



# Accelerator Design and Integration

Top Level Change Control - 2010



# 2010 TLCC timeline

- PAC Review
  - May (Valencia)
  - November (Eugene)
- Assignment of Lol and MDI contact persons
- Wednesday Webex meetings – (all or part)
  - SRF, CFS, AS, AD&I
  - preparation for Baseline Workshops
- ECFA LC Workshop (Geneva)
- Baseline Workshops
  - September 7-10, 2010 (KEK)
  - January 18-21, 2011 (SLAC)
  - *Each Workshop is to culminate in a document, to be submitted to the Project Director*
  - *Requires Preparation / discussion in advance*



# Project Advisory Committee Review - Summary

- May 13 / 14, 2010
- <http://ilcagenda.linearcollider.org/conferenceDisplay.py?confId=4509>
- Agenda:
  - ‘Cost Containment is essential for ILC’ – (Barry)
  - SB2009 (Ewan)
  - SRF
  - Beam tests / test facilities: CsrTA, ATF/2, FLASH
  - Collaboration with CLIC (Mike)
- Technical focus
  - Written response to previous review questions (November 2009) provided (see indico)
  - *Beam Test reports excellent*
- Chair: Lyn Evans



# Project Advisory Committee Review - Closeout

- Verbal comments on management – related topics:
- “
- *Strongly support cost containment and cost reduction efforts*
- *The biggest issue of all is the ‘buy-in’ of the experimenters. We have to make sure that the detector voice is represented.*
- *Change control is important. It should get more and more formal depending on the ‘stakeholders’.*
- *The main message: you are going to come under enormous pressure to defend the ILC cost once the XFEL costs are known.*
- “
- We (PM) are quite pleased with the committee’s initial comments



# 'Getting the Stakeholders Involved'

- Who are the 'Stakeholders'?
  - (English usage unclear; we use the term to mean:
    - those entities within or outside an organization which:
      - a) Sponsor a project or,
      - b) Have an interest or a gain upon a successful completion of a project.
      - c) May have a positive or negative influence in the Project Completion.
  - copied from wiki)
- Ourselves, Users, Oversight and related institutions
  - (See Beijing plenary)



## Stakeholder involvement - Suggestions:

- (Brian Foster, Beijing 27.03 Joint Plenary, last page)
- Develop the 'SB2009 Working Group'
  - <http://ilcagenda.linearcollider.org/getFile.py/access?contribId=16&sessionId=3&resId=0&materialId=slides&confId=4175> page 2)
  - GDE 'Physics Questions Committee - Jim Clarke, Brian Foster, Mike Harrison, Daniel Schulte, Andrei Seryi, Toshiaki Tauchi
- Or do something else...
- Expect a kind of physics parameters committee with ~balanced GDE, MDI, Lol, RD participation
- Expect broader participation in these meetings
  - Lol etc



# Workshop Report – a proposal

- To include:
  - Motivation
  - Strategy
  - Proposed changes
  - Scope and performance impact
  - Cost impact
  - Related R & D
  - Remaining concerns and post TDP follow-up
- What has changed wrt SB2009?
  - Proposal document to be formulated through discussion with Physics/Detector teams
  - Post-submission process discussed; procedure outlined
  - Reviewer's questions received



# 1<sup>st</sup> BAW Announcement

distributed, May 3, and updated, May 23, 2010

- Date: Sept. 7 – 10, 2010
- Place: KEK
- Subjects:
  - Single tunnel HLRF systems (Sept. 7 – 8)
  - Accelerating gradient (Sept. 9-10)
- Announcement
  - Distributed to GDE mailing list including physics/detector executive members,
- URL and Indico Agenda including registration
  - To be prepared in cooperation with GDE secretariat and KEK LC-office,



# Discussion Topics: Single-tunnel HLRF system in the 1<sup>st</sup> BAW, Sept. 7-8, 2010

- KCS:
  - RF power margin required for cluster operation, including gradient spread, as consistent with cavity production strategy,
  - Tuning and control strategy, including impact on high gradient operation and required gradient operational margin
  - RF amplitude and phase performance tolerance within a cluster; allowed common-mode and normal-mode fluctuations,
  - R&D required, including demonstrations of component performance and demonstrations with small clusters
- DRFS:
  - Cavity and klystron sorting and resulting required RF power margins
  - Installation strategy; needed tunnel infrastructure and access
  - RF amplitude and phase performance tolerances, including gradient spread, as consistent with cavity production strategy,
  - R&D required in the remaining half of the TDP (and beyond) including radiation shielding, klystron lifetime, redundancy strategies
- Backups:
  - Original RF system in RDR, in single tunnel, just in case, as a backup,

# Discussion Topics: Accelerating Gradient

## 1<sup>st</sup> BAW, KEK, Sept. 9-10, 2010

- Gradient Improvement Studies:
  - material/fabrication, surface processing, instrumentation and repair
  - strategy to overcome 'quench', and 'field emission' and to maintain moderate cryogenic load,
  - improvement of gradient and achievement of adequate yield,
- Strategy for Average Accelerating Gradient in the ILC:
  - Overview and scope of 'production yield' progress and expectations for TDP, including acceptable spread of the gradient needed to achieve the specified average gradient,
  - Specifications of Gradient, Q0, and Emitted Radiation in *vertical test*, including the spread and yield,
  - Specifications of Gradient, Cryogenic-load and Radiation, including the gradient spread and operational margin with nominal controls, in *cryomodule test*,
  - Specifications of Gradient, Cryogenic-load and Radiation, including the gradient spread and the operational margin with nominal controls in *beam acceleration test*,
  - Strategy to define and specify 'Emitted Radiation', (Radiation that may result in increased cryogenic-load and usable gradient limitations),
  - Strategy for tuning and control, including feedback, control of 'Lorentz force detuning', tolerances and availability margin,
  - Impact on other accelerator systems: CFS, HLRF, LLRF, Cryogenics, and overall costs



