Project Managers' Report

July 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
July 2009

This issue, edited by Frank Lehner, APM for AS

Global Design Effort
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Monthly Report from Project Managers for July 2009

In mid-July, the group ‘Funding Agencies for Large Colliders’, FALC, met in Canada. Since the Terms of Reference for this group specifically indicate promotion of the ILC, we prepare a report and an update of our ‘R & D Plan’ for submission to them each time they meet. The ‘ILC Research and Development Plan for the Technical Design Phase, Release 4’ was published in July. Release 4 contains updated resource tables for each region and for each technical area that indicate hoped-for resources through 2012, the end of TDP2.

The Accelerator Design and Integration effort was well underway in July, with most engineering resources focused on CFS activities. With the preliminary definition of our proposed new baseline, ‘SB2009’, complete, attention is now focused on gathering details to allow a cost comparison for each of its seven components with respect to the 2007 RDR baseline. Reduction of CFS requirements – particularly underground volume and CF requirements – is a primary motivator for the choices outlined in SB2009.

The proposed new ILC baseline, SB2009, will include a design for a single main linac tunnel. Work on developing availability comparisons that will guide our design work is underway. The Monte-Carlo simulation program, 'Availsim', has been updated to reflect the proposed new configuration, (with the new HLRF designs), and to include the possibility that ILC regions other than the linac may retain a support tunnel or enclosure. Also, as highlighted in the RDR, we expect to require very high availability for basic ‘off-the-shelf’ components such as magnet power supply controllers and electrical circuit breakers. For the RDR ‘Availsim’ results, typical Fermilab and SLAC component reliability performance data were used – and found to indicate inadequate overall performance. As part of the ongoing effort, we will try to incorporate modern-day reliability performance as realized at 3rd generation light sources.
On the R & D front, we have assembled an inter-institutional team responsible for collecting and unifying cavity gradient test results and putting these results into a common database. This effort was reported in the ILC Newsline ‘Director’s Corner’ at the end of July. Camille Ginsburg from Fermilab’s Technical Division leads the team and we expect them to present their first full report at the upcoming GDE meeting ALCPG09 in late September.
The first inter-regional cryomodule, ‘S1 global’, now being prepared for testing at KEK in late 2010, achieved a major step of the cryomodule assembly in late July. We now believe that all major mechanical components and assembly tools are properly accounted for and listed in a ‘practical’ memorandum. This is due, in large part, to a concerted effort by the KEK, INFN, DESY and Fermilab teams. While much remains to be done to realize the construction of the S1 global cryomodule, the KEK STF team has started planning the S1 global study program and we expect this to be presented at ALCPG09.

On the test facility front, summer down-time activities are either underway or in the final planning phases. The DESY VUV – FEL 'FLASH' downtime will begin in mid-August and the team is now planning the tests and procedures needed to raise the beam power in FLASH to roughly 30 KW. At 30 KW, the FLASH beam intensity and temporal structure is similar to that planned for ILC. Tests of RF controls and beam tuning algorithms will be done.

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.

- **HLRF: 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.

20. Accelerator Systems WebEx Conference
08 July 2009, 13:00 GMT

Minutes (v1.0)

Attending: W. Bialowons, J. Carwardine, P. Garbincius, S. Guiducci, F. Lehner, T. Omori, E. Paterson, M. Palmer, M. Ross, A. Seryi, T. Shidara, J. Urakawa, N. Walker, A. Yamamoto

Apologies received from: K. Kubo

All slides are available on the indico site
http://ilcagenda.linearcollider.org/conferenceDisplay.py?confId=3709

1. Welcome and News (N. Walker)

N. Walker welcomed the attendees. There was no news reported.

2. Short status report by TAGLs

DRs (S. Guiducci, slides available):
Susanna reported from the CesrTA workshop held at Cornell. Discussions started to organize the e-cloud working group with the aim to apply the R&D results to the damping ring design. After the CesrTA program has concluded, recommendations on mitigation techniques are required. By the end of the year the group will start to evaluate the SB2009 scenarios. Risk tables for both, SB2009 and RDR scenario, will be updated.
Susanna pointed out that the CFS group needs information on temperature values and stability in the tunnel. Although there are no resources to carry out this estimate, Susanna will collect information from existing rings to perform a preliminary evaluation. In addition, work on the 3.2 km damping ring lattice with straight section (for injector/ejector) is carried out and lattice files could be sent to the CFS group in a few days. Finally, a joint CLIC/ILC damping ring workshop will be held in January 2010.
Nick mentioned that at ALCPG09 some feedback from e-cloud studies is necessary. Susanne replied that preliminary results from e-cloud simulation with limited assumptions could be shown.

