



U.S. Department of Energy Categorical Exclusion Determination Form

Submit by E-mail

Proposed Action Title: The Boeing Company - A Case Study on the Impact of Additive Manufacturing for Heat/Mass Transfer Equipment used for Aerospace Applications

Program or Field Office: Advanced Research Projects Agency - Energy

Location(s) (City/County/State): See Description Below

Proposed Action Description:

Funding will support the project team's small-scale, research and development activities to build upon prior work that was designed to develop next-generation air-cooled heat exchangers using additive manufacturing that can operate in dry or hybrid mode and substantially reduce (or eventually eliminate) the cooling water consumption in condenser cooling of steam electric generation plants. The new effort will involve (1) further development of the additive manufacturing technique; (2) design, scale up, fabrication, and testing of the heat exchanger; (3) long term durability, thermal, and mechanical integrity testing of the heat exchanger; and (4) extension of the additive manufacturing capability to heat pipes to enable novel designs that will improve heat transfer. If successful, the project would enable more widespread use of dry-cooled systems.

Testing of small-scale heat exchanger coupons will occur at the University of Maryland, with UCLA as an alternate location to accommodate any schedule or budget constraints. Testing of larger scale heat exchanger coupons will occur at the facilities of one of two heat exchanger suppliers (one in Niagara Falls, NY and one in Forest, OH). Selection of the heat exchanger supplier will occur in early 2016.

Project activities will be conducted at existing facilities that are designed for the applicable activities, and will be conducted in accordance with applicable Federal, State, and local safety and environmental requirements.

Locations: Huntington Beach, CA; El Segundo, CA; Los Angeles, CA; College Park, MD; Forest, OH; Niagara Falls, NY; Austin, TX; Belton, TX

Categorical Exclusion(s) Applied:

B3.6 - Small-scale research and development, laboratory operations, and pilot projects

For the complete DOE National Environmental Policy Act regulations regarding categorical exclusions, including the full text of each categorical exclusion, see Subpart D of 10 CFR Part 1021.

Regulatory Requirements in 10 CFR 1021.410(b): (See full text in regulation)

The proposal fits within a class of actions that is listed in Appendix A or B to 10 CFR Part 1021, Subpart D.

To fit within the classes of actions listed in 10 CFR Part 1021, Subpart D, Appendix B, a proposal must be one that would not: (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, or similar requirements of DOE or Executive Orders; (2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities (including incinerators), but the proposal may include categorically excluded waste storage, disposal, recovery, or treatment actions or facilities; (3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that preexist in the environment such that there would be uncontrolled or unpermitted releases; (4) have the potential to cause significant impacts on environmentally sensitive resources, including, but not limited to, those listed in paragraph B(4) of 10 CFR Part 1021, Subpart D, Appendix B; (5) involve genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species, unless the proposed activity would be contained or confined in a manner designed and operated to prevent unauthorized release into the environment and conducted in accordance with applicable requirements, such as those listed in paragraph B(5) of 10 CFR Part 1021, Subpart D, Appendix B.

There are no extraordinary circumstances related to the proposal that may affect the significance of the environmental effects of the proposal.

The proposal has not been segmented to meet the definition of a categorical exclusion. This proposal is not connected to other actions with potentially significant impacts (40 CFR 1508.25(a)(1)), is not related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1508.27(b)(7)), and is not precluded by 40 CFR 1506.1 or 10 CFR 1021.211 concerning limitations on actions during preparation of an environmental impact statement.

Based on my review of the proposed action, as NEPA Compliance Officer (as authorized under DOE Order 451.1B), I have determined that the proposed action fits within the specified class(es) of action, the other regulatory requirements set forth above are met, and the proposed action is hereby categorically excluded from further NEPA review.

NEPA Compliance Officer:

Date Determined: 11/05/2015