

DOE-ID NEPA CX DETERMINATION

SECTION A. Project Title: The Influences of Neutron Irradiation on Aggregate Induced Degradation of Concrete – University of California, Los Angeles

SECTION B. Project Description

The University of California, Los Angeles, in collaboration with a National Lab, proposes to examine evolutions/manifestations of irradiation assisted aggregate (and concrete) degradation caused by neutron exposure. Objectives of this research include 1) to quantify the impacts of damage cascades, caused by heavy ion bombardment, and their ability to induce aggregate amorphization, and volume changes in relation to the aggregate mineralogy, composition, and radiation dosage; 2) to correlate atomic-scale alterations and amorphization of aggregates, to the increase in their reactivity in high pH solvents at sub-boiling temperatures; and 3) to model the chemo-mechanical manifestations of aggregate dissolution and product precipitation in a microstructural reaction-transport environment which describes the evolution of concrete degradation.

SECTION C. Environmental Aspects / Potential Sources of Impact

Chemical Use/Storage / Chemical Waste Disposal – The research is expected to result in moderate quantities of chemical wastes as are typically encountered in wet chemistry laboratories. This includes acids, bases, reagents, etc. Such wastes are tagged, labelled and transported to a central collection facility for safe disposal. UCLA ensures exhaustive health/safety protocols for laboratory management with oversight provided by an office for Environmental Health and Safety.

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 investigation of influences irradiation on aggregate induced degradation of concrete.

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 06/18/2015