

Memorandum of Understanding
between
University of South Carolina
and
Fermi National Accelerator Laboratory
for
NOvA Experiment R&D
and Construction Work

July 13, 2009

I. Preamble

This Memorandum of Understanding is made between University of South Carolina (USC) here and the Fermi National Accelerator Laboratory Particle Physics Division (Fermilab). This document represents an understanding between USC and Fermilab in connection with NOvA detector electrical and mechanical engineering and development work. This document does not constitute a legal contractual obligation on the part of either of the parties. It reflects an arrangement that is currently satisfactory to the parties involved.

II. Responsibilities

1. Activities

University of South Carolina will perform software development, construction and testing for the NOvA experiment. This MOU covers work on the NOvA, which includes, but is not limited to, the following tasks:

- (a) Data Acquisition System (DAQ) and Event Monitoring
- (b) Off-line Reconstruction and Monte Carlo
- (c) Event Display
- (d) IPND installation and commissioning
- (e) In situ Flux Measurement and physics sensitivity

2. Personnel

The USC NOvA Group Leader is Sanjib R. Mishra.

3. Deliverables

USC will deliver

- 1. Test software as needed
- 2. Test reports and documentation to be placed on the NOvA docdb

4. Institutional Contribution of Services and Equipment

1) Facilities and Equipment

- a) Lab and workshop areas
- b) Computers
- c) Normal test equipment

2) Operating Costs

University of South Carolina, subject to adequate funding from the DOE (or NSF), will support the normal research operating expenses (such as physicists' salaries, physicist travel expenses, miscellaneous supplies, administrative support, etc.) of the University of South Carolina group working on the NOvA experiment.

5. Fermilab Resources Required

None currently anticipated.

III. Reporting, Costs and Schedule

1. Reporting

University of South Carolina will document and NOvA docdb notes the procedures, analyses and results obtained as this work progresses. Your Institution Name here will provide material for NOvA project monthly reports in a timely fashion, including descriptive material, financial reporting, monthly task status reports and information needed for the NOvA Project's monthly earned value management analysis.

During this period of performance, the NOvA group at University of South Carolina will monitor the costs and progress of this work regularly, with a view to providing ample notice if the cost of the effort is projected to exceed the estimate described in this document or subsequent amendments. If it is determined that additional costs for effort will be required, the Fermilab NOvA Project Manager will evaluate available options and, in consultation with Sanjib R. Mishra and USC, determine the best means of supplying the additional effort.

2. Cost & Progress Reporting

University of South Carolina and Fermilab will jointly develop annual Statements of Work to provide detailed description of the work covered by this MOU, including cost and schedule estimates. University of South Carolina will monitor the progress of this work in order to provide ample notice of projected deviations from the cost and schedule estimates. If it is determined that additional funds will be needed, the Fermilab NOvA Project Manager will evaluate available options and, in consultation with University of South Carolina, determine the best means of supplying the required resources.

3. Schedule

This work will be carried out during the R&D and construction phases of the NOvA experiment.

IV. Other Considerations

1. Safety and Engineering Practices

All detector components will be constructed in conformity with University of South Carolina safety policies and practices, and normal engineering standards. Detector components that will be installed at Fermilab or at Ash River, Minnesota will be constructed in conformity with Fermilab safety policies and practices and engineering standards.

2. Equipment Ownership

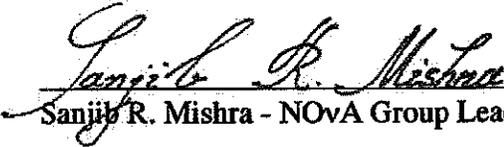
All items purchased or fabricated wholly with funds supplied by Fermilab will remain the property of Fermilab. Such items will be properly identified with Fermilab property tags as required by Fermilab policy. All items purchased with University of South Carolina funds will be tagged as required by University of South Carolina policy.

V. Approval

The following concur in the terms of this Memorandum of Understanding.
These terms will be updated as appropriate in Amendments to this document.



Dr. Chaden Djalali, Physics Department Chair, University of South Carolina



Sanjib R. Mishra - NOvA Group Leader, University of South Carolina



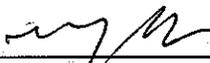
11/30/09

J. Cooper - NOvA Project Manager, Fermilab



12/3/09

M. Lindgren - Acting Head, Fermilab Particle Physics Division



12/3/09

G. Bock - Fermilab Associate Director for Research