Comments from Editors' Meeting

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Feasibility Study-II Teleconference
October 16, 2000

- **Target**

- **Proton driver**

- **Solenoids**

- **Absorbers**

- **Induction linac**

- **NCRF**

- **SCRF**

- **Acceleration**

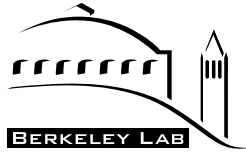- **Storage ring**

- **Detector**

- **General**

- **Check effect of pulse structure on jet target disruption**

    — **is 20 ms spacing okay?**

    — **what jet parameters are needed for 20 ms pulses?**

- **Look at merits of PbSn vs. Hg**

- **Simulate tilted beam and target geometry**

- **Review pion production data to optimize for 24 GeV beam**

    — **compare against alternatives in *E* and *Z***

- **Study beam dump and evaluate downstream neutron flux**

- **Define limit on bunch length**

    — **define scheme to get $\sigma_{...} \leq 3$ ns (bunch rotation?)**

- **Examine possible options for pulse structure**

- **Quantify differences between hollow conductor and Bitter implementations for target solenoid insert**

  — **issues are shielding, radiation resistance, water and electrical connections/disconnects, costs**

  — **quantify implications for SC outsert**

- **Look at alternative insulation for hollow conductor (Al_2O_3, BeO)**

- **Quantify trade-offs between capture solenoid parameters**

  — **1.25 T, r = 30 cm vs. 3 T, r = 20 cm**

- **Assess radiation dose of solenoids with MARS, GEANT**

  — **impact of neutrons, protons from target**

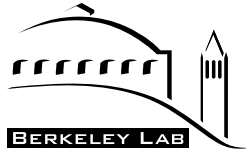 — **impact of opposite-sign pions and muons after minicool absorbers**

Absorbers

- **Define window material and thickness**

- **Define LH$_2$ pressure (1 atm or 2 atm)**

- **Complete an <u>engineering</u> design of window with stress analysis**

Induction Linac

- **Examine trade-offs of making IL-2 unipolar**

  — **mainly a simulation issue**

- **Optimize core costs**

- **Evaluate performance of open-cell cavities for buncher section**

- **Determine what limits foil size to 19 cm radius**

- **Understand properties of Be foils**

  — **porosity, SEY of BeO, thermal conductivity at LN$_2$ temperature**

- **Compare smoothly tapered vs. stepped Be windows**

- **Can we control Be foil prestress? (Must we?)**

- **Reoptimize channel with foil thicknesses compatible with $\Delta T \leq 50°$**

- **Look at thermal issues for grid design**

[Added after the talk]:

- **Evaluate cost and technical trade-offs of operating NCRF cavities at LN$_2$ temperature**

- **Examine trade-offs of 2 ms vs. 3 ms fill time**

  — **implications for power coupler**

  — **determine whether power costs driven by peak or average current**

- **Define operating temperature (4.5 K or 2 K)**

- **Evaluate active tuning for handling microphonics**

- **Revisit acceptance criteria**

- **Investigate scenario with a single RLA (cost optimization)**

- **Look at modulator implications of non-uniform pulse spacing**

- **Look at operational impact of RF module failures**

  — **retuning required when modules taken offline**

- **Explore matching between cooling channel and acceleration section**

  — **transition from solenoid to quadrupole focusing**

- **Determine maximum number of turns (splitter/recombiner limit)**

- **Evaluate alternative designs (dogbone RLA; fixed field)**

- **Consider "skew" lattice**

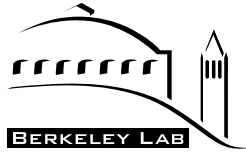- **Evaluate nonlinear effects in selected design**

- **Examine cost and efficiency trade-offs for L = 3000 km and L = 1800 km baselines**

- **Assess alternative placement options for near detector (uphill or downhill)**

- **Consider implications of operating at a higher beam energy in Phase 2**

- **Evaluate impedance of proposed radiation absorber**

- **Evaluate magnetic field quality requirements**

- **Assess temperature margin of SC coils**

- **Look at trade-offs of proposed magnet design vs. standard cosine coils with inner shield**

Detector

- **Evaluate efficacy and cost of upgraded MINOS detector for initial facility**

- **Examine ways to reduce muon low-energy cutoff**

- **Quantify shielding requirements for near detector**

- **Decide how many seconds constitute a year**

  - **Study-I took 2×10^7 s = 1 year**

  - **Snowmass lore (and real world experience) say 1×10^7 s = 1 year**

- **Evaluate whether there are clear reasons why Hg target is not viable**

  - **we lose credibility if we propose system with "fundamental flaw"**

  - **note that having unresolved R&D issues is not the same as having demonstrable flaws**

    …especially if we have a credible backup

  - **suggested approach: convene few-day workshop of experts to answer this question (soon!)**

  - **must define questions for this group and identify participants ASAP**

  - **Study Leaders and Target editor will do this**