

AAP Report

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referring to Oxford review January 2010

1st Baseline Assessment Workshop

- Main Subjects:
 - Single-tunnel ML design and High Level RF System (Sept. 7 - 8)
 - Accelerator Field Gradient for SCRF Cavity (Sept. 9 – 10)
- Objectives and Goals:
 - Assessment of technical proposal in SB2009
 - R&D plan and goal in TDP-2
 - Impact across system interfaces, cost and schedule
- Discussions toward consensus in GDE and Physics/Detector groups

Quotes from AAP Review on

- Management
- RF Schemes
- Single Tunnel
- SRF
 - SRF had not been reviewed in much detail

Other recommendations, e.g. on Low Power not repeated here.



Report on the AAP Review in Oxford
January 6-8, 2010, Oxford, UK
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Management

- The AAP does not recommend adopting SB2009 as a whole as the new baseline.
- The AAP recommends that the GDE Management adopt more rigorous configuration control for managing the design effort and that, henceforth, changes to the baseline be processed using the by-now relatively standard change control procedures.

RF Distribution Schemes

- The AAP recommends better understanding of the underground requirements for the three cryomodule 10 MW implementation, similar to the RDR baseline but in a single tunnel, until alternate RF distribution techniques have been established.
- KCS
 - The AAP recognizes the benefits of the KCS RF scheme and encourages the planned R&D. Handling of the high power levels is a risk and it is acknowledged that a demonstration is needed. A systematic analysis of possible failure modes should be carried out.
 - The acceptance criteria should be defined by the Project Management to understand whether KCS could become the baseline RF distribution. The R&D on this option should be continued.

RF Distribution Schemes cont'd

- DRFS

- The AAP recognizes that the fine distribution of RF power generation is a viable solution for the ILC if the performance and cost parameters can be met. R&D into this scheme should continue. However, it is observed that the DRFS scheme imposes operational constraints on the ILC to meet the availability/luminosity goals.

- Availability

- All three variants can be made to work at energies below the peak energy, provided the improvements in magnet power supply and other lifetimes can be met.
- The impact of the RF distribution schemes on availability arises only at the highest energies. The KCS and DRFS satisfy these requirements with small energy overhead, albeit the latter imposes additional constraints on the operation of the ILC to satisfy the maintenance.
- With appropriate overhead all three RF distribution schemes meet the luminosity requirements.

Single Tunnel

- A single tunnel configuration for the ILC will satisfy the safety requirements in all three regions.
- The AAP recommends consolidating the tunnel diameter requirements and to reducing the number of variants to the essential minimum.
- The AAP supports the transition to a single tunnel provided that at least one of the RF distribution schemes can be demonstrated to work.
- A change control process should be put in place that will define the acceptance criteria for either RF solution and examine the side effects before adopting the single tunnel solution as the new baseline. The R&D for the RF distribution schemes should be adapted accordingly.
- The CFS implications of the single tunnel solution should be fully explored and should include an assessment of the installation procedure.

SRF Observations

- The AAP acknowledges the good progress on the S0 goals. The AAP is pleased to see a clear definition of TDP I process yield.
- Proof-of-principle for the S1 goal of 31.5 MV/m exists
- Description of goals of S1 global is missing
- Progress of S2 should be reported
- Based on the continued progress in gradients for S0, S1 and S2, there is no reason to change the gradient specification at this stage. This issue can always be re-visited if and when exciting results from LHC push the ILC to the forefront.

PAC Review of SB2009

- Strong recommendation for the Low Power option
 - recover luminosity by stronger focusing and traveling focus schemes
- Favors e^+ source at end of linac
- In general supportive of the change control system that includes the discussion with the detector community

...and much more

Role of AAP as discussed in EC meeting in Paris

- PAC has become considerably stronger concerning accelerator topics
 - L Evans (chair)
 - K Oide (joining)
 - H Weise (joining)
- No need to duplicate aspects in AAP that can now easily be covered in PAC
- AAP should concentrate on preparing **detailed** assessment of the developments in the BAW and so help to prepare the optimum TDR

Nominal AAP Membership

- Chris Damerell
- Jonathan Dorfan*
- Eckhard Elsen
- Thomas Himel
- Masao Kuriki
- Olivier Napoly
- Katsunobu Oide*
- Hasan Padamsee*
- Tor Raubenheimer
- Daniel Schulte
- Bill Willis*
- Norbert Holtkamp*
- Lucio Rossi*
- Toshiki Tajima
- Mitsuru Uesaka
- Frank Zimmermann

Guidelines for AAP Make-up

- Recognized leader of the field (in the respective region)
- Expertise in some of the accelerator issues and the implementation of large scale projects.
- Rather smaller than larger committee – suggest to abandon the notion of external committee members (experts can still be invited ad hoc)
- Co-leadership (BW&EE) made it fairly easy; suggest to maintain that interregional leadership

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- Primary task is to help shape the TDR; the TDR itself will be presented to a **new external committee** for full evaluation
- In order to avoid interference the AAP could accompany the BAWs and give immediate feedback after each BAW
 - Technically this could be a fairly short meeting with the PMs and a few selected experts immediately following the BAW

Summary

- Oxford AAP review
 - gave many detailed recommendations that need to be followed up
 - SB2009 did not consider SRF in any detail. This part needs to be addressed.
- BAW will work towards these goals