CX Posting No.: DOE-ID-INL-25-017

SECTION A. Project Title: IMCL Cooling Water Tower Installation for Instrument Heat Removal

SECTION B. Project Description and Purpose:

MFC-1729 (IMCL) requires a critical project to enhance the cooling capabilities of the facility. The project involves the installation of new cooling towers and associated plumbing systems, aimed at resolving the current issue where water-to-air chillers are causing an increase in room temperature, leading to instrument shutdowns due to overheating.

Project Highlights:

To mitigate the overheating problem, two state-of-the-art hybrid cooling towers will be installed NE of the facility. These towers will supply 50% propylene glycol at 70°F directly to the chillers. This transition will convert the existing water-to-air chillers to water-to-water chillers, effectively eliminating heat rejection into the facility and thereby reducing the risk of instrument shutdowns.

Each cooling tower is designed to handle 256,000 BTU/h (75 kW) of cooling. The system will operate on a lead/lag basis, ensuring redundancy and uninterrupted cooling capabilities. The intent is for this to be a closed loop system during seasonal operation with the possibility of a sump basin that may need to be drained in the winter. The cooling water blow-down will be plumbed into a sanitary sewer drain located in the mechanical room which will send the wastewater to the sanitary sewage lagoons.

The cooling water towers will be smaller units with either a 4ft x 6ft or a 4ft x 9ft depending on what the facility chooses.

Electrical Requirements:

The cooling towers will be connected to the facility's standby power system, ensuring continued operation during power outages. Circulator pumps and controls will be integrated with the existing uninterruptible power supply system. Additionally, heat trace will be installed on the make-up water line from the exterior to the cooling tower to prevent freezing.

Structural Requirements:

Concrete pads will be constructed to support the new cooling towers. The concrete pad will be constructed along the East side of the facility and will run the length of the building to stay at least five feet away from a fire/potable water line located on that side. An ECAR will be prepared for pipe hangers, penetrations, and other structural modifications not covered by TEV-1802, “Guidelines for Minor Structural Modifications to Building MFC-1729 (IMCL).”

Control System Requirements:

Flow, pressure, and temperature transmitters, along with corresponding indicators, will be installed to monitor the cooling water loop. A controller will be provided to manage the lead/lag operation of the pumps and cooling towers, indicate failures, and facilitate resets. The control system will be integrated with the existing facility management control system to display data and manage alarms.

This cooling tower upgrade project is a vital step towards enhancing the operational efficiency of the facility, ensuring reliable instrument performance, and maintaining optimal room temperatures, thereby supporting the critical research and development activities at INL.

SECTION C. Environmental Aspects or Potential Sources of Impact:

Air Emissions

Cooling towers have the potential to emit fine particulates into the air from the dissolved solids in the water, they also have the potential to emit pollutants from any descaling chemicals used.

Discharging to Surface-, Storm-, or Ground Water

NA

Disturbing Cultural or Biological Resources

Biological: There is the potential for this work to impact vegetation and for project personnel to interact with various wildlife species. A nesting bird survey is required prior to the initiation of activities that might disturb soil or vegetation for activities taking place between April 1st and October 1st.
Cultural: A Section 106 review for the IMCL Cooling Tower was completed under CRMO project number BEA-25-054 and resulted in no historic properties affected.

Generating and Managing Waste

When wastes are generated, how they are disposed can adversely affect the environment. Managing wastes appropriately and responsibly and implementing recycling or reuse practices, where feasible, during project activities can reduce the potential impact on the environment.

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

Project activities have the opportunity to reduce the impact on our natural resources by recycling or diverting materials from disposal in the landfill.

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 and is not related to other actions with individually insignificant but cumulatively significant impacts.

References: B1.5 "Existing steam plants and cooling water systems"

Justification: Based on the purpose and need and description of the proposed action and potential environmental impacts, the proposed action fits within the class of actions that is listed in Appendix B CX B1.5. There are no extraordinary circumstances related to the proposed action that may affect the significance of the environmental effects of the proposal (10 CFR 1021.410(b)(2)). The proposed action has not been segmented to meet the definition of a categorical exclusion (10 CFR 1021.410(b)(3)). This proposal is not connected to other actions with potentially significant impacts, is not related to other actions with individually insignificant but cumulatively significant impacts, and is not precluded by 10 CFR 1021.211 concerning limitations on actions during preparation of an environmental impact statement (10 CFR 1021.410(b)(3)).

Authorizing the proposed action will not (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, including DOE and/or Executive orders; (2) require siting of new facilities or expansion of existing facilities; (3) disturb hazardous substances, pollutants, or contaminants; (4) adversely affect environmentally sensitive resources; or (5) involve genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species.

B1.5 Existing steam plants and cooling water systems. Minor improvements to existing steam plants and cooling water systems (including, but not limited to, modifications of existing cooling towers and ponds), provided that the improvements would not: (1) Create new sources of water or involve new receiving waters; (2) have the potential to significantly alter water withdrawal rates; (3) exceed the permitted temperature of discharged water; or (4) increase introductions of, or involve new introductions of, hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products.

Approved by Robert Douglas Herzog, DOE-ID NEPA Compliance Officer on: 6/5/2025