PMC-EF2a

(2.04.02)

U.S. DEPARTMENT OF ENERGY
EERE PROJECT MANAGEMENT CENTER
NEPA DETERMINATION

RECIPIENT: Lyondell Chemical Company **STATE:** TX

PROJECT TITLE : Catalyst-Assisted Manufacture of Olefins from Natural Gas Liquids: Prototype Development and Full-

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0560-2131	DE-EE0005754	GFO-0005754-001	GO5754

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.)
B3.6 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.

Rational for determination:

The Department of Energy (DOE) is proposing to provide federal funding to Lyondell Chemical Company (Lyondell) to develop and demonstrate an energy efficient catalyst-coated furnace. Work would be performed at the following existing laboratory facilities:

Lyondell Chemical, 3801 West Chester Pike, Newton Square, PA
Lyondell Chemical, Houston Technical Center, 8450 Sheldon Road, Houston, TX
BASF Qtech, (BASF) 25 Middlesex/Essex Turnpike, Iselin, NJ
Quantiam Technologies, Inc. (Quantiam), Edmonton Research Park, Edmonton, Alberta, Canada

The following activities would be funded:

- Catalyst Coating Development for Energy and Emissions Reductions. (Quantiam)
- Base Alloy Metallurgy Optimization/Enhancement. (Lyondell)
- Tuning of manufacturing, application, and bonding processes for Generation 2 coatings. (Quantiam and BASF)
- Test catalyst coatings. (Lyondell)
- Project Management and Reporting (Lyondell, Quantiam, BASF)
- Manufacture of coated furnace coils. (Quantiam and BASF)
- Installation of prototype coated coils. (Quantiam and BASF)
- Full Scale testing of prototype in commercial cracker (Project Furnace) & Operational Process optimization with catalyst-coated coils. (Lyondell)
- Pre-firing Activities/Steam System Filling. (Lyondell)
- Firebox Purging/Pilot and Burner Gas Header Pressure Testing. (Lyondell)
- Controls and systems preparation. (Lyondell)
- Establishing the Dilution steam, purge steam and lighting burners. (Lyondell)
- Bring the furnace on line. (Lyondell)
- Furnace System and Flow Control Optimization. (Lyondell)

An R&D laboratory questionnaire addressing laboratory safety protocols, risk management, chemical handling and waste disposal was completed for each location.

According to the completed Lyondell R&D laboratory questionnaire, both Lyondell laboratories have applicable permits in place to conduct research on site (including air permits); at the Texas facility, air contaminants levels are anticipated

to be within the Texas Commission on Environmental Quality permit levels; no toxic materials or liquid effluent would be produced for this work; no additional permits are needed for the proposed project activities; environmental health and safety protocols are in place per state, federal, and OSHA standards with Environmental Health and Safety professionals providing oversight; fume hoods, alarms, automatic unit shutdown systems, and scrubbers are present and available at the laboratories. When air flow rates are low enough, test products would be released into a laboratory hood and discharged above the building. Larger quantities of material would be routed to a Thermal Oxidizer that converts 98% of feed material to carbon dioxide and water vapor.

According to the completed Quantiam R&D laboratory questionnaire, no additional permits are needed. The facility has a General Industrial category operating license. All used alcohol-based and organic-based solvents are collected in 5-gallon sized steel drums for disposal by ProEco according to federal law. Acids and bases are neutralized and collected for disposal by ProEco according to federal law. No toxic waste would be produced for this work. Gases and chemicals are located in a quarantined area with limited access. Quantiam contracts with the suppliers of the gas and chemicals to handle disposal of empty containers. Fume hoods, alarms, automatic unit shutdown systems, and scrubbers are present and available at the laboratory. Air pollutants would be limited to micron-sized metal and ceramic particulates while in use at the laboratory. Fume hoods and Personal Protective Equipment (PPE) are present and available while working in these particulates. For work outside the fume hoods, an industrial grade mobile air filtration system is used. Environmental health and safety protocols are in place per federal standards with trained professionals providing oversight.

According to the completed BASF R&D laboratory questionnaire, the laboratory has applicable permits in place to conduct research on site (including air permits and waste water permit); air emissions are anticipated to be within existing New Jersey air permit levels; any toxic waste, liquid effluent, or hazardous materials generated would be disposed of properly; no additional permits are needed for the proposed project activities; environmental health and safety protocols are in place per state, federal, and OSHA standards with Environmental Health and Safety professionals providing oversight; fume hoods, eye wash, safety showers, PPE, alarms, monitors, automatic unit shutdown systems, and scrubbers are present and available at the laboratory; gases and chemicals are located in a quarantined area with limited access. BASF contracts with the suppliers of the gas and chemicals to handle disposal of empty containers.

This project comprises information gathering, analysis, and laboratory operations; therefore the DOE has categorized this into Categorical Exclusions A9 and B3.6.

Federal share: $4,500,000
Cost share: $2,199,895

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

If you intend to make changes to the scope or objective of your project you are required to contact the Project Officer identified in Block 11 of the Notice of Financial Assistance Award before proceeding. You must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved.

Note to Specialist :

EF2A by Christopher Carusona II

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Electronically Signed By Lori Gray / Lori Gray Date: 8/27/2012
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.