

10. Accelerator Systems WebEx Conference 22 August 2008, 13:00 GMT

Minutes (v1.0)

Attending: W. Bialowons, J. Carwardine, M. Kuriki, F. Lehner (minutes), O. Napoly, E. Paterson, M. Ross, A. Seryi, T. Shidara, N. Solyak, N. Toge, J. Urakawa, N. Walker, A. Wolski, A. Yamamoto

1. General Announcements

Nick welcomed the attendees and started the meeting by mentioning that the primary focus of the meeting is to pin down the minimum machine requirements. According to the planning it was supposed to sign-off the concept of the minimum machine at this meeting, but that given progress over the holiday season, this would now be delayed.

There were no further announcements.

2. Short status report by TAGLs

2.1 Damping Ring – A. Wolski

Andy reported on some progress to reinstate the DR regular meeting beginning in mid September with monthly schedules. Announcements were sent out. The meetings are coordinated with CESR-TA & CLIC meetings.

2.2 Beam Delivery Systems – A. Seryi

Andrei mentioned the plans to restore BDS meetings. There will be a phone meeting in October together with ATF meeting. A half-day workshop on BDS status and planning will take place in December at KEK.

Nick added that all dates of meetings should be posted at central place through Maxine.

2.3 RTML – N.Solyak – *slides attached*

Nikolay presented simulation results of RF kicks due to asymmetric couplers and wakefields in ML and BC1, BC2 for “old”, “new” and “alternate” configurations. There is an unacceptable emittance growth in BC1 and BC2 due to RF-kicks in the new configuration. While the old configuration performs best for BC1 and BC2 the emittance growth in the ML for the alternate design is smallest.

Nikolay further reported on work done to re-evaluate costs of the RTML return line vacuum system using tapered beam lines with increased pipe diameters. However, presently nobody is re-evaluating the tight vacuum requirements of 20 nTorr.

Nikolay further emphasized the RTML planning for September, which includes design work on the single stage bunch compressor, the study of effects of the tapered beam pipes in the return line and the conceptual design of RTML in the context of the minimum machine.

3. Study of low power parameter sets – E. Paterson (Slides attached)

Ewan presented a preliminary study of possible low power parameter sets for consideration in a minimum machine. Ewan pointed out that low power parameters look interesting if one makes maximum use of lower power in beam in all systems from beginning to end. Ewan presented four new low P parameter sets and showed simulation results that were carried out by Andrei. All four new low P parameter sets exploit the idea of a “travelling focus”, a scheme that shifts the focal point during collisions by introducing head/tail energy shifts which has to be applied if the bunch length is larger than β^* . In case of travelling focus a higher disruption parameter for bunches is needed to keep them focusing together. At the same time the sensitivity to offsets of the beams is higher.

It was suggested to write up the presented ideas and publish them as a note.

4. Minimum Machine; next steps – Nick (Slides attached)

Nick revisited the basic philosophy of the minimum machine concept, which should represent reduced cost alternatives with respect to the RDR. The goal is to define the minimum machine concept at the end of the ILC08 workshop with identified and prioritized studies to be done for 2009. Nick further presented the minimum machine report outline and invited all TAG leaders to make comments and suggestions to him and Ewan.

5. PM report – Marc (Slides attached)

Marc presented the PM report by giving extensive information on the two future major reviews (PAC 19/20 October 2008 and AAP 17-21 April 2009). He also reported about preparation work towards the upcoming ILC 08 workshop and CLIC meeting. The outcome of the recent FALC meeting held on 14 July 2008 was shortly reviewed. Moreover, Marc presented the ideas of the SLAC high level RF distribution proposal to the cryomodules that would abandon the service tunnel.

5. A.o.B.

The future scheduled AS-TAGL meetings are:

- Friday, 19 September 2008 13:00 GMT
 - First draft of selected sections in minimum machine report ready for feedback/discussion
 - Lattice files migrated into EDMS

- Friday, 17 October 2008 13:00 GMT
 - Reports from AS TAG action items, iteration of existing sections
- Friday, 14 November 2008 13:00 GMT
 - Draft – ready for discussions at ILC08
- ILC08 – 17-21 November 2008
- Friday, 12 December 2008 13:00 GMT
 - Final complete draft – submission to EC

Attachments

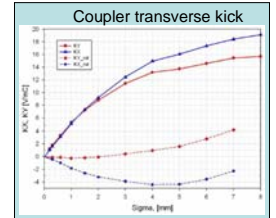
- 1. Slides Nikolay Solyak - RMTL Report**
- 2. Slides Ewan Paterson – Low P Parameter Studies**
- 3. Slides Nick Walker – Minimum Machine Philosophy**
- 4. Slides Marc Ross – PM Report**

