting on 3D CAD issues to discuss with the local EDMS experts.
- C: Need some ways to tighten the communication with the detector folks as they seem concerned about the low-P option. A: Points noted.
- C: Need to allocate a sufficient amount of time to define the issues and to discuss them. A: Important enough questions, as they come even after May 8, will be put into the consideration list.

The next TAGL meeting is set on June 12, 2009 at 13:00 GMT.

Monthly Report (May 1-31, 2009) for Peter H. Garbincius

PHG_monthly_report_31may09.doc

distributed June 5 to: Marc Ross, Tetsuo Shidara, John Carwardine, Wilhelm Bialowons, Frank Lehner.

Accelerator Design and Integration (AD&I) activities:

I participated in the International Linear Collider (ILC) Accelerator Design and Integration (AD&I) meeting at the DESY laboratory on May 29, 2009. This meeting was between the Project Managers, the Cost Engineers, the Conventional Facilities and the Technical Area Group Leader teams to discuss the plans for new Strawman Baseline configurations for the ILC to improve performance and cost effectiveness beyond the configurations presented in the ILC Reference Design Report, which was released in 2007. Personally, I presented plans for gathering the required information needed to produce differential cost estimates for proposed changes to the baseline configuration in order to evaluate which changes would be given further consideration and study. My presentation can be linked through meeting agenda at:

<http://ilcagenda.linearcollider.org/conferenceDisplay.py?confId=3526>

Although I was on a prior scheduled family vacation in Scotland, the ILC Project Managers requested me to divert my return home and to participate in the second day of this two-day meeting.

Triad's ILC Cost Estimating Tool (ICET):

J. Carwardine, T. Himmel, T. Shidara, P. Garbincius, Maura Barone, David Seigle (summer student)

Triad: S. Curtis, L. Lew, and K. Long, and

DESY-EDMS: Daniel Szepielak, Jens Kreutzkamp, and Lars Hagge.

There were Triad-EDMS-ILC webex meetings on: May 1, May 12, May 19, June 2 (added here for convenience). The next Triad-EDMS-ILC webex meeting will be on Tuesday, June 9. Triad also released two versions of ICET_V1.4 (15may09) and ICET_V1.4a (3june09), which fixed some obvious bugs in V1.4. V1.4 (and V1.4a) feature implementation of the "rebuilder" which allows the easy use of prior developed cost estimating modules in studies of alternative ILC configurations (such as for the AD&I efforts). This was demonstrated by Triad at the June 2 webex. We are currently working our way through ICET_V1.4a checking whether the prior identified bugs have been fixed and checking whether any other new problems arose.

David Seigle, a summer student who completed his first year at Washington University in St. Louis, joined May 11 and is shared between Maura Barone (web development) and Peter (ICET and EDMS). He first posted all of the background documentation files for the RDR cost estimate (which had been linked through Peter's ILC website) on EDMS into five folders which correspond to the five confidentiality classes (described more below). David is now exercising ICET_V1.4a checking for bugs, checking prior bugs were fixed, and learning about how to develop a WBS.

There was lots of activity, some positive, some really problematic, on the Triad ICET-EDMS front.

Triad was able to implement the Stager feature in ICET_V1.3 to identify files in an EDMS Parts structure (Part is an EDMS collection item for associated files), get the OBid numbers for those associated files, and then download each required file (including proper version number) from EDMS to the ICET workspace located on the users local desktop. A great success!

But, this was on the DESY EDMS Development Environment, not on the ILC EDMS Production Environment. The Triad test data on the Development Environment was also flushed (standard procedure, Daniel warned that this would happen beforehand) during some EDMS system maintenance. So now the real interfacing problems begin! For security reasons, DESY EDMS requires an identified IP Address to use their web services. Unfortunately, Triad doesn't have a fixed IP Address. Each of their people use an internet service provider who gives random, always changing IP Addresses. This is not acceptable for DESY Cyber Security. EDMS did allow access under these conditions to Triad to develop the Parts and Stager on the Development Environment, but will not allow that type of access to the Production Environment. We got the Triad people computer accounts and VPN accounts at Fermilab, but that also reverts to the local user's ISP IP Address, which DESY Security will not accept. Moreover, EDMS shut down the portal that Triad had been using to access even the Development Environment. So, for the last week, while we are trying to find workarounds at both Fermilab and DESY, Triad doesn't have web services access to any EDMS environment, specifically being prevented from implementing the Parts and the associated ICET Stager on the ILC Production Environment. It is hard to predict, if and when this will be satisfactorily settled.

Also DESY EDMS has not yet fully implemented PARTS on the ILC EDMS Production Environment, even though they pushed PARTS as the way for ILC to implement ICET. Jens Kreutzkamp apologized for this shortcoming, but it will be at least a couple of week until this is implemented which will have to be scheduled around a shut-down of the entire EDMS system for the required modifications.

Daniel Szepielak implemented a URL-like EDMSdirect call for accessing native EXCEL files (needed for looking at details of background documentation for our cost estimates if we want these details to be posted on EDMS). At this time, this only works in a stand-alone browser. Because of some EDMS and web services complications, this does not work as a simple web call in another EXCEL, WORD, or PDF file. Daniel says this will be fixed soon.

Since discussing the principle behind confidentiality classes for different parts of the ILC estimate since the May 2008 meeting at DESY, we have finally gotten agreement to implement five Designated Access Schemes (or projects) where individuals would have

either author or reader access depending on the confidentiality class of the data to be accessed and their authorized level of access. This is outlined in Daniel Szepielak's presentation at EDMS D*879755. DESY EDMS will start implementing these access privileges in the next couple of weeks. We will have to identify the individuals and their Designated Access Schemes. Trying to do this identification shows that I, for one, have no idea how in this post-RDR world the cost estimating information will flow. It appears that there are only AS leaders, CF&S, Cryomodule, and RF Power (only Fukuda-san remains) people identified. How are the AS leaders going to produce estimates for magnets, power supplies, controls, installation, vacuum, dumps & collimators, etc.?

CLIC-ILC Cost & Schedule Working Group:

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

I attended the International Linear Collider (ILC) Steering Committee (ILCSC) Project Advisory Committee (PAC) review in Vancouver, Canada, May 9-10, 2009. The review agenda with links to presentations is:

<http://ilcagenda.linearcollider.org/conferenceDisplay.py?confId=3386>

I presented the status of the CLIC-ILC collaboration, specifically the activities of the Conventional Facilities Working Group and the Cost & Schedule Working Group

Since we had a face-to-face meeting at Tsukuba in late April, we decided to skip our May meeting. The next webex will be on Friday, June 13, while Peter will be at CERN. This will be either at 1200 GMT or 1400 GMT depending on scheduling around the ILC GDE AS-TAGL meeting scheduled at 1300 GMT. We plan to discuss progress on the common risk document. As background for the GDE AD&I cost estimating efforts, I requested a discussion as how CERN treats escalation or inflation with regard to the proposal, estimating, approval, and year-to-year funding allocations for projects.

Peter