SCRF Monthly WebEx Meeting
June 2, 2010

Agenda

1. Report from PMs (5 min.)
2. General Report from Group Leaders (15 min.)
3. Special Discussions
    1. TDP R&D Plan (Rel. 5) Preparation (30 min.)
    2. BAW-1 Preparation (10 min.)
    3. Others

Report from PMs

- ILC Program Advisory Committee (ILC-PAC)
  - Held at Valencia on May 13 and 14
- Workshop on 'Cavity Industrialization'
  - Held at Kyoto, May 23, as an IPAC satellite meeting
- Review on Design Study of Asian Single in Mountain Regions
  - held at KEK, June 1 and 2,
- Baseline Assessment Workshop (BAW) – 1
  - Held at KEK on Sept. 7 – 10,
    - Single tunnel HLRF (Sept. 7 – 8)
    - Accelerating Cavity Gradient (Sept. 9- 10)
  - Information to be sent to Physics and Detector Groups
    - Mailing list to be added, including SiD and ILD representatives

Project Advisory Committee Review - Summary

- http://ilcagenda.linearcollider.org/conferenceDisplay.py?confId=4509
- Agenda:
  - 'Cost Containment is essential for ILC' – (Barry) ⟹
  - SB2009 (Ewan)
  - SRF (Akira)
  - Beam tests / test facilities: CesrTA, ATF/2, FLASH (Mark P, Toshiaki, John C)
  - 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:

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- *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

A Satellite Meeting at IPAC-2010

SCRF Cavity Technology and Industrialization

Date : May 23, 2010, a full-day meeting, prior to IPAC-2010

Place: Int. Conf. Center, Kyoto, Japan

Organized by: ILC-GDE Project Managers,

Objectives:

- To discuss and exchange information on:
  - preparation for the 'ILC SCRF Cavity' industrialization between industries and laboratories,
  - Industrialization plan to be reported by laboratories, and
  - Comments/advices given by industries,

Cavity Industrialization WS: May 23

09:00 ~ 09:35 Introduction

09:00	Opening Remarks (15')	A. Yamamoto (KEK, ILC-GDE)
09:15	Current Status of SCRF Cavity development (20')	R.Geng (JLab), J. Kerby (FNAL)

09:35->10:30 Industrialization Experience at European Laboratories

09:35	European XFEL cryomodule production model and status (20')	O. Napoly (CEA/Saclay)
09:55	CERN Industrial Experience with LHC Construction (35')	P. Lebrun (CERN)

10:45->12:15 Laboratory Plans in the American and Asian Regions

10:45	American Region Laboratory Plans (45')	B. Kephart (FNAL)
11:30	Asian Region Laboratory Plans (45')	H. Hayano (KEK)

13:15->15:30 Industrial Experience / Studies / Advice

13:15	European industrial experience with large international projects (30')	W. Walter (Babcock Noell)
13:45	From Americas region (1h00')	
	* Industrial studies of ILC cavity and component production in the Americas (30')	T. Favale (AES)
	* The interim US market for SCRF accelerator technologies (30')	Ken Olsen (SPAFOA)
14:45	From Asian region (45')	
	* Industrial studies with Japanese industries (30')	E. Kako (KEK and J. Industries)
	* Efforts with the Advanced Accelerator Science/Technology Association (15')	M. Ono / A. Yamamoto (AAA)

