

SECTION A. Project Title: Context-Aware Safety Information Display for Nuclear Field Workers – Arizona State University**SECTION B. Project Description**

Arizona State University proposes to develop an “Intelligent Context-Aware Safety Information Display” to allow nuclear power plant (NPP) field workers to access digital models and operational data while in the physical workspace. The objectives of the proposed research are: (1) Navigate field workers through safe and radiologically conscious routes and assist them in locating the maintenance site; (2) Automatically highlight the correct process of operating NPP equipment in the real-time video views of AR glasses; (3) Highlight minimum task-related objects and environmental and facility conditions (e.g., water level, temperatures of objects) in the real-time AR video views for guiding safe field operations; (4) Develop methods that can predict the likely conditions of typical flow loops (e.g., water levels) when network service for real-time data transmission for the AR device is disrupted; and (5) Reduce the computational resource needs of the computer vision and intelligent maintenance process visualization algorithms so that AR glasses with limited computing power can execute these algorithms.

SECTION C. Environmental Aspects / Potential Sources of Impact

The university has procedures in place to handle any waste that will be generated through this project. The action would not create additional environmental impacts above those already permitted 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 field tests of the developed AR technology. These tests will involve (1) movement of the field worker through a flow loop simulator and (2) assembling and troubleshooting a motor contactor.

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 07/24/2019