

**SECTION A. Project Title:** Routine General Lab Work in the STAR Facility

**SECTION B. Project Description and Purpose:**

**Revision 1 to (formerly INL-15-035):**

Revisions to this project at the Safety and Tritium Applied Research (STAR) Facility (TRA-666/666A) include the following:

- Design, construct and test a Hot Vacuum Extraction (HVE) system to heat, desorb, and measure trapped hydrogen (H) in samples.
- Equipment purchases to include, but not limited to induction furnace, recirculating chiller, turbomolecular pump, quadrupole mass spectrometer and vacuum hardware. These are plug-in pieces of equipment and will not require facility modifications.

The HVE will heat irradiated yttrium hydride samples provided by Los Alamos National Laboratory (LANL) in a tungsten crucible past their melting point of 1526°C to liberate all of the hydrogen from the sample. The amount of hydrogen will be quantified and the sample will be allowed to solidify and the yttrium + tungsten crucible will be disposed.

**Original ECP:**

This work was originally covered under EC INL-12-069 (OA 14). This EC is being written as part of a routine project review and to update the work scope. EC INL-12-069 (OA 14) is superseded by this EC.

The purpose of this EC is to cover routine R&D-related work in the Safety and Tritium Applied Research (STAR) Facility (TRA-666/666A) using common tools and equipment.

The STAR Facility (TRA-666/666A) is an R&D lab located at the Advanced Test Reactor Complex (ATR Complex) designed to investigate the uses of various materials associated with fusion and fission nuclear technology. Experiments are normally located in gloveboxes, ventilated enclosures, fume hoods, or on bench tops. By using common tools and equipment, trained facility personnel will perform operating tasks in support of various research projects being conducted within the STAR Facility.

While this EC covers general work and use of tools at the STAR, each project for which these tools might also be used will be covered by a separate EC.

The following routine R&D activities are covered by this EC.

1. Soldering operations
2. Heat gun operation
3. Power hand tool operation
4. Hot glue gun operation
5. Use of chemicals such as lubricants and sealants
6. General material handling and assembly/disassembly activities
7. General test activities for experimental systems
8. Testing and operation of heat tapes and high temperature heaters/furnaces
9. Cleaning surfaces with ethyl or isopropyl alcohol, or acetone
10. Working with compressed gases
11. Working with acid and base solutions
12. Cutting operations using a band saw
13. Use of ladders
14. Use of cryogenic liquids
15. Use of drill press
16. General glovebox activities
17. Handling Particularly Hazardous Substances
18. Operation of electrical circuit breakers or disconnect switches
19. Handling of tritiated liquid and bubbler vial changeout

20. Handling tritiated sample for imaging plate (IP) exposure and operation of IP reader
21. Handling of radioactive samples and sources

**SECTION C. Environmental Aspects or Potential Sources of Impact:**

**Air Emissions**

Very small quantities of air emissions might be generated during general tool use. These include soldering fumes, solvent vapors, and inert gases. All emissions are expected to be far below limits established in IDAPA air regulations. Radioactive emissions, in the form of tritium, may occur; tritium emissions will be within the limits established in APAD 01-79.

**Discharging to Surface-, Storm-, or Ground Water**

NA

**Disturbing Cultural or Biological Resources**

Cultural: Pursuant to the 2023 Programmatic Agreement, this federal undertaking is excluded from Section 106 review and the proposed activity results in no historic properties affected.

**Generating and Managing Waste**

Generating and Managing Waste - Small amounts of industrial and hazardous wastes are expected. These include common lab waste such as PPE, scrap metal, solvent wipes, aqueous waste to the drain system, lead waste, Be waste, and corrosives. Tritium-contaminated low level radioactive waste may also be generated. Yttrium = 10 g. All Solid Waste will be managed by WGS.

**Releasing Contaminants**

When chemicals are used during the project there is the potential for spills that could impact the environment (air, water, soil).

**Using, Reusing, and Conserving Natural Resources**

Using, Reusing, and Conserving Natural Resources - All applicable waste will be diverted from disposal in the landfill when possible. Project personnel will use every opportunity to recycle, reuse, and recover materials and divert waste from the landfill when possible. The project will practice sustainable acquisition, as appropriate and practicable, by procuring construction materials that are energy efficient, water efficient, are bio-based in content, environmentally preferable, non-ozone depleting, have recycled content, and are non-toxic or less-toxic alternatives. New equipment will meet either the Energy Star or SNAP requirements as appropriate (see <http://www.sftool.gov/GreenProcurement/ProductCategory/14>).

**Environmental Justice**

NA

**SECTION D. Determine Recommended Level of Environmental Review, Identify Reference(s), and State Justification:** Identify the applicable categorical exclusion from 10 Code of Federal Regulation (CFR) 1021, Appendix B, give the appropriate justification, and the approval date.

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, or similar requirements of Department of Energy (DOE) or Executive Orders; (2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment or facilities; (3) disturb hazardous substances, pollutants, contaminants, or Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)-excluded petroleum and natural gas products that pre-exist in the environment such that there would be uncontrolled or unpermitted releases; (4) have the potential to cause significant impacts on environmentally sensitive resources (see 10 CFR 1021). In addition, no extraordinary circumstances related to the proposal exist that would affect the significance of the action. In addition, the action is not "connected" to other action actions (40 CFR 1508.25(a)(1) and is not related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1608.27(b)(7)).

**References:** B3.6 "Small-scale research and development, laboratory operations, and pilot projects"

**Justification:** B3.6 Siting, construction, modification, operation, and decommissioning of facilities for small-scale 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.

**DOE-ID NEPA CX DETERMINATION**  
**Idaho National Laboratory**

CX Posting No.: DOE-ID-INL-24-057

Is the project funded by the American Recovery and Reinvestment Act of 2009 (Recovery Act)     Yes     No

Approved by Robert Douglas Herzog, DOE-ID NEPA Compliance Officer on: 6/18/2024