PMC-EF2a

(2.06.02)

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

RECIPIENT: American Iron and Steel Institute (AISI) **STATE:** UT

PROJECT TITLE : A Novel Flash Ironmaking Process

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0000560	DE-EE0005751	GFO-0005751-001	GO5751

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.)
B1.31 Installation or relocation of machinery and equipment	Installation or relocation and operation of machinery and equipment (including, but not limited to, laboratory equipment, electronic hardware, manufacturing machinery, maintenance equipment, and health and safety equipment), provided that uses of the installed or relocated items are consistent with the general missions of the receiving structure. Covered actions include modifications to an existing building, within or contiguous to a previously disturbed or developed area, that are necessary for equipment installation and relocation. Such modifications would not appreciably increase the footprint or height of the existing building or have the potential to cause significant changes to the type and magnitude of environmental impacts.
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 U.S. Department of Energy (DOE) is proposing to provide federal funding to the American Iron and Steel Institute (AISI). AISI would conduct research and development on a new process for alternate ironmaking based on the direct gaseous reduction of iron oxide concentrates in a flash reduction process. DOE funding would be used to install, commission and conduct tests on a new larger-scale bench reactor used in the flash reduction process.

Laboratory work and the installation of a bench reactor system would be conducted at the University of Utah at the Ivor Thomas Lab at the Frederick Albert Sutton Building (115 S 1460 E. Salt Lake City, UT 84112). An advanced engineering company would complete the design for the on-site installation of the bench reactor including foundations and utilities, and of a separate facility for the bulk gas system. An existing room would be retrofitted for laboratory work. A facility for the storage of gases would be constructed of concrete masonry unit (CMU) block outside of the laboratory building. The dimensions of the gas facility would be 20ft. long by 20ft. wide and 9ft. tall. The facility would be a concrete pad with a fence on one side and CMU on the other three sides. The area is currently covered by asphalt and has been previously disturbed. Hydrogen and oxygen cylinders would be stored and separated by two-hour fire-rated partition walls. Compressed hydrogen would be stored in type K cylinders, each 9.5 in. in diameter and 5 ft. in height with a capacity of 260 standard cubic feet (SCF). Liquid oxygen would be stored in 265 liter cylinders, each 22.3 in. in diameter and 3.5 ft. in height, with a capacity of 6811 SCF. Piping from the gas facility to the laboratory would be 100 ft. and would run underground at a depth of 6 ft. The piping system would consist of double-walled pipes. The proposed construction would comply with building and fire codes and would be completed in a previously disturbed area.

AISI has completed an R&D questionnaire addressing the protocols for laboratory safety, risk management, chemical handling and waste disposal. The laboratory would comply with standard safety procedures and all processes and procedures are monitored by University of Utah Environmental Health and Safety (EHS) Department. Standard

operating procedures for the bench reactor would include the sequence of operation and emergency shut-off procedures. The solid raw materials of iron oxide would be noncombustible and would be stored in the lab in quantities of 130kg. All handling and disposal of gases and chemicals would be executed by EHS personnel who comply with appropriate regulations of OSHA. The proposed project would emit 82 tons per year of CO2 which falls significantly below the state permitting requirement of 100,000 tons per year. Current permits for air, water, and waste are in place and no additional permits would be required.

Based on review of the project information and the above analysis, DOE has determined the research would not have a significant individual or cumulative impact to human health and/or environment. DOE has determined the proposed project is consistent with actions contained in DOE categorical exclusion A9 "information gathering, analysis and dissemination," B1.31 "installation or relocation of machinery and equipment" and B3.6 "small-scale research and development, laboratory operations and pilot projects," and is categorically excluded from further NEPA review under CX A9, B1.31 and B3.6.

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 :

Kelly Daigle 8.20.2012

DOE: $7,120,000
Cost Share: $1,780,000
Total Project Cost: $8,900,000

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Electronically Signed By: Lori Gray / Lori Gray Date: 8/22/2012
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