

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** Shell International Exploration and Production, Inc.**STATE:** TX

**PROJECT TITLE:** First demonstration of a commercial scale liquid hydrogen storage tank design for international trade applications

<b>Funding Opportunity Announcement Number</b>	<b>Procurement Instrument Number</b>	<b>NEPA Control Number</b>	<b>CID Number</b>
DE-FOA-0002229	DE-EE0009387	GFO-0009387-001	

**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.)

**B3.6 Small-scale research and development, laboratory operations, and pilot projects** Siting, construction, modification, operation, and decommissioning of facilities for smallscale research and development projects; conventional laboratory operations (such as preparation of chemical standards and sample analysis); and small-scale pilot projects (generally less than 2 years) frequently conducted to verify a concept before demonstration actions, provided that construction or modification would be within or contiguous to a previously disturbed or developed area (where active utilities and currently used roads are readily accessible). Not included in this category are demonstration actions, meaning actions that are undertaken at a scale to show whether a technology would be viable on a larger scale and suitable for commercial deployment.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide federal funding to Shell International Exploration and Production, Inc. (Shell) to develop an affordable large commercial scale liquid hydrogen storage tank. Project activities include developing a design, evaluation and selection of the concept, detailed design and engineering of a demonstration tank, demonstration tank construction and performance testing.

Project activities would be coordinated by Shell. Shell and the University of Houston would perform activities such as information gathering, data analysis, computer modeling, conceptual design, and stakeholder engagement at established facilities in Houston, TX and Amsterdam, Netherlands. Fabrication, construction, and commissioning of the demonstration tank as well as testing of a new insulation system would occur at CB&I Storage Solutions in Houston, TX. Design of testing equipment and testing of insulation materials would occur at NASA Kennedy Space Center's Cryogenics Test Laboratory in Florida. Cryotek would produce and store liquid hydrogen, fabricate components, assemble test equipment, and perform testing at their facilities in Florida.

Project activities would occur in existing facilities and laboratories designed for the type of work planned. Cryotek is building a new Advanced Hydrogen Research Center where some project activities would occur but the construction is not associated with this DOE project. No modifications to facilities, new permits, additional licenses and/or authorizations would be necessary. Any work proposed to be conducted at a federal facility may be subject to additional NEPA review by the cognizant federal official and must meet the applicable health and safety requirements of the facility. The construction/installation of the demonstration vessel will occur outdoors and require ground disturbing activities. No more than three feet below grade and 1600 square feet would be disturbed for the foundation footings of the demonstration vessel. The expected installation location is currently a previously disturbed vacant material laydown area next to CB&I Storage Solutions Houston Fabrication Shop. Potential impacts associated with storm water runoff would be managed under the facility's existing Storm Water Pollution Prevention Plan.

Project activities would involve the use and handling of hazardous materials, including liquid nitrogen, liquid hydrogen, and industrial solvents. All handling of these materials would occur at facilities dedicated to the safe and proper handling of hazardous materials and use of proper disposal practices. As such, the project activities that involve these materials would pose no risk to the public. All hazardous materials and wastes would be managed in accordance with existing company/facility policies as well as Federal, State and local environmental regulations. Existing company/facility health and safety policies and procedures would be followed, including employee training, proper

protective equipment, engineering controls, monitoring, and internal assessments. Mechanisms for identifying new hazards associated with the project activities are also in place to help ensure compliance with applicable health and safety regulations, and minimize health and safety risks to employees and the public. Test specific safety protocols and operational procedures would be written and reviewed by a technical review panel. Facility design and operation, with respect to hydrogen and nitrogen, would follow the rules of NFPA-2 and other regulations and standards as required.

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:

Hydrogen and Fuel Cell 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:  \_\_\_\_\_ Date: 5/4/2021  
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