

DOE-ID NEPA CX DETERMINATION

Idaho National Laboratory

SECTION A. Project Title: Narrow Range Core Differential Pressure (NRCQDP) System Upgrade

SECTION B. Project Description and Purpose:

Revision 1: The Advanced Test Reactor's (ATR's) Narrow Range Core Quadrant Differential Pressure (NRCQDP) instruments relays information to the reactor control room (RCR) regarding differential pressure (DP) between the upper vessel plenum and each of the four (4) flow distribution tank pressure taps on ATR's flow distribution tank below the core.

The proposed work installs safety-related displays of the NRCQDP that meets design basis requirements for the Plant Protection System (PPS) in the RCR. The proposed activity installs the new NRCQDP system in two phases. Phase 1 relocates the high-side reference legs inside the reactor vessel below the 88'-6" level, during the Core Internals Change-out VI (CIC-VI) to enable NRCQDP functionality during partial vessel drain down event. The activity connects the high-side reference legs to an existing T-Bar inside the Reactor Vessel with exits through Flange C-4 located in the Nozzle Trench then caps the lines until connection to the system is required during Phase 2. See Figures 1 and 2. The proposed action also fits the ATR Simulator with new differential pressure indicators to match those planned for installation in ATR's RCR.

Phase 2 installs two new differential pressure transmitter (DPT) enclosures and new differential pressure indicators (DPIs), along with connecting tubing and wiring, after CIC-VI is completed. One DPT enclosure will be located in the first basement, outside room A106, and the other will be located on the south wall in Room A111 (Cubicle 1B).

Figure 1. Plan view of the Nozzle Trench showing the approximate location of Flange C-4 (made from drawing 047098).

