Minutes from the May 22, 2003 Meeting of the Linear Collider Subcommittee of the Fermilab Long Range Planning Group

Present: J. Butler, S. Holmes, R. Kephart, H. Montgomery, R. Patterson

Absent: M. Carena, S. Nagaitsev, Y-K. Kim

Guests: J. Dorfan, M. Tigner, M. Witherell

Discussion of USLCSG Goals and Activities

Jon Dorfan led a discussion of the U.S. Linear Collider Steering Group goals and activities.

Charter, organization, membership, and other useful information are available on the USLCSG website:

http://www.slac.stanford.edu/~hll/USLCSG/

The USLCSG grew out of the (Bagger/Barish) subpanel. However, the USLCSG is an arm of the HEP community, not HEPAP or DOE or the government. Mont asked how the USLCSG communicates with the government in this case. Jon stated that in general discussions with government (which includes Office of Science, OSTP, and OMB) are conducted by Jon (USLCSG chair), Maury Tigner (International Linear Collider Steering Committee chair), and Fred Gliman (HEPAP chair).

A copy of the charter for the steering group was distributed. It describes an Executive Committee and three subcommittees. The role to the subcommittees is to greatly extend the involvement of the community in the executive committee's role of executing its mandate. The three subcommittees and their chair are:

Accelerator	Gerry Dugan
Physics and Detectors	Mark Oreglia and Jim Brau
Internationalization	Maury Tigner

University based LC R&D Program

This was started as a grass roots effort, nurtured by the USLCSG. There are two groups (LCRD and UCLC), one funded by DOE and one by NSF. The USLCSG organized a peer review process to assure that a strong and coherent set of proposals went to the funding agencies. These are now on the verge of being funded, DOE having announced last week that $400K is ready for release (NSF has not yet made such an announcement however). The steering group is gearing up for review of the next round of proposals.

"The Cap"

Everyone in government agrees that the cap on LC R&D spending is gone. However, the proof is in the pudding and the next step is for DOE to actually allocate funds beyond the $19.2M that has been in effect for several years now. This is anticipated shortly.

Bid to Host

Preparation of a U.S. bid to host is a centerpiece of the USLCSG charter. The steering group has gotten started on trying to understand the elements of the bid to host including, in addition to technical documentation, the legal and international aspects. Jon discussed a major initiative the steering group is undertaking on codifying the machine parameters and design.

A machine performance document has been assembled by the Physics and Detector Subcommittee. This document establishes the U.S. view on performance parameters we are looking for in the linear collider. The document is available at:

http://www.slac.stanford.edu/~hll/USLCSG/BidToHost/MachineScopeA30323.pdf

It describes parameters for a 500 GeV initial machine, upgradeable to 1000 GeV.

Based on this document the Accelerator Subcommittee has been charged to develop in parallel plans for both normal conducting (X-band) and superconducting based implementations within the U.S. This activity is organized by Gerry Dugan. It will evaluate the issues surrounding both implementations in as parallel way as possible. Many elements of the machines, for example the beam delivery systems, will be identical in both cases. Two sets of representative sites are being examined in Illinois and California. Their report is due in October.

It is not yet well established how the U.S. will use this information for establishment of the technical basis for the machine. The U.S. can either make its own decision or defer to the international decision making process (see discussion with Maury below).

Timeframe

Jon outlined the (optimistic) timeframe the USLCSG is thinking about:

2004	Technology down-select. International design group formed
2008	CDR and engineering design complete
2009	Start construction
2015?	Start operations

Subsequent discussion (after Maury's presentation) questioned whether this was realistic. The point was that people are guessing it will take of order $1B from the international community to get to a complete CDR and engineering design. It is assumed that approximately two-thirds of this is U.S. funding. Such an effort requires a doubling of our spending every year, starting with a $19M base in 2003, over the next five years—a somewhat daunting task. Maury remarked that $1B is far from a bottoms up number.

Internationalization

Jon started with the question "can a truly international laboratory exist within the DOE structure?" Jon deferred to Maury but said that it can't be DOE "business as usual".

