



# U.S. Department of Energy Categorical Exclusion Determination Form

Proposed Action Title: Development and Verification of a Continuous, Real-Time Tritium Monitoring System for Aqueous Processes Project – TJSO-SC-26-01

Program or Field Office: Thomas Jefferson Site Office

Location(s) (City/County/State): Newport News, VA

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Proposed Action Description:

This Cooperative Research and Development Agreement (CRADA) project includes the advancement of technologies that enable continuous, real-time tritium monitoring in aqueous systems. A central part of the scope includes experimental work to gather ground truth data as well as refine the electronics design. The tasks involve: assembly and testing of prototype electronics, coordinating with Jefferson Lab Radiation Control for access to specific test sources and materials collection of experimental data and the analysis of those data. Testing and calibration results gathered from the prototype will provide performance data and support further work towards development of a prototype product that can be utilized onsite. The project would occur in the northern portion of the campus at the Thomas Jefferson National Accelerator Facility (TJNAF) in Newport News, Virginia. The action will take place in the Detector Group lab area (L215) in the Applied Research Center (ARC). The action will take place within a previously disturbed area, and no further environmental impacts are expected.

Excerpt from JOINT WORK STATEMENT/CRADA JSA 2026S002: *"In its environmental monitoring application, the tritium monitoring devices will enable more continuous and real-time environmental measurements (subsurface water) - thus improving response time and continuity of measurement that are not possible with current approaches.*

*In the flow cell process monitor application the device will provide a continuous and high sensitivity monitoring capability for a variety of applications. The monitoring of beam dump activated cooling water at Jefferson Lab is one example. Other examples are related to the emerging fusion power industry in areas related to Fuel Cycle, Tritium Processing and Blanket Technology - all areas identified in U.S. Department of Energy's (DOE) Fusion Science & Technology Roadmap.*

*To Jefferson Lab, this project will:*

*Provide an instrument for monitoring beam dump water activation. If funding is available, provide and install an in-ground environmental monitor for the TJNAF.*

*Tasks:*

*The goals of this project are to:*

*Advance the detail design of the tritium monitoring technologies including instrument readout electronics, the data acquisition system and user interfaces. An additional goal is to provide access to both sealed radioactive sources and tritiated water with known activation concentrations to facilitate calibration and foundational performance measures.*

*The following activities are planned to accomplish the above goals during the period of this CRADA:*

*Jefferson Lab Tasks:*

- 1) Assemble and prepare revised readout and data acquisition electronics to facilitate testing*
- 2) Review safety requirements and operational procedures in collaboration with Radiation Control*
- 3) Collect data from flow cell tritium monitor with tritiated water in collaboration with Radiation Control*
- 4) Collect crosscalibration data from flow cell tritium monitor with sealed sources*
- 5) Host initial design discussions of user interface options and features*

There would be no anticipated impacts to the environment as all work associated with the project will occur on previously developed land at the facility. De minimis amounts of liquid effluent (~<1-gallon) will be generated from actions associated with a water sample utilized for testing of a tritium monitoring device. The subject sample will be properly managed by Jefferson Lab Radiation Control Group through activation screening after use and disposal to EF sanitary sewer line as

authorized under the Lab's Hampton Roads Sanitation District (HRSD) Permit #0117 for discharges of industrial wastewater to sanitary sewer. *The project has a low potential for radioactive contamination and exposure to individuals. All radioactive exposures, material and contamination are managed under the existing Radiation Protection Program and Environmental Radiation Protection Program at Jefferson Lab. Personnel monitoring and radiation control activities are invoked commensurate with the hazard and in accordance with 10 CFR Part 835, Occupational Radiation Protection and DOE O458.1, Radiation Protection and the Public and the Environment.*

Cultural Resources and Historic Preservation was addressed through coordination with the Virginia Department of Historic Resources (VADHR) as referenced in DOE/EA-1384 (*Proposed Improvements at the Thomas Jefferson National Accelerator Facility*). DOE was advised by the VADHR through letters received in 1992 when the facility was being constructed and again in 2006 as preparation for EA-1384 that their archives indicated no recorded architectural or archaeological within or adjacent to the property and no adverse impacts to archaeological and historic resources would be expected from improvements at the TJNAF. An additional review of the VADHR online archives indicated that no known historic resources are present onsite.

