

STATEMENT OF CONSIDERATIONS

REQUEST BY PRAXAIR, INC. FOR WAIVER OF DOMESTIC AND FOREIGN PATENT RIGHTS IN AN IDENTIFIED INVENTION, DOE DOCKET NO. S-115,861 MADE UNDER DOE COOPERATIVE AGREEMENT NO. DE-FC26-05NT42469, SUBCONTRACT QZ001, W(I)-08-011, CH1428

This waiver request by Praxair, Inc., is for an identified invention developed under Praxair's subcontract with Eltron Research. Eltron was awarded a cooperative agreement for work entitled, "Scale-Up Hydrogen Transport Membranes for IGCC and FutureGen Coal to Hydrogen Production Plants". Eltron is a small business whose patent rights under this cooperative agreement are governed by the terms of 48 CFR 952.227-11. The terms of 48 CFR 952.227-13, Acquisition by the Government, were then flowed down by Eltron in the subcontract to Praxair, a large business. As explained in response to question 3 of the attached waiver petition, Praxair evaluated the economic impact of H₂ separation technology on commercial – scale coal based H₂ and power co-production processes. The goal of this process economic analysis was to develop scenarios in which advanced membranes demonstrate an advantage over existing PSA technology and to enable the low-cost pathway to H₂ and power co-production.

The invention relates to the use of low pressure air separation unit (ASU) N₂ sweep gas in a hydrogen transport membrane (HTM) to increase syngas H₂ recovery and make a near-atmospheric pressure fuel for supplemental firing in the heat recovery steam generator (HRSG) duct burner. Further details of the invention are provided in response to question 2 of the waiver petition, as well as in the attached copy of the invention disclosure.

Praxair states that Eltron's prime contract with DOE was for \$1,915,802, with DOE providing \$1,532,642 or 80% cost share. Praxair's subcontract is valued at \$258,380 with a DOE cost-share of \$155,028 or 60%. Praxair is cost sharing the remaining \$103,352 or 40%, and states that it expended \$30,000 in the development of the subject invention. No further Governmental funding is anticipated in the development of the invention.

In response to questions 5 and 6 of the waiver petition, Praxair states that it is North and South America's largest industrial gas supplier, with \$8.3B in sales and over 27,000 employees. Its ongoing H₂ R&D includes development of low-cost, small-scale H₂ PSA, Pd-based H₂ membrane separators, and oxygen transport membrane based H₂ production. Praxair has successfully developed and commercialized a variety of hydrogen production and purification systems for a broad range of industrial applications including refining, chemical production,


metals processing, food production, electronic materials production, and power production. Praxair's response demonstrates its technical competency in hydrogen purification and supply.

Praxair states that it plans to commercialize the subject invention and that it maintains ongoing investments in gasification and H₂ membrane R&D projects as well as pre-commercial evaluations of coal and pet coke-based power and/or H₂ production plants. Integration of the subject invention will be pursued when the appropriate opportunity arises for implementation.

In its response to questions 9 and 10 of the attached waiver petition, Praxair states that grant of the waiver will provide a competitive alternative to the four major worldwide industrial gas suppliers. These competitors have development programs in hydrogen and gasification, and granting Praxair a waiver will increase its incentive to rapidly commercialize the technology to benefit the U.S. economy. Grant of the waiver will have a positive effect on competition and market concentration.

Praxair has agreed to accept the terms of the Large-Business, Confirmatory license, including the Government license, march-in rights and preference for U.S. industry set forth in 35 USC §§ 202, 203, and 204. The confirmatory license includes the attached U.S. competitiveness clause. Praxair also agrees to submit copies of issued U.S. Patents resulting from the waived invention, and to submit annual report on the utilization of the waived invention or on efforts at obtaining such utilization that are being made by the Contractor or any of its licensees or assignees.

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.


Mark P. Dvorscak
Deputy Chief Counsel
Office of Intellectual Property Law

Date: 05/14/2010

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 described above, and therefore the waiver is granted.

CONCURRENCE:

APPROVAL:







~~Stewart J. Clayton FE-221~~
~~Clean Coal Energy Research~~
Office of Fossil Energy

Mark Ackiewicz
FE-24

John T. Lucas GC-62
Acting Assistant General Counsel for
Technology Transfer and Intellectual
Property

Date: 9/8/2010

Date: 9/14/2010

U.S. Competitiveness Clause

The waiver recipient agrees that any products embodying any waived invention or produced through the use of any waived invention will be manufactured substantially in the United States unless the waiver recipient can show to the satisfaction of the DOE that it is not commercially feasible to do so. In the event the DOE agrees to foreign manufacture, there will be a requirement that the Government's support of the technology be recognized in some appropriate manner, e.g., recoupment of the Government's investment, etc. The waiver recipient agrees that it will not license, assign or otherwise transfer any waived invention to any entity unless that entity agrees to these same requirements. The waiver recipient further agrees that in the event a controlling interest is to be acquired by a foreign entity in the waiver recipient or in any assignee or licensee of a waived invention, then in that case any rights in the waived invention to be acquired by the foreign entity will be subject to the written approval of the DOE.