

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** Fervo Energy COmpany**STATE:** TX**PROJECT TITLE:** ZIPPER: Zonal isolation with plug and perf in enhanced reservoirs

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001945	DE-EE0008486	GFO-0008486-002	G08486

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Policy 451.1), 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:

The U.S. Department of Energy (DOE) is proposing to provide federal funding to Fervo Energy Company (FEC) to develop, prototype, and field test an upgraded ball drop frac plug to meet the high-temperature and pressure requirements of Enhanced Geothermal Systems (EGS). The proposed project was selected under Funding Opportunity Announcement (FOA) DE-FOA-0001945 to support early-stage development of EGS zonal isolation tools and technologies. Projects selected from this FOA were structured into multiple Budget Periods (BP) separated by a Go/No-Go decision aimed at readying the proposed technology for field testing. Preliminary design, engineering, and laboratory-based research were reviewed previously by GFO-0008486-001 (A9, B3.6, B3.15; 11/21/18). FEC has since selected a site for field testing activities, therefore this NEPA review is for the remaining field testing and project closure activities (Tasks 4 and 5).

The remaining project work would include testing and validating a geothermal zonal isolation plug (developed previously as part of this award) in a horizontal geothermal well located at the Blue Mountain geothermal field (operated by Cyrq Energy) in Humboldt County, Nevada as well as data analysis, project documentation, and reporting. The Blue Mountain geothermal field includes wells that are located on both private and federal geothermal leases (administered by the Bureau of Land Management). The exact geothermal well to be used for testing of the plug has yet to be determined but would be a well where well stimulation activities are already planned. Testing of the plug would be performed using existing infrastructure as part of a plug-and-perforate style stimulation treatment operation in the lateral section of the geothermal well. The newly developed plug would be tested on a small fraction of the total number of treatment stages that would occur as part of the ongoing well stimulation. Well stimulation activities would involve subsurface fluid injection which could have the potential to cause induced seismicity. The well stimulation and any potential induced seismicity would occur regardless of whether FEC's plug were being tested.

The testing and validation of the zonal isolation plug would be within normal permitted well operations so no new permits, licenses, or authorizations would be required to execute the proposed scope of work and no new facilities construction or surface disturbance would occur as part of project activities. All work would occur on an existing well pad with deployment of the plugs requiring a wireline unit, which would be located on the well pad. For work occurring at a well site or geothermal power plant facility, all workers would be required to follow the operator's (Cyrq Energy) existing health and safety plans.

DOE does not anticipate any impacts to resources of concern due to the proposed activities of the project.

NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

Geothermal Technologies Office
This NEPA determination does not require a tailored NEPA provision.

FOR CATEGORICAL EXCLUSION DETERMINATIONS

The proposed action (or the part of the proposal defined in the Rationale above) fits within a class of actions that is listed in Appendix A or B to 10 CFR Part 1021, Subpart D. To fit within the classes of actions listed in 10 CFR Part 1021, Subpart D, Appendix B, a proposal must be one that would not: (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, or similar requirements of DOE or Executive Orders; (2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities (including incinerators), but the proposal may include categorically excluded waste storage, disposal, recovery, or treatment actions or facilities; (3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that preexist in the environment such that there would be uncontrolled or unpermitted releases; (4) have the potential to cause significant impacts on environmentally sensitive resources, including, but not limited to, those listed in paragraph B(4) of 10 CFR Part 1021, Subpart D, Appendix B; (5) involve genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species, unless the proposed activity would be contained or confined in a manner designed and operated to prevent unauthorized release into the environment and conducted in accordance with applicable requirements, such as those listed in paragraph B(5) of 10 CFR Part 1021, Subpart D, Appendix B.

There are no extraordinary circumstances related to the proposed action that may affect the significance of the environmental effects of the proposal.

The proposed action has not been segmented to meet the definition of a categorical exclusion. This proposal is not connected to other actions with potentially significant impacts (40 CFR 1508.25(a)(1)), is not related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1508.27(b)(7)), and is not precluded by 40 CFR 1506.1 or 10 CFR 1021.211 concerning limitations on actions during preparation of an environmental impact statement.

The proposed action is categorically excluded from further NEPA review.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature:  Casey Strickland Date: 3/3/2021
NEPA Compliance Officer

FIELD OFFICE MANAGER DETERMINATION

- Field Office Manager review not required
- Field Office Manager review required

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

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