MAR 01 2013

Mr. Jack W. Anderson
Chief Operating Officer
Fermilab
P.O. Box 500
Batavia, IL 60510

Dear Mr. Anderson:

SUBJECT: NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) DETERMINATION AT FERMI NATIONAL ACCELERATOR LABORATORY (FERMILAB) – NORTHERN ILLINOIS CENTER FOR ACCELERATOR AND DETECTOR DEVELOPMENT (NICADD) EXTRUSION LINE FACILITY

Reference: Letter, from J. Anderson to M. Weis, dated February 13, 2013, Subject: NEPA Environmental Evaluation Notification Form (EENF) for the NICADD Extrusion Line Facility

I have reviewed the Fermilab EENF for the NICADD Extrusion Line Facility. Based on the information provided in the EENF, I have approved the following categorical exclusion (CX):

Project Name	Approved	CX
NICADD Extrusion Line Facility	2/20/2013	B1.15

I am returning a signed copy of the EENF for your records. No further NEPA review is required. This project falls under categorical exclusions provided in 10 *CFR* 1021, as amended in November 2011.

Sincerely,

Michael J. Weis
Site Manager

Enclosure:
As Stated

cc: P. Oddone, w/o encl.
Y. - K. Kim, w/o encl.
N. Grossman, w/encl.
T. Dykhuis, w/encl.

bc: P. Siebach, CH-STS, w/encl.
M. McKown, CH-OCC, w/o encl.
J. Scott, FSO, w/o encl.
R. Hersemann, FSO, w/encl.

FERMILAB ENVIRONMENTAL EVALUATION NOTIFICATION FORM (EENF) for documenting compliance with the National Environmental Policy Act (NEPA), DOE NEPA Implementing Regulations, and the DOE NEPA Compliance Program of DOE Order 451.1

Project/Activity Title: Fermi National Accelerator Laboratory (FNAL) – Northern Illinois Center for Accelerator and Detector Development (NICADD) Extrusion Line Facility

ES&H Tracking Number: 01103

I hereby verify, via my signature, the accuracy of information in the area of my contribution for this document and that every effort would be made throughout this action to comply with the commitments made in this document and to pursue cost-effective pollution prevention opportunities. Pollution prevention (source reduction and other practices that eliminate or reduce the creation of pollutants) is recognized as a good business practice which would enhance site operations thereby enabling Fermilab to accomplish its mission, achieve environmental compliance, reduce risks to health and the environment, and prevent or minimize future Department of Energy (DOE) legacy wastes.

Fermilab Project Owner: Anna Pla-Dalmau (X3985)
Signature and Date 2/13/2013

Fermilab ES&H Officer: Angela Sands (X3701)
Signature and Date Angela Sands 2/13/13

I. Description of the Proposed Action and Need

Purpose and Need:

The purpose of FNAL-NICADD Extrusion Line Facility is to conduct research, development and preparation of extruded plastic scintillator strips for use in particle detection and identification in nuclear and high energy physics experiments and applications.

The FANL-NICADD Extrusion Line Facility is needed to study and produce extruded plastic scintillator materials that can be used in numerous particle physics applications since the extrusion technique provides a compromise in design flexibility, scintillation quality and low cost that cannot be reached by plastic scintillation materials prepared in any other way.

Proposed Action:

The FNAL-NICADD Extrusion Line Facility would be located in Laboratory 5, which is an existing building in the Village area of Fermilab that uses the water and power supplied to the village. The extrusion line would occupy about 25% of the building and the remaining space is used for storage of raw materials and final products, as well as shipping and receiving of goods. This facility would make extruded plastic scintillator strips of different shapes and lengths with a white reflective coating. It uses commercially available, general purpose polystyrene pellets with 1% scintillation grade dopants (normally, 2,5-diphenyloxazole (PPO) and 1,4-bis(5-phenyloxazol-2-yl)benzene (POPOP)) and 15% titanium dioxide in polystyrene pellets. In the extrusion process, the pellet mixture would be melted in the extruder, pulled through the die and water cooling tanks to yield a plastic scintillator bar with the shape, length and high quality desired.

Alternatives Considered:

The extrusion process was the only technique with the potential to reduce the cost while maintaining high light output of plastic scintillation materials needed to build large detectors for neutrino experiments. Commercial extruded plastic scintillators were not available. The only option was to further investigate this technique at Fermilab in collaboration with NICADD.

Laboratory 5 in the Village was the only building with the appropriate size, infrastructure and availability to accommodate the equipment and carry out the work within the Particle Physics Division.

II. Description of the Affected Environment

These are described in Section III and IV.

III. Potential Environmental Effects (If the answer to the questions below is "yes", provide comments for each checked item and where clarification is necessary.)

A. Sensitive Resources: Would the proposed action result in changes and/or disturbances to any of the following resources?

