



GDE CCB Remarks on $\gamma\gamma$

GDE Meeting, Vancouver, July, 2006

Nobu Toge (CCB/KEK)

Date

Event

Global Design Effort

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CCB Basics

- Members: C.Pagani, G.Blair, D.Schulte, T.Markiewicz, S.Mishra, W.Funk, K.Kubo, M.Kuriki, N.Toge
- Wiki main (with official procedure):
http://www.linearcollider.org/wiki/doku.php?id=bcd:bcd_home
- Change History:
http://www.linearcollider.org/wiki/doku.php?id=bcd:bcd_history
- Public Communications:
<http://lcdev.kek.jp/ML/PubCCB/>
- Leaders of GDE Area Groups, Global Groups, EC and Board Chairs can submit change requests.
- Classification: 0 – trivial, 1 – light, 2 – heavy.



BCD History

#	Submitted	Area	Requester	Class	Status	Date
13	2006/6/12	Linac	Adolphsen	1	Accepted	2006/7/13
12	2006/5/17	BDS	Seryi	1	Returned	2006/7/1
11	2006/4/21	Param/Layout	Paterson, Toge	1	Accepted	2006/5/8
10	2006/4/20	BDS	Seryi	0	Accepted	2006/4/23
9	2006/4/13	RTML	Tenenbaum	1	Accepted	2006/4/23
8	2006/3/22	White Paper	Toge		Fixed	2006/3/23
7	2006/3/20	RTML	Tenenbaum	1	Accepted	2006/3/28
6	2006/3/4	CF/S	Enomoto	0	Accepted	2006/3/16
5	2006/2/28	Params	Yokoya	1	Accepted	2006/3/3
4	2006/2/24	RTML	Tenenbaum	1	Accepted	2006/3/3
3	2006/2/7	DR	Wolski	1	Accepted	2006/2/27
2	2006/2/4	OPS	Hime1	0	Accepted	2006/2/11
1	2006/1/27	RTML	Tenenbaum	1	Not Accepted	2006/2/3
0	2005/12/20	CF/S	Huedem		Accepted	2005/12/23



In This Talk

- I will explain –
 - The logic of internal discussion that CCB followed with regards to the $\gamma\gamma$ change request of May, 2006,
 - Which led to the CCB conclusion of “returning” the $\gamma\gamma$ change request, on the basis of lack of system-wide analysis + system-wide proposal for this “Option”.
 - However, it is **NOT** that CCB concluded “ $\gamma\gamma$ NEVER”. The door can be knocked and it will open, when you bring in the material that we said we need.



BDS Change Config Request on $\gamma\gamma$

- Submitted by A.Seryi on May 17, 2006.
- Classified as Class-1
- Requester:
 - Stated that $\gamma\gamma$ requires $\theta_{\text{cross}} > 25\text{mrad}$ + a 250m long gas/water beam dump. This is not compatible with e+e- beam dump requirements.
 - Stated that if it is desirable to be able to alternate e+e- vs $\gamma\gamma$ runs. Hence, it is desirable to find a configuration that allows for the simultaneous presence of both these dumps.



BDS Change Config Request on $\gamma\gamma$ (2)

- Requester (continued):
 - Suggested that either the baseline θ_{cross} of 20 mrad or the alternative configuration crossing angle of 14 mrad could allow future civil modifications to the tunnel geometry. This geometry, with relatively modest and reversible changes to beamline and detector position, would permit an extraction line dedicated to $\gamma\gamma$ at 25mrad.
 - Dismissed modifying the 2mrad baseline crossing angle layout, as being akin to digging a new (3rd?) interaction region (It can be left as being dedicated to e+e- runs).



Examination from Scientific and Technical Standpoint (1)

- The reference $\gamma\gamma$ Snowmass Summary Report
 - Provides an outline of the $\gamma\gamma$ scheme that mainly relates to production of high-energy photons through the laser-beam interactions.
 - More systematic and thorough evaluations and design proposals are necessary in the areas of
 - **beam parameters,**
 - **beam sources (if they are affected by gamma-gamma specific requirements),**
 - **operation mode,**
 - **hardware equipment related to high-power laser, and others.**
 - This Change Request is the first of the gamma-gamma-related request which attempts to bring in substantial inputs to BCD.



