

BMC-ND  
(1.08.09.13)

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



RECIPIENT: Foro Energy, Inc.

STATE: CO

PROJECT TITLE : High Power Laser Tool and System for Unique Geothermal Well Completions

<b>Funding Opportunity Announcement Number</b>	<b>Procurement Instrument Number</b>	<b>NEPA Control Number</b>	<b>CID Number</b>
	DE-EE0006270	GFO-0006270-003	GO6270

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.

Rationale for determination:

Foro Energy (Foro) would utilize DOE and cost share funds to design, build, and field test an engineering prototype of a high power laser tool and system with the objective of enabling unique geothermal well completions with potential for superior thermal contacting between the wellbore and surrounding geological formation. Funds would be used for conducting an engineering design and then final design, purchasing capital equipment (e.g. high power laser and system), building the tool and system, laboratory testing, surface and subsurface system testing, and field testing at a to-be-determined field location. Work would occur at Foro Energy facilities in Colorado and Texas as well as test facilities in Texas and Oklahoma. A yet to be determined location may be selected for subsurface Phase II and Phase III activities. This project is planned as a three phase project. Phase I of this project was previously approved by GFO-0006270-001 on September 4, 2013. Originally, Phase I was to be funded as a cooperative agreement and Phase II and III (if selected to move forward) would have been funded through a Technology Investment Agreement (TIA). After a successful Phase I, the project was selected to move into Phase II continuing as a cooperative agreement instead of a TIA. Phase II was originally approved by GFO-0006270-002 on January 30, 2014 but Phase II has now been modified to include new activities that would occur outside of Foro's lab facilities therefore a new NEPA Determination is needed. This NEPA review is for the Phases II changes only. There is a Go/No-Go decision point between Phases II and III. Based upon review of the results of Phase II activities regarding final prototype design, surface and subsurface tests, DOE may or may not decide to continue funding the project into Phase III. If the project is selected to move forward with Phase III activities another NEPA review will be required once the location and activities of the Phase III field testing is more defined.

The Phase II changes in the project include procedure creation, project management, reporting, and subsurface field work outside of Foro laboratory facilities. Subsurface field work could occur at the Schlumberger Cameron Test and Training Facility in Texas or the Catoosa Test Facility in Oklahoma. Both test facilities are specifically designed and permitted for customer research and development or training activities. No new permits or authorizations would be needed for any of the proposed Phase II activities to occur at either test site. Subsurface testing in Phase II could occur at a yet to be determined site. While Foro does not yet know the specific location, the site would be an existing well with all required permits in place. Subsurface testing of the tool would not perforate, or compromise the integrity of the wellbore or casing at any of the field/test sites. Under this DOE award, authorization of federal funds for Phase II field work that would occur at a location other than the Schlumberger or Catoosa test sites may be subject to additional NEPA review by the DOE.



Based on review of the project information, DOE has determined that the additional Phase II activities would not have a significant individual or cumulative impact to human health and/or environment. DOE has determined that these activities are consistent with actions contained in DOE categorical exclusion B3.11 "Outdoor tests and experiments on materials and equipment components," and are 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:

Phase III

This restriction does not preclude you from:

Phase I

Phase II

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.

Insert the following language in the award:

You are required to:

If the recipient chooses to complete field work at sites other than the Slumberger Cameron Test and Training Facility or the Catoosa Test Facility, the recipient shall provide DOE with specific field test locations prior to beginning field work. After reviewing the submitted locations provided, DOE will determine if the authorization of federal funds for field testing activities at the sites is subject to additional NEPA review.

Note to Specialist :

Geothermal Technologies Office

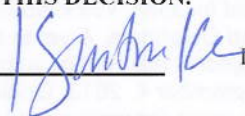
This NEPA Determination does require a tailored NEPA provision.

Casey Strickland 11/26/2014

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

NEPA Compliance Officer Signature: \_\_\_\_\_

Electronically Signed By: Kristin Kerwin  
NEPA Compliance Officer



Date: 12/1/2014

**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: \_\_\_\_\_

Field Office Manager

Date: \_\_\_\_\_