RTML upgrade Aug.2008

N.Solyak

Coupler's RF-Kick and Wakefields PLACET Simulations

in ML, BC1 and BC2



Summary tables and conclusions

	RF-Kick + Wakes							
	BC1		BC2		ML			
	old	new	old	new	alt	old	new	alt
no correction	21.55	115.88	24.80	7430.1	1991.2	91.53	7425.25	654.6
1-to-1 correction	21.20	35.03	20.95	73.06	42.68	26.8	31.63	20.95
1-to-1 dip free	20.40	35.03	20.95	65.59	30.08	26.6	23.26	20.26

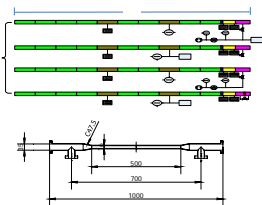
- Old configuration works better in BC1 and BC2
- Alternate configuration works better in ML

Re-evaluation of the vacuum system in RTML return Line (Report of Xiao Qiong /IHEP China)

Tight vacuum requirements ~20 nTorr

Two options considered:

- Non-passivated tubes
- Passivated vacuum tubes



	Quantit	Unit	Cost (US \$)	Cost (US \$)
For not passivated pipes				
35mm ID passivated pipe(including flanges)	13712	m	220	3,016,640
0.04 m ³ /s Ion Pump with the port for it (including controller)	4888		700	3,421,600
		In Total		6,438,240
Common Part				
Bellow (ICF70)	376		250	94,000
Rough Pump Unit (including controller)	188		17000	3,196,000
Manifold for gauges (6 ports, ICF70)	188		280	52,640
L-angle Valve for rough pumping (ICF70)	282		550	155,100
Gate Valve (ICF114)	47		7,000	329,000
Interlock box (per 1 GV)	47		500	23,500
Vacuum breaker with by-pass valve	47		?	?
3 Cold gauges with 1 controller	126		3000	378,000
BGA	188		9000	1,692,000
He-LD	94		?	?
Duct Support (1 per chamber)	4512		400	1,804,800
Gasket (ICF70 in average)	20000		7	140,000
Bolt/Nut (6 in average)	80000		0.3	24,000

Plans for Sept. 2008

- Single stage Bunch compressor design
- Effect of tapered beam pipe in Return Line
- Conceptual design of the RTML in "minimum machine" scenario



A preliminary look at a Low P Parameter set for consideration in a Minimum Machine Study

Presenter
Ewan at TAGL meeting Aug 22



The RDR Parameter Plane

TABLE 2.1-2
Beam and IP Parameters for 500 GeV cms.

Parameter	Symbol/Units	Nominal	Low N	Large Y	Low P
Repetition rate	f_{rep} (Hz)	5	5	5	5
Number of particles per bunch	N (10^{10})	2	1	2	2
Number of bunches per pulse	n_b	2625	5120	2625	1320
Bunch interval in the Main Linac	t_b (ns)	369.2	189.2	369.2	480.0
in units of RF buckets		480	246	480	624
Average beam current in pulse	I_{ave} (mA)	9.0	9.0	9.0	6.8
Normalized emittance at IP	$\gamma\epsilon_x^*$ (mm-mrad)	10	10	10	10
Normalized emittance at IP	$\gamma\epsilon_y^*$ (mm-mrad)	0.04	0.03	0.08	0.036
Beta function at IP	β_x^* (mm)	20	11	11	11
Beta function at IP	β_y^* (mm)	0.4	0.2	0.6	0.2
R.m.s. beam size at IP	σ_x^* (nm)	639	474	474	474
R.m.s. beam size at IP	σ_y^* (nm)	5.7	3.5	9.9	3.8
R.m.s. bunch length	σ_z (μ m)	300	200	500	200
Disruption parameter	D_y	0.17	0.11	0.52	0.21
Disruption parameter	D_x	19.4	14.6	24.9	26.1
Beamstrahlung parameter	Υ_{ave}	0.048	0.050	0.038	0.097
Energy loss by beamstrahlung	δ_{BS}	0.024	0.017	0.027	0.055
Number of beamstrahlung photons	n_b	1.32	0.91	1.77	1.72
Luminosity enhancement factor	H_D	1.71	1.48	2.18	1.64
Geometric luminosity	\mathcal{L}_{geo} 10^{34} /cm ² /s	1.20	1.35	0.94	1.21
Luminosity	\mathcal{L} 10^{34} /cm ² /s	2	2	2	2



Revisit with Emphasis on Cost

- Low P looks interesting if one makes maximum use of lower power in beam in all systems from beginning to end.
 - This includes installed electrical distributions, cryo-systems, RF power, Beam dumps etc etc
 - Consider 3km DR or 6km rings with less RF & SR power?
 - Full luminosity with half the number of bunches but it stresses parameters like bunch length, beamstrahlung etc
 - Asked Andrei to revisit old ideas like "travelling focus" and to dust off old computer codes to study parameter sensitivities around this part of the parameter plane.
 - I wanted to get some confidence before proposing this as Min Machine study which would be independent, i.e. additive, to others.



