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

RECIPIENT: IntraMicron Inc. for Task 10.6 **STATE:** AL

PROJECT TITLE: Modular Catalytic Desulfurization Units for Sour Gas Sweetening

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001578	DE-EE0007888	GFO-0007888-Task 10.6	GO7888

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Order 451.1A), 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.)
B3.11 Outdoor tests and experiments on materials and equipment components	Outdoor tests and experiments for the development, quality assurance, or reliability of materials and equipment (including, but not limited to, weapon system components) under controlled conditions. Covered actions include, but are not limited to, burn tests (such as tests of electric cable fire resistance or the combustion characteristics of fuels), impact tests (such as pneumatic ejector tests using earthen embankments or concrete slabs designated and routinely used for that purpose), or drop, puncture, water-immersion, or thermal tests. Covered actions would not involve source, special nuclear, or byproduct materials, except encapsulated sources manufactured to applicable standards that contain source, special nuclear, or byproduct materials may be used for nondestructive actions such as detector/sensor development and testing and first responder field training.
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 the American Institute of Chemical Engineers for the Rapid Advancement in Process Intensification Deployment (RAPID) Institute. RAPID is a consortium established under a Cooperative Agreement with the DOE and with participation from sub-recipients of the award, large and small private companies, universities, as well as national laboratories, and non-governmental organizations. RAPID's focus is on research, development and demonstration of high-impact modular chemical process intensification solutions for U.S. Manufacturing. This project has five budget periods but only project activities within budget periods 1 and 2 (BP1 and BP2) have been defined and have NEPA determinations (GFO-0007888-BP1; 3/16/2017 and GFO-0007888-BP2; 12/12/2017). A NEPA determination was also completed (GFO-0007888-BP2-OSU; 5/21/2018) for activities occurring at the Advanced Technology and Manufacturing Institute (ATAMI) facility in Corvallis, Oregon and other Oregon State University (OSU) laboratories. This NEPA determination is specific to Task 10.6 activities as part of an effort by IntraMicron, Inc. and their partners, to conduct catalytic desulfurization experiments and analysis with sour gas resources.

IntraMicron proposes to manufacture an oxidative sulfur removal (OSR) catalyst at their manufacturing facilities in Auburn, AL. IntraMicron would then conduct experiments and evaluate the OSR performance at the IntraMicron laboratory also in Auburn, Alabama. The project would generate effluent waste from lab experiments and catalyst

preparation. IntraMicron has an acid waste treatment and effluent disposal permit from the Alabama Department of Environmental Management. This waste treatment process also includes a special permit for nonhazardous waste through Waste Management. All treated liquid waste would be discharged to the sewer and would have a contaminant concentration below the maximum allowable contaminant concentration. The catalyst preparation would be operated in an isolated ventilation system due to silica particulate with appropriate air filtration, and all employees would be properly trained, equipped with appropriate personal protective equipment, and follow all applicable safety and environmental regulations. No new or modified permits would be necessary.

Oregon State University, at the ATAMI facility would develop cost models for direct near-term and long-term strategies for producing microfiber components. The project would involve the use, processing and handling of non-hazardous materials, such as tubes and sheet materials. These activities would generate small amounts of waste that would be disposed of in partnership with OSU who currently picks up and disposes of waste at the facility. No new or modified permits would be necessary.

Auburn University (AU) proposes to complete data modeling and analysis, process simulation/optimization studies, and document preparation at the Department of Chemical Engineering at AU in Auburn, AL. All activities would be limited to analytical activities.

Once the initial analysis and experiments are completed, the OSR catalyst would be installed at a functioning well at an existing industrial natural gas production facility in Dimmit County, near Cotula, Texas. The catalyst would be attached to piped loop on the downstream side of the compressor, diverting a portion of the continuous well production gas stream to the existing production flowline, and into the plant. Produced well gas would be analyzed and monitored on the inlet side for comparison to the processed gas on the outlet side of the plant, where the gas would also be analyzed and monitored. The gas would be taken from the outlet of the compressor, hydrogen sulfide (H2S) would be introduced, and then the gas would treated to remove the H2S, and returned to the inlet of the compressor. SourGas would be leading and coordinating all the on-site test activities.

Additionally, IntraMicron and SourGas would collect and analyze data at the well site, and Zeton would provide primarily remote engineering assistance. The control room and analytical facilities for the equipment at the well site would be located in a single-wide trailer (approximately 10 feet x 30 feet) that would be placed on an existing well pad. The trailer is a self-contained unit that contains all of the necessary utilities for it to operate: water, sewer, and electricity from a generator. No ground disturbance would be required to place the trailer. No new permits would be required. While this project is in operation, the trailer would be staffed with personnel 24 hours a day, 7 days a week, for roughly 6 months. The trailer would be removed at the end of the 6 month testing period. Activities at the well site would involve the use and handling of various hazardous materials, such as toxic gases (gases containing hydrogen sulfide or sulfur dioxide), combustible gases (hydrogen, methane, including waste water from industry process), and various solid catalyst and sorbents such as zinc oxide and silica particles. Existing corporate health and safety policies and procedures would be followed, including employee training, proper protective equipment, engineering controls, monitoring, and internal assessments. All hazardous materials would be managed in accordance with federal, state, and local environmental regulations. No new or modified permits would be required.

Based on the review of the proposal, DOE has determined the proposal fits within the class of action(s) and the integral elements of Appendix B to Subpart D of 10 CFR 1021 outlined in the DOE categorical exclusion(s) selected above. DOE has also determined that: (1) there are no extraordinary circumstances (as defined by 10 CFR 1021.410 (2)) related to the proposal that may affect the significance of the environmental effects of the proposal; (2) the proposal has not been segmented to meet the definition of a categorical exclusion; and (3) the proposal is not connected to other actions with potentially significant impacts, related to other proposals with cumulatively significant actions, or an improper interim action. This proposal is categorically excluded from further NEPA review.

NEPA PROVISION

DOE has made a conditional NEPA determination for this award, and funding for certain tasks under this award is contingent upon the final NEPA determination.

Insert the following language in the award:

You are restricted from taking any action using federal funds, which would have an adverse affect on the environment or limit the choice of reasonable alternatives prior to DOE/NNSA providing either a NEPA clearance or a final NEPA decision regarding the project.

Prohibited actions include:
Budget Periods 3 through 5

This restriction does not preclude you from:
Budget Period 1 and Budget Period 2 and Task 10.6 in all budget periods
If you move forward with activities that are not authorized for federal funding by the DOE Contracting Officer in advance of the final NEPA decision, you are doing so at risk of not receiving federal funding and such costs may not be recognized as allowable cost share.

Note to Specialist :

This NEPA Determination requires a tailored NEPA provision.
Advanced Manufacturing Office
Diana Heyder 07/30/18

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Electronically Signed By: Casey Strickland Date: 7/30/2018
NEPA Compliance Officer

FIELD OFFICE MANAGER DETERMINATION

☐ Field Office Manager review required

NCO REQUESTS THE FIELD OFFICE MANAGER REVIEW FOR THE FOLLOWING REASON:

☐ Proposed action fits within a categorical exclusion but involves a high profile or controversial issue that warrants Field Office Manager's attention.
☐ Proposed action falls within an EA or EIS category and therefore requires Field Office Manager's review and determination.

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

Field Office Manager's Signature: _____ Date: _____
Field Office Manager