



Department of Energy

Office of Science
Fermi Site Office
Post Office Box 2000
Batavia, Illinois 60510

March 30, 2021

Ms. Amber Kenney
Chief Safety Officer
Fermilab
P.O. Box 500
Batavia, IL 60510

Dear Ms. Kenney:

**SUBJECT: NATIONAL ENVIRONMENTAL POLICY ACT DETERMINATION AT FERMI
NATIONAL ACCELERATOR LABORATORY – TARGET SYSTEM
INTEGRATION BUILDING**

**Reference: Letter, from A. Kenney to R. Hersemann, dated March 23, 2021, Subject:
National Environmental Policy Act Environmental Evaluation Notification Form for
Target System Integration Building**

The Fermi Site Office (FSO) has reviewed the revised National Environmental Policy Act (NEPA) Environmental Evaluation Notification Form (EENF) for the Target System Integration Building. Based on the information provided in the EENF, the following categorical exclusion (CX) is approved:

<u>Project Name</u>	<u>Approved</u>	<u>CX</u>
Target System Integration Building	3/30/2021	B1.15

Enclosed is 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,


Richard K. Verhaagen
Site Manager

Enclosure:
As Stated

cc: N. Lockyer, w/o encl.
K. Gregory, w/o encl.

B. Iverson, w/o encl.
T. Dykhuis, 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 Policy 451.1**

Project/Activity Title: Target System Integration Building (TSIB)
ES&H Tracking Number: 01146

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 Action Owner: Andrew Federowicz (X5205)

Signature and Date

Andrew Federowicz 3/18/21

I. Description of the Proposed Action and Need

Purpose and Need:

The current MI-8 production areas are operating at full capacity and the overall size is not suited to meet the next generation of experimental deliverable that include an accelerated Long Baseline Neutrino Facility (LBNF) schedule. This project would expand the productions areas at MI-8.

Since MI-8 is unable to accommodate the existing target hall facilities needs concurrent with the LBNF schedule, additional high bay space is needed to meet production capacity that is expected to double. Note that LBNF Horn A full scale prototyping would begin spring of 2021, with floor space required for receivables & assembly. Going forward LBNF would require floor space to produce and test three distinct horn designs (plus a spare of each type), positioning modules, strip line block assemblies plus spares, and floor space to accommodate target assembly contributions from the United Kingdom – Science and Technology Facilities Council/Rutherford Appleton Laboratory that require high bay accommodations near the horn production area.

Fermilab currently does not have a dedicated hot cell or post-irradiation examination (PIE) facility for examination of activated materials. A new High Power Targetry (HPT) laboratory is planned to be included in the new Target Systems Integration Building, with the following equipment to cover HPT Research and Development (R&D) program for current and future projects:

- Hot lab area including a hot-cell suite for mechanical and physical property testing of activated materials
- Microscopy lab area capable of accepting activated small samples (including suitable space for existing optical and Nano-indenter microscopes as well as for future instruments such as an atomic force microscope and a scanning electron microscope with electron back-scatter diffraction)
- Remote Handling prototyping and Robotics R&D Lab area
- Cold specimen testing lab area where thermal and mechanical testing can be performed on non-active materials
- Novel material and technology development area

Proposed Action:

This project would include site preparation, connections to adjacent utilities, excavation for building foundations and construction activities performed to complete new high bay facility addition to MI-8. *The project also includes the construction of a High Power Targetry Lab for R&D.*

The location of the project can be found in Section VII.

Alternatives Considered:

Comparable spaces to MI-8 on the Fermilab site have been evaluated to meet the upcoming increased demand. Like MI-8, other large high bays on site such as the Heavy Assembly Building (HAB), D-Zero Assembly Building (D-0) and Industrial Center Building Addition (ICB-A) are running at full capacity and unable to meet the scale of the next generation project components.

If nothing is done, production for LBNF horns would have to take place in an undersized MI-8 footprint. This would have schedule impacts on the LBNF accelerated schedule and delay existing deliverable that are already underway at MI-8.

The 'No Action' alternative would not meet the purpose and need for this proposed activity.

II. Description of the Affected Environment

Specific environmental effects are presented in Section III.

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.

Clearing or Excavation

At this stage of design, the project anticipates approximately 20 belled caissons at an approximate depth of 25 feet each. Final caisson sizes and depths would be determined through soil testing by the Architectural/Engineering Firm and contained in the Final Design Documents.

Excess material would be retained on the Fermilab site and located in active stockpile locations.

Erosion control measures consistent with Fermilab standards would be incorporated in the Final Design documents.

Demolition or decommissioning

Selective demolition at the existing MI-8 facility is anticipated to construct the TSIB building addition. Removed demolition at MI-8 would include small amounts of exterior metal panels, interior partitions, and metal doors.

Chemical use or storage

New HVAC systems would utilize modern refrigerant in accordance with Fermilab policies

Air Emissions

Permanent electrical generators would be installed outside the building addition. Portable electrical generators may be used during construction. There would be no internal combustion engine emissions.

Liquid Effluents

Since this project is expected to impact greater than 1 acre, a Storm Water Pollution Prevention Plan would be developed and a SWPP Permit would be obtained. Modifications to domestic water are anticipated.

Radioactive Exposure or radioactive emissions

During operation of the HPT Lab it is likely that Fermilab employees would be exposed to radiation (not the public). All activities involving radiation hazards would be planned and executed with guidance and oversight from the radiation safety group and in compliance with the Fermilab Radiation Control Manual to keep dose to workers ALARA. If any of the shielding is disturbed for the 8GeV Beamline, the Booster accelerator would not be allowed to run beam. The Facility Engineering and Services Section is currently working with Booster and MI operations and radiation safety to identify and plan for construction activities during scheduled periods of downtime to minimize risk to workers and beam operations.

Collection of process liquids in the hot cells is necessary. It is expected that any liquid spills would be small and cleaned up before reaching any drain system. If there is a large spill, any drainage system should hold the liquid until it can be properly checked for contamination and disposed of according to regulations. Contamination in the Larger Hot Lab area is not expected, but to be safe, the Radiation Safety Department may want to have any floor-drains empty into a separate pit and held there until it can be properly checked for contamination and disposed of according to regulations. FESS would work this out with the Radiation Safety Department as work scope and requirements documents are developed.

Public utilities/services

Modifications to domestic water are anticipated.

V. NEPA Recommendation

Fermilab staff has evaluated the proposed action and believe a Categorical Exclusion is appropriate. It is believed that the proposed action meets the description found in DOE's NEPA Implementation Procedures, 10 CFR 1021, Subpart D, Appendix B1.15 as follows.

B1.15 Support Buildings

Siting, construction or modification, and operation of support buildings and support structures (including, but not limited to, trailers and prefabricated 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 3/24/2021

VI. DOE/Fermi Site Office (FSO) NEPA Review

Based upon my review of information conveyed to me and in my possession concerning the proposed action, as NEPA Compliance Officer (as authorized under DOE Policy 451.1), I have determined that the proposed action fits within the specified class of actions, the other regulatory requirements set forth above are met, and the proposed action is hereby categorically excluded from further NEPA review.

FSO NEPA Compliance Officer: Rick Hersemann

Signature and Date

Rick Hersemann 3/30/2021

VII. Diagrams