Why not Low Power via Lower Bunch Current

- My assumption is that bunch trains 5120 long are probably off the real axis for any reasonable injector/damping ring complex.
- Therefore with N=1 you start with half the geometric luminosity even using the lowest emittances and beta's used elsewhere on the plane.
- Could my assumption be wrong?



Study of Parameter Sets which are Variations on Low P Set

Q1. What are the resulting Parameter Sets with standard assumptions when each of the noted parameters listed is varied independently around the RDR low power set?

		Low P	Other possible values
Energy cms	GeV	500	500
Repetition rate		5 Hz	Fixed
Number of Particles per bunch		2x10 ¹⁰	2 +/- ?
Number of bunches per pulse		1320	Fixed
Bunch interval in main linac		480 ns	?
In units of RF buckets		624	?
Average beam current in pulse		6.8 mA	Calc from above
Normalized emittance at IP x (mm-mrad)		10	constant 10
Normalized emittance at IP y (mm-mrad)		0.036	0.04 or 0.03
Beta function at IP bx (mm)		11	11 or 20?
Beta function at IP by (mm)		0.2	0.2 or 0.6
R.m.s beam size at IP σ_x (nm)		474	Calc from above
R.m.s beam size at IP σ_y (nm)		3.8	Calc from above
R.m.s bunch length σ_z (μ m)		200	300 or 500
Disruption Parameter	D _r	0.21	Derived
Disruption Parameter	D _i	26.1	Derived
Beamstrahlung Parameter		0.097	Derived
Energy loss by beamstrahlung	δ_{BS}	0.055	Derived
Number of beamstrahlung photons	n_B	1.72	Derived
Luminosity enhancement factor	H _d	1.64	Derived
Geometric luminosity	L _{geo} 10 ³⁴ /cm ² /s	1.21	Derived
Luminosity	L 10 ³⁴ /cm ² /s	2.0	Derived

Q2. What is the affect of applying "Travelling Focus" techniques in some of the parameter sets. Even if the affects are small they might be useful in decreasing the sensitivity to beam parameters.

Q3. What is the optimum bunch spacing in the linac for a fixed number of 1320 bunches TAGL different charge per bunch Global Design Effort

Date 8/22/08

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TENTATIVE For discussion of low power ILC Andrei Seryi

SLAC
August 7, 2008

SLAC TAGL

Global Design Effort



Cases considered

- RDR cases
 - 1: Nominal RDR
 - 2: Low Power RDR
- JMP Note Consider only cases 1,2,3 for now*
- Traveling focus cases:
 - 3: similar as "2", but longer σ_z
 - 30: similar as "3", FLAT Z distribution, lower β_y
 - 4: even Lower P, FLAT Z, long σ_z
 - 5: FLAT Z, not so long σ_z
- Analytical predictions not valid – use Guinea-Pig code

Date 8/22/08

TAGL

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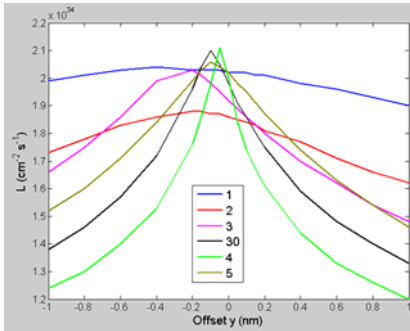
Comparison of parameter sets

