

STATEMENT OF CONSIDERATIONS

REQUEST BY ARCHER DANIELS MIDLAND COMPANY ("ADM") FOR WAIVER OF DOMESTIC AND FOREIGN PATENT RIGHTS IN AN IDENTIFIED INVENTION DOE INVENTION NO. S-147,947 MADE UNDER DOE CONTRACT NO. DE-FG36-08GO18134; W(1) 2018-001

ADM has requested a waiver of domestic and foreign patent rights of the United States of America to the subject invention entitled "System and Method for Extracting Ethanol from Fermentation Broth" and numbered DOE S-147,947 ("the Subject Invention"). The Subject Invention was made by ADM in the performance of DOE contract number DE-FG36-08GO18134 entitled "Energy Reduction and Advanced Water Removal via Membrane Solvent Extraction Technology." The contract was to the 3M Company. ADM was a subcontractor under the contract.

The Subject Invention is directed to a system and method for producing an organic compound made by fermentation. The organic compound is extracted from the aqueous fermentation broth flowing across one side of a semipermeable membrane into an organic solvent flowing on the opposite side of the membrane. The system and method allow for extraction of a high concentration of the organic compound from the fermentation broth in a continuous system and the recycling of the biomass, aqueous fermentation broth and extraction solvent. The Subject Invention should lower the overall energy cost associated with ethanol production. The Subject Invention is further described in U.S. Patent Application No. 15/325,557.

The period of performance of the contract was from September 15, 2008 through September 30, 2013. The total cost of the contract was \$9,895,908 with \$5,933,538 cost share provided by the 3M Company and its partners. The total cost attributable to the subcontract with ADM was \$3,136,559 including \$1,337,684 cost share (42% cost share) provided by ADM. ADM's work for the project was from the second quarter of 2010 through December 2012.

According to ADM's petition, it has 40 years of history in commercial ethanol production and is the largest ethanol producer in the U.S. It produces approximately 1.6 billion gallons of ethanol per year from its facilities in Illinois, Iowa, Nebraska and Minnesota. It has filed 22 patent applications related to improving the cost of ethanol production and has substantial know-how for optimizing the operation of industrial scale batch, continuous dry grind corn ethanol plants and continuous wet grind corn plants. It has invested more than a billion dollars in ethanol production plants and approximately \$18 million dollars in research prior to the contract related to improving the economics of ethanol production by fermentation, which is the general field of technology in which the Subject Invention pertains. Since the contract, ADM has spent approximately \$24 million in further research generally related to ethanol and other alcohols production by fermentation.

ADM does not believe the patent waiver will negatively impact competition. ADM and the 3M Company have a contractual relationship that allows the 3M Company to sell the technology (including ADM's know-how needed for implementation) to any other ethanol or other alcohol producer that uses fermentation technology other than wet grind corn ethanol producer. ADM

will license the technology at a reasonable rate to all wet grind corn ethanol producers. This arrangement is intended to be pro-competitive in order to increase demand for the technology and incentivize the 3M Company to make additional investments needed for commercialization.

The terms of this patent waiver are reflected in the attached confirmatory license to DOE from ADM. The patent waiver is subject to the march-in and preference for U.S. industry provisions, as well as the U.S. Government license, comparable to those set out in 35 U.S.C. 202-204. Furthermore, the patent waiver is subject to the standard U.S. competitiveness provision in which ADM must agree that any products embodying or made through the use of the Subject Invention shall be manufactured substantially in the United States. ADM cannot license, assign, or otherwise transfer the Subject Invention to any entity unless that entity agrees to these same requirements.

Upon evaluation of the waiver petition, in view of all the objectives and consideration set forth in 10 CFR 784, all of which have been considered, it is recommended that the requested waiver be granted.



Glen R. Drysdale
Patent Attorney
EERE

Date: 2/16/18

Based upon the foregoing Statement of Considerations and representations in the attached waiver petition, it is determined that the interests of the United States and the general public will best be served by a waiver of patent rights of the scope determined above, and therefore the waiver is granted.

CONCURRENCE:



Robert Ivester
Office Director
Advanced Manufacturing Office

Date: 2/16/18

APPROVAL:



Brian Lally
Assistant General Counsel for Technology
Transfer and Intellectual Property

Date: 2/22/18