Department of Energy
Argonne Site Office
9800 South Cass Avenue
Argonne, Illinois 60439

SEP 2 6 2014

Dr. Peter B. Littlewood
Director, Argonne National Laboratory
President, UChicago Argonne, LLC
9700 South Cass Avenue
Argonne, IL 60439

Dear Dr. Littlewood:

SUBJECT: NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) DETERMINATION FOR ARGONNE NATIONAL LABORATORY (ARGONNE)

The Argonne Site Office (ASO) has approved the following as a categorical exclusion (CX) under Appendix B (to 10 CFR Part 1021, Subpart D, Integrated DOE NEPA Implementing Procedures, December 1996), Category B 5.15 "Small-scale renewable energy research and development, and pilot projects" applicable to:

- Bio-Aviation Fuel Life Cycle Analysis (LCA) with Greenhouse Gases, Regulated Emissions and Energy Use in Transportation (GREET) (ASO-CX-309)

Therefore, no further NEPA review is required. However, if any modification or an expansion of the scope is made to the above project, additional NEPA review will be necessary.

Enclosed please find a copy of the approved Environmental Review Form (ERF) for the project. If you have any questions, please contact Kaushik Joshi of my staff at (630) 252-4226.

Sincerely,

Joanna M. Livengood

Joanna M. Livengood
Manager

Enclosure:
As Stated

cc: J. Stauber, ANL, w/encl.
W. Brocker, ANL, w/encl.
G. Keller, ANL, w/encl.
M. McKown, SC-CH, w/encl.
P. Siebach, SC-CH, w/encl.
K. Joshi, ASO, w/encl.

Argonne NATIONAL LABORATORY

Environmental Review Form for Argonne National Laboratory

Project/Activity Title: Bio-Aviation Fuel LCA with GREET

ASO NEPA Tracking No. ASO-CX-309 **Type of Funding**: FOA

B&R Code _____

Identifying number: _____ WFO proposal # _____ CRADA proposal # _____

Work Project # _____ ANL accounting # (item 3a in Field Work Proposal) _____

Other (explain) Altex-FOA981

Project Manager: Jennifer Dunn Signature: Jennifer Dunn Date: 9/23/14

NEPA Owner: William Brocker Signature: William Brocker Date: 9/23/14

ANL NEPA Reviewer: Joel Stauber Signature: Joel V. Stauber Date: 9/23/14

I. Description of Proposed Action:

Argonne National Laboratory develops the Greenhouse Gases, Regulated Emissions and Energy use in Transportation (GREET) model to calculate the life-cycle energy consumption and air (including greenhouse gas) emissions of biofuels and other advanced transportation technologies. GREET contains many biofuel pathways with feedstocks including corn, sugar cane, and cellulosic crops. The bio-aviation fuel module in GREET models the following feedstock-to-fuel pathways: Fischer-Tropsch jet fuel from biomass (and other fossil feedstocks), hydroprocessed renewable jet (HRJ) fuels from bio-oils including algal oil, and renewable jet fuel from hydrotreated pyrolysis oil produced from corn stover or forest residue. GREET also contains fuel consumption data for six classes of passenger aircraft and four classes of freight aircraft.

For the proposed project, we will conduct a life cycle analysis (LCA) of the conversion of a blend of coal and cellulosic feedstocks (corn stover, switchgrass, and forest residue) to JP-8 from "well-to-wake." The steps in this life cycle include feedstock production (including fertilizer manufacture, coal mining), feedstock transport, fuel production, fuel distribution, and fuel combustion during use. To begin, project partners will provide data that Argonne will incorporate into GREET. For example, Argonne will collect data on the energy consumption and additional inputs (e.g., fertilizers) during feedstock farming, harvesting, and transportation from UC Davis.