	Nom. RDR	Low P RDR	new Low P	new Low P	new Low P	new Low P
Case ID	1	2	3	30	4	5
E CM (GeV)	500	500	500	500	500	500
N	2.0E+10	2.0E+10	2.0E+10	2.0E+10	2.0E+10	2.0E+10
n_b	2625	1320	1320	1320	1105	1320
F (Hz)	5	5	5	5	5	5
P _s (MW)	10.5	5.3	5.3	5.3	4.4	5.3
γ_{sx} (m)	1.0E-05	1.0E-05	1.0E-05	1.0E-05	1.0E-05	1.0E-05
γ_{sy} (m)	4.0E-08	3.6E-08	3.6E-08	3.6E-08	3.0E-08	3.0E-08
β_x (m)	2.0E-02	1.1E-02	1.1E-02	1.1E-02	7.0E-03	1.5E-02
β_y (m)	4.0E-04	2.0E-04	2.0E-04	1.0E-04	1.0E-04	1.0E-04
Traveling focus	No	No	Yes	Yes	Yes	Yes
Z-distribution *	Gauss	Gauss	Gauss	Flat	Flat	Flat
σ_x (m)	6.39E-07	4.74E-07	4.74E-07	4.74E-07	3.78E-07	5.54E-07
σ_y (m)	5.7E-09	3.8E-09	3.8E-09	2.7E-09	2.5E-09	2.5E-09
σ_z (m)	3.0E-04	2.0E-04	3.0E-04	3.0E-04	5.0E-04	2.0E-04
Guinea-Pig $\delta E/E$	0.023	0.045	0.036	0.036	0.039	0.038
Guinea-Pig Lumi (cm ⁻² s ⁻¹)	2.02E+34	1.86E+34	1.92E+34	1.98E+34	2.00E+34	2.02E+34
Guinea-Pig Lumi in 1%	1.50E+34	1.09E+34	1.18E+34	1.17E+34	1.06E+34	1.24E+34



Higher sensitivity to offset

- In traveling focus case, higher disruption is needed for the bunches to keep focusing each other
- It then produces higher sensitivity to offset of the beams
- Operation of intratrain luminosity optimization is more challenging



more challenging

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First look and IMHO

- Need to review assumptions and codes used in RDR tables and use same for Low P studies.
Lumi definition, within 1%, 2% etc
- "Mild" application of 'Traveling Focus' optics in the BDS (Case 3) helps with bunch length and beamstrahlung. Looks encouraging!
- Should this Low P parameter region become an area for study in MM design?
- The cost reductions are not easy to estimate and involve many policy decisions on upgrade paths or staging scenarios but here is a scenario where we can have a major impact on machine design and at least on paper, **start with full luminosity at full energy!**

Date 8/22/08 TAGL

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Minimum Machine Definition: Next Steps

Nick Walker

AS TAG leaders meeting
22.08.2008

1



State of Current Discussions

- **Central campus integration (CCI)**
 - Inclusion of e+ and e- source systems into upstream sections of BDS (downstream of main linacs)
 - KAS replaced by 'minimal' e+ auxiliary source in same tunnel
 - (DR in same plane but horizontally displaced to avoid IR hall)
- **BDS (specific)**
 - Minimum 500 GeV lattice (no upgrade support)
- **RTML**
 - Single stage factor 20 compressor
- **Main Linac**
 - Single tunnel solution
 - Use of novel HLRF distribution system
 - Marx modulator
 - Specification for water cooling and power distribution
- **Other?**

Focus of discussions (to date)
within this group
(Paterson/Walker)

Issues for discussion with ML
Tech. and CFS/Global
(Ross/Yamamoto)

3



Basic Philosophy Revisited

- **Minimum Machine concept is about Possible Cost Reduction**
 - Focus for machine design activities in TDP-1
 - Complimentary to on-going R&D activities
 - As defined in R&D Plan
- **The Minimum Machine should represent reduced cost alternative to the current RDR Baseline**
 - CFS is primary focus (identified RDR cost driver)
 - Aggressive use of systems integration leading to reduce underground volume (∴ cost)
 - Less conservative approach to specific sub-systems
 - e.g. water cooling
 - Other – potentially novel – ideas for cost reduction
 - e.g. HLRF distribution system
- **Minimum Machine must be defined by end of ILC08**
 - Basic layout and design decisions
 - List of questions to be addressed
 - Plans for further studies in 09
- **Note these activities are somewhat parallel to the more basic activities into looking for cheaper solutions to specific problems (e.g. vacuum, PS distribution).**
 - strongly encouraged!
- **Conclusions to be reviewed beginning on 2010 for formal re-baseline of ILC**

2



Known Issues (Questions for 09)

- **Does it fit?**
 - General issue for CCI.
 - Basic assumption is integration will lead to reduced underground volume and reduced cost
 - Engineering solution (albeit conceptual) needed to justify this
 - questions like "will it fit in a 4.5m tunnel" is something to be worked on.
 - Assume it can and look for solutions!
 - If necessary, allow tunnel diameter to increase (but cautiously).
- **Impact on installation and commissioning**
 - Again, make basic assumption and look for cost-effective solution.
 - Look for installation/construction strategies that will support early commissioning of injectors
 - Estimate impact on time to commission etc.
- **Impact on operationals**
 - Sketch our possible PPS zoning *within basic layout assumption* and work through scenarios.
 - Catalogue reduced access possibilities (wrt to RDR baseline) and discuss impact
 - (Can we quantify such things with a Himel-like approach?)
- **Proof of principle R&D, etc.**
 - More specific to Main Linac systems (e.g. HLRF distribution, Marx)

understand what can be done with proposed cost-reduced layout, rather than allow pre-conceived (and potentially unjustified) requirements drive the design.

