STEVENSON-WYDLER (15 USC 3710) COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENT (hereinafter CRADA) No. 06-CR-14

BETWEEN

Battelle Energy Alliance, LLC (BEA)

under its U.S. Department of Energy Contract

No. DE-AC07-05ID14517 (hereinafter Contractor)

AND

Baard Energy, LLC

(hereinafter Participant), both being

hereinafter referred to singularly as "Party" and jointly as "Parties"

ARTICLE I: DEFINITIONS

A. "Government" means the Federal Government of the United States of America (U.S.) and agencies thereof.

B. "DOE" means the Department of Energy, an agency of the Federal Government.

C. "Contracting Officer" means the DOE employee administering the Contractor's DOE contract.

D. "Generated Information" means information produced in the performance of this CRADA.

E. "Proprietary Information" means information which embodies (i) trade secrets or (ii) commercial or financial information which is privileged or confidential under the Freedom of Information Act (5 USC 552 (b) (4)), either of which is developed at private expense outside of this CRADA and which is marked as Proprietary Information.

F. "Protected CRADA Information" means Generated Information which is marked as being Protected CRADA Information by a Party to this CRADA and which would have been Proprietary Information had it been obtained from a non-