For the conversion stage of the biofuels' life cycle, Altex will provide to Argonne material flows and by-type energy consumption for the conversion process. Argonne will incorporate co-products (e.g., char) into the LCA. The impacts of catalyst use and possible regeneration could be calculated with data from Pennsylvania State University. Fuel transmission and distribution and use (combustion in aircraft) will be modeled with existing GREET parameters in the aviation module. Once the coal-biomass-to-liquids pathway has been built into GREET with project-specific data, identification of key parameters and a sensitivity analysis will be conducted.

Conducting an LCA of this fuel pathway with Argonne's GREET model will identify high-impact stages, focusing energy efficiency efforts on the most critical steps. It will also permit a comparison of this pathway with conventional jet fuel (from petroleum and oil sands) as modeled in GREET.

All work activity will be performed in an office environment.

II. Description of Affected Environment:

III. There is no effect on environment. The task deliverables is to collect data and conduct life cycle analysis via the GREET model system. No experimental work is involved. All work will be indoors in an office environment.

IV. Potential Environmental Effects: (Attach explanation for each "yes" response. **See Instructions for Completing Environmental Review Form**)

A. Complete Section A for all projects.

1.	Project evaluated for Pollution Prevention and Waste Minimization opportunities and details provided under items 2, 4, 6, 7, 8, 16, and 20 below, as applicable	Yes ____ No X
2.	Air Pollutant Emissions	Yes ____ No X
3.	Noise	Yes ____ No X
4.	Chemical/Oil Storage/Use	Yes ____ No X
5.	Pesticide Use	Yes ____ No X
6.	Polychlorinated Biphenyls (PCBs)	Yes ____ No X
7.	Biohazards	Yes ____ No X
8.	Effluent/Wastewater (If yes, see question #12 and contact Gregg Kulma (FMS-SEP) at 2-9147 or gkulma@anl.gov	Yes ____ No X
9.	Waste Management	
	a) Construction or Demolition Waste	Yes ____ No X

b) Hazardous Waste Yes ____ No X

c) Radioactive Mixed Waste Yes ____ No X

d) Radioactive Waste Yes ____ No X

e) PCB or Asbestos Waste Yes ____ No X

f) Biological Waste Yes ____ No X

g) No Path to Disposal Waste Yes ____ No X

h) Nano-material Waste Yes ____ No X

10. Radiation Yes ____ No X

11. Threatened Violation of ES&H Regulations or Permit Requirements Yes ____ No X

12. New or Modified Federal or State Permits Yes ____ No X

13. Siting, Construction, or Major Modification of Facility to Recover, Treat, Store, or Dispose of Waste Yes ____ No X

14. Public Controversy Yes ____ No X

15. Historic Structures and Objects Yes ____ No X

16. Disturbance of Pre-existing Contamination Yes ____ No X

17. Energy Efficiency, Resource Conserving, and Sustainable Design Features Yes ____ No X

B. For projects that will occur outdoors, complete Section B as well as Section A.

18. Threatened or Endangered Species, Critical Habitats, and/or other Protected Species Yes ____ No ____

19. Wetlands Yes ____ No ____

20. Floodplain Yes ____ No ____

21. Landscaping Yes ____ No ____

22. Navigable Air Space Yes ____ No ____

23. Clearing or Excavation — Yes ____ No ____

24. Archaeological Resources — Yes ____ No ____

25. Underground Injection — Yes ____ No ____

26. Underground Storage Tanks — Yes ____ No ____

27. Public Utilities or Services — Yes ____ No ____

28. Depletion of a Non-Renewable Resource — Yes ____ No ____

C. For projects occurring outside of ANL complete Section C as well as Sections A and B.

29. Prime, Unique, or Locally Important Farmland — Yes ____ No ____

30. Special Sources of Groundwater (such as sole source aquifer) — Yes ____ No ____

31. Coastal Zones — Yes ____ No ____

32. Areas with Special National Designations (such as National Forests, Parks, or Trails) — Yes ____ No ____

33. Action of a State Agency in a State with NEPA-type Law — Yes ____ No ____

34. Class I Air Quality Control Region — Yes ____ No ____

V. Subpart D Determination: (to be completed by DOE/ASO)

Are there any extraordinary circumstances related to the proposal that may affect the significance of the environmental effects of the proposal? — Yes ____ No X

