

**SECTION A. Project Title: – High Spatial Resolution Distributed Fiber-Optic Sensor Network for Reactors and Fuel Cycle Systems – University of Pittsburgh****SECTION B. Project Description**

The University of Pittsburgh proposes to develop new distributed fiber sensing schemes, new radiation-resistant air-hole microstructural fibers, and new fiber sensor prototypes suitable for high radiation environments to perform multi-parameter measurements. This includes the development of radiation-hard active fiber sensors and development of distributed chemical sensors.

**SECTION C. Environmental Aspects / Potential Sources of Impact**

Radioactive Material Use – Radiation sources provided by Westinghouse Electric Company will be used to radiate samples. The work will be done in Westinghouse laboratories, and no radioactive waste will be generated.

Chemical Use/Storage – A number of organic and inorganic chemicals will be used for optical fiber sensor development.

Chemical Waste Disposal – Approximately 100 lbs of chemical waste will be produced annually. This research will produce PCB and other small electronic waste. All PCB containing wastes are collected and processed through the University's Chemical waste program. Electronics and waste materials containing circuit boards are recycled via the E-waste program. The University of Pittsburgh has established waste disposal procedures, and EH&S at Pitt provides waste disposal services.

Water Use – The project will use approximately 20 lbs of water per month

Discharge of Wastewater – Approximately 20 lbs of wastewater per month will be generated. The University's Laboratory Waste Management Summary details a zero discharge initiative at the University.

**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 of university-scale research aimed at developing radiation-hard fibers and sensors.

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

Approved by Jack Depperschmidt, DOE-ID NEPA Compliance Officer on 09/09/2014