CesrTA (M.Palmer, slides available):
Mark reported on activities at CesrTA. The third major run has now finished with emphasize on commissioning. A workshop (CTA09) held in June 25/26 at Cornell was attended by 40 participants and saw a major review of the experimental

program and also planning for the next four runs. The character of the runs will now shift from commissioning towards experimental focussed. Talks and information from the workshop are available at the CesrTA wiki: https://wiki.lepp.cornell.edu/ilc/bin/view/Public/DampingRings/CTA09/WebHome The next CesrTA run will start in about two weeks at July 31, lasting until September 8, 2009.

Mark reported also on the Cesr reconfiguration work. All major ring modifications and upgrades are now complete.

Nick congratulated everybody involved at CesrTA for getting so far with this project. He pointed out the importance of this program for the ILC.

Positron Source (J. Clarke):
Progress is being made with integration of the central region (positron source, BDS, RTML). A webex meeting with CF&S has been held on this and a face to face meeting will be held at Daresbury in September.

The target experiment at Cockcroft is taking data at up to 1500rpm now (2000rpm is the specification). The eddy current loads appear to agree better with the simple model of the target wheel (just the rim) rather than the more complete model (rim and spokes).

BDS (A. Seryi):

ATF2 work: an extracted vertical emittance of 11 pm has been achieved.
Hardware upgrades during the summer include:
- Shintaki laser beam size monitor - LW laser transport
- Monalisa tests for vibration
- Preparing extraction line bpm electronics upgrade
- Preparation for fabrication for multi OTR

SC FD for ATF2 - coil design proceeding in BNL.
BDS lattice design work continues in collaboration with e+ source integration work (Daresbury Lab.)

IR design work: Alain Herve (CERN) has finished his two-month visit to SLAC, where several aspects of detector push-pull configuration were discussed:
- shielding, moving system
- vibration modes of detector

Work on the high-power beam dump continues with a meeting planned in August.

Simulations (slides prepared by K. Kubo, reported by Nick Walker):
A report from the ILC/CLIC beam dynamics workshop held from 23-25 June at CERN was given. About 36 participants attended the workshop. Common ILC/CLIC plans include work on survey/pre-alignment models, measurements of stray fields, benchmarking of simulations on CLIC main linac, RTML design, combined studies of fast (intra-pulse) and slow (inter-pulse) feedbacks and traveling focus studies.
It is planned to have a CLIC/ILC beam dynamics workshop once a year.

Talks from the workshop are available at
http://indico.cern.ch/conferenceDisplay.py?confId=56133.

3. PM status and information report (N. Walker; slides available)

The Draft Release 4 of the ILC R&D plan is now submitted to FALC with minor updates. The resource tables of appendix 1 are now covering 2009-2012. Section 4 is modified to reflect SB2009 elements. Moreover, the CesrTA text was updated (beyond 2010) and the 300 Hz positron source R&D at KEK was modified. The WP description, goals and milestone of appendix B was not updated. The primary responsibility for these TAG sections is with the TAG leaders. Release 5 as next update of the document is planned for December 2009. Release 6 due by June/July 2010 is then expected to have major revisions after finishing the TDP-I phase.

Nick mentioned that the final release of the DESY AD&I meeting summary document is available at EDMS:
http://ilc-edmsdirect.desy.de/ilcedmsdirect/file.jsp?edmsid=*879845

Follow up AD&I webex meetings will be organized with detailed agendas to be announced soon.

Nick explained that the integration of the central region is a complex issue and 3D CAD work represents an important aspect. Many questions need to be resolved and focused interactions between relevant TAG leaders and CFS are important. There will be two focused CFS face-to-face meetings at SLAC (20-21 July and at Daresbury (3-4 September).