Is the project connected to other actions with potentially significant impacts or related to other proposed action with cumulatively significant impacts? — Yes ____ No X

If yes, is a categorical exclusion determination precluded by 40 CFR 1506.1 or 10 CFR 1021.211? — Yes ____ No ____

Can the project or activity be categorically excluded from preparation of an Environment Assessment or Environmental Impact Statement under Subpart D of the DOE NEPA Regulations? — Yes X No ____

If yes, indicate the class or classes of action from Appendix A or B of Subpart D under which the project may be excluded. Appendix B, B 5.15 Small-scale renewable energy research and development and pilot projects.

If no, indicate the NEPA recommendation and class(es) of action from Appendix C or D to Subpart D to Part 1021 of 10 CFR.

ASO NEPA Coordinator Review: Kaushik Joshi

Signature: Kaushik Joshi Date: 9-24-2014

ASO NCO Approval of CX Determination:

The preceding pages are a record of documentation that an action may be categorically excluded from further NEPA review under DOE NEPA Regulation 10 CFR Part 1021.400. I have determined that the proposed action meets the requirements for the Categorical Exclusion identified above.

Signature: Peter Siebach Date: 9/24/2014

Peter R. Siebach
Acting Argonne Site Office NCO

ASO NCO EA or EIS Recommendation: NOT APPLICABLE

Class of Action: _____

Signature: _____ Date: _____

Peter R. Siebach
Acting Argonne Site Office NCO

Concurrence with EA or EIS Recommendation: NOT APPLICABLE

CH GLD: _____

Signature: _____ Date: _____

ASO Manager Approval of EA or EIS Recommendation: NOT APPLICABLE

An ☐ EA ☐ EIS shall be prepared for the proposed _____ and

_____ shall serve as the document manager.

Signature: _____ Date: _____

Dr. Joanna M. Livengood
Manager

Argonne NATIONAL LABORATORY

VERIFICATION OF NEPA APPROVAL

Release of Funds is Contingent on Approval

A. DESCRIPTION

Name of project or activity Bio-Aviation Fuel LCA with GREET

Division ES Project Manager/or Project Investigator Jennifer Dunn (name)

Identifying numbers (enter all that apply):

____ WFO proposal number ____ LDRD number

____ CRADA proposal number ____ B&R Code

____ Field Work Proposal (enter the number in Item 3a on the FWP)

FOA Other (explain) Altex-FOA981

CONTINUE

B. APPROVAL FOR OFFICE ACTIVITIES (If not applicable, GO TO Section C.)

The activity(s) described above will be wholly confined to conducting "office work" (e.g. program planning, management and administration; information gathering; information/data analysis; preparation and dissemination of reports; modeling; conceptual design; software development).

For any off-site or on-site activities ANL personnel will not be responsible for directing or conducting: laboratory work, field sampling, geophysical or geological characterization, installation of field instruments, drilling or digging, or any other activities with potential for disturbing the existing ecological/environmental conditions.

Project Manager Jennifer Dunn (name) (signature) 02/26/14 (mm/dd/yyyy)

Environ. Compl. Rep. Bryan Wozny (name) (signature) 02/24/2014 (mm/dd/yyyy)

STOP if Section B is applicable. * Office Work/on-site Only (02/24/14)

C. APPROVAL FOR OTHER ACTIVITIES (Complete either item 1 or 2.)

1. ☐ The activities will fully conform with the criteria defined in the ANL-specific site-wide categorical exclusions for bench-scale research and development in established facilities.

2. ☐ Other applicable NEPA documentation has been approved by (check all that apply):

   ☐ NEPA Owner ☐ ANL NEPA Coordinator ☐ DOE-ASO

   Most recent approval ____ (date) (ANL determination or ASO number)

Environ. Compl. Rep. ____ (name) (signature) (mm/dd/yyyy)

NEPA Owner ____ (name) (signature) (mm/dd/yyyy)

Bio-Aviation Fuel LCA with GREET

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