Date: May 11, 2005

To: G. S. Hartman, DOE-ORO

From: W. M. Belvin, DOE-ORO

Subject: **Contract DE-AC05-00OR22725, National Environmental Policy Act (NEPA) Categorical Exclusion (CX) for Research and Development Activities Conducted by ORNL Nuclear Science and Technology Division (3059X)**

The DOE Oak Ridge Office (ORO) proposes to conduct basic research and development activities within the Nuclear Science and Technology Division (NSTD) at the Oak Ridge National Laboratory (ORNL). The NSTD is involved in experimental and theoretical research in a broad, interdisciplinary research program with emphasis on the characterization, understanding, and processing of advanced systems and materials, testing, developing, and analyzing various isotopes and fissionable materials, and developing and testing complex machines equipment and components. The proposed activities would take place at existing facilities at ORNL and at existing structures and facilities on the DOE Oak Ridge Reservation.

Research and development activities would include, but are not limited to (1) developing computer codes in chemical technology; (2) evaluating constituents of synthetic oils and lubricants; (3) testing and analyzing various crystals using an assortment of equipment and technology; (4) developing technology in waste minimization and utilization; (5) developing environmentally acceptable technologies for chemicals and materials derived from alternative materials; (6) establishing analytical protocols for analyzing degradation products; (7) testing the effects of irradiation on selected systems and materials; (8) developing instrumentation and methodology for detection of nuclear materials associated with nonproliferation, threat reduction, and arms controls assessment; (9) advancing techniques and methodology involved in the separation, production, and distribution of stable, radioactive, and transuranic isotopes; (10) modeling and theoretical development of advanced nuclear reactors and fuels; (11) inspecting and determining the integrity of storage containers containing fissile materials; (12) refining separation and production methods of stable isotopes and radioisotopes used in nuclear medicine; (13) designing, developing, and testing remote systems; (14) designing and conducting materials irradiation experiments; (15) quantifying, assessing, detecting, and measuring materials in various media; (16) conducting computational analysis and research on the effects of surface tension in various liquid media; (17) converting research quantities of hazardous and unstable materials, as well as wastes, to stable and benign conditions; (18) determining various properties of hydrocarbons; (19) testing and evaluating various equipment and materials used in treating, recovering, and recycling of materials, including oils and other hydrocarbons, water and other liquids; (20) using theoretical and computational capabilities to model chemical problems of industrial and scientific interest; (21) designing, developing, and testing processes and equipment for the generation, storage, and/or transfer of hydrogen; (22) designing, developing, and testing processes and equipment for the separation, handling, and/or stabilization of nuclear wastes; (23) designing, developing, and testing processes and equipment for separation, refinement, and handling of hazardous chemicals; (24) designing, developing, and testing processes and equipment for the preparation and/or recycle of nuclear fuels and other nuclear materials;

(25) designing, developing, and testing systems, processes, and equipment for use in the study of the uncontrolled release of radioactive and/or hazardous materials; and (26) designing, developing, and testing instruments, processes and equipment for the use in the study of the interaction of reactive gases and other materials with various equipment and systems.

No new permits or modifications to existing permits would be required for the proposed actions. In addition, the proposed actions would take place in previously developed areas and would not disturb sensitive resources.

Any wastes generated during research and development activities would be appropriately characterized and disposed of at existing permitted/approved waste storage, treatment, or disposal facilities. The proposed actions would be evaluated by Pollution Prevention or other responsible personnel for action options to reduce or eliminate the generation of waste materials.

These projects would pose no threat of significant individual or cumulative environmental effects. The described actions would not be part of an ongoing Environmental Assessment or Environmental Impact Statement. No extraordinary circumstances would be related to these actions, and the proposal would not be connected to other actions with potentially significant impacts.

These actions fall under Section 5.1.1.3.A.1 of the Cultural Resource Management Plan (DOE/ORO 2085, July 2001). The applicable categorical exclusion (CX) is B3.6 as listed in DOE NEPA Implementing Procedures, 10 CFR 1021, Subpart D, Appendix B.

The above description accurately describes the proposed actions, which reflects the requirements of the CX cited above. Therefore, I recommend that the proposed actions be categorically excluded from further NEPA review and documentation.

William Mark Belvin 5/20/05

W. Mark Belvin — Date
DOE-ORO Program Manager

Based on my review and the recommendation of the DOE-ORO Program Manager, I have determined that the proposed actions are categorically excluded from further NEPA review and documentation.

Gary S. Hartman 6/9/2005

G. S. Hartman — Date
DOE-ORO Office NEPA Compliance Officer

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