PMC-EF2a
(2.0.6.0.2)

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

RECIPIENT: General Motors LLC **STATE:** MI

PROJECT TITLE : Development of Integrated Die Casting Process For Large Thin-Wall Magnesium Applications

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0000560	EE0005753	GFO-000573-001	GO5753

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 General Motors (GM) to research and develop a die casting magnesium manufacturing process for automobile doors. Work would be performed at the following existing laboratory facilities:

GM Technology Center, 30500 Mound Road, Warren, MI
GM Milford Proving Grounds, 3300 General Motors Road, Milford, MI
Ohio State University (OSU), Baker Systems Engineering Building, 1974 Neil Avenue, Columbus, OH
Meridian Lightweight Technologies, Inc. (Meridian), 2001 Industrial Drive, Eaton Rapids, MI
Meridian would also utilize a physical testing laboratory at their headquarters in Strathroy, Ontario, Canada

The following activities would be funded:

• Die design, simulation and manufacturing- The initial activities under the project consist of the design and production of three dies, two of which are experimental, intended for components of the door inner design and one at production scale sufficient to create a full-size automobile door inner. Computer modeling design and simulation activities would occur at OSU with support from GM and Meridian staff. Desktop work would culminate in the production of the three dies at Meridian's existing magnesium die manufacturing facility.

• Casting process development - After the dies are produced, the project team would optimize various components of the casting process using the three dies. The experimental dies would be utilized to test and optimize the super-vacuum system and overcasting process required for the door inner application. The full scale die would be utilized for casting trials designed to optimize the final die cast process of the full-size door. The super-vacuum die casting trials would take place at OSU, the overcasting trials would occur at the GM Technology Center and the die casting trials would occur at Meridian.

• Testing and validation - Testing and validation of the processes developed previously would involve mechanical, static and cyclic load, and corrosion testing of both the specimen components and prototype inner doors produced under this project. These tests would be performed at OSU, both the GM Technology Center and Milford Proving Grounds, and Meridian.

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 GM R&D laboratory questionnaires, both GM laboratories have applicable permits in place to conduct research on site (including air permits, and waste water permits); any toxic waste generated would be disposed of properly, however no toxic materials would be used for this work; no additional permits are needed for the proposed project activities; liquid effluent is released to the sewer consistent with existing waste water permits; safety programs are in place per OSHA, and industry standards; fire extinguishers, evacuation alarms, medical and fire responder support, ventilation, spill control materials are present and available at the laboratory; hazardous material communication and worker safety programs as well as division representatives ensure compliance with standards.

According to the OSU R&D laboratory questionnaire: no additional permits are needed, and there would be no generation of air emissions associated with this work; liquid effluent is released to the sewer consistent with Columbus City water system; any toxic waste generated would be disposed of properly, however no toxic materials would be used for this work; safety and hazardous guidelines are in place specific to OSHA requirements, as the University Environmental and Health Services Director monitors the lab facilities and guidelines; fire extinguishers, first aid kids, an AED, sprinklers, ventilation, absorbent materials safety cans and fire doors are present and available at the laboratory.

According to the completed Meridian R&D laboratory questionnaire, no additional permits are needed. The facility is a registered manufacturing site with OSHA standards imposed. No liquid effluent or toxic waste would be generated completing the proposed tasks. Gases and chemicals are located in a quarantined area with limited access. Meridian contracts with the supplies of the gas and chemicals to handle disposal of empty containers. Meridian has fire suppression devices and utilizes flux on die cast machines to suppress fire. Air pollutants would be limited to those from the required energy to cover gas used in regular production including manufacturing the experimental die casts.

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

Federal share: $2,672,124
Cost share: $668,031

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

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: 8/20/2012
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.

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

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