

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** Powdermet Inc**STATE:** OH

PROJECT TITLE: High-Toughness Cermets for Molten Salt Pumps

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001697	DE-EE0008383	GFO-008383-002	GO8383

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.)

A11 Technical advice and assistance to organizations Technical advice and planning assistance to international, national, state, and local organizations.

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 federal funding to Powdermet, Inc. to redesign and fabricate a corrosion resistant salt pump incorporating novel, ultra-high toughness metal matrix ceramic nanocomposite material ("Cermet") that is resistant to the salts utilized in next-generation Concentrated Solar Power (CSP) system technologies.

The project consists of two Budget Periods (BP). A previous NEPA Determination for this award (GFO-0008383-001; CXs A9, A11, B3.6; 08/28/18) reviewed all activities associated with BP1 only. GFO-0008383-001 conditioned BP2 on further NEPA review because adequate information was not available to complete a meaningful review of BP2 tasks and subtasks involving test loop validation. At that time, the project had not yet identified an existing loop facility at which to validate the pump developed during BP1. Since then, however, the Recipient has proposed assembling a small-scale molten chloride salt test loop at the University of Wisconsin (UW) rather than utilizing an existing research center to accomplish validation objectives. This NEPA Determination is to review all activities associated with BP2, as modified.

In addition to the recently defined acquisition, installation, and operation of laboratory test loop equipment at UW for the purposes of project validation, other activities associated with BP2 would include furtherance of BP1: data collection, analysis, and dissemination; stakeholder outreach; computer modeling; design and engineering, and; laboratory-scale fabrication and testing of pump components. With the exception of the work to be performed at UW, the nature and scope of remaining project activities would not meaningfully differ from those completed during BP1, and this work would still occur within facilities previously reviewed under the existing NEPA Determination. No new

environmental impacts have been identified that would result from implementation of the respective BP2 activities at Powdermet and subrecipient Sulzer Pump.

The assembled test loop would occupy approximately 10 feet (ft) x 10 ft of space in a leading UW laboratory dedicated to the type of materials and components research being proposed. No physical modifications to existing university facilities would be required to accommodate the new equipment, and all necessary permits and authorizations are in place to allow project work. Proposed activities would not result in any changes to laboratory use, mission, or general operating procedures. All work would be conducted by trained personnel with experience following established high temperature testing procedures in accordance with established environmental and worker safety policies; no new safeguards would be required.

The primary materials that would be used for testing activities at UW would consist of approximately 850 kilograms (kg) of various salt compounds. Minor amounts of inert and/or potentially hazardous gases produced during the salt purification and testing processes would be trapped within a controlled environment and released through existing in-lab systems, which are subject to state regulations and properly monitored to ensure compliance. The test loop would also generate non-gaseous waste materials containing spent salts and some traces of the metals used for purification. Test loop waste along with standard quantities of other non-hazardous laboratory consumables would be recycled if possible, or disposed of in accordance with appropriate university-managed waste programs. No expansion of existing waste services or special treatment actions would be necessary given the consistency of proposed work with past and ongoing facility operations. Upon conclusion of BP2, equipment purchased and fabricated by the project would either be properly decommissioned or retained at UW to provide future industry test services.

NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

Solar Energy Technologies Office

This NEPA determination does not require a tailored NEPA Provision.

NEPA review completed by Whitney Doss Donoghue, 9/30/2019

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: _____

 Electronically Signed By: **Kristin Kerwin**

NEPA Compliance Officer

Date: 10/1/2019

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: _____