4



Issues pertaining to Physics Scope

- **Cost reduction strategy first presented at Sendai (later re-stated at Dubna). Two 'steps' outlined (→ as sold to the detector community):**
 1. Reduce the cost of the machine but maintain the RDR physics scope (→ minimum machine)
 - primarily CFS focused via discussions of machine layout
 2. About above 'working point', quantify cost of performance
 - so-called performance derivatives
- **(1) and (2) can proceed in parallel (resource permitting), but initial focus should be (1)**
- **e+ source integration does not strictly adhere to (1)**
 - Lower energy luminosity running will be compromised
 - Needs to be quantified for pending discussions with WWS
- **Single-stage compressors 'reduces parameter plane'**
 - and has impact on 'low-power-like' options (see later)
- **Impact on TeV upgrade should be documented**
 - There should be no technical show-stoppers!
 - (Is cost a show stopper? – rhetorical question!)
 - (Do we need to do more within the scope of the MM studies for 09?)
- **3km ring (reduced # bunches) discussions: is this part of (1) or (2)?... (see next slides)**

5



Reduced n_b : impact on physics?

- **Zeroth-order approach: 50% loss of luminosity**
 - Certainly the easiest option.
 - Clearly belongs to step (2)
- **Recover lumi by pushing IR parameters (→ Ewan's presentation)**
 - Complete or partially recover? (step 1 or 2 or in-between?)
 - Increase in beamstrahlung / backgrounds
 - Need for a two stage compressor?
 - 200 micron needed elsewhere in parameter plane – impact of single-stage option requires study.
 - Need for concepts such as travelling focus?
 - General increased risk of achieving published peak luminosity
 - Compromised "area" of published RDR parameter plane
- **Bottom line: potential cost savings too large to ignore, and studies should be pursued in parallel**
 - include the scenario(s) in our ILC08 report

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Example scenarios: reduced n_b by $\div 2$

Step	Comment	Recoverable
Remove ~50% klystrons and modulators	RDR-like RF unit now ~6 CM [Proposed novel HRF distribution system becomes easier]	YES – can install missing klystrons/modulators over time
Minimum conventional support for reduced RF station count, + injectors, dumps etc	Install only water cooling and power for reduced set	YES but harder. Additional water cooling etc also required. Scope of upgrade becomes larger
Minimum civil construction for reduced set	Do not leave 'extra space' for Klystrons, modulators and associated conventional facilities.	Not possible to upgrade without major C.E. works
Reduced RF power in DR	Half current = half power	YES
Remove CFS support for above	As above for ML	Major hurdles
Go to 3km ring	True minimum solution	Very difficult to recover/upgrade

Example of the types of 'scenarios' that can be considered.

Cost saving ranges from 150 MILCU to possibly ½ BILCU, but 'recoverability' scales inversely

Other implications need discussion (impact on energy-upgrade for example)

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Minimum Machine Report Outline

1. **Introduction**
 - rationale, scope of document etc.
2. **Minimum Machine Layout**
 - textual description of assumed machine layout
 - Including sketches, tables of parameters (where applicable) etc.
 - Working assumptions (mostly for linac)
 - Options and alternatives can be included
 - But will ultimately depend on our resource situation
3. **Comparison to RDR baseline**
 - Critical comparison which focuses on the identified areas of increased risk and performance reduction.
 - Either sub-section across Accelerator Systems, or sub-section across "themes":
 - Installation, commissioning, availability, luminosity performance (parameter plane etc.)
4. **Low-Power Option (reduced n_b)**
 - Technical arguments and possible cost savings. Physics impact should be dealt with below.
5. **Potential Impact on Physics Scope (including TeV upgrade)**
 - A single section that covers all potential impact on physics scope (including the low-power option stuff)
 - This section will be scrutinized by WWS! Keep it short and factual.
6. **Potential Cost Impact (rough initial estimates; under discussion – policy decision)**
 - Rough initial guesstimates of possible savings
 - Sensitive: needs further discussion (EC)
7. **Further studies and required resources**
 - Outlining of plans for 09 to address
 - layout and design issues, allowing for a better cost saving estimate
 - studies specifically aimed at quantifying (solving) questions and issues raised in the previous sections

A very first draft!