Examination from Scientific and Technical Standpoint (2)

- H.Yamamoto and F.Richard (MDI) contributed remark stating
 - That discussion on the gamma-gamma option has not yet been done extensively.
 - That, however, the proposed description of the BDS upgrade for gamma-gamma would be very useful for forming a consensus on how to consider the gamma-gamma option.
- A.Enomoto (CF/S) contributed remarks which offered
 - A rough evaluation of the size of the gamma-gamma beam dump together with his assessment on the required tunneling work.
 - It was indicated that the cost impact in terms of CF/S work for the additional gamma-gamma dumps is consistent with a Class-1-type configuration change.
 - However, this estimate **does not yet include**
 - the work associated with installation of beamline equipment and
 - any other work that may be required in other areas of ILC, nor
 - studies on the schedule implications of e+e- vs $\gamma\gamma$ change overs.



Examination from the Configuration Control Standpoint

- With the given focus of GDE efforts on the Reference Design Report and the first-round costing associated with it,
 - **This Change Request ought to be flagged as “an entry for future discussion for the upgrade/alternative-type issues”.**
 - CCB finds that it is its duty to reorganize and improve its scheme of classifying incoming Change Requests, and to more adequately treat and tag similar cases in the near future .
 - **CCB notes the fact that while a reference has been made on the desirability of $\gamma\gamma$ option by the “Parameter Subcommittee Report” submitted to ILCSC in 2003, little progress has been made on studies of the gamma-gamma case at LC from a system integration viewpoint.**
 - As mentioned earlier, no discussion exists in the present BCD for the operating parameters with gamma-gamma, for instance, whether as a Baseline or an Alternative configuration.
 - **Therefore, this Change Request submitted by the Leaders of the BDS Area Group is in an unfortunate position where it has to stand out without the backup of substantial supporting design materials in other parts of BCD.**



CCB Statement on $\gamma\gamma$ Change Request -- Conclusions

- The CCB expresses its whole-hearted gratitude to the Leaders of the BDS Area Group, Andrei Seryi and his colleagues,
 - **for their attempt at examining the $\gamma\gamma$ implications to BDS and for offering possible scenarios for revising the BDS to accommodate gamma-gamma running.**
- However, CCB notes the fact that an outline description does not yet exist for the design studies of the gamma-gamma option within the present BCD.
 - **The text offered by the requesters is an important part of it, but, naturally, it does not discuss the full impact of maintaining the gamma-gamma option on the whole of the ILC project.**
 - **Nor, as is recognized with the R&D to-do list, does it include adequate input from the relevant technical systems for even the BDS specific portion.**
- In this situation, the CCB cannot accept the proposal, as submitted, into the baseline.
 - **It is not appropriate that technical discussion which is part of a major system upgrade with significant changes to facility capability be made unilaterally when the full impact of the change on the rest of the project is not fully known.**



CCB Statement on $\gamma\gamma$ Change Request -- Conclusions

- Therefore, while again gratefully noting the submission, we hereby return it to the submitters while awaiting further developments on the topic, made in cooperation with the other Area, Global and Technical groups at the appropriate time.
 - **CCB suggests that such a taskgroup, under guidance of GDE Executive Committee, could be formed in the TDR timescale.**
- CCB also recommends the WWS group to more systematically survey the $\gamma\gamma$ upgrade option, including detector integration, possible impact on the interaction region and other related issues, thereby providing GDE with inputs to consider from the physics and detector perspectives.
 - **It would be highly desirable if a rough timetable for addressing these issues is made available by the time when RDR becomes finalized.**
- CCB acknowledges the need for reorganizing its scheme for adequately classifying incoming Change Requests on Alternative Configurations or System Upgrade Scenarios.



Now, What Do These All Mean? (1)

- First,
 - **It is important that a serious system config baseline always gets to be made part of BC.**
 - Otherwise, that part of config baseline won't be designed, be costed, and be built.
- Second,
 - **BC is something that we (CCB) “maintain” and “evolve” for GDE.**
 - Not a Bible that is not allowed to be rewritten
 - **Can be revised**, if the rest of GDE and CCB agree.



Now, What Do These All Mean? (2)

- Third, for CCB to be able to assess incorporating $\gamma\gamma$ option into BC
 - Need descriptions of system-wide picture of $\gamma\gamma$, eg.
 - Parameters
 - Beam Sources (electron/positron beams, photon beams)
 - Baseline (+alternative) scheme for producing, controlling, diagnosing and disposing of photons and electron/positron beams.
 - Other HW equipment of relevance
 - Need descriptions of system-wide implications of $\gamma\gamma$, eg.
 - Who else, besides BDS, get affected by incorporation of $\gamma\gamma$, and how?
- Fourth, it looks to me that an organized effort will be required to do the work above. This point is my personal observation, somewhat being outside my capacity as CCB chair, since **CCB is NOT a body to direct or coordinate** the design efforts.



Summary

- I have explained –
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