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UEC Minutes -- January 17, 2004

Present: Bloom, Bose (GSA), Clark(GSA), Garcia, Griffiths (GSA), Gottschalk, Groer, Hagopian, Messier, Sheldon, Tanaka (video), Tschirhart, Trischuk, White, Zimmerman (apologies: Rolli).

Outreach (Marge Bardeen)

Have been exploring ways for the UEC to support the efforts of the education office. She suggests we consider making use of materials and experience in dealing with outreach to school-age kids. Some on the web (<http://www-ed.fnal.gov/physicists.html>), some in the Lederman Science center (in the Teacher's Resource Center TRC). Users should be made aware what is available. Always looking for additional material. If user's have developed something they could add it (or a copy) to the TRC collection. Their most spectacular item demonstrates cryogenics and is shown to about 6000 kids a year. DPF education committee launched a complementary web-site (<http://www.aps.org/units/dpf/education/>). One can easily find this site from the side-bar of the DPF website. There is also an email contact there for people to add material to that site.

It was suggested that the TRC might consider advertising their resources in a booth setup at the users meeting. Or the UEC/Education Office might be more ambitious. September 2001 has restricted site access for open houses. The current solution is the 'Ask a Scientist' programme that offers guided tours to one behind-the-scenes area once a month. Recent tours have included CDF/D0, the Feynman centre and other parts of the lab. The Education Office had planned a more ambitious open house for families in honor of Fermi's 100th birthday but it was canceled by 9/11. UEC members suggested a "College Night" where members of the local community could meet researchers from mid-western Universities and learn more about science programmes for college bound students. Perhaps this could be arranged in conjunction with the Saturday Morning Physics graduation.

Another role Marge's office plays is forwarding inquiries to people from the lab staff (and members of the users community). People who would like to be added to the list of experts willing to field such questions should contact her. Often get requests from students further afield (Connecticut, Ohio,...). May not be possible to get these people to the lab but putting them in touch with a user that is geographically closer to them is a good alternative.

The UEC should also help raise awareness in the rest of the community as to how useful these kinds of outreach activities. They help maintain the lab's public profile and thence support from the funding agencies. Some people are discouraged by their supervisors or

employers from participating in outreach activities. Need to make sure the efforts of these volunteers are recognised and the importance of their work to the community is acknowledged at all levels.

Communication from Judy Jackson: A new linear collider Outreach web page, which has information and talks about the linear collider, has been set up at: <http://www.interactions.org/cms/?pid=1009040>. If you give a talk about the linear collider, please use the web form at <http://www.interactions.org/cms/?pid=1009128> to make your slides available to others.

State of the Laboratory (Mike Witherell)

He started with a couple of slides from the Accelerator division on how the return to stable operations after shutdown. Peak luminosities well ahead of the planned startup curve at this point. However, have had two ~10 day periods where we had to warm up to exchange superconducting spool-pieces. Anticipate about three of these a year... Their influence on integrated luminosities has been mitigated by the record luminosities when running. The integrated luminosities are almost tracking the planned startup accumulation. Have also had several stores above 2 pb⁻¹ integrated. Prior to the shutdown best stores were in the 1.5-1.7 pb⁻¹ range.

He addressed a number of questions that had been sent to him by the UEC ahead of the meeting. What are the prospects for putting critical machine items on backup power (eg. the abort kickers that lost power and causing one of the recent aborts/quenches)? Many critical elements are on backup power. There is a task force on aborts and quenches being led by Paul Czarapata. Among other things they are looking at critical areas where backup power may have been overlooked.

Status of the recycler? The vacuum is now down to the level where it is no longer an issue. Lifetime of anti-protons is several hundred hours. The group is now addressing a number of smaller issues, such as tuning stochastic cooling in the recycler and working to reduce the longitudinal emittance to 50 ev-s. Hope to soon be ready to extract 36 bunches of anti-protons and inject them into the Tevatron. Can probably achieve this now on a good day -- working to make these kinds of activities routine.

Several reviews are planned. HEPAP will meet in Washington February 9-11, February 24-26 is a DOE review of the Fermilab accelerator complex. January 20-22 will be an internal (director's) review of the accelerators to prepare for the DOE review the following month. March 12-13 will see a URA visiting committee at Fermilab. March 16-18, the DOE will conduct a Tevatron/lab operations review (topics include -- but may not be limited to -- accelerator, detectors, ES&H, finances, etc.). March 23-25 is lab's annual programme review. April 27-29 will be the BTeV CD-1 review.