# 2nd BAW Announcement (to be distributed)

- Date: January 18-21, 2011
- Place: SLAC
- Subjects:
  - Reduced Beam Parameter Set (January 18-19)
  - Positron Source at end of Linac (January 20 – 21)
- Announcement
  - To be distributed to GDE mailing list;
  - physics/detector executive member list needed
- URL and Indico Agenda including registration
  - To be prepared in cooperation with GDE secretariat and SLAC



## Preparation for the 2nd BAW

- Still in initial planning
- Subjects relate most directly to luminosity (strong P&D involvement)
  - reduced beam-power and associated beam-beam parameters
  - e+ source location and low-energy operation mode(s)
- Themes to be developed (together with P&D representatives, in no specific order):
  - Impact on accelerator technical sub-systems and R&D
    - effective continuation of SB2009 machine activities
  - Consolidation of 8/10Hz alternate pulsing scheme for low energy running scenarios (→23 June ADI)
  - Range/flexibility of beam-beam parameters (parameter sets) (→21 July ADI)
  - Impact on physics and detectors
  - Scenarios for restoring beam power at a later stage (post construction)
    - effective luminosity upgrade
  - Capitol cost increments
  - Qualitative risk assessment and an evaluation of available parameter flexibility
  - Other: luminosity running scenarios (first 4+1 years), commissioning strategies etc.
  - ...
- Expect to use AD&I meeting to address as much as possible.
  - But expect that additional focus (WebEx) meetings will be needed.

AD&I	5/26/2010	Wednesday	IPAC10 - Kyoto (Today)
SCRF	6/2/2010	Wednesday	POSIPOL 2010 & Japan Site Review at
CFS/Global	6/9/2010	Wednesday	
AS	6/18/2010	Friday	
AD&I	6/23/2010	Wednesday	High repetition rate
SCRF	6/30/2010	Wednesday	
CFS/Global	7/7/2010	Wednesday	
AS	7/14/2010	Wednesday	after CFS / Daresbury; before e+ DES'
AD&I	7/21/2010	Wednesday	Day before ICHEP, Paris
SCRF	7/28/2010	Wednesday	ICHEP, Paris
CFS/Global	8/4/2010	Wednesday	
AS	8/11/2010	Wednesday	
AD&I	8/18/2010	Wednesday	
SCRF	8/25/2010	Wednesday	
CFS/Global	9/1/2010	Wednesday	
AS	9/8/2010	Wednesday	ILC BAW I (KEK)
AD&I	9/15/2010	Wednesday	LINAC 10 (KEK)
SCRF	9/22/2010	Wednesday	
CFS/Global	9/29/2010	Wednesday	
AS	10/8/2010	Friday	Day after FLASH LBT workshop (DESY)
AD&I	10/13/2010	Wednesday	
SCRF	10/20/2010	Wednesday	GDE/CLIC/ECFA workshop (Geneva)
CFS/Global	10/27/2010	Wednesday	
AS	11/3/2010	Wednesday	
AD&I	11/10/2010	Wednesday	PAC (Oregon)
SCRF	11/17/2010	Wednesday	
CFS/Global	11/24/2010	Wednesday	

Wednesday  
'Technical Area'  
Webex meetings,  
06-11.2010

To be used to  
prepare for  
Baseline  
Workshops – as  
needed



# Preparation for the 1<sup>st</sup> BAW

- May 7: SCRF webex meeting and homework assignment
- May 26: AD&I meeting – High repetition rate
- June 2: SCRF webex meeting and *progress report* from each collaborator,
- June 23: AD&I meeting
- June 30: SCRF webex meeting and *preliminary draft* report to be distributed
- July 21: AD&I meeting
- July 28: SCRF meeting and *draft report* to be distributed,
- August 18: AD&I meeting
- Aug. 25: SCRF meeting and the *final report* (prior to the 1<sup>st</sup> BAW) to be distributed



# Preparation for Workshops – proposed TA agendas

- June 23: AD&I meeting – High repetition rate
- July 21: AD&I meeting – Physics and Detector groups – ‘beam parameter sets *review*’
- August 18: AD&I meeting – BAW1 summary: Single tunnel
- September 15: AD&I meeting – BDS
- October 13: ADI meeting – Plans for ECFA workshop

# Next ADI meeting (23.06)

- Theme: “10Hz” operation (for low Ecm e+ generation)
- Use 10Hz summary document from Beijing
  - Updated after initial feedback
  - Focus on identified issues not indicated as OK (currently 13 line items, some probably minor)
- Preparation:
  - Release updated summary document (Nick -ASAP)
  - Further discussions on operational Modes (Ewan/Nick)
  - HLRF issues (Shigeki)
  - Other Linac issues (Akira)
  - Positron source issues (Jim)
  - DR issues (Susanna)
  - BDS issues (Andrei)
  - Beam Dynamics issues (Kiyoshi)
  - Physics & Detector impact (of higher rep-rate) (MDI/TBD)
  - Cost issues (Peter)

Detailed agenda to be posted shortly