



PMC-EF2a

(2.0+02)

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



RECIPIENT: Draka Cableteq USA

STATE: MA

PROJECT TITLE : Complete Fiber/Copper Cable Solution for Long-Term Temperature and Pressure Measurement in Supercritical Reservoirs and EGS Wells

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-EE0000075	DE-EE0002786	GFO-10-264	0

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 Siting, construction (or modification), operation, and decommissioning of facilities for indoor bench-scale research projects and conventional laboratory operations (for example, preparation of chemical standards and sample analysis); small-scale research and development projects; and small-scale pilot projects (generally less than two years) conducted to verify a concept before demonstration actions. Construction (or modification) will be within or contiguous to an already developed area (where active utilities and currently used roads are readily accessible).

B3.11 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 that would not involve source, special nuclear, or byproduct materials. Covered activities may 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

Rational for determination:

DOE and recipient cost share funds will be used by Draka Cableteq USA (Draka) to develop a complete, multi-purpose cable solution for long-term deployment in geothermal wells/reservoirs that can be used with the widest variety of sensors. This cable will incorporate specialty optical fibers, with specific glass chemistry and high temperature and pressure protective coatings for data communication and distributed temperature and pressure sensing high-temperature insulated wire conductors.

The work required for each of these advances has been divided into discrete phases and tasks. Draka intends to bring each component of the cable (i.e. hydrogen-insensitive fiber, high temperature conductors, etc.) into commercial production at the conclusion of each phase.

PHASE I – Development of Hydrogen-Insensitive High-Temperature Fiber

Task 1 : Fiber Development

Task 1.1: Glass-chemistry / drawing conditions to enhance hydrogen resistance

Task 1.2: Bandwidth and Optical Properties Optimization

Task 1.3: Drawing With High Temperature Coating

Task 2: Coating Development

Task 2.1: Synthesis of new high temperature polymers

Task 2.2: Conduct preliminary screening of new materials

Task 2.3: Scale Up/Down Selected Polymer

Task 2.4: Optimize process and performance properties of polymer/additive formulation

Task 2.5: Identify polymer base for final coating

Task 2.6: Scale up selected final coating / deliver fiber

Task 3: Fiber Testing and Validation

Task 3.1: Develop Test Procedure

Task 3.2: Validation Tests

Task 3.3: Prototype Screening Fiber Tests

Task 3.4: Optimization Fiber Tests

Task 3.5: Qualification Fiber Tests

PHASE 2 - CABLE DEVELOPMENT

Task 1: High Temperature Buffer Tube (FIMT) Development
 Task 1.1: Define Optimal Excess Fiber Length
 Task 1.2: Determine Optimal Gels or Buffer Tubing Construction
 Task 1.3: Test and Validate Buffer Tube and Fiber Construction

Task 2: High Temperature Cable Development
 Task 2.1: High Temperature Cable Jacketing/Insulation
 Task 2.2: Trial Cable

Task 3: Metalclad Cable Development
 Task 3.1: Develop a High Temperature Core Filler
 Task 3.2: Evaluate Securing Buffer Tube and Twisted Pair within the Cable
 Task 3.3: Metalclad Cable Prototypes

PHASE 3 CABLE TESTING AND VALIDATION

Task 1: Short Term Test
 Task 2: Medium Term Test
 Task 3: Long Term Test

PHASE 4 COMMERCIAL ROLL OUT

All tasks and subtasks in Phase 1 and Phase 2 are categorized into Categorical exclusion B3.6 as they involve design and feasibility studies and laboratory development and testing activities that would take place in existing facilities. As indicated in the "DOE R&D Laboratory Questions" completed for each of the laboratories, OSHA requirements are followed and monitored, and appropriate permits, like air quality, stormwater, and hazardous waste, are in place. Two of the laboratories also have ISO certifications.

As indicated in the Questionnaires, the Draka Cableteq USA R&D Laboratory is located in North Dighton, Massachusetts and is included in the manufacturing facility's ISO 9001:2000 and ISO 14001:2004 certifications and is approved to perform tests for product certification by Underwriters Laboratories, Defense Logistics Agency, Canadian Standards Association, and Intertek Testing Services. Draka Communications R&D Laboratory is located in Claremont, North Carolina, and the site is certified ISO 14001:2004. Tetramer Technologies R&D Laboratories are located in Pendleton, South Carolina, in a facility administered by Clemson University Research Foundation.

Phase 3 tasks consist of outdoor tests and experiments for the development, quality assurance, or reliability of materials and equipment, therefore the DOE has categorized this into Categorical Exclusion B3.11. The field site has yet to be determined but would be an existing geothermal well. Regardless of the well location selected, there would be no additional environmental consequences beyond those associated with the existing well attributable to the Phase 3 activities.

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

Note to Specialist :

None Given.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____

NEPA Compliance Officer

Date: _____

3/31/10

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: _____