

STATEMENT OF CONSIDERATIONS

REQUEST BY LIGNOL INNOVATIONS, LTD, (LIGNOL LTD) FOR AN ADVANCE WAIVER OF DOMESTIC AND FOREIGN PATENT RIGHTS UNDER A PROPOSED SUB-AWARD OF COOPERATIVE AGREEMENT NO. DE-FG36-08GO18047 BETWEEN LIGNOL INNOVATIONS, INC. (LIGNOL INC) AND DOE; W(A)2008-036, CH-1463

The Petitioner, LIGNOL LTD, has requested a waiver of domestic and foreign patent rights for all subject inventions arising from its participation under the above referenced award entitled "Lignol Demonstration Biorefinery." Petitioner is proposed to become a subawardee under LIGNOL INC (which is Petitioner's U.S. entity) by means of a sub-award agreement.

Since LIGNOL INC has certified that it is a domestic small business entity, subject inventions made by LIGNOL INC under the award are not subject to the U.S. Competitiveness provision. However, as discussed in detail below, subject inventions made by its parent company LIGNOL LTD under its sub-award will be subject to the attached U.S. Competitiveness provision.

The current project is part of DOE's Small-Scale Biorefinery Project which builds on the goal of making cellulosic ethanol cost-competitive by 2012. Under the project, pre-commercial scale biorefineries will use a wide variety of feedstocks to test novel conversion technologies to provide data necessary to bring online full-size, commercial-scale biorefineries.

The objective of the original agreement with LIGNOL INC is the design, construction, and operation of a demonstration biorefinery in Colorado for the production of cellulosic ethanol and biochemical co-products from biomass. The overall work includes the optimization of process variables and capture process data to improve commercial plant designs and processes and to demonstrate Petitioner's process at a significant, but pre-commercial scale. Specific project objectives include the following: to design build and operate a bioerfinery to produce, amongst other products, cellulosic ethanol and lignin from wood at a scale which processes more than 100tpd of dry feed and produces more than 2.5 million gallons. Phase I of the project will include detailed engineering and design as well as all environmental documentation and permitting. Phase II will include detailed engineering and design, followed by construction, commissioning and start up. The final stage will be demonstrating the operation of the plant using various feedstocks.

The scope of the work that the Petitioner proposes to perform under the sub-award relates to technical support relating to the engineering and design of the plant. Petitioner's personnel will be part of the construction project team, responsible for contractor management, quality control, safety and contract administration.

The budget for Phase I of the project is approximately \$3.12 million of which approximately 50% is being cost shared by Petitioner's domestic subsidiary LIGNOL INC. Although DOE is not currently obligated to do so, upon the successful completion of the milestones outlined within the first phase, and subject to DOE approval and the availability of appropriated funding for each fiscal year, Phase II of the project will commence with LIGNOL INC contributing at least 50% of the total cost of plant construction. This waiver is contingent upon maintaining, in aggregate, the above cost sharing percentage over the course of the award. DOE's maximum contribution under this award is \$28.44 million.

Accordingly, if additional funding is added to the agreement to fund such a second or additional phases, this waiver will also extend to subject inventions under those additional phases of the agreement, contingent upon Petitioner and its domestic subsidiary maintaining in aggregate at least substantially the same cost sharing as described above.

Petitioner is the developer of a proprietary biorefining process. Development work is performed at its various pilot scale plants. Petitioner's core technology is covered by several patents including U.S. Patent No. 5,681,427. LIGNOL LTD has invested about \$15 million in the development of the technology to date. Prior to the acquisition of the technology by LIGNOL LTD, the previous owners, Repap, Inc. and General Electric, invested in excess of \$100 million in the development and demonstration of the original organosolv pretreatment process in pulp and paper applications. Given its expertise and its significant investment in this technology, including the sizeable cost sharing being provided by Petitioner's domestic subsidiary, it is reasonable to conclude that Petitioner will continue to develop and ultimately commercialize the technology and products which may arise from this award.

Petitioner has agreed that this waiver shall be 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. The Petitioner has also agreed to the attached U.S. Competitiveness Provision, paragraph (t). In brief, Petitioner agrees that any substantial portion of the feedstock grown in the United States and processed using any waived invention will be processed in the United States. Petitioner also 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 ability of Petitioner to implement in the U.S. plants embodying any waived inventions will be accelerated if it has the ability to license the waived inventions for the development of plants overseas.

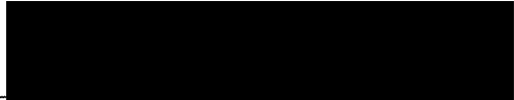

Referring to item 10 of the waiver petition, granting this waiver is not anticipated to have any adverse impact on competition because Petitioner's retention of rights will increase competition among ethanol producers and licensors of ethanol technologies and reduce market concentration. First, the technology's use of corn stover as a feedstock would directly compete with acid hydrolysis, enzymatic and other processes for converting cellulosic and carbonaceous materials, such as corn stover, to a form that can be fermented or otherwise biologically processed to produce ethanol and other alcohols. If Petitioner receives the requested waiver, any potential subject inventions developed under the sub-award would broaden the range of materials usable as a biofuel feedstock and consequently should incentivize further research, innovation and commercialization within the ethanol and biofuels industry. Second, the ethanol marketplace currently supports many ethanol processes practiced by a multitude of parties for converting a wide variety of feedstock to ethanol.

Considering the foregoing, it is believed that granting this waiver will provide Petitioner with the necessary incentive to invest its resources in commercializing the results of the agreement in a manner that will make the above technology available to the public in the shortest time. Therefore, upon evaluation of the waiver petition and in view of the objectives and considerations set forth in 10 CFR 784, all of which have been considered, it is recommended that the requested waiver be granted.

/Brian J. Lally/
Brian J. Lally
Assistant Chief Counsel
Intellectual Property Law Division
Chicago Office

Date: December 2, 2008

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. This waiver shall not apply to any modification or extension of the agreement, where through such modification or extension, the purpose, scope, or cost of the agreement has been substantially altered.

<p>CONCURRENCE:</p> <p></p> <p>Jacques A. Beaudry-Losique Program Manager Office of Biomass Program EE-2E</p> <p>Date: <u>1/21/09</u></p>	<p>APPROVAL:</p> <p></p> <p>Paul A. Gottlieb Assistant General Counsel for Technology Transfer and Intellectual Property</p> <p>Date: <u>1-23-09</u></p>
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(t) U. S. Competitiveness

The Petitioner agrees that a substantial portion of any feedstock grown in the United States as determined by DOE, and processed using any waived invention will be processed in the United States. The Petitioner also agrees that it will commercialize the technology of the waived inventions in the United States unless the Petitioner can show to the satisfaction of the DOE that it is not commercially feasible to do so. DOE agrees that Petitioner has an expanding presence in the U.S., and that it is committed to carrying out business in the U.S. The ability of Petitioner to implement in the U.S. plants embodying any waived inventions will be accelerated if it has the ability to license the waived inventions for the development of plants overseas. The Petitioner and any licensee, sub-licensee or assignee thereof, agrees that it will not license, sub-license, assign or otherwise transfer any waived invention to any entity unless that entity agrees to these same requirements. Should the Petitioner undergo a change in ownership amounting to a controlling interest, then the waiver, assignment, license, or other transfer of rights in the waived invention is suspended until approved in writing by the DOE.