

DOE-ID NEPA CX DETERMINATION

SECTION A. Project Title: Tritium Migration/Control for Advanced Reactor Systems – The Ohio State University

SECTION B. Project Description

The Ohio State University proposes to study the mitigation of tritium permeation in the coolant loops of a fluoride salt-cooled High-temperature Reactor (FHR) by proposing a two-loop FHR to eliminate the intermediate third loop. Objectives include:

1. To estimate tritium permeation behavior in FHRs;
2. To design a tritium removal system for FHR system;
3. To meet the same tritium permeation level in the FHRs as the tritium production rate of 1.9 Ci/day in PWRs;
4. To show economic benefits of our proposed FHR system via comparing with the three loop FHR system.

SECTION C. Environmental Aspects / Potential Sources of Impact

Chemical Use/Storage – Hydrogen gas will be purchased in standard gas bottles and will be stored according to standard OSHA requirements as established by OSU. Hydrogen will be used in place of tritium in all experiments.

SECTION D. Determine the Level of Environmental Review (or Documentation) and Reference(s): Identify the applicable categorical exclusion from 10 CFR 1021, Appendix B, give the appropriate justification, and the approval date.

Note: 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, including requirements of DOE orders; 2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities; 3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that pre-exist in the environment such that there would be uncontrolled or unpermitted releases; 4) adversely affect environmentally sensitive resources. In addition, no extraordinary circumstances related to the proposal exist which would affect the significance of the action, and the action is not “connected” nor “related” (40 CFR 1508.25(a)(1) and (2), respectively) to other actions with potentially or cumulatively significant impacts.

References: 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 development.

Justification: The activity consists evaluating tritium penetration in a FHR system for research purposes.

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

Approved by Jason Sturm, DOE-ID Deputy NEPA Compliance Officer on 11/27/2013