16:00->16:40 Nb Material Supply

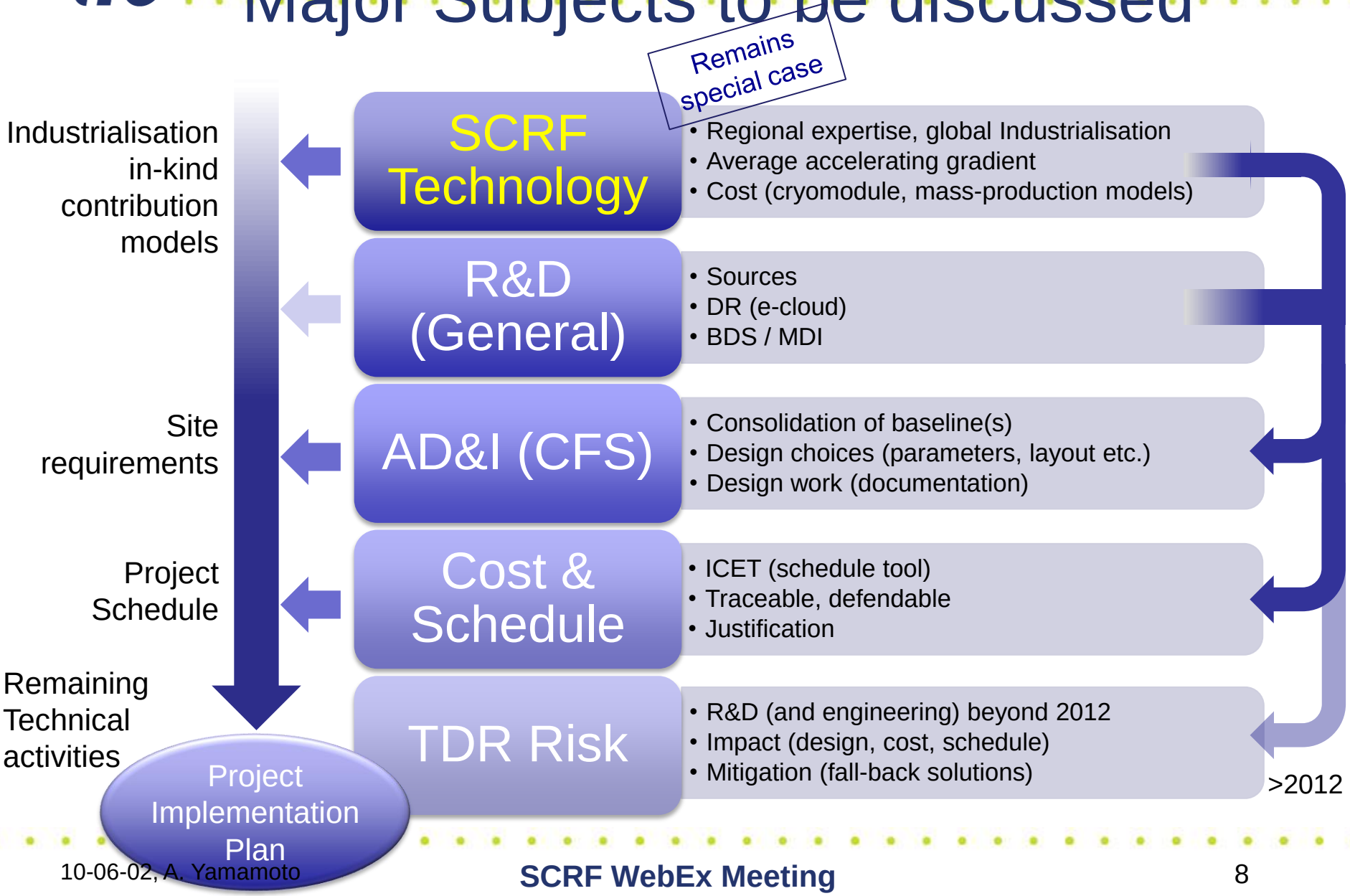
16:00	Industrial comments on the material requirements for the ILC (25')	H. Umezawa (Tokyo Denkai)
16:25	High pure Nb; Indust Alt. Production and Strategic Cooperation (15')	B. Spaniol (Heraeus)
16:40	General Discussion (35')	All
17:15	Summary (15')	J. Kerby (FNAL)
17:30	End	

CF Review - June 1-2

Asian Single Tunnel in Mountain Region

- Based on the review of:
  - **Conceptual design of the ILC Conventional Facility (CF) in mountain regions in cooperation of KEK-LC-CFS Group and AAA Conventional Facility Working Group (AAA-CF-WG)**
  - **Consistency with the ILC-GDE CFS design guideline for SB2009 and TDP-2 R&D Plan**
  - **Work-package plan for conventional facility design to be executed at KEK since JFY2010.**
- To evaluate and advise/recommend:
  - **Technical feasibility/reality, and consistency with the GDE design guideline**
  - **Further work required in the CF design work with the necessary priority with limited resource and time in TDP-2**