Clearly expected to be qualitative rather than quantitative

Not much detail

Relatively terse, but enough information to define 09 studies

Note: minimum machine definition to be discussed at KEK EC meeting 5-6.09

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Next steps (tbc)

			Deadline	Responsible
August	22.08.2008	AS TAG		
	29.08.2008		Finalised draft outline of report - action items for TAG leaders	EJP/NW/MCR/AY
September	05.09.2008 - 06.09.2008	EC F2F (KEK)	Presentation of MM machine proposal	PM(NW)
	12.09.2008			
	19.09.2008	AS TAG	First draft of selected sections (MM description), ready for feedback/discussion	EJP/NW/...
October	26.09.2008			
	03.10.2008			
	10.10.2008			
	17.10.2008	AS TAG	CUC workshop	
	18.10.2008 - 20.10.2008	PAC (Paris)	Reports from AS TAG action items, iteration of existing sections	
	24.10.2008			
	31.10.2008			
November	07.11.2008	AS TAG	draft - ready for discussion at ILC08	
	14.11.2008			
	17.11.2008 - 21.11.2008	ILC08 (Chicago)	During ILC08, 09 studies should be developed and prioritised. Necessary resources identified etc. This will form the basis of 'planning' section of report.	
	12.12.2008	AS TAG	Final complete draft - submission to EC	
	19.12.2008		Publish report.	

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Comments and Suggestions to Ewan and Nick

(Comments on outline by end of next week)

It is important to communicate between our WebEx meetings!

10



PM report Aug 20, 2008:

- **Reviews**
 - PAC
 - AAP
- **Meetings**
 - ILC08
 - CLIC
- **FALC**
- **Collaborative activities**
 - CLIC
 - XFEL
- **Initiatives**
 - HLRF distribution
 - Min Machine
 - Plug Compatibility
- **Schedule**



Reviews:

- **Project Advisory Committee**
 - Oct 19 – 20, Paris
 - hosted by the chair, Jean-Eudes Augustin.
 - Many will remember him from the Itrp 2004
- **PAC reports to ILCSC and is our primary external review committee.**
 - We hope PAC complements the AAP, about which more below.
 - It is a pretty traditionally 'structured' review.



PAC

- The review will be 'high level'
- with our part lasting ~60% of the total (rest detectors) and our presentations mainly given by Barry, PM, regional directors, etc.
- The detailed agenda is now in process, but key topics will include the following:
 - Organization (many committee members are new to GDE)
 - R&D Plan (this should be the basis for the technical part of the review)
 - Minimum machine design (our approach to project-wide value engineering)
 - Collaborations (including GDE - institutional relations and CLIC, XFEL, etc)
 - Project Implementation (includes technical procurement, governance, siting work,...)
 - AAP - (our internal review process)
 - Resources - (as indicated in the R&D plan, with regional focus)
 - Oversight (FALC, ILCSC - this is necessarily connected to the PAC itself so will be in exec session...)



PAC Agenda

- The actual agenda is in final stages of preparation and should be released soon.. Although the final agenda has not been completed, we can assume:
 - Barry - overview
 - Marc - organization and r&d / design overview (this is where CFS / global are)
 - Akira - srf
 - Nick / Ewan machine design and minimum machine
 - Test facility & MDI talks
 - Project Implementation talk
- The meeting is open.
 - The closeout is to be completed Monday mid-afternoon Oct 20, two months from today.



AAP

- This will be completely different.
- It is not 'traditionally structured' and is a full-fledged attempt to bring a stronger panel into the process.
- As an internal review, we hope for the strongest practical feedback, with meaningful recommendations etc.
- (Reminder: for backup info see Barry's directors corners).
- The stronger panel arises from 'embedding' the members into our routine management process as observers.
 - So that, for example, Katsunobu Oide is an observer at the monthly AS webex and attends thematic workshops.
 - Nominally, Eckhard Elsen fulfils this role for CFS / Gbl.
 - As you know, Jonathan also observes the cfs process.



AAP Planning

- This review is to be held April 17 to 21(?) 2009, 5 days, at kek.
- It will be the 'LCWS' meeting, so will include opening and closing plenary sessions.
- The 'review' part of the meeting is also expected to be plenary, so that the full panel will see presentations that cover the breadth of our work.
- In addition to the 9 AAP members, we expect a few (7?) external members.
 - AAP is chaired by Bill Willis (Eckhard Elsen helps in this role).



Your part in AAP review

- We will need strong participation by the Technical Groups at the review.
- We call it the 'Technical Design Phase 1 Interim Review'.
- It is broadly based on the R&D plan and emphasis should reflect the goals, schedules, resource commitments, management / technical strategies, issues, etc... listed there.
- **Foremost among these is the goal to have an updated baseline by the end of TDP-1 in July 2010.**
 - There will be a second TDP-1 review in spring 2010 leading up to that point.
- This AAP review is really the first comprehensive ILC review and is therefore quite important.

