

# DOE-ID NEPA CX DETERMINATION

## Idaho National Laboratory

### **SECTION A. Project Title:** Submarine Glovebox Atmosphere Control Upgrade and Modifications

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

A new atmosphere purification system is being installed and operated for the Submarine Glovebox in building 792A at the Materials and Fuels Complex (MFC) at Idaho National Laboratory (INL). The change involves replacement of the purification system, associated piping and supports, and other hardware. Changing the power supply for a vacuum pump from normal power to standby power is also included in the proposed action.

The proposed action would change the atmosphere purification system for the Submarine Glovebox in MFC-792A from a Vacuum Atmosphere's model MO-120 to Vacuum Atmosphere's multiple purification system (MPS) units. A new analyzer cabinet would be installed to house the Teledyne oxygen analyzer. In addition, a heat exchanger would be added to the purification line to help remove heat created by the radioisotope power system (RPS) unit.

The Dri-train SUB-DT-6651 would be replaced with a two MPS units and a control module. The layout of the systems and their connections are different than the old Dri-train. Most of the piping going to and from the MPS system would need to be replaced or reconfigured. Where feasible, existing pipes and valves will continue to be used.

The atmosphere control cabinet SUB-AC-6651 would also be replaced, and the oxygen analyzer would be replaced with an updated model.

A heat exchanger would be added to the argon recirculation line. A pressure regulator would be added to the chill water line to ensure the pressure does not exceed the design pressure of the heat exchanger. A new pressure relief valve would be placed on the chill water lines to replace the current leaking relief valve.

The removal of the Dri-Train requires the high-efficiency particulate air (HEPA) filters to be relocated to the area above the MPS units suspended from the ceiling as part of the bypass loop.

A heat exchanger would also be added to the clean argon leg below the glovebox. A new valve would be added to isolate the heat exchanger from the glovebox when a vacuum is pulled on the glovebox.

A 1" branch line would be added with a solenoid valve and a globe valve to control the flow for operating the glovebox at a negative pressure with a purge.

The following modifications to the vacuum line would be implemented:

- The solenoid valve and hand valve controlling the passbox evacuation process would be replaced. The 110V solenoid valve would be replaced with a 24VDC solenoid valve.
- A new 3/8" line to the MPS control unit would be installed. The line would also have a solenoid and hand valve. A gauge would be added to the line to allow process monitoring and testing of the line.
- The filter on the 1" vacuum line would be replaced and located closer to the pumps. This would place the filter downstream of the connection to the MPS line connection.

A new passbox line and valves would be added to the existing line to allow the passbox to be automatically backfilled with glovebox argon. During backfill operations, facility argon would flow through the line to the passbox until the pressure is nearly atmospheric. At that point, the facility argon would be shut off and the new line opened to the glovebox atmosphere to finish the refill process. A new hand valve would be installed to isolate the new line from the glovebox when a vacuum is being pulled on the glovebox. The line would have its solenoid valve replaced with a lower voltage solenoid valve (24VDC instead of 110VAC).

The process water lines going to the existing Dri-Train would be removed, and a new regulator and pressure relief valve would be added to control the pressure.

A new analyzer cabinet would be installed to replace the outdated cabinet that worked with the old Dri-Train system. The new cabinet would have a new oxygen analyzer, a pump to pull sample gas from the glovebox, argon and span gas and zero gas inputs, and outputs to the glovebox or process exhaust. An oxygen catalyst would be placed on the zero gas input line. A check valve would be installed on the process exhaust line and the bypass line to prevent any backstreaming.

The piping/tubing to the atmosphere purification system and associated equipment would be modified or replaced as necessary to configure to the new system.

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

**Air Emissions**

The modifications would not increase air emissions. Air emissions have been evaluated by Air Permitting Applicability Determination INL-09-013 R1. The glovebox is a clean glovebox with no radioactive contamination, but has the potential to be contaminated with the use of sealed nuclear materials being used in the glovebox.

**Generating and Managing Waste**

The proposed action would generate industrial and low-level radioactive waste. Project personnel would work with Waste Generator Services (WGS) to properly package and transport waste according to laboratory procedures.

**Releasing Contaminants**

Alcohol would be used to clean parts and thread sealant during assembly. Any chemicals would be entered in the vendor data system for approval. The Chemical Coordinator would track these chemicals in the Idaho National Laboratory Comply Plus Chemical Management System.

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

All materials would be reused and/or recycled where economically practicable. All applicable waste would be diverted from disposal in the landfill where conditions allow.

**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:** National Environmental Policy Act (NEPA) Implementing Procedures, Final Rule, 10 CFR 1021, Appendix B to Subpart D, Categorical Exclusion B1.31 "Installation or relocation of machinery and equipment."

**Justification:** The proposed activities are consistent with CX B1.31 "Installation or relocation and operation of machinery and equipment (including, but not limited to, laboratory equipment, electronic hardware, manufacturing machinery, maintenance equipment, and health and safety equipment), provided that uses of the installed or relocated items are consistent with the general missions of the receiving structure. Covered actions include modifications to an existing building, within or contiguous to a previously disturbed or developed area, that are necessary for equipment installation and relocation. Such modifications would not appreciably increase the footprint or height of the existing building or have the potential to cause significant changes to the type and magnitude of environmental impacts."

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

Approved by Jason Sturm, DOE-ID NEPA Compliance Officer on: 7/7/2016