The availability task force group has been charged to look for availability issues for SB2009, exploring ML single-tunnel variant and klystron cluster and distributed RF source concepts. The group will meet weekly by webex. The indico site is:
http://ilcagenda.linearcollider.org/categoryDisplay.py?categId=177
Three subgroups have been setup to work on AVAILSIM simulations, Analysis (definition of parametric studies etc) and on benchmarking (i.e. alternative codes to AVAILSIM)

Nick described the current planning for the ALCPG conference in Albuquerque on 29 September – 03 October. GDE working groups are on particle sources, damping rings, Main Linac, Beam delivery, CFS and Simulation.
The parallel program must now be put together including SB2009/AD&I activities and on-going R&D status and results.
The PMs will produce a “charge” for the working groups along these lines.

Beyond ALCPG the SB2009 proposal has to be further consolidated by preparing a draft proposal to be submitted to director/EC by December 2009. A second AD&I meeting end of November will be needed to finalize the draft. The report will be sent to AAP for review taking place in Oxford on 6-8 January 2010.

The TDP-2 baseline decision will happen early 2010 after the AAP review feedback. The process is not yet determined. The new baseline will then be described in the TDP-1 interim report due mid July 2010.

Finally, Marc reported briefly on the joint GDE EC – CLIC Steering Group meeting with CERN management on 12 June. Barry Barish has already written up a few things in the director’s corner. Beyond the current ILC-CLIC collaborative (synergy) work, brief discussions with the DG considered various ways in which ILC could work more closely with LHC, in particular on cryogenics etc. There is also hope to increase involvement with CF&S and cost group. Late 2010 a larger scope ILC/CLIC workshop at CERN will be held in conjunction with the ECFA physics and detector meeting

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

CFS & Global Systems Monthly Webex Meeting

July 29, 2009

AGENDA

1. Report on the the CFS Accelerator Design & Integration meeting at SLAC
2. Report on Safety documents and 3-D modeling
3. Availability Task Force
4. Project Manager Q&A

Attendance

A. Enomoto, A. Yamamoto, V. Kuchler, M. Ross, E. Paterson, J. Osborne N. Toge, P. Garbincius, T. Himel, J. Carwardine.

MEETING NOTES

Report on CFS AD&I Meeting at SLAC (Vic)

- The meeting comprised working sessions to identify and document CFS requirements from each of the Accelerator Areas: identify specific CFS items from each area to identify machine layout, identify overall heat load, utility requirements, etc. The format of small discussions proved successful.
- The requirements spreadsheet template developed by CFS group being filled out to describe the current status will be the main way of capturing the data
- The group met with all the Area Systems Leaders either in person or via webex. The format of small working sessions provide successful.
- Discussions with Area Leaders continue as part of the weekly CFS webex meetings. There is now an area on Indico (ilcagenda) for the CFS weekly meetings where sides and the latest revisions of the requirements spreadsheets will be posted.

- Vic requested guidance from the PMs by Alberquerque on the final positions on each of the working assumptions for SB2009. There are CFS issues that cannot be finalized without this guidance. For example, they need to know the final decision on the working gradient because it has a direct bearing on tunnel length and a number of follow-on requirements.
- Akira responded on the gradient question, saying a final decision on the gradient is not likely to come until much later in the year.

- The CFS group plans to have a full machine layout for next CFS AD&I meeting in Daresbury in Sept (just before Albuquerque)

- Marc asked how CFS criteria specific to the linac and HLRF options were handled at the SLAC meeting. Ewan reported there was no great examination of the details, they just considered the two options. Vic reported that the group was studying CFS impact of both HLRF options in all three regions.

- Two low-power options are still on the table for SB2009: the half current option and the short-pulse option. Ewan noted that a PM decision was needed on which option will be chosen.

- Marc asked the CFS group to put together a list of the specific decisions that are most critical in order to proceed. Vic agreed to develop the list.

Safety Documents and 3-D modeling (John Osborne)

Safety documents:

- The LHC chapter has been compiled and is under approval at CERN, and will be used as a template for other chapters. It was presented at the CLIC meeting in May. The chapter can be found on the (CERN) Indico page or in CERN EDMS at the following link:
  http://indico.cern.ch/conferenceDisplay.py?confId=44870
  CERN EDMS 995165 v1
  https://edms.cern.ch/cedar/plsql/doc/info?cookie=8286997&document_id=995165&version=1

- The XFEL safety document is in the process of being translated from German
- The goal is to have all the safety reports assembled by Albuqueque. The final document will be assembled after that.

