

PMC-ND

(1.08.09.13)

**U.S. DEPARTMENT OF ENERGY  
OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY  
NEPA DETERMINATION**

**RECIPIENT:** Missouri University of Science and Technology**STATE:** MO

**PROJECT TITLE:** Novel High Resolution High Temperature In-Line Sensors for Steel Manufacturing, 1980-1675

<b>Funding Opportunity Announcement Number</b>	<b>Procurement Instrument Number</b>	<b>NEPA Control Number</b>	<b>CID Number</b>
DE-FOA-0001980	DE-EE0009119	GFO-0009119-001	G09119

**Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Policy 451.1), I have made the following determination:**

**CX, EA, EIS APPENDIX AND NUMBER:**

Description:

**A9 Information gathering, analysis, and dissemination** Information gathering (including, but not limited to, literature surveys, inventories, site visits, and audits), data analysis (including, but not limited to, computer modeling), document preparation (including, but not limited to, conceptual design, feasibility studies, and analytical energy supply and demand studies), and information dissemination (including, but not limited to, document publication and distribution, and classroom training and informational programs), but not including site characterization or environmental monitoring. (See also B3.1 of appendix B to this subpart.)

**B3.6 Small-scale research and development, laboratory operations, and pilot projects** Siting, construction, modification, operation, and decommissioning of facilities for smallscale research and development projects; conventional laboratory operations (such as preparation of chemical standards and sample analysis); and small-scale pilot projects (generally less than 2 years) frequently conducted to verify a concept before demonstration actions, provided that construction or modification would be within or contiguous to a previously disturbed or developed area (where active utilities and currently used roads are readily accessible). Not included in this category are demonstration actions, meaning actions that are undertaken at a scale to show whether a technology would be viable on a larger scale and suitable for commercial deployment.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide funding to Missouri University of Science and Technology to develop a prototype fiber optic based sensor that can function directly in the extreme conditions of the steelmaking production environment. This device would sense temperature and chemistry changes in the steelmaking process to aid in the improved safety, energy efficiency, production, quality, and yield of steelmaking plants. The project would be completed over 3 Budget Periods (BPs), with a Go/No-Go Decision Point in between each BP. This NEPA Determination will be applicable to all three BPs.

In this bench scale project, approximately 100 optical fiber sensors would be fabricated out of silica or alumina and made to fit on the furnace of a steel-making plant. In BP 1, the sensors would be developed and evaluated under simulated steel-making conditions using test facilities at the university's laboratory. Specific activities for this BP would include design, specimen fabrication, and laboratory testing. In BP 2, fiber optic sensors would be tested in a production environment. Specific activities would include specimen fabrication, thermal and chemical testing, and data collection and analysis. BP 3 would assess the impact of sensors on the steel production process. Specific activities would include data collection and analysis.

Missouri University of Science and Technology in Rolla, MO would oversee the project and perform stakeholder outreach. Design, fabrication, and testing would be conducted in three different university laboratory facilities. SSAB America is a project partner. SSAB staff in the Muscatine, IA office would be providing advising support. Plant trials would occur in one of SSAB's industrial steelmaking facilities, either in Alabama or Iowa. Additional project partners are Algoma and Stelco. Both are located in Ontario, Canada and would serve as advisors. No project work would occur at either facility.

There would be no change in the use, mission, or operation of existing facilities as part of this project. No additional permits would be required in order to conduct any of the work activities. Fiber optic sensors would be attached to an existing industrial steel production facility with no modifications or ground disturbing activities taking place. After completion of the project, sensor systems would be removed from the plant site.

Project activities would involve the use of chemicals and work in high temperature environments with heavy machinery. Missouri University of Science and Technology and SSAB would follow all applicable environmental, health, and safety regulations. University labs are equipped with necessary personal protective equipment. Students

are required to attend safety training prior to working in the labs. Standard operating procedures and material safety data sheets are employed in all labs. Safety and environmental audits are performed routinely. SSAB is a purpose-built production site where personnel are trained in plant operations and safety.

**NEPA PROVISION**

DOE has made a final NEPA determination.

Notes:

Advanced Manufacturing Office

This NEPA determination does not require a tailored NEPA provision.

Review completed by Shaina Aguilar on 7/14/20.

**FOR CATEGORICAL EXCLUSION DETERMINATIONS**

The proposed action (or the part of the proposal defined in the Rationale above) fits within a class of actions that is listed in Appendix A or B to 10 CFR Part 1021, Subpart D. To fit within the classes of actions listed in 10 CFR Part 1021, Subpart D, Appendix B, a proposal must be one that would not: (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, or similar requirements of DOE or Executive Orders; (2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities (including incinerators), but the proposal may include categorically excluded waste storage, disposal, recovery, or treatment actions or facilities; (3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that preexist in the environment such that there would be uncontrolled or unpermitted releases; (4) have the potential to cause significant impacts on environmentally sensitive resources, including, but not limited to, those listed in paragraph B(4) of 10 CFR Part 1021, Subpart D, Appendix B; (5) involve genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species, unless the proposed activity would be contained or confined in a manner designed and operated to prevent unauthorized release into the environment and conducted in accordance with applicable requirements, such as those listed in paragraph B(5) of 10 CFR Part 1021, Subpart D, Appendix B.

There are no extraordinary circumstances related to the proposed action that may affect the significance of the environmental effects of the proposal.

The proposed action has not been segmented to meet the definition of a categorical exclusion. This proposal is not connected to other actions with potentially significant impacts (40 CFR 1508.25(a)(1)), is not related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1508.27(b)(7)), and is not precluded by 40 CFR 1506.1 or 10 CFR 1021.211 concerning limitations on actions during preparation of an environmental impact statement.

The proposed action is categorically excluded from further NEPA review.

**SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.**

NEPA Compliance Officer Signature:



Casey Strickland

NEPA Compliance Officer

Date:

7/15/2020

**FIELD OFFICE MANAGER DETERMINATION**

- Field Office Manager review not required
- Field Office Manager review required

**BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :**

Field Office Manager's Signature:

Field Office Manager

Date: