

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** University of Florida**STATE:** FL

**PROJECT TITLE:** Development of High Energy Density Thermomagnetic Processing Technology for Intensification of Industrial Heat-treatment and Increased Material Performance

<b>Funding Opportunity Announcement Number</b>	<b>Procurement Instrument Number</b>	<b>NEPA Control Number</b>	<b>CID Number</b>
DE-FOA-0001980	DE-EE0009131	GFO-0009131-001	G09131

**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 University of Florida (UF) to develop a novel system for the heat treatment of ferrous alloys. The Induction-coupled Thermomagnetic Processing (ITMP) system would utilize high magnetic fields when processing ferrous alloy materials. For this project, a pilot version of the ITMP would be developed, fabricated, and tested.

Proposed project activities would consist of material synthesis (e.g. ferrous alloy samples), material characterization, data collection, design work, computer modeling/simulations, component fabrication, ITMP assembly, and performance testing. All project activities would be coordinated by UF. Prototype ITMP fabrication/testing, material synthesis, material characterization, and computer modeling would occur at UF's campus in Gainesville, FL. Eck Industries would perform casting and testing at its facility in Manitowoc, WI. Materials testing would be performed by project partners Oak Ridge National Laboratory (ORNL) and Virginia Polytechnic Institute and State University (Virginia Tech) at their campuses in Oak Ridge, TN and Blacksburg, VA, respectively. American Magnetics Inc. (Oak Ridge, TN) would fabricate custom parts for the ITMP system. Ajax TOCCO (Ontario, CA) and Eaton Corporation (Beachwood, OH) would both supply materials and provide design input. Computer modeling and data analysis would be performed by project partners University of Illinois, Urbana-Champaign (UIUC) and DANTE Solutions at their office spaces in Champaign, IL and Cleveland, OH, respectively. All project work would occur in existing, purpose-built laboratory and manufacturing facilities.

The pilot ITMP would be assembled and installed indoors at the Nuclear Sciences Building at UF's campus in Gainesville. Installation would require modifications to the safety, electrical, and plumbing systems, as well as construction of a mezzanine to support the ITMP system. An existing crane system would also be refurbished, but would not require any additional building modifications. Once assembled, the pilot ITMP would consist of several pieces of equipment, including a superconducting magnet system, a 40 kW induction power supply, a condensing unit, instrumentation, and various pieces of ancillary equipment (e.g. piping, tubes, etc.). The unit would be fully assembled within a dedicated laboratory space and would fit within the installed mezzanine. The mezzanine and all ITMP equipment would have an approximate footprint of 11' 5" height x 15' 2" width x 15' 4" depth.

UF has a Programmatic Memorandum of Agreement in place with the Florida Division of Historical Resources (FDHR) which details guidelines for performing maintenance, construction, and development activities in buildings and historic districts listed with the National Register of Historic Places (NRHP). The Nuclear Sciences Building is not currently

listed with the NRHP, nor is it located within a historic district. However, given the age of the building, it has the potential for listing in the future. Though construction activities will not be fully defined until the project has commenced, all construction will be performed in compliance with polices and guidelines established by UF's Preservation of Historic Buildings & Sites Committee.

Project work would involve the use and handling of metals, gases, industrial solvents, and equipment producing strong magnetic fields. All such handling would occur in controlled, laboratory settings. Potential risks associated with the performance of project activities would be mitigated through adherence to established health and safety policies and procedures. Protocols would include employee training and use of personal protective equipment. Magnetic processing would be performed by trained personnel in dedicated laboratory spaces with controlled access. All chemicals would be labeled properly and housed in containers with a secondary containment system to prevent spillage or breakage. Containers would be stored in appropriate storage cabinets. UF and its project partners would observe all applicable Federal, state, and local health, safety, and environmental regulations.

Any work proposed to be conducted at a federal facility may be subject to additional NEPA review by the cognizant federal official and must meet the applicable health and safety requirements of the facility.

## NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

Advanced Manufacturing Office

This NEPA determination does not require a tailored NEPA Provision.

NEPA review completed by Jonathan Hartman, 08/11/2020

## 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

Date: 8/11/2020

NEPA Compliance Officer

## 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: \_\_\_\_\_