3D modeling – central injector complex integration (John Osborne)

- There have been several meetings and work has been proceeding, but it has gone as far as it can until there are better indications of where to go next with regard to the SB2009 options. Until then, 3D modeling effort has been put on hold
- CERN has produced some very preliminary layouts. John showed a preliminary layout of DR - but the wrong assumption had been made about which side the DR is on relative to detectors and bypass region. John noted that it would be much easier from CFS perspective to have DR on opposite side from service tunnel. Ewan will review this.
- The next step is to integrate all the beamlines.
- There are some discrepancies that need to be reconciled between the CFS layout the layout that Suzanna showed at the CFS meeting the previous day (July 28th).

Availability Task Force (John Carwardine)

- The Availability Working Group is studying issues associated with single tunnel linac for the two HLRF configurations. Tom Himel's Availsim application will be used to explore the different scenarios
- Availsim input data on equipment reliability, repair times, access times, etc is based on operations experience and availability data from SLC and the Tevatron, which gives a large database of component reliability experience. More recent experience with storage rings, especially light sources such as APS have demonstrated significantly better availability numbers, and it is in our interest to present the ILC availability in an optimistic light. We want to therefore update our database to use the 'best in class' availability data and operations models *that we can defend*.
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- Nobu pointed out that it is important to take into account not just mean-time-to-failure numbers, but also repair times.
- Output from Availsim will be analyzed according to these criteria:
    - Items that have a high impact on mean times to beam fault
    - Items that have a high impact on machine downtime, which constitutes:
        - Actual repair times
        - Access times, eg for equipment that is in the tunnel
        - Recovery times to get luminosity back to the nominal level
    - This will be used as a target list for further investigation and study

Cost Management (Peter)

- Peter reported that Barry wants to start Primavera integration into the cost management tools. At Peter's request, Triad has submitted a proposal for doing that.

Next Meeting: August 26, 2009

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

PHG_monthly_report_31july09.doc

Distributed July 30 to: Marc Ross, Tetsuo Shidara, John Carwardine, Wilhelm Bialowons, Frank Lehner.

Accelerator Design and Integration (AD&I) activities:

We had initial discussion of the Low-Power (low-P) option at the HLRF webex on July 2 (July 3 in Japan) and a follow-up introduction of the Low-P RF at AD&I webex on July 15. Preliminary cost estimates, partial in some cases, were provided for both the Low-P and the original full power configurations by Shigeki Fukuda for DRFS and by Chris Adolphsen for the Klystron Cluster. These were for the same beam pulse length with only ½ the number of original pulses populated. Chris also considered a beam pulse with ½ the length of the RDR beam pulse, but with the same density of bunches populated. This may have some further advantages on the total cryogenic power needed to cool the cavities since the pulse length is reduced. Will we be considering Chris' second approach?

Triad's ILC Cost Estimating Tool (ICET):

J. Carwardine, T. Himel, T. Shidara, P. Garbincius, Maura Barone, David Seigle (summer student)
Triad: S. Curtis, L. Lew, and K. Long, and
DESY-EDMS: Daniel Szepielak (plus infrequently Jens Kreutzkamp & Lars Hagge who read e-mail)

Triad-EDMS-ILC webex meetings were held on: July 7, 13, 20, and 28.

ICET V1.4c was released by Triad on 12july09. David helped debug V1.4c and is helping to debug the V1.4d before its release, expected soon.

Peter and Daniel defined and the DESY EDMS team implemented the five designated access schemes (projects) for cost estimating confidentiality. These are described in EDMS *884435. The five designated access schemes (projects) are intended to be accessed by the cost estimating teams (with proper cost authorization) via generic parts where individual sub-parts can be included in these designated access schemes (projects). These confidentiality projects were fully tested, successfully, by David and Peter using test users for each confidentiality team, including checking accessibility via the ICET Stager and generic parts. After David found some bugs and implemented simple fixed, the STAGER seems to be fully functional. These fixes will be included in the next version ICET v1.4d.

