

NEXT LINEAR COLLIDER PROJECT

AT FERMILAB

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FNAL/NLC PROJECT

- **Status of NLC Technology**
 - **R&D at Mature Stage. But, A Few Unproven Objectives (e. g., MM, 75-MW klystrons).**
 - **Many Items Ready for Engineering and Procurement Issues.**
 - **Overall Cost Reduction Strategies.**

- **Long-Range Goals**
 - **Build 200-M Long Sub-Unit of the Accelerator Using Final Designs, (MM, Movers, Instrumentation, Controls, etc.).**
 - **Use As Many Industrially-Produced Items as Possible.**
 - **Study Machine Dynamics Issues.**
 - **By End of FY00 Define Goals for the Sub-Unit Accelerator; Demonstrate FNAL Capabilities; and Provide Cost and Manpower Estimates to Build It.**

- **Solidify SLAC-FNAL Collaboration**

- **FY00 Goals**

SLAC/FNAL NLC Collaboration Roadmap For Fall 1999

- August 16-17** **Planning discussions at SLAC. (COMPLETED)**
Identification of early Fermilab roles and responsibilities.
Identification of issues for further discussion.
- September 3** **Release of Fermilab White Paper. (COMPLETED)**
- October 4-6** **Planning Discussions at Fermilab.**
Machine Advisory Committee (MAC) membership
finalized.
Break Out sessions on NLC technology issues.
NLC Collaboration Org./WBS/scheduling/reporting plans.
- November** **NLC Collaboration Meeting at Fermilab**
Collaboration issues and schedules.
SLAC-Fermilab MOU signed.
Organization chart.
Roles and responsibilities.
Draft of revised Project Management Plan.
Schedules - R&D goals.
NLC Model (v.2) Status Reports (Reduced Cost Design)
Technology progress.
Design options.
Cost/Risk.
Configuration control.
Guidelines for site studies.
- January** **NLC Collaboration Meeting at SLAC**
Collaboration issues and progress.
Review Project Management Plan.
NLC Model (v.2) Review presentations
Technology substitutions.
Design choices.
Cost/Risk.
Implementation and schedule.
MAC presentations and discussion.

**On-Going
Visits**

SLAC/FNAL Video Conferences (Weds. 11:00 am) and

FNAL/NLC R&D GOALS FOR FY00

NLC Beamline Components:

- Understand the basic designs for the LINAC beamline components downstream of the klystrons (rf-structures, magnets, movers, etc.).
- Transfer the component technology from SLAC and Japan (codes, drawings, tech notes, etc.).
- Fabricate and/or procure the 1.8-m long X-band rf-structures and test their rf-performance. (A secondary goal would be to power test the rf-structures.)
- Understand the design criteria and the technology for the LINAC quadrupole magnets, controls and movers.
- Take part in cost reduction strategies for the NLC LINAC components (for example, use of Permanent Magnets and A0).

Accelerator Physics Issues:

- Transfer accelerator design technology from SLAC (design codes and reports).
- Take part in the design of LINAC components (rf-structures, movers, etc.) to vet questions regarding LINAC performance.
- Assist in the SLAC/NLC cost reduction efforts by investigating alternative design criteria.
- Investigate alternative electron LINAC designs to compare with NLC (workshops, seminars, brain storming, etc.).

Civil Construction Issues:

- Establish with SLAC a common framework to evaluate NLC civil construction issues and costs.
- Review of the current SLAC/NLC proposal with attention given to cost reduction.
- Generation of a site-specific study for the FNAL site for the NLC (Complete by FY01).

Manpower Estimates for FNAL/NLC Effort for FY00*

Skill Type	Description.	FTE**	Division
Physicist	Project Manager	1	BD
Admin.	Project Systems	0.5	BD
Physicist	Accelerator Issues	2	BD
Physicist/Engineer	Rf Calculations	1.5	BD
Electrical Engineer	Rf Measurements	0.5	BD
Technician	Rf Measurements	0.5	BD
Production Engineer	Rf Fabrication	1.5	TD
Technician	Rf Fabrication	0.5	TD
Mechanical Engineer	Movers, etc.	1	BD
Physicist	Machine Diagnostics/Controls	1	BD/PPD (?)
Physicist	Magnets	0.5	BD/TD
Engineer	Mags.	0.5	BD/TD
Civil Engineer		3	FESS
Physicist	Collimators	1	PPD (?)
Physicist	Tunnel	1	PPD (?)
Physicist	Alternative Ideas/Physics Goals	2	TD/BD/PPD
Totals		18	

*Estimates are based on a total \$3M FY00 budget, with \$0.6M assigned to FESS.

**Averaged over FY.

M&S Estimates for the FNAL/NLC Effort for FY00*

Item	BD Budget (\$k)	TD Budget (\$k)	
Rf-Structure Fabrication (Industry Contracts)		\$300k	
Measuring Devices (CMM, rf-Electrical, etc.)	\$40k	100	
Travel	35	25	
Contingency	100		
Totals	\$175k	\$425k	\$600k

*Based upon a total \$3M FY00 budget, with \$0.6M assigned to FESS.