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ILC08

- We will use ILC08 to prepare for the AAP review.
- When reading the ILC08 goals, distributed this week, focus on what is to be completed and presented at the review.
- In summary, these goals are:
 - 1) review status and plans,
 - 2) esp for the test facilities,
 - 3) develop goals (milestones) for r&d and
 - 4) discuss collaborative efforts.
- During ILC08, there will be meetings with PM's to underline goals, deliverables and strategy for the AAP review.
- **The agenda should be posted soon and parallel session plans should be reported at the next cfs/global webex meeting,**

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ILC08 Organization

- As usual for such large, gde-wide meetings, ILC08 is not thematic and is therefore structured along the lines of our technical groups, with a few important exceptions.
- Because of this, special care must be applied by the working group conveners to arrange joint sessions that cover various critical cross-group activities.
- For logistical and for practical reasons, there are only 6 working groups.
- We intend to be able to accommodate meetings outside of the nominal wg's, and should start discussing these soon.

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FALC

- FALC is one of our two oversight bodies and is comprised of funding agency representatives from most of our supporting governments.
- We look to FALC, perhaps, to be the seed of the funding agency council who will manage the construction of the ILC, eventually.
- The group meets twice a year and a report from the ILC is always on the agenda.
 - The January 2008 meeting was dominated by news of funding cuts in the US and UK.
- The meeting last month, July 14, was really the first one since the formation of the 'PM team' which could focus on what we are trying to do.
- As such, it is the first time where we can find real feedback as to what this group feels it might be able to do.
 - The situation is somewhat tenuous since there is little precedent, on a global basis, for collaboration at this level.

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FALC July 14, 2008 meeting

- There were three discussions at the meeting that are of interest to us:
- 1) The group was quite interested in our intention to develop a 'project implementation plan' pip.
- This should be part of the tdr, to be delivered in 2012.
- The pip will include
 - srf (other high tech) procurement strategies,
 - a funding model and
 - a project schedule,
 - a governance plan, etc).
- It is quite clear to me and to some (all?) members of FALC, that the pip works best if it is based on a consensus developed between the project (us) and themselves.
 - How should this be done?
- It is also clear that we should begin work on it now and that there are links between the pip and present r&d activities.
 - Our attempt to institute a high-tech plug compatibility is an example - if we can have a degree of flexibility in the assembly of srf components, then it may be possible for these sub-components to be supplied from relatively small-scale partners from across the world.
- Of course, FALC will be interested in the funding program etc - items beyond the direct interest of the project managers.

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FALC July 14, 2008 meeting (2)

- 2) There is a sub-group, I believe, who would like to look closely at the r&d plan - especially the resource tables and lists of participating institutions.
 - Ultimately, their scrutiny may help bolster us by lending validity to our plan.
- In both the US and UK we are faced with funding program officials who are skeptical about contributions from those outside their country.
- The linkage with the implementation plan is also clear; namely that the same funding agency groups will need to develop ties to partner agencies and the project itself.
- FALC is the only place where funding agencies can speak directly to one another.
 - Until this last meeting it was chaired by Roberto Petronzio, from the next meeting forward, the group will be chaired by Pierre Coulombe of Canada.

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FALC July 14, 2008 meeting (3)

- 3) This meeting included a presentation on CLIC, given by Jean Pierre Delahaye.
 - Between the Cern director and Jean-Pierre, the CLIC group made a strong 'sell' of their project.
- Issues include
 - the relative maturity of the design effort,
 - the nature of the demonstration and systems test to be provided by the test facility and
 - the relative cost vs energy.
- Because of the tendency of funding groups to react somewhat ambivalently when technical experts disagree, I feel we should work together, internally, to develop common agreed-upon statements on issues such as those listed above.
- In this way they can make fair decisions without requiring heavy decision making procedures.
- We have always tried, in the ILC FALC presentations, to provide genuine, simple summaries of our status.
- The PM and Jean-Pierre have agreed to try to make such common statements which would then, hopefully, be used in our fall workshops.

