1. The Muon telescope may need upgrade to take TOF and eliminate slow muon.
   Tune Kamee, Gary Godfrey / Elliott Bloom
   Cosmic ray muons will be used in I&T for surveying the LAT, calibrating the calorimeter with the muon minimum ionizing peak, and measuring the timing jitter of the various triggers. Currently, we have a muon telescope with 24x24 paddles which are slightly larger than our 15x15 towers. We also have a 50 cm stack of Pb that can be placed over the bottom scintillator. This stack sits under the LAT when the LAT is in its rotation island. The Pb allows >900 MeV kinetic energy muons to pass between the scintillators and make a trigger. This was used successfully in the testing of EM1. Currently, there is no plan to use this Pb in LAT testing. The TKR subsystem indicates they intend to use thin fiber track residuals and so do not need stiff muons selected by the Pb. The CAL also does not require Pb selected muons for their calibration. Momentum selection could be done with TOF, though it would require a very good TOF resolution. The TOF is (6.657 ns, 6.726 ns, 6.856 ns) for (infinite, 690 MeV, 345 MeV kinetic energy). Thus a 345 MeV muon and a 690 MeV muon have only a 130 ps TOF difference.
   The existing system is sufficient to measure the timing jitter to the required accuracy. As the existing muon telescope satisfies all existing requirements, I&T cannot justify the considerable expenditure (~$20 k) to construct a much better system.
   Closed

2. If VdG is going to be used to test 3-16 towers, it may be wise to buy a free ~500V accelerator.
   Tune Kamee, Gary Godfrey / Elliott Bloom
   Quotes were obtained from HT Engineering for two different accelerators. 1) 1.0 MeV Coastal Singleton (~$592 K, 12 month delivery) and 2) 5 MeV Coastal Singleton (~$623 K, 12 month delivery). The cost of a new machine is very high, and, in any case, the delivery time does not allow sufficient lead time before the machine is needed. Thus the current plan to make the existing VdG into a production machine (see below) is our only possible recourse.
   Closed

3. The Particle test tool VdG needs to be incorporated into the I&T standard processes. Once baseline, the VdG needs to be operated on all I&T workers, verified/calibrated periodically & certified by QA as required.
   Rick Horn, Elliott Bloom
   This process is underway. The VdG operation procedure is in LAT-TD-01805. The Vd photon flux calibration procedure is in LAT-TD-01396. The procedure for simultaneously taking BGO calibration data while LAT data is acquired is LAT-PF-0433. Once finished, the VdG will be operated by executing the operation procedures as called out by the AIDs. QA signature will be required on all these documents. These documents are just at the stage of going out for final approval.
   Closed

4. VdG - UHP - Regarding new radiation levels on VdG, is a database maintained by the Muon telescope physicist (or a CBN representative) who monitors the radiation levels and updates the database? This is to verify that the conditions that cause the data to be taken are appropriate for the data to be used.
   John Weisend, Gary Godfrey
   A new "Operation of Van de Graaff Accelerator Authorization Form. Rev 2" is being signed by SLAC OHP. It includes the max contact and 30 cm radiation rates at which the VdG will be shut off and OHP notified. It also reiterates the weekly inspection requirement. Since the VdG is <10 MeV, OHP classifies the VdG as a "Radiation Generating Device" under Section 365 of the SLAC Radiological Control Manual (www.slac.stanford.edu/manuals/RON.pdf). OHP similarly regulates other Radiation Generating Devices in the Klystom department, BBR, and SSRL Beam Authorization Sheets are only required under Section 364 for devices classified as accelerators.
   Closed

5. Do we need to have GERT required for all people who have crane-lick cab for room 104?
   Elliott Bloom, Gary Godfrey / Larry Wai
   Currently, OHP only requires GERT badging when the Crane Room is a "Radiation Area". Since the VdG is ON such a small fraction (~1%) of the time, OHP has allowed this process. The VdG operation procedure is in LAT-TD-01805 "Van de Graaff Accelerator Safety/Operations Handbook". Gary Godfrey has confirmed with Larry Wai (the IFCT Manager for I&T) that he already maintains a record of these trainings for VG operators. These records are also maintained by SLAC OHP.
   Closed

6. All documents must be released by IRR. Must identify draft due dates, release dates. Must provide weekly status of document release progress.
   Brian Grisl / Elliott Bloom, Gary Godfrey
   Yes, documents are written and in the release/signature process to be completed by IRR. Dates are being tracked by Brian Grisl.
   Closed

7. Coordinate with QA for approval of VdG training program. Get agreement of required training an process for recording training. Coordinate effort with IFC to make sure agreements are consistent with their training records.
   Brian Grisl, Gary Godfrey
   The present VG Training Program is with SLAC OHP. OHP requires 1 Rad Worker I Training, 3 (SLAC Course 270 "Operating a Radiation Generating Device") and 3 Training by the VdG physicist (Gary Godfrey) in the operation of the VdG. This is stated in LAT-TD-01805 "Van de Graaff Accelerator Safety/Operations Handbook". Gary Godfrey has contacted Daren Marsh to bring these trainings into the LAT QA process. Gary Godfrey has confirmed with Larry Wai (the IFCT Manager for I&T) that he already maintains a record of these trainings for VG operators. These records are also maintained by SLAC OHP.
   Closed

8. Address schedule risks due to VdG instability - Minimum 1 day turn around to fix. Mean time to failure ~10 hours. Justification for high rate VdG running.
   MT Alwood, Gary Godfrey / Elliott Bloom
   The VdG logbook contains the VdG on/off times. Using this, the VdG has had a mean run time between failures of 27 hours during the past year. We are actively trying to increase the VdG reliability. Two SLAC physicists, Jim Cimander (Linac source) and Tom Walker (EFD), are working with Gary Godfrey to do this. The root cause of the VdG failures, since the successful EM1 test, has been trying to push the machine to higher than design energies to achieve high rate on the Li target of 17.6 MeV gamma rays. Several accelerator stages in the accelerator column were shorted out in attempting to do this. We are replacing the accelerator column and expect to restore the VdG to its past performance. This accelerator was used routinely for years with no adverse effects to the delivery time does not allow sufficient lead time before the machine is needed. Thus the current plan to make the existing VdG into a production machine (see below) is our only possible recourse.
   Closed

9. Can information such as pulse heights from telescope PMTs be incorporated into data stream? Candidate Data Items: 1) Pulse Height form 2 PMTs to 2 TOF between telescope PMTs.
   MT Alwood, Gary Godfrey / Elliott Bloom
   Information could be incorporated into the LAT data stream with the purchase of two reflective memory modules. A similar approach will be used for the LAT high energy beamtest in 2006. In the current VdG setup there is no info to incorporate, and the modules required to provide this information are not in the budget. Currently, the only required use of the muon telescope for TOF is to provide a stable time for making LAT trigger jitter measurements. For this, every trigger from the telescope does not have to be a muon. Some telescope triggers where no muon passes through the LAT are allowed. The scintillators have been plaetad (they are efficient for muons) so no run time is being wasted. Improvements to this system are not in the budget, and currently are not required.
   Closed