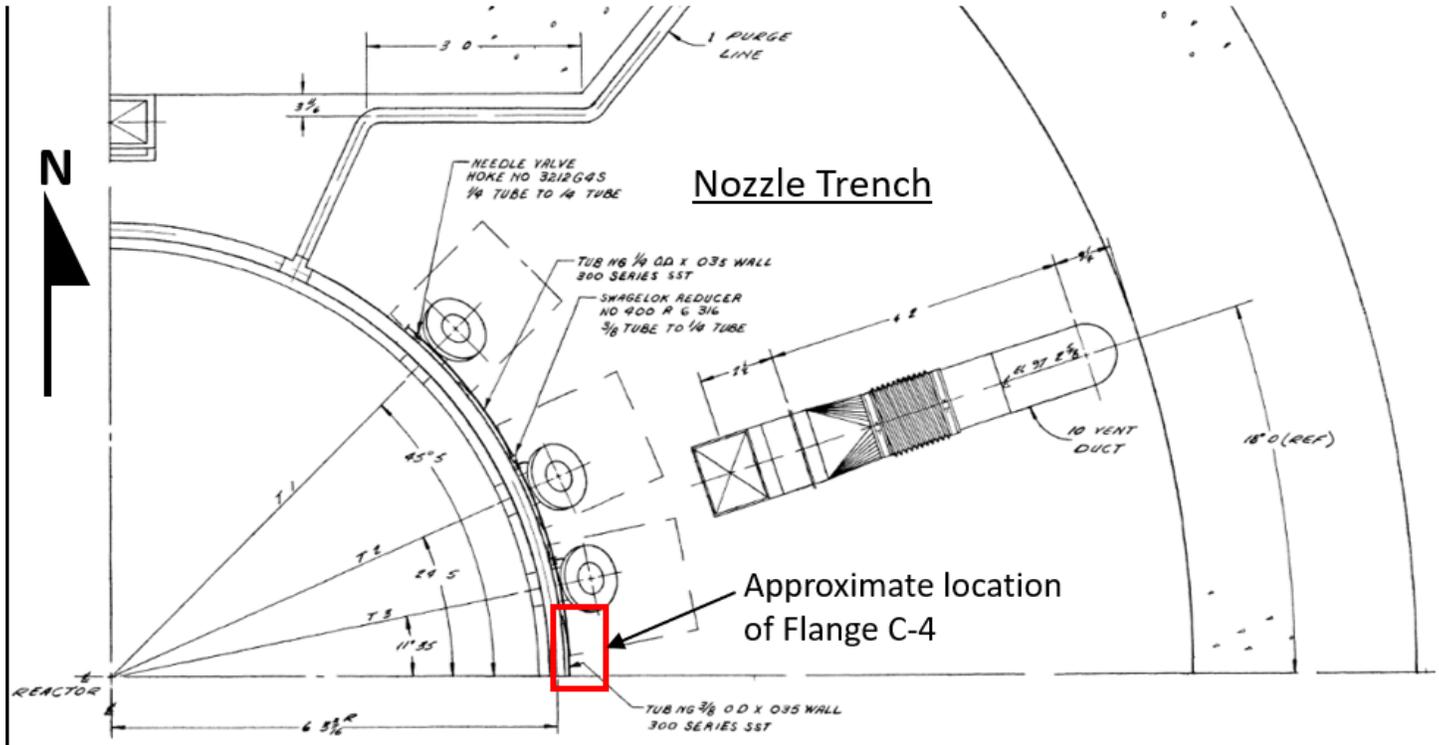
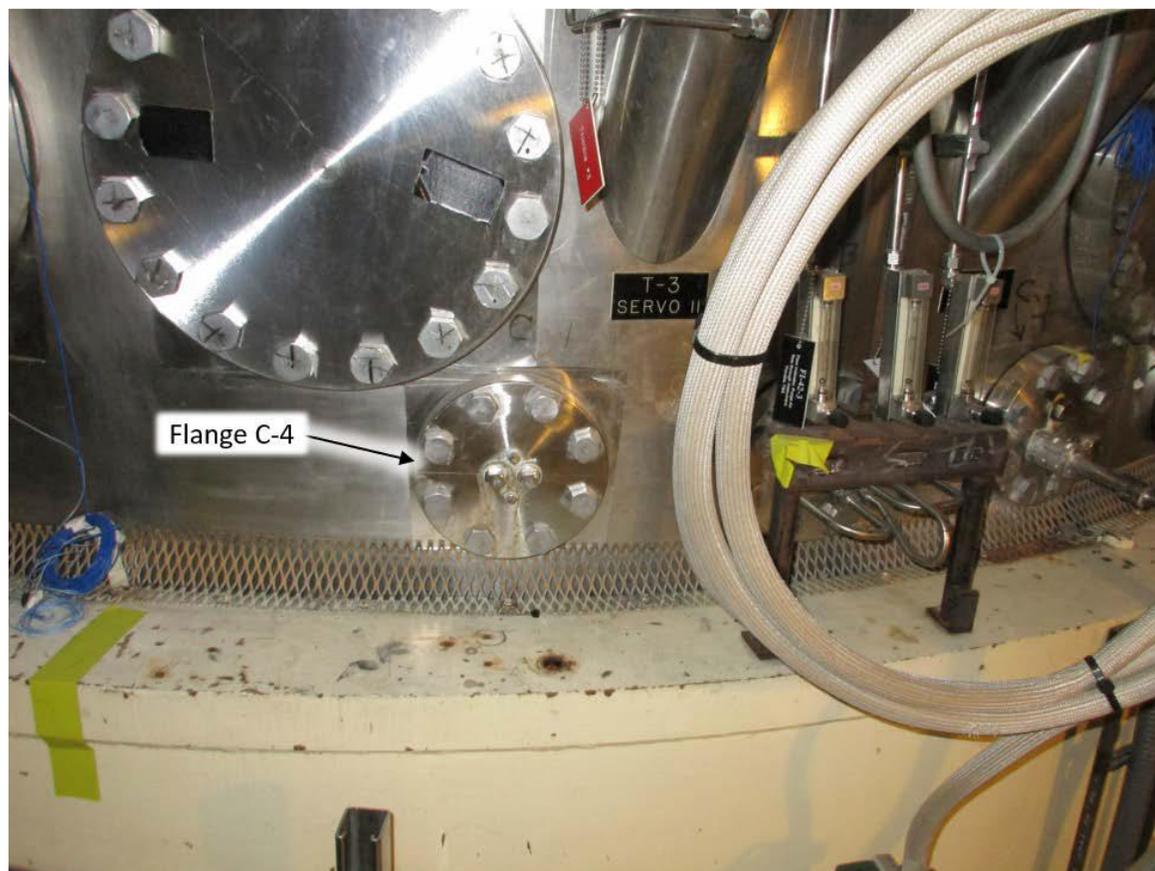


Figure 2. Picture showing the location of Flange C-4 in the Nozzle Trench.



