DOE-ID NEPA CX DETERMINATION

CX Posting No.: DOE-ID-15-085

SECTION A. Project Title: Deep Borehole Field Test (DBFT) Characterization Borehole Drilling and Testing, Pierce County, N.D. – Battelle Memorial Institute

SECTION B. Project Description

The primary goal of the DBFT program is to drill a 5,000-meter-deep characterization borehole with a 3,000-meter open-hole section across crystalline bedrock, and to conduct scientific testing to characterize the hydrogeologic, geochemical, and geomechanical properties of the near-borehole host rock.

The geologic characterization borehole site is on a parcel of land owned by the North Dakota Department of Trust Lands (NDDTL) in the southeast quarter of Section 36, Township 154 North, Range 73 West (SE1/4, Sec. 36 T154N R73W), fifth principal meridian in south-central Pierce County, North Dakota. Approximately 20 acres of land will be leased and developed on this quarter-section of land that is currently used for grazing. The NDDTL has agreed to lease up to 20 acres of grazing land to Battelle for 5 years (with an option for an additional 5 years) for this project, pending the successful acquisition of appropriate township, county, or state zoning and drilling permits.

The drilling pad location will allow easy inclusion of the second, full-size borehole test in a future phase of the project, if required by expansion of the initial pad. The drilling pad will include an area with improved surfaces measuring approximately 152 x 152 m (500 x 500 ft) and an approximately 23 x 38m (75 x 125 ft) inner reinforced area to support the drill rig, service rig, and other heavy equipment. The site will be constructed by excavating and stockpiling the original soil, emplacing a geotextile liner, and backfilling the lined section and compacting. The pad will include lay-down areas for casing, test strings, and other equipment, with access provided by a hardened, engineered, road connecting east to State Route 3. Proximity to Route 3 will ensure easy mobilization and demobilization of rigs and testing equipment. The site will include facilities for the drill rig and crew, trailers and facilities for the site manager, testing personnel, testing equipment, and laboratory space for analyses. The drilling pad will be secured with a 6-foot chain-link fence around the perimeter to help control access during field operations.

SECTION C. Environmental Aspects / Potential Sources of Impact

Radioactive Material Use – Some wireling logging tools that may be run utilize encapsulated radioactive sources contained within the wireline tool. The tool body has a pressure rating of 15,000 psi and bottomhole pressures are expected to be less than 7,500 psi. The radioactive sources are never in contact with the borehole fluids and are removed from the well after logging operations. There are two sources containing radioactive material that may be run. A wireline tool bulk density source suc has GSR-J and a wireline neutron tool source such as NSR-F. The GSR-J source is made up of Cesium-137 and has an activity level of 63 GBq. The NSR-J source is made up of Americium-241 and Beryllium and has an activity level of 296 GBq.

Chemical Use/Storage – Diesel fuel will be used during testing for generators used to supply power to the service rig/components. All fuel will be contained in above ground tanks placed in secondary containment placed on top of plastic underlayment to prevent releases to the environment. Approximately 125,000 lbs of drilling fluid chemicals/products will be used to make up drilling fluids during the duration of the project. A closed loop drilling fluid system will be used (no earthen pit) so no chemicals will be introduced into the environment.

Water/Well Use – Water will be used on the site for both drilling and human consumption. Water will be brought in by truck and stored in temporary tankage which will be removed at the end of the program.

Chemical Use/Storage – Diesel fuel will be used during testing for generators used to supply power to the service rig/components. All fuel will be contained in above ground tanks placed in secondary containment placed on top of plastic underlayment to prevent releases to the environment.

Air Emissions – a 575 HP diesel engine rig will be used. The rig will operate 12 hours per day for 210 days at 90% of rated power.

Interaction with Wildlife/Habitat – Site is to be located in actively grazed pasture devoid of trees. No notable interaction expected.

SECTION D. Determine the Level of Environmental Review (or Documentation) and Reference(s): Identify the applicable categorical exclusion from 10 CFR 1021, Appendix B, give the appropriate justification, and the approval date.

Note: For Categorical Exclusions (CXs) the proposed action must not: 1) threaten a violation of applicable statutory, regulatory, or permit requirements for environmental, safety, and health, including requirements of DOE orders; 2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities; 3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that pre-exist in the environment such that there would be uncontrolled or unpermitted releases; 4) adversely affect environmentally sensitive resources. In addition, no extraordinary circumstances related to the proposal exist which would affect the significance of

the action, and the action is not "connected" nor "related" (40 CFR 1508.25(a)(1) and (2), respectively) to other actions with potentially or cumulatively significant impacts.

References: B3.1 Site characterization and environmental monitoring (including, but not limited to, siting, construction, modification, operation, and dismantlement and removal or otherwise proper closure (such as of a well) of characterization and monitoring devices, and siting, construction, and associated operation of a small-scale laboratory building or renovation of a room in an existing building for sample analysis.) Such activities would be designed in conformance with applicable requirements and use best management practices to limit the potential effects of any resultant ground disturbance. Covered activities include, but are not limited to, site characterization and environmental monitoring under CERCLA and RCRA. (This class of actions excludes activities in aquatic environments.

Justification: The activity consists of drilling and characterizing a 5,000-meter-deep borehole.

Approved by Jack Depperschmidt, DOE-ID NEPA Compliance Officer on 12/07/2015