David also found bugs, sent a temporary fix, and indicated to Triad modification needed for the Detailed Cost Report (CostSummaryExcelallData) to be implemented in v1.4d. David also generated a report which compares two estimates showing changes in either structure or detail numbers. We are also trying to converge on a standard WBS structure through Level 3 for the ILC estimate before starting to load the existing RDR cost estimating information into ICET.

We also received a proposal from Triad on 19july09 for the remaining tasks that we might consider to complete the ICET implementation. We asked Triad to complete the following high priority elements: Data Support - checks and validations of cost estimating files and improved run-time error diagnostics; Documentation - both as an ICET users guide (what it does and how to use it) and for (comment lines within) the ICET program scripts; and minimum additional Report Generation (using the Data Cube concept and little else, since we have capability to use the mysql database directly or to port it to MS ACCESS, and to modify the existing ICET reporting scripts).

DESY EDMS is still working on implementing URL-like EDMSdirect call for accessing native EXCEL files. Daniel Szepielak reports DESY is still adding functionality to this call, but expects it to be released “soon”.

Peter demonstrated that one can place the RDR estimate excel files submitted by the estimators into the Cost Estimating Modules (CEMs) for ICET as additional worksheets and then link the information on the CEM forms to cells in the submitted RDR estimates.

Peter has started to load the RDR estimate WBS into ICET in preparation for AD&I studies.

We must soon complete the Triad work in development of ICET. Barry Barish wants to push to get ICET finished as much as possible this US Fiscal Year (by end of September 2009) and to get started on implementing Primavera. Triad sent a proposal (28july09) to do the Primavera implementation and initial scheduling, which we are evaluating.

CLIC-ILC Cost & Schedule Working Group:
G. Riddone, P. Lebrun, H. Braun, J. Carwardine, T. Shidara, and P. Garbincius

There was a CLIC-ILC Cost & Schedule Working Group webex meeting on Friday, July 17 with Peter Garbincius, Philippe Lebrun, Germana Riddone, John Carwardine, and also Frank Lehner participating. Main topics included review of Philippe’s presentation on June 12 as input to a common CLIC-ILC costing risk document and a detailed discussion of learning curves, including whether the learning saturates or continues *an infinitum*... and especially how learning gets translated into the actual cost that the laboratory pays for many items. The link to

CERN Indico for this meeting with all materials presented (with confidential cost estimating information redacted) is:

http://indico.cern.ch/conferenceDisplay.py?confId=64451

There were lots of general questions and discussions:

- How do you scale from a handful of R&D quantities?
- Do Learning Curves flatten or saturate or continue *an infinitum*...?
- What does this imply for total cost and single vs. multiple vendor procurement strategies? It is not only quantity, but also the production or delivery rate that impacts costs
- Do Learning Curves apply for estimating, call for tender strategy, vendors preparing tender?
- Are they before-the-fact or after-the-fact concepts?
- Does this affect your price or just delivery?
- What do vendors do? Neither Lucio Rossi nor Vittorio Palma could respond at prior meetings.

We discussed escalation factors grouped into industrial price indices or "market baskets" for both CERN and ILC estimates, and how and when escalation factors are applied.
Does configuration (or technical) risk relate to cost risk – Philippe thinks not! However, Fermilab just got beaten up over not fully translating technical risk into cost risk at the recent DOE Review for the construction project for the NOvA experiment.
Again, each funding agency does this its own way! So there was some progress in understanding and even agreeing to some of the issues, but we still do not have an outline or writing assignments for our common document on Cost Risk.

Katy Foraz is still very busy with the LHC re-start and has not had time to prepare documentation on the ILC construction/installation schedule that she had developed.

John Osborne has been keeping CLIC informed of the AD&I SB2009 Cost/Performance optimization studies.

The next CLIC-ILC Cost & Schedule webex meeting is tentatively scheduled for Friday, August 21 at 1300 GMT. Frank Lehner suggested, and Peter invited Nick Walker to join us to discuss the activities of the ILC Machine Availability Task Force and their relation to operational risk. If Nick cannot join us, Peter or John Carwardine can outline (e.g. Marc Ross' recent summary) progress in preparations for further meetings of that working group in Albuquerque at the end of September. Philippe Lebrun, John Osborne, and Jean-Pierre Delahaye from CERN will be at Albuquerque.

Peter