



Department of Energy

Office of Science
Chicago Office
9800 South Cass Avenue
Argonne, Illinois 60439

SEP 21 2012

Michael J. Weis, Manager
Fermi Site Office

SUBJECT: NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) DETERMINATION FOR
THE LONG BASELINE NEUTRINO EXPERIMENT (LBNE)

The Fermi National Accelerator Laboratory (Fermilab) submitted the attached Environmental Evaluation Notification Form (EENF) to the Department of Energy (DOE) Fermi Site Office (FSO) for the subject proposed action, which is an experiment to study the nature of neutrinos. The EENF is Fermilab's disclosure of environmental data associated with the LBNE.

The LBNE would use the existing Main Injector Accelerator at Fermilab to produce a pure beam of muon neutrinos. As neutrinos travel through the earth, they oscillate — in other words, the relative proportions of the three types of neutrinos (electron, muon, and tau) change. Scientists hope to better observe and understand this phenomenon through use of “near” and “far” detectors proposed to be constructed respectively at Fermilab and at the Sanford Underground Research Facility (SURF) in Lead, South Dakota.

Newly promulgated DOE NEPA regulations identify a Class of Action for:

Siting, construction or modification, operation, and decommissioning of low- or medium-energy (when the primary beam energy exceeds approximately 100 million electron volts and the average beam power exceeds approximately 250 kilowatts or where the average current exceeds 2.5 milliamperes) particle acceleration facilities, including electron beam acceleration facilities, and associated beamlines, storage rings, colliders, and detectors for research and medical purposes, within or contiguous to a previously disturbed or developed area (where active utilities and currently used roads are readily accessible). (10 CFR 1021 Subpart D, Appendix C.11)

The regulations indicate that an environmental assessment (EA) is normally the appropriate level of NEPA review for this Class of Action. Note the explicit mention of *detectors*, which is new to the DOE NEPA regulations. Preparation of an EA would also be consistent with FSO's experience with similar neutrino experiments, i.e., the Neutrinos at the Main Injector (NuMI) and the NuMI Off-axis ν Appearance (NO ν A) experiments. Therefore, my recommendation is that an EA be prepared on the LBNE.

Based on the information provided in the LBNE EENF, a consensus was reached among DOE staff that the LBNE has the potential to impact human health and the environment, however this is not a certainty. Most notably, the LBNE project could have an effect on wetlands at both Fermilab and SURF and could result in some limited activation of air, soil, and groundwater at Fermilab. Also, SURF is located in an area with a historical and cultural legacy and it is uncertain if potential surface or subsurface disturbance could adversely affect related resources. If the EA establishes that impacts are significant, an Environmental Impact Statement would need to be prepared. Otherwise, DOE could issue a Finding of No Significant Impact and the NEPA process would be complete.



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Per DOE Order 451.1B, Section 5a(8), you have the responsibility and authority to officially determine that preparation of an EA is appropriate. You also have the responsibility, per Section 5a(2) to designate a "Document Manager" to take the lead in managing the EA process for the DOE. You recommended me for that role, with Rick Hersemann providing substantial support, and my management has concurred. Since you are the authority responsible for this determination and designation, your signature on the approval line below is requested.

I will notify the DOE Office of General Counsel, Safety and Health, Office of NEPA Policy and Compliance (GC-54) and the DOE Office of Science, Environment, Safety and Health Division (SC-31.1) of your determination. As required by the DOE NEPA regulations (10 CFR 1021.301(c)), I will also notify the designated State and Tribal NEPA contacts.



Peter R. Siebach
NEPA Compliance Officer

Approve:



Michael J. Weis, Manager
Fermi Site Office

9/21/2012

Date

Enclosure:
LBNE EENF

- cc: P. Oddone, Fermilab, w/o encl.
Y. - K. Kim, Fermilab, w/o encl.
N. Grossman, Fermilab, w/o encl.
R. Walton, Fermilab, w/encl.
J. Strait, Fermilab, w/o encl.
E. McCluskey, Fermilab, w/o encl.
M. Andrews, Fermilab, w/o encl.