TDP R&D Plan Rel-5, Major Subjects to be discussed



SCRF Main Subjects

1a. Request for Rongli G.:

- Proposal for R&D plan and strategy for improving the cavity gradient, Q0, and radiation,
- Proposal for the way of evaluation in terms of radiation which also cause the limit of the gradient,

1b. Request for Camille G.:

- Proposal for further evaluation of the cavity performance based on the current status of the production yield plot,
  - **spread of cavity gradient and the quantitative evaluation with a new plot and width (RMS),**
  - **Q0 value evaluation at G = 31.5 MV/m,**

1c. Request for Akira in communication with Jim K

- Proposal for re-arrangement for the cavity/cryomodule cavity gradient specification for the iLC accelerator components and for the operation

SCRF Major Subjects

2a. Request for Hitoshi H.;

- Proposal for R&D plan for the cavity integration including tuners and input couplers, including a systematic test plan for S1-Global, which contain these evaluation,
- Proposal for a cavity fabrication (and industrial R&D) facility to be estalished at KEK as an approach,

2b. Request for Jim K. iin communication with Bob K. :

- Proposal for R&D plan for the cavity mass production in the US,

2c. Request for Akira (myself) in communication with DESY (Nick will help me),

- Input and reflection of the progress in XFEL mass production program,

SCRF Major Subjects

3. Request for Norihito and Tom in cooperation with Harry and Hirotaka

- Proposal for R&D plan for the cryomodule integration, including the cryomodule assembly and cryogenic test plan for S1 Global and for further (S2 cryomodule),

4. Request for Shigeki F. and Chris N. ;

- Proposal for R&D plan for KCS and DRFS in single tunnel - Further proposal for ACD RF such as Marx Generators,

5. Request for Chris A. in communication with Jim K., and Vladimir K.

- Proposal for R&D plan for split-quadrupole in cryomodule,
- Proposal for R&D plan for cavity alignment and tolerances,

6. Any others, if they should be included.

R&D Plan To be updated

- Draft due: June 11 from Group Leaders and Collaborators

- Completion; Jun 30

1st BAW

Announced, May 3

- 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,

Preparation for the 1st BAW

- May 7: SCRF webex meeting and homework assignment

- May 26: AD&I meeting
- 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,

- Aug. 25: SCRF meeting and the final report (prior to the 1st BAW) to be distributed

Discussion Topics: Single-tunnel HLRF system in the 1st 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 Gradiet
1st 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.

Next SCRF WebEx

- June 30

2010 TLCC timeline

- PAC Review
  - May (Valencia)
  - November (Eugene)
- Assignment of LoI and MDI contact persons
- Wednesday Webex meetings – (all or part)
  - SRF, CFS, AS, AD&I
  - preparation for Baseline Workshops
- ECFA LC Workshop - together with CLIC team (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*

Industrialization Models

- Global Vendors/Consortiums/Laboratories
  - **Research Instruments (ACCEL) and Zanon in Europe**
  - **AES, Niowave/Roark, and PAVAC in Americas**
  - **MHI, (Hitachi, Toshiba, and others) in Asia**

Production Models and Rate of SCRF Cavities				
Project	# of Cavities assumed	# of Vendors	Production period (years)	Production Rate: (Cavities/day/vendor) (at 200 ~ 250 work-days/yr)
SNS	~ 110 (including +20%)	1	3	0.2 ~0.15
XFEL	(~640)	(1) (2)	(3) (3)	(1.1 ~ 0.85) (0.55 ~ 0.43)
ILC	**(~ 18,000) (including +10%)**	**(1) (3) (6)**	**(5) (5) (5)**	**(18 ~ 14.4) (6 ~ 4.8) (3 ~ 2.4)**