PMC-EF2a
(2.04.02)

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

**RECIPIENT:** Advanced Magnet Lab, Inc. **STATE:** FL

**PROJECT TITLE :** A Lightweight, Direct Drive, Fully Superconducting Generator for Large Wind Turbines

| Funding Opportunity Announcement Number | Procurement Instrument Number | NEPA Control Number | CID Number |
|---|---|---|---|
| DE-FOA-0000439 | DE-EE0005140 | GFO-0005140-003 | GO5140 |

**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:

| | |
|---|---|
| **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:

Advanced Magnet Labs, Inc (AML) is proposing to use DOE funding to assist in the development of a FSG (fully superconducting generator), a wind turbine technology that would be used to create large turbine generators (10+ MW) with increased capacity of torque at reduced costs.

Two previous determinations were made for activities proposed in budget period 1 and 2 of this project. These activities received a categorical exclusion (CX) A9 and B3.6 that allowed for conceptual designs, computer modeling, cost analyses, risk analyses and bench-scale laboratory research at Advanced Magnetic Labs facility. Tasks 1-5 and 7-8 have not changed and the previous determinations made on August 11, 2011 and September 11, 2012 are still applicable.

This review is being conducted on the subtasks that were unable to be reviewed previously (6.1.2-3, 6.2.2-3, 6.3.2-3, 6.4.2-3, 6.5.2-3, 6.6.2-3) because AML had not selected the subcontractors whose lab facilities were to conduct more of the manufacturing and testing.

The following subcontractor labs have been identified to conduct manufacture and lab facility testing of AML designs:

Columbus Superconductor
Winona State COMTECH
Argonne National Lab
Florida State University Center for Advanced Power Systems (CAPS-FSU)
Creare Laboratories

Task 6 had been broken down into six sub-tasks. The subtasks being reviewed have been identified by the subcontractor conducting that activity:

Subtask 6.6.1 – MgB2 mini-cable Build and Test
6.1.1 Design - AML, Columbus Superconductor (CX A9 on 9/11/12)
6.1.2 Manufacture – work being conducted at Columbus Superconductor facilities
6.1.3 Test - work being conducted at Columbus Superconductor facilities

Subtask 6.6.2 – Structural Composite Analysis
6.2.1 Design - AML, Emerson (Kato) (CX A9 on 9/11/12)
6.2.2 Manufacture – Winona State COMTECH
6.2.3 Test - Winona State COMTECH

Subtask 6.6.3 – Conductor Containment Fatigue Analysis
6.3.1 Design - AML, Emerson (Kato) (CX A9 on 9/11/12)
6.3.2 Manufacture - AML (CX B3.6 on 9/11/12) and Winona State COMTECH
6.3.3 Test – Argonne National Lab

Subtask 6.6.4 – Sub-scale Torque Tube Temperature Cycling
6.4.1 Design - AML, Emerson (Kato), Argonne National Lab (CX A9 on 9/11/12)
6.4.2 Manufacture - AML
6.4.3 Test - CAPS-FSU

Subtask 6.6.5 - Characterization of AC losses in MgB2 Superconductor
6.5.1 Design - AML (CX A9 on 9/11/12)
6.5.2 Manufacture – AML (CX B3.6 on 9/11/12)
6.5.3 Test – Creare Laboratories,

Subtask 6.6.6 – Fault Current Limitation Measurement
6.6.1 Design - AML (CX A9 on 9/11/12)
6.6.2 Manufacture - AML (CX B3.6 on 9/11/12) and Creare Laboratories
6.6.3 Test - Creare Laboratories, CAPS-FSU

Each subcontractor has submitted an R&D questionnaire for their respective facilities and have provided sufficient information on OSHA practices, waste disposal and safety protocols.

Sub-tasks 6.1.2-3, 6.2.2-3, 6.3.2-3, 6.4.2-3, 6.5.2-3, 6.6.2-3 comprise conventional laboratory and manufacturing operations in established facilities. These sub-tasks are consistent with CX B3.6 (conventional laboratory and small-scale pilot projects operations conducted to verify a concept before demonstration actions,) and are categorically excluded from further NEPA review.

**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 :

Review completed by Laura Margason on November 14, 2012

Total Budget:

DOE Share (Non-FFRDC): $1,896,850
DOE FFRDC: $140,000
Cost Share: $1,128,234
Total (Non-FFRDC): $3,025,084
Total (w/FFRDC): $3,165,084

**SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.**

NEPA Compliance Officer Signature: Electronically Signed By: Lori Gray / Lori Gray / NEPA Compliance Officer Date: 11/14/2012

**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.