DOE NEPA Tracking Number

U. S. DEPARTMENT OF ENERGY, OFFICE OF SCIENCE
INTEGRATED SUPPORT CENTER—CHICAGO OFFICE

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)
ENVIRONMENTAL EVALUATION NOTIFICATION FORM

To be completed by "Applicant," i.e., organization with responsibilities for a "Federal action" involving application to DOE for a permit, license, exemption or allocation, or other similar actions. For assistance with this Form, refer to "Instructions for Preparing ISC-CH F-560, Environmental Evaluation Notification Form."

Solicitation/Award No. (if applicable): DE-SC0023946

Organization Name: Luna Innovations Incorporated

Proposed Action Title: C56-40.W Optical Fiber Based Distributed Radiation Detection

Total DOE Funding/Total Funding: $199,935.00

I. Project Description: ***(Use explanation pages if additional space is required)***

A. Proposed Project/Action (if applicable, delineate Federally funded/Non-Federally funded portions)

Luna is teaming with Dr. Tom Blue from OSU, who will assist with design, modeling and testing of the gamma thermometer in the Ohio State University Research Reactor (OSURR), a 500 kW Materials Testing Reactor. Luna will fabricate the radiation probes and conduct extensive modeling, temperature testing and calibration of the completed probes. In addition, Luna will provide sensors, electronics, data analysis and on-site personnel support for the testing at OSU. Luna has successfully transitioned fiber optic sensing technology from the laboratory to commercial products, and this innovation would be integrated with our existing product line. It is anticipated that the results could have significant commercial potential in the nuclear reactor sensor market.

B. Would the project proceed without Federal funding? Yes ☐ No ☑

If "yes," use explanation page.

II. Description of Affected Environment: ***(Use explanation pages if additional space is required)***

Luna and The Ohio State University (OSU) propose to combine their expertise to develop an innovative Optical Fiber Based Distributed Radiation Sensor based on a Gamma Thermometer. Installing a permanent system of sensors for LPRM calibration that do not degrade over time would eliminate the risk of releasing radioactive material caused by inserting and removing the TIPs and would also increase the safety and speed of the calibration process while reducing the cost and complexity of the process.

III. Preliminary Questions:

		Yes	No
A.	Is the DOE-funded work routinely administrative or *entirely* advisory or a "paper study?"	☐	☑

If "Yes", ensure that the description in Section I reflects this and go directly to Section V.

B. Is there any potential whatsoever for: (***Provide an explanation for each "Yes" response***)

1.	Work to be performed outdoors?	☐	☑
2.	Major modification of a building interior?	☐	☑
3.	Threat of violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health?	☐	☑
4.	Siting, construction or major expansion of waste treatment, storage, or disposal facilities?	☐	☑
5.	Disturbance to hazardous substances, pollutants, or contaminants preexisting in the environment?	☐	☑
6.	The presence of any environmentally-sensitive resources?	☐	☑
7.	Any potential whatsoever for high consequence impacts to human health or the environment?	☑	☐
8.	The work being connected to another existing/proposed activity that could potentially create a significant impact?	☐	☑
9.	Nearby past, present, and/or reasonably foreseeable future actions such that collectively significant impacts could result?	☐	☑
10.	Scientific or public controversy, uncertainty over potential impacts, or conflicts regarding resource usage?	☐	☑

If "No" to ALL Section III.B. questions, go directly to Section V.

IV. Potential Environmental Effects: (***Provide an explanation for each "Yes" response***)

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

		Yes	No
1.	Threatened/Endangered Species and/or Critical Habitats	☐	☑
2.	Other Protected Species (e.g., Burros, Migratory Birds, Pollinators)	☐	☑
3.	Sensitive Environments (e.g., Tundra/Coral Reefs/Rain Forests)	☐	☑
4.	Cultural or Historic Resources	☐	☑
5.	Important Farmland	☐	☑
6.	Non-Attainment Areas for Ambient Air Quality Standards	☐	☑
7.	Class I Air Quality Control Region	☐	☑
8.	Special Sources of Groundwater (e.g. Sole Source Aquifer)	☐	☑
9.	Navigable Air Space	☐	☑
10.	Coastal Zones	☐	☑
11.	Areas with Special National Designation (e.g. National Forests, Parks, Trails)	☐	☑
12.	Floodplains and/or Wetlands	☐	☑

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

13.	Natural Resource Damage Assessments	☐	☑
14.	Invasive Species or Exotic Organisms	☐	☑
15.	Noxious Weeds	☐	☑
16.	Clearing or Excavation greater than one acre or Removal of Trees Governed by Local Requirement	☐	☑
17.	Dredge or Fill (under Clean Water Act, Section 404, greater than one acre)	☐	☑

B. Regulated Substances/Activities: Would the proposed action involve any of the following regulated Items or activities? (*continued*)