However, Jon stated that internationalization appeared to be viewed as a point of merit in its own right by people in the U.S. government. Apparently many are impressed by the ITER model, in particular the following aspect: A commitment to the (substantial) R&D project , but with "off-ramps" maintained for the participating governments before a commitment to construction. Within the LC framework this is an ~ $1B commitment upfront from the international community.

Discussion of ILCSC Goals and Activities

Maury described the formation, goals, and activities of the International Linear Collider Steering Committee. More information is available on their website:

http://www.fnal.gov/directorate/icfa/International_ILCSC.html

Background

Studies/advisory groups from the three major world regions engaged in HEP all emphasized the international aspects of the linear collider construction and operation. While this practice has been in place for many years on HEP detectors it is really new for accelerators. There is also a strong sentiment in the communities for siting the LC near an existing, large HEP facility. Maury noted that this may not be realistic in the end as governments and politics enter the fray. He also noted that there have been concerns expressed with regard to the potential for the host laboratory to dominate the facility. This will have to be dealt with.

Documents

Maury described documents being prepare under the auspices of the ILCSC. Most are available on the website. However, one of the more important is the worldwide "Consensus Document" written in support of the construction of a linear collider. Over 1000 scientists world-wide have signed this document. To view the document, and to lend your support, please visit:

http://flc25.desy.de/lcsurvey/

U.S. as a Reliable Partner

There was a discussion of how to overcome the perception of the U.S. as an unreliable international partner. Maury said this was a major issue discussion point for our community and that we did not have a crisp solution yet. He noted that ITER is looking at a treaty arrangement.

ILCSC Organization

What effectively exists at the moment is three regional steering groups (U.S./North America, Europe, and Asia) in communication with an International Steering Committee and with their respective government agencies. This is pretty much all self-organized, as opposed to formally organized, at the moment. The ILCSC was established by ICFA in June of 2002. The goal is to promote the construction of a linear collider through world-wide collaboration. Committee members hold three year terms with the chair holding his/her position for two years. The chair is selected by the committee and it is anticipated that the chair will rotate among the three regions. The charge to the ILCSC will be reviewed after three years by ICFA.

Three meetings have been held to date. Among the activities have been the formation of subcommittees, development of the world-wide consensus document, and initial discussions of the process for technology recommendation and establishment of a "global design center".

There are currently three established subcommittees:

Physics and Detectors:	D. Miller (chair), J. Brau (deputy)
Accelerator:	G. Loew (chair), G. Dugan (deputy)
Scope and Parameters:	R. Heuer (chair)

To date the Scope and Parameters effort has failed to produce a world consensus on the performance goals of the linear collider (in contrast to the internal U.S. effort).

Technology Decision

The goal is to make an international technology decision by summer 2004. At the international level the ILCSC foresees a "wise persons" committee with 3 members from each region to make a recommendation.

International Organization

Thinking is strongly influenced by the ITER model. It is foreseen to approach the project in phases with an organization associated with each phase. Phase 1 would be development of the Conceptual Design Report. The organizational structure being contemplated for this phase is centered on a Global Design Center that coordinates all activities. The GDC would report to ICFA through the ILCSC. Most of the actual design work would be carried out by Regional Teams. Phase 1 could start as soon as the technology decision is in place. Phase 2 would be the engineering design activity. The end of the phase would represent an off-ramp for sponsoring governments prior to initiation of construction (phase 3). There was a question as to where site selection takes place in this process. There was no crisp answer, but in writing these notes it occurs to me that it would be difficult to produce a complete engineering design without a specific site.

Other Business

Steve discussed the work plan and the need to start setting up meetings. Steve would like to rely on the assigned committee members to organize their assigned meetings. A suggestion was made, and accepted, that George Gollin and Dan Amidei should be included in the list of outside invitees for discussion of outreach and local alliances, and that Gene Fisk has to be included in detector discussions.

Next Meeting

Tentatively Thursday, May 29, from 10:30 to 12:00 in the Comitium. Michelle will be in contact.

Agenda:

1. Status of civil design and siting activities – Vic Kuchler
2. Discussion of expanded committee membership