

A Review on Research and Development at KEK for Accelerator Technologies toward ILC

- Dates and Place: July 31 – Aug. 2, at KEK
- What will be reviewed?
 - Technical progress in the research and development for ILC
 - R&D program coordination/management to matures the required technologies for ILC
 - Preparation for input to the KEK road-map updates to be realized in 2012.
- General agenda for reports to be presented :
 - 7/31 (full day): STF including tours for experimental facilities
 - 8/1 (full day): CFS and ATF
 - 8/2 (a half day): Report writing and review summary (close-out)
- Review committee members
 - Ross (GDE/SLAC, Chair), K. Akai (KEK), chikahisa (CE Ass., Japan), J. Flanagan, T. Furuya (KEK), H. Hanaki (Spring-8), Y. Kobayashi (KEK), F. Naito (KEK), Y. Ohnishi (Kyoto-U), K. Oide (KEK), T. Raubenheimer (SLAC), R. G. Tomas (CERN),

Charge to the Review

- **Technologies progressed at KEK to prepare for the ILC accelerator to be built**
 - Are they adequate in the direction and priorities, and reasonably progressed?
 - What is missing and what shall be further demonstrated
- **Scope and strategy at KEK with global cooperation**
 - Are the KEK's efforts well organized in view of global cooperation?
 - How the KEK roles may be improved in order to maximize the global efforts to realize ILC?
- **Scope and strategy in relation to other programs expected at KEK.**
 - How are they adequately planned in balance with other existing programs at KEK?
 - How the ILC R&D program may be better progressed in common or complementary efforts with other programs along the KEK road map updates?

The Review Agenda: July 31

July 31, 9:00 ~ 18:00:

9:00 {Closed session for the review committee}

9:20 *Opening Remark and Introduction* : A. Suzuki

9:40 Review program A. Yamamoto

9:45 Reports from SCRF and STF

9:45 General progress at STF H. Hayano

10:15 SCRF cavity development Y. Yamamoto

10:45 *-- Coffee/Tea Break --*

11:15 In-house cavity surface process M. Sawabe

11:45 In-house cavity fabrication T. Saeki

12:15 *-- Lunch break --*

(13:00) *-- Tour of ATF, STF, and CFF --*

15:00 RF and PDS T. Matsumoto

15:30 S1-Global E. Kako

16:00 Quantum Beam K. Watanabe

16:30 *-- Coffee/Tea Break --*

16:45 STF-2 Cryomodule and cryogenics H. Nakai

17:15 Plan for STF-2 and future A. Yamamoto

17:45 {Closed session, if necessary}

18:15 *-- Reception and discussions --* *Everybody*

Agenda: Aug 1 -2

August 1, 9:00 ~ 18:00:

9:00 {Closed session}

9:15 Reports from CFS

9:15 Progress in CE design work

A. Enomoto

10:00 Progress in Geological survey in Japan

M. Miyahara

10:45 -- coffee/tea break --

11:00 Reports from ATF

11:00 General progress and recovery from East-Japan Earthquake

N. Terunuma

11:30 Low emittance beam study

K. Kubo

12:15 -- Lunch break --

13:30 DR operational experience

S. Kuroda

14:15 Beam Extraction for DR to ATF2

T. Naito

15:00 Nano-beam study with AT2

T. Okugi

15:45 -- Coffee break --

16:00 International contribution (tentative title)

P. Burrows

16:30 Plan for ATF future

N. Terunuma

17:00 Comments – Cooperative efforts for the future of ATF and STF

A. Yamamoto

17:15 {Closed session}

August 2, 9:00 ~ 12:00

9:00 {Closed session, questions and answers, and writing}

11:30 Closeout and review summary

12:00 End

Reports from Reviewers (Preliminary):

STF: Cavities and Cryomodules (CMs)

Observation:

- Progress toward ILC cavity performance and yield is excellent (9/11 cavities: 82 %), but
- the optimum engineering not completely established because of some of recent cavities showing very poor performance

Recommendations:

- The cavity defect problem should be solved through the use of CFF with further investigation.
- The reason of degradation after CM assembly should be well understood
- R&D on couplers should be pushed even if it require redistribution of human resource (man-power),
- Further precise cost estimates on cavities and peripherals such as couplers, RF sources, and CMs required for further reduction

Reports from Reviewers (Preliminary):

STF: RF and PDS

Observation:

- PDS (Linear- and Tree-type) successfully tested in S1-global, and LLRF provides functions worked excellently, as well. Stability in ~ 2 hours demonstrated
- HLRF/LLRF has been well operating as part of QB project

Recommendations:

- The continuous operation for more than several days to be realized in future tests,
- It is very important to demonstrate the 8.7 mA operation with 10 MW MBK, Marx modulator, PDS based on the ILC-TDR report in STF-2.

Reports from Reviewers (Preliminary):

STF: CFF

Observation:

- A basic parameter search started using the new machine with reliable progress,
- Strategy for > 17,000 cavity production not presented

Recommendations:

- Extend the search for EBW, Nb-based material with extreme care for chemical work
- Exchange sufficient information among participating vendors. CFF has to take the initiative for cooperating working relationship with cavity makers

Reports from Reviewers (Preliminary):
Conventional Facilities and Siting

Observation:

- in progress

Recommendations:

- In progress

Reports from Reviewers (Preliminary):

ATF

Observation:

- Major setback with the Eastern Earthquake, and KEK should be commended on how quickly they were able to restore high quality operation. This was an impressive feat.

Recommendations:

- Goal-1: The dedicated run for ATF2 in fall 2012 will be very important with clear leadership for coordination.
- Goal-2: The program for 2 nm stability at IP as an extension should be accepted by KEK including extension of the operation at least as further 3 years program.

Reports from Reviewers (Preliminary):

View to the future

- Success of the program STF, CFF, ATF is critical to the successful Japanese bids for the ILC but also for other programs using SCRF technology such as the ERL at KEK or possibly J-Parc linac upgrade
- The committee urges that the KEK management explore additional funding opportunities to maintain this unique and productive facilities.
- The committee recommend that KEK consider and evaluate possible saving and benefit from more cooperative work between STF and ATF with attracting additional funding from within or outside of Japan.