A new accelerator division web-site has been launched. There is a page (see <http://www-bd.fnal.gov/records.html>) devoted to record luminosities (instantaneous, integrated), largest stacks of anti-protons, number of hours without a failure, etc. Accumulating

11.2 pb⁻¹ in one 7 day period is one particularly recent accomplishment highlighted there. Mini-BooNe has almost returned to the best protons on target (POT) per week from last year. January could be a record month. Looking at ways to further reduce losses and hence achieve new POT records. Q: What is the current limit on instantaneous luminosity for Tevatron? A: Could probably exceed 6×10^{31} if that were the focus. But that would detract from the integrated luminosity goals that are the priority. Currently installed hardware, when fully commissioned, should to 8×10^{31} . Q: Is the PBar tax working as expected? A: Yes, the director is happy with it. Recycler is making much faster progress now that they have pre-agreed access to PBars. Impact on integrated luminosity has been no more than expected. Recycler is adapts itself to the supply of PBars -- taking advantage of windfall's when Tevatron has been down and not requesting many when stacking has been problematic.

The PAC meeting in December focused on the neutrino programme. Heard about accelerator division plans to deliver more protons for miniBooNe initially and then sufficient protons to keep MINOS and the collider happy in a subsequent periods. The PAC encouraged the lab to continue to pursue this, endorsing the physics of the neutrino programme.

The long range planning committee retreated to Naperville to consider all the sub-group reports last week. A full report should be delivered to the director soon allowing a public release and discussion with the wider community in the spring.

Q: What can FNAL do to mitigate the poor funding of linear collider R&D? A: There is still a DOE cap on funds that can be spent on linear collider work. Direct spending remains capped at 2.3M\$. The lab will increase spending in this area if given authorisation. OMB and DOE are amenable to increasing or lifting the cap, but the are waiting for the technology choice and further evidence of international cooperation. This is one issue pacing the international technology choice. Probably too soon to lobby for this in Washington, but next year -- after the technology choice. The lab is still doing what it can to foster international cooperation by doing things 'without money'.

Q: What is the lab's role in the DPF/DNP neutrino study panel? A: The lab is not trying to steer this process but many members of the Fermilab community are among the leaders of it, including Boris Kayser. There is good communication between the DPF study and the laboratory long-range planning process.

Q: URA might not get the contract rolled over to operate Fermilab, does the Director have an opinion? A: This could happen, but Fermilab should not take it personally. There is great pressure in Washington to put all such contracts out to bid. ORNL has changed operators, as has BNL. LANL's contract will be put out to bid for the first time in 50 years. But others are likely to be put out to bid -- if recent trends continue. Decision on whether to compete the contract will be made in 2005 as the current contract is up in 2006. Q: Are there any indications how the new contractors are working out at ORNL and BNL? A: Should hear from BNL or ORNL users as to the differences they have seen. Safe to assume it takes some time to effect major changes of

direction/emphasis.

Linear Collider Programme at FNAL (Steve Holmes)

Fermilab is a member of both NLC and TESLA collaborations putting it in a unique position to compare technologies -- a very hot topic. On the NLC they have been fabricating cavities and doing siting studies. Have been comparing Northern Illinois sites to those in California. TESLA effort is much smaller. Contributed an electron source to TESLA studies in Germany and have a copy of this source on site. Also collaborating with Northern Illinois Consortium for Accelerator Development (NICAD) and developing a collaboration with the Illinois Consortium for Accelerator Research (ICAR). The international community, with Fermilab as a member is moving towards merging the efforts of the two collaborations to one international linear collider collaboration.

Steve showed several slides on the technical progress being made on accelerating cavities and various prototypes that have been mandated by the technology steering and choice committees. The Technical Division is leading the effort in this area on behalf of the Lab -- led by Dave Finley, Shekhar Mishra and Harry Carter.

Have also led studies of siting both warm and cold machines in IL and CA. These have been studied on common sites at each location facilitating apples-to-apples comparisons of the two technologies. All of these are tunneled (cut and cover not sufficiently stable for a warm machine). Representative sites in both Kane and DeKalb counties have been analysed. Tunnel depths range from 100-350 feet depending on the location. They are considering a two tunnel system with klystrons accessible during machine operation in the other tunnel. Establishing a task-force to discuss siting and community concerns.