- ☐ Threatened or endangered species
- ☐ Other protected species
- ☐ Wetland/Floodplains
- ☐ Archaeological or historical resources
- ☐ Non-attainment areas

B. Regulated Substances/Activities: Would the proposed action involve any of the following regulated substances or activities?

- ☐ Clearing or Excavation
- ☐ Demolition or decommissioning
- ☐ Asbestos removal
- ☐ PCBs
- ☒ Chemical use or storage
- ☐ Pesticides
- ☒ Air emissions
- ☐ Liquid effluents
- ☐ Underground storage tanks
- ☒ Hazardous or other regulated waste (including radioactive or mixed)
- ☐ Radioactive exposures or radioactive emissions
- ☐ Radioactivation of soil or groundwater

C. Other Relevant Disclosures: Would the proposed action involve any of the following actions/disclosures?

- ☐ Threatened violation of ES&H permit requirements
- ☐ Siting/construction/major modification of waste recovery or TSD facilities
- ☐ Disturbance of pre-existing contamination
- ☐ New or modified permits
- ☐ Public controversy
- ☐ Action/involvement of another federal agency
- ☐ Public utilities/services
- ☐ Depletion of a non-renewable resource

IV. Comments on checked items in section III.

Chemical Use and Air Emissions

The extrusion line has its own chiller to control the temperature in the extruder and water cooling tanks. It uses a mixture of water and DOWTHERM SR-1 (corrosion-inhibited ethylene glycol). Any waste ethylene glycol/water mixture would be disposed of as special waste, coordinated through the Environment, Health, Safety and Quality Section's (ESH&Q) Hazard Control Technology Team (HCTT).

Personnel air monitoring of the extruder for styrene resulted in mostly lower than detectable limits, and all results were below the Occupational Safety & Health Administration permissible exposure limit of 100 parts per million (ppm) Time Weighted Average and the American Conference of Governmental Industrial Hygienists threshold limit value of 50 ppm TWA.

There is a potential for a small amount of volatiles from polystyrene and its additives to be released. Vents are installed at the die exit. Levels have been checked on several occasions. The Lab 5 extruder meets the 35 Illinois Administrative Code (IAC) Section 201.146 Exemptions from State Permit Requirements, listed under:

cc) Extruders used for the extrusion of metals, minerals, plastics, rubber or wood, excluding:
   1) Extruders used in the manufacture of polymers;
   2) Extruders using foaming agents or release agents that contain volatile organic materials or Class I or II substances subject to the requirements of Title VI of the Clean Air Act; and
   3) Extruders processing scrap material that was produced using foaming agents containing volatile organic materials or Class I or II substances subject to the requirements of Title VI of the Clean Air Act

Hazardous or other Regulated Waste

Scrapped scintillator bars that are generated at the start of any extrusion run, as well as scintillator bars that are out of tolerance, would be collected and sent to a plastics recycling vendor through arrangements made by ES&H/PPD.

A small amount of Hazardous Waste (flammable) would be periodically generated since toluene, methanol, acetone or ethanol would be used in the cleaning step of certain equipment (filters, dies). This activity would not require a permit as it meets the exemption for 'Other Industrial Solvent Cleaning Operations' found at 35 IAC Section 218.187 (Solvent wipe cleaning). Lab emits less than 15 lbs VOM per day from solvent cleaning, therefore exempt.

Solvent waste would be managed through our hazardous waste program – waste pickups/disposal coordinated through the Hazard Control Technology Team.

V. NEPA Recommendation

Fermilab staff have reviewed this proposed action and concluded that the appropriate level of NEPA determination is a Categorical Exclusion. The conclusion is based on the proposed action meeting the description found in DOE's NEPA Implementation Procedures, 10 CFR 1021, Subpart D, Appendix B1.15 - Support buildings which states: "Siting, construction, or modification, and operation of support buildings and support structures (including but not limited to, trailers and prefabricated buildings and modular buildings within or contiguous to an already developed area (where active utilities and currently used roads are readily accessible). Covered support buildings and structures include, but are not limited to, those for office purposes: parking; cafeteria services; education and training; visitor reception; computer and data processing services; health services or recreation activities; routine maintenance activities; security (such as security posts); fire protection; small scale fabrication (such as machine shop activities), assembly, and testing of non-nuclear equipment or components; and similar support purposes, but exclude facilities for nuclear weapons activities and waste storage activities, such as activities covered in B1.10, B1.29, B1.35, B2.6, B6.2, B6.4, B6.5, B6.6, and B6.10 of this appendix."

Fermilab NEPA Program Manager: Teri L. Dykhuis
Signature and Date Teri L. Dykhuis 2/13/13

VI. DOE/FSO NEPA Coordinator Review

Concurrence with the recommendation for determination:

Fermi Site Office (FSO) Manager: Michael J. Weis
Signature and Date 3/1/2013

FSO NEPA Coordinator: Rick Hersemann
Signature and Date 2/20/13

Appendix A