The TJNAF was screened for potential impacts to any threatened/endangered species or protected habitat that included the Northern Long-eared Bat (NLEB). Through additional coordination with the U.S. Fish and Wildlife Service (FWS) for the project, it was determined that suitable habitat for the NLEB did not exist onsite and therefore, no impacts were anticipated. There are no documented and/or observed instances of migratory birds habitat or nesting within the project footprint. However, in the event that migratory birds are observed onsite, TJNAF will mitigate any impacts through compliance with the requirements of the U.S. Fish and Wildlife Service (USFWS) "*Nationwide Avoidance and Minimization Measures for Birds*".

The proposed action would not impact any jurisdictional wetlands, and will not be part of an ongoing Environmental Assessment or Environmental Impact Statement. The proposed action would not be related to any extraordinary circumstances or other actions with potentially significant impacts.

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Categorical Exclusion(s) Applied:

B3.1 - Site characterization and environmental monitoring  
B3.6 - Small-scale research and development, laboratory operations, and pilot projects

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For the DOE procedures regarding categorical exclusions, including the full text of each categorical exclusion, see 10 CFR 1021.102 and Appendix B to 10 CFR Part 1021, and also Section 5.4 (Applying one or more categorical exclusions to a proposal) and Appendices B and C of DOE's National Environmental Policy Act Implementing Procedures (February 2, 2026).

Requirements and guidance in 10 CFR 1021.102 and DOE's NEPA Implementing Procedures: (See full text in regulation and in Implementing Procedures)

Appendix B to 10 CFR Part 1021 or Appendix B and C of DOE's NEPA Implementing Procedures (February 2, 2026).

To fit within the classes of actions listed in Appendix B to 10 CFR Part 1021, or Appendix B of DOE's NEPA Implementing Procedures, a proposal must satisfy the conditions that are integral elements of the classes of actions in Appendix B of both 10 CFR Part 1021 and DOE's NEPA Implementing Procedures.

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

This proposal is not connected to other DOE actions with potentially significant impacts, is not related to other proposed DOE actions with cumulatively significant impacts.

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

The above description accurately describes the proposed action, which reflects the requirements of the CX cited above. Therefore, I recommend that the proposed action be categorically excluded from further NEPA review and documentation. [Note: For proposals that fit within the categorical exclusions listed in Appendix C of DOE's NEPA Implementing Procedures, see DOE's notice of adoption for the subject Appendix C categorical exclusion for additional considerations. DOE notices of adoption for other agency categorical exclusions may be found on DOE's Section 109 webpage.]

**TJSO Federal Project Manager:** KY Craft

**KY CRAFT**

Digitally signed by KY CRAFT  
Date: 2026.05.21 15:55:42  
-04'00'

**Date Determined:**

5/21/2026

**TJSO NEPA Coordinator:** Derek Favret

**DEREK FAVRET**

Digitally signed by DEREK FAVRET  
Date: 2026.05.26 13:27:01 -04'00'

**Date Determined:**

5/26/2026

**JSA Environmental Compliance Representative:** Scott Conley

**econley**

Digitally signed by econley  
Date: 2026.05.19 17:26:47  
-04'00'

**Date Determined:**

5/19/2026

Based on my review of the proposed action, as NEPA Compliance Officer (as authorized under DOE Policy 451.1), I have determined that the proposed action fits within the specified class(es) of action, the other regulatory requirements set forth above are met, and the proposed action is hereby categorically excluded from further NEPA review.

NCO Comments: This CX determination is limited to current proposed actions. A separate NEPA review must be completed for any future work including development of a prototype product for onsite utilization.

**NEPA Compliance Officer:** Jayashree Jayaraj

**Date Determined:**