Efforts at the lab are not commensurate with Fermilab aspirations to host the linear collider. Constrained by budget authorisations from Washington. If those were lifted the Lab would like to find a way to double the effort on the linear collider but that would be difficult given the current budget situation. Spending about 2.5M\$ on identified LC R&D and about the same amount of money on cold RF for projects that are not directly related to the linear collider. Steve commented on the importance of Universities getting involved in accelerator R&D which also raises its profile with the funding agencies.

The US Linear Collider Steering group has commissioned a Warm/Cold option evaluation. A complete draft is now in the possession of the steering group. Arranging to get comments from KEK and DESY before making it public. Gerry Dugan (Cornell) chaired the group that prepared this several hundred page report. Comparing machines with comparable physics capabilities (500 GeV initially, upgradeable to at least 1000 GeV, 500 fb⁻¹ of integrated luminosity in four years, two interaction regions, etc.). A number of parameters in the cold design were adapted to US technology and design criteria -- relative to the TESLA design. Included a study of the reliability of the machine in the presence of reasonable estimates of mean time between failures. Goal was to maintain availability of 75% comparable to the

Tevatron and other colliders. The final report will not quote costs in \$ but give relative costs for a warm and cold machine. The international warm/cold committee has been charged to get a decision by the end of the calendar year but there is pressure to get a decision sooner as this might result in additional funds becoming available in the FY06 budget.

Suggestions for new members for the PAC (Hagopian)

The UEC has been asked by Jeff Appel, head of Fermilab's Program Planning Office, to make suggestions for new members of the Fermilab Physic Advisory Committee (PAC). Sharon reviewed the current composition of the committee and the retiring members (see http://www.fnal.gov/directorate/program_planning/phys_adv_com/PACDates.html). The UEC tried to establish some guidelines for suggesting potential new members. Should probably consider neutrino people, possibly theorists with a background in flavour physics. It will also be important for the PAC to assess the lab's commitment to CMS in the coming years. The goal is to get impartial advice for the lab. She will solicit additional input from the committee and eventually we will vote on names to forward to Appel.

User's Meeting Plans (White)

The meeting dates have been moved back one day to:

June 2nd and 3rd, 2004.

This avoids a conflict with the URA board of overseer's who will meeting June 4th. A proposed agenda was circulated to the full committee following a sub-committee meeting 10 days ago. A budget is being established. We are preparing to send the invitations to the various non-US and non-physicist (ie. funding agency) speakers that have been identified so far.

There was some additional discussion of the scientific part of the programme. Chris will discuss our theme ("Making Connections") with the spokespeople of the various experiments in an effort to sell our vision of this part of the users meeting -- ie. it is not just another physics conference but an opportunity for the various projects at the lab to explain to other users how they see themselves fitting in to the overall lab programme: now and in the future. We need to advertise the thesis award and postdoc awards, solicit nominations, judge the entries and come up with the names of award recipients. (Note added after meeting: For the Tollestrup award see:

<http://www.physics.rutgers.edu/~jconway/Tollestrup-2004.html>)

Preparations for the DC trip (Zimmerman)

The SLAC Users Organisation (SLUO) chair and April Burke joined

us on the phone.

Joint UEC/SLUO meeting on Jan 31st. Will use this meeting to go over our plans for the trip to Washington.

Zimmerman summarised what goes into making the DC trip a success. He gave a brief summary of the budget process. High energy physics is about 700 million dollars in a multi-trillion budget. Not often discussed at the highest level. However the President's budget is seldom more than +/-2% away from what finally comes out of committee. The people responsible for producing the drafts are very approachable and welcome input from users. After the President's budget is established it is passed on to the congressional appropriations committees. Individual senators and congressmen intervene whenever they see political advantage. We time our visit to overlap the discussions of the various appropriations committees.

Eric stressed the importance of following up on congressional visits and the debriefing with the funding agencies -- who don't have access to the process at this stage. He plans to prepare a trip report that can be used to plan subsequent year's visits. We hope to settle on the dates of the DC trip at (or before) the joint UEC/SLUO meeting in two weeks but it will likely be late March.

GSA Planning for New Perspectives (David Clark)

GSA is going to hold their New Perspectives meeting on Friday as the Monday of our users meeting week is Memorial Day. Posters will go up on the Thursday afternoon of the User's meeting and we will have a wine and cheese reception that evening to maximise the exposure of the posters. The GSA plans to try to fit their talks into one day on Friday. Although many collider students are expected to have mature analyses that they could talk about so the GSA will leave the option of an overflow session on Saturday morning.

Next meeting: February 21, 2004