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CLIC

- The Cern-based CLIC project will host their annual workshop in mid-October. The charge to the conveners and working group plans have been formulated and distributed. Of special interest to us are the activities to be reported through the CLIC-ILC collaboration working groups.
 - For us, today, the most important of these are the cfs and cost/schedule groups.
- We would like to have
 - 1) consistent reporting of working group efforts during the opening and closing plenaries,
 - 2) consistent (reciprocal is perhaps to rigorous) attendance to the workshop and
 - 3) consistent inclusion in the respective agendas - CLIC workshop and ILC08. There will be no CLIC plenary at ILC08 and no ILC plenary at the CLIC workshop.
- This should not be too difficult.
- I remain concerned about the work done by the collaboration working groups goals, as listed in closing plenaries at the Dubna meeting.
- To this end, to counter this concern, we will hold a short 'update-only' teleconference September 19.
- Please prepare a presentation for that meeting and circulate it in advance.

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High level rf distribution proposal

- In mid-July, the slac group proposed the development of over-moded waveguides for the distribution of rf to the cryomodules as a technical solution that would allow the abandonment of the linac support tunnel.
- This should provide substantial flexibility to our design because it makes single tunnel-deep and shallow enclosure systems practically equal.
 - Using technical advances to level the comparison between sites of very different topographies is one of the primary goals of the Dubna workshop and this proposal could do just that.
- The executive committee will meet at KEK in early September to consider the impact that diversion of R&D funds would have and try to listen to the pros/cons of the proposal and associated r&d.
- It is no surprise that the technology referred to in the SLAC proposal is very similar to that developed for the xband distribution in the nlc.
- We will proceed to make a recommendation on the r&d for this proposal.
- In addition, we will adopt it as acd and put forth a decision process for adopting it as baseline, as part of tdp1.

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waveguide HLRF distribution

- Chris Adolphsen - July 21, 2008
 - hoped-for response from Dubna CF/S strategy
- Design and Impact presentation for EC Sept 5
 - Technical (Chris Adolphsen – via telecon)
 - RD Plan (Akira)
 - Value Estimate update (Marc/Peter – via telecon)
 - Aug 11 teleconference (Vic, Mike H, Chris, Marc, Peter)
- 1 M\$ / year total for 2 years (US / Japan) R & D needed for re-baselining process
 - resonant line powered by one or two MBK's
 - support to be requested from regional directors
 - PM request: EC provide comment on this scheme at KEK meeting
- XFEL cable-based design?

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Plug Compatibility

- R&D :
 - Goal: prove baseline performance
 - Restrict / promote specific R&D actions
 - Establish unified interface conditions
 - Develop specification and supporting documentation
 - Draft release 2008
- Project Planning:
 - Develop guidelines as a basis for PIP preparation
 - Goal: PIP delivered in 2012
 - Suggestions (from PM):
 - Define subcomponents – broadly based on interfaces established during R&D
 - Multiple vendors, multiple designs
 - Initial SRF-related PIP preparation guidelines due in 2009

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Plug Compatibility

- Costing based on a single design
 - Assumption: design differences do not result in substantial cost differences
 - RDR: single vendor with multiple sets of tooling
 - Multiple vendors roughly equivalent
- Cost engineers (WB, PG, TS) and Kerby to be asked to develop model
 - PM will specify AAP review goal at KEK EC
- 'Industrialization' based on test facilities during TDP
 - And XFEL

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KEK face to face EC meeting

- September 5 and 6 (1/2 day)
- (September 4 – ATF/STF reports and tour)
- (meet with DG morning September 5 – per Yokoya May 15)
- September 8, 9 Nick Marc and Akira meet with KEK staff
- **Agenda – KEK EC PM report:**
 - CFS / Main Linac Integration: waveguide HRF distribution
 - Project Implementation Plan – preparation process
 - Minimum Machine – parameter plane and approach to options
 - FALC 'RG'
 - response to the CERN / CLIC team
 - Plans for PAC, Chicago and AAP



PM Schedule – through 02/2009

(new items)

- Applied Superconductivity Conference Chicago August 19, 20 (Akira, Marc)
- Fermilab August 21 (Akira, Marc)
- SLAC / LBL August 22 (Marc)
- XFEL CF DESY August 25-27 (Marc, Nick)
- KEK Sept 4-10 (PM)
- JLab Sept 11 and 12 (Akira, Marc)
- JINR / GSPI Telecon Sept 17
- CLIC / ILC Telecon Sept 19
- SLAC / LBL Sept 26 (Marc)
- Linac08 (Victoria-will meet with JINR team), CCAST / ATF2 (Daegu) Sept 29-Oct 3
- CLIC / PAC / TTC Oct 14 – Oct 23
- BARC Oct 24 (Akira, Marc)
- Positron workshop Oct 29-31 (Nick, Marc)
- LCWS/ILC08 Nov 16-20; Project X Nov 21 22 ?
- DESY XFEL technical and CF early December
- KEK ATF project (also BDS?) mid December
- China December 9 - 10, or Dec. 16, 17
- INFN / Spain - Jan 2009 ?