		Yes	No
18.	Noise (in excess of regulations)	☐	☑
19.	Asbestos Removal	☐	☑
20.	Polychlorinated biphenyls (PCBs)	☐	☑
21.	Import, Manufacture, or Processing of Toxic Substances	☐	☑
22.	Chemical Storage/Use	☐	☑
23.	Pesticide Use	☐	☑
24.	Hazardous, Toxic, or Criteria Pollutant Air Emissions	☐	☑
25.	Liquid Effluents	☐	☑
26.	Spill Prevention/Surface Water Protection	☐	☑
27.	Underground Injection	☐	☑
28.	Hazardous Waste	☐	☑
29.	Underground Storage Tanks	☐	☑
30.	Radioactive or Radioactive Mixed Waste	☑	☐
31.	Radiation Exposure	☑	☐
32.	Nanoscale Materials	☐	☑
33.	Genetically Engineered Microorganisms/Plants or Synthetic Biology	☐	☑
34.	Ozone Depleting Substances	☐	☑
35.	Greenhouse Gas Generation/Sustainability	☐	☑
36.	Off-Road Vehicles	☐	☑
37.	Biosafety Level 3-4 Laboratory	☐	☑
38.	Research on Human Subjects or other Vertebrate Animals	☐	☑
39.	Facility footprint exceeds 5,000 Square Feet	☐	☑

C. Other Relevant Information: Would the proposed action involve the following?

		Yes	No
40.	Disproportionate Nearby Presence of Minority and/or Low Income Populations	☐	☑
41.	Existing, Modified, or New Federal/State Permits	☑	☐
42.	Involvement of Another Federal Agency (e.g. license/permit, funding, approval)	☐	☑
43.	Action in a State with NEPA-type law	☐	☑
44.	Expansion of Public Utilities/Services	☐	☑
45.	Depletion of a Non-Renewable Resources	☐	☑
46.	Subject to an Existing Institutional Work Planning and Control Process	☐	☑
47.	Other Pertinent Information Which Could Impact Human Health or the Environment	☐	☑

V. Applicant certification that to the best of their knowledge all information provided on this form is accurate:

Does this disclosure contain: classified, sensitive business, or other exempt information that DOE would not be obligated to disclose pursuant to the Freedom of Information Act. Yes ☐ No ☑

A. Organization Official (Name and Title): Matt Moore/ Manager, Contracts & Compliance

Signature: Matthew E. Moore Date: 8/2/2023

e-mail: moorem@lunainc.com Phone: 540-961-6729

B. Optional Secondary Approval (Name and Title): _____

Signature: _____ Date: _____

e-mail: _____ Phone: _____

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Remainder to be completed by DOE

VI. DOE Concurrence/Recommendation/Determination:

A. DOE Project Director/Program Manager or Contract/Grant Management Specialist:

	Yes	No
Has the Applicant completed this Form correctly?	☒	☐
Does an existing generic categorical exclusion apply?	☒	☐

If yes, indicate: ***CX signed by the NEPA Compliance Officer is filed in ACQ-SD***

Name and Title: ***Julian Leal, Contract Specialist***

Signature: Julian Leal Digitally signed by Julian Leal Date: 2023.08.03 15:02:56 -05'00' Date: ***08/03/2023***

B. DOE NEPA Team Review (if requested):

	Yes	No
Is the class of action identified in the DOE NEPA Regulations (Appendices A-D to Subpart D (10 CFR § 1021))?	☒	☐

If yes, specify the class(es) of action: B3.6

Name and Title: Environmental Engineer

Signature: Jayashree Jayaraj Digitally signed by Jayashree Jayaraj Date: 2023.08.04 16:41:22 -05'00' Date:

C. DOE Counsel (if requested):

Name and Title:

Signature: Date:

D. DOE NEPA Compliance Officer:

The preceding pages are a record of documentation required under DOE Final NEPA Regulation. 10 CFR § 1021.410.

☒ Action may be categorically excluded from further NEPA review. I have determined that the proposed action meets the requirements for Categorical Exclusion referenced above.

☐ Action requires approval by Head of the Field Organization. Recommend preparation of an Environmental Assessment.

☐ Action requires approval by Head of the Field Organization or a Secretarial Officer. Recommend preparation of an Environmental Impact Statement.

Comments/limitations if any:

Actions are limited to those bounded by the award scope AND covered by the OHIO STATE UNIVERSITY RESEARCH REACTOR ENVIRONMENTAL ASSESSMENT REGARDING RENEWAL OF FACILITY LICENSE NO. R-75 (TAC NO. MA7724) and the License itself.

NEPA Compliance Officer:

Name:

Signature: PETER SIEBACH Digitally signed by PETER SIEBACH Date: 2023.08.14 16:09:48 -05'00' Date:

Optional Additional Narrative: (add additional detail to description to Sections I and II or explanations to responses in Sections III and IV.

For those experiments that monitor radiation in the reactor, Cr-51 will be generated in the nichrome thermocouples. These will be allowed to decay in OSURR's holding pool, and properly disposed of by OSURR. OSU will handle all radiation work, including reactor operation, sensor installation and removal and waste disposal. The low level waste will be disposed of via OSURR's disposal procedures in accordance with the OSURR's NRC License and the OSURR ALARA program.
Current license /permit associated ith the project: The Ohio State University Research Reactor (OSURR) is owned and operated by OSU, a non-profit educational institution, and is licensed by the US Nuclear Regulatory Commission. Its current license, issued in June 2008, authorizes steady-state 500kW operation for 20 years. All work being performed and material disposal is covered by OSURR's License.