



National Nuclear Security Administration Categorical Exclusion Determination Form



NEPA ID#: HEDLP 15-001-001

Proposed Action Title: UNESE Tunnel Test Bed Characterization (Phase I) (NV-2017-003)

Program or Field Office: Nevada Field Office

Location(s) (City/County/State): Nevada National Security Site (NNSS), Nye County NV

Proposed Action Description:

Background: The detection, location, and verification of suspected nuclear explosions are priorities of the National Nuclear Security Administration's Office of Proliferation Detection. The Underground Nuclear Explosives Signatures Experiment (UNESE) is designed to develop new technologies and models utilizing former nuclear tests that were executed at the Nevada National Security Site (NNSS). The UNESE emphasizes non-prompt signals that are generated by a nuclear explosion. These signatures include features such as noble gas emissions, fracturing of rock, topographic changes, and geophysical changes. UNESE would improve understanding of the creation and evolution of these signatures.

UNESE would be sponsored by the Defense Nuclear Nonproliferation Research and Development (DNN R&D) Office. It would be performed in collaboration with the NNSS/NFO O&M subcontractor (currently National Security Technologies, LLC [NSTec]), Lawrence Livermore National Laboratory, Los Alamos National Laboratory, Pacific Northwest National Laboratory, and Sandia National Laboratories.

Proposed Action: Conduct tunnel characterization and determine the suitability of the tunnel for conducting Phases II and III of UNESE.

- Phase I—Tunnel Characterization/Suitability Study. A major criterion is that the Disko Elm chimney does not strongly connect to the rest of the P Tunnel complex, i.e., through unsealed core holes, compromised line of site (LOS) pipe, etc. To determine suitability the following tasks would be performed:
 - Air sampling to determine baseline conditions. These sampling locations are marked 1, 2, 3, and 4 on the attached map.
 - Note: To obtain air samples in location 1, entry into a restricted area is needed to access the bulkhead. At this bulkhead a sampling hole (2-3 inch diameter) would be drilled. For location 3, holes (2-3 inch diameter) must be drilled to obtain access for sampling air in the U12p.03 LOS drift.
 - It may be necessary to isolate sections of the tunnel complex for air sampling. This could include installation of brattice cloth curtains and/or construction of plywood bulkheads at as many as six locations (e.g., entries into crosscuts between the U12p.04 LOS and Bypass drifts and at the end of U12p.04 LOS pipe).
 - At location 5, a core hole (approximately 4-inch diameter) would be drilled into the approximate location of Disko Elm collapse chimney. A liner and/or packers would be installed in the core hole.
 - Sampling of chimney gas to determine existing conditions would be performed.
 - After background conditions are established, an inert gas would be injected, and the chimney pressurized if necessary. Tracer gases being considered for injection at this time are sulfur hexafluoride (SF₆), sulfur hexafluoride (SF₆), dibromodifluoromethane (Freon 12B2), or bromotrifluoromethane (Freon 13B1).
 - After gas injection, gas samples would be obtained at all five locations. After samples are collected over one month, they would be analyzed and a decision on suitability would be made by all the collaborators.
 - Additional Activities
 - Passive seismic sensors would be placed in the U12p.04 and U12p.03 drifts.
 - Selected areas near CS10+00 in the U12p.04 LOS drift would have the shotcrete removed to visually access the geology underneath.
 - Geophysical logs would be recorded in the core holes made in the tunnel by a subcontractor.
 - Core samples would be evaluated.
 - Clean-up and disposal of any project generated contaminated waste would be performed.
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Categorical Exclusion(s) Applied:

B3.1 Site Characterization and Environmental Monitoring

For the complete DOE National Environmental Policy Act regulations regarding categorical exclusions including the full text of each categorical exclusion, see Subpart D of 10 CFR 1021. Regulatory Requirements in 10 CFR 1021.410(b): (See full text in regulation)

The proposal fits within a class of actions that is listed in Appendix A or B to 10 CFR Part 1021, Subpart D.

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

The proposal has not been segmented to meet the definition of a categorical exclusion.

Based on my review of information conveyed to me and in my possession concerning the proposed action, as NEPA Compliance Officer (as authorized under DOE Order 451. 1B), I have determined that the proposed action fits within the specified class(es) of action and that other-regulatory requirements set forth above are met. Therefore, the application of a categorical exclusion is appropriate.

NEPA Compliance Officer: Carrie Stewart

Date Determined: 10/25/2016