Original ECP: Advanced Test Reactor Core Internals Changeout (CIC) Outage - 2015

The proposed action will provide for the sixth core internals changeout (CIC) outage of the Advanced Test Reactor (ATR), which is housed in building Test Reactor Area (TRA)-670, located at the Idaho National Laboratory (INL) ATR Complex. Activities scheduled during the CIC outage include the changeout of components in the high-flux region of the ATR core and support components, refueling, and maintenance activities. The periodic CIC of the ATR is necessary due to the impact the high neutron flux environment has on reactor core components. Over an extended period, this neutron exposure induces components stress and growth because of new element generation. If the Department of Energy (DOE) does not periodically replace these components, safety problems can develop such that they will eventually not function as originally designed. Changeout of these components maintains the facility's safe and continued operation. The public has been made aware of the need to change the core internals part of the normal operation of the ATR. The description, operation, and environmental impacts of operating ATR were included in the 2000 "Final Programmatic Environmental Impact Statement for Accomplishing Expanded Civilian Nuclear Energy Research and Development and Isotope Production Missions in the United States, Including the Role of the Fast Flux Test Reactor Facility" (DOE/EIS-0310). That description included a discussion of the need to change the ATR core internals every seven to nine years.

Scope of work for this proposed action includes, but is not limited to the following:

Reactor Refueling – Before changing-out core components, project personnel will remove the 40 fuel elements and store the elements in the ATR canal. Some fuel elements will be stored pending transfer to the Idaho Nuclear Technologies and Engineering Center (INTEC). Upon completion of all component change-out, project personnel will place fuel elements not sent to long-term storage back into the reactor core on an as-needed basis along with new fuel elements. DOE's National Environmental Policy Act (NEPA) implementing procedures (10 Code of Federal Regulation [CFR] 1021) identifies reactor refueling as categorically excluded, that is an activity that does not have a significant environmental impact.

Preventative Maintenance Activities – Maintenance activities conducted during CIC may result in like for like or functionally equivalent replacement of components that are not upgrades or improvements. Maintenance planned during the CIC includes, but is not limited to: 1) Replacing the reactor core components with a like for like item and disposing of the old core components; 2) Replacing the reactor support components (those support components outside the core that have reached the end of their design life) and disposing of the old support components.

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There will be other routine maintenance activities conducted during this outage.

This evolution is preventative and required to maintain and preserve the structure in a condition suitable for the facility to be used for its designated purpose.

This specific evolution does not change the planned operating duration of the ATR. Approximate Start Date: February 2015

Project Duration: ATR personnel will conduct the CIC over a four (4) to six (6) month period, however, various facility activities and operation issues may dictate that specific activities associated with the CIC must be performed earlier or later than the indicated start date (e.g., procurement of materials, QA validations, etc.).

SECTION C. Environmental Aspects or Potential Sources of Impact:

Air Emissions

N/A

Discharging to Surface-, Storm-, or Ground Water

N/A

Disturbing Cultural or Biological Resources

MODIFYING EBR-I OR OTHER PRE-1970 BUILDINGS OR STRUCTURES - For proposed activities that would potentially impact historic buildings or structures, contact the Cultural Resources Management Office (CRMO) to conduct a cultural resource review.

Generating and Managing Waste

The proposed action has the potential to generate the following waste types:

- Industrial (non-hazardous, non-radioactive) waste such as boxes, wood, wiring, paper, lubricants/oil, and some metals.
- Hazardous and/or low level waste from performing project activities on systems or equipment containing hazardous chemicals, or by using hazardous chemicals to clean or decontaminate equipment and systems. Hazardous metal waste (e.g., lead, electronics, brass, metal containing paints, etc.) may also be generated.

Releasing Contaminants

Chemicals will be used and will be submitted to chemical inventory lists with associated Safety Data Sheets (SDSs) for approval prior to use.

Although not anticipated, there is a potential for spills when using chemicals or fueling equipment.

Using, Reusing, and Conserving Natural Resources

All materials will be reused and recycled where economically practicable. All applicable waste will 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)).

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References:

10 CFR 1021, Appendix B to subpart D, Categorical Exclusion items B1.14 "Refueling of nuclear reactors", and B2.5 "Facility safety and environmental improvements."

Justification:

Project activities in this EC are consistent with Categorical Exclusions B1.14 "Refueling of an operating nuclear reactor, during which operations may be suspended and then resumed," and B2.5 "Safety and environmental improvements of a facility (including, but not limited to, replacement and upgrade of facility components) that do not result in a significant change in the expected useful life, design capacity, or function of the facility and during which operations may be suspended and then resumed. Improvements include, but are not limited to, replacement/upgrade of control valves, in-core monitoring devices, facility air filtration systems, or substation transformers or capacitors; addition of structural bracing to meet earthquake standards and/or sustain high wind loading; and replacement of aboveground or belowground tanks and related piping, provided that there is no evidence of leakage, based on testing in accordance with applicable requirements (such as 40 CFR part 265, "Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities" and 40 CFR part 280, "Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks"). These actions do not include rebuilding or modifying substantial portions of a facility (such as replacing a reactor vessel)."

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

Approved by Jason Anderson, DOE-ID NEPA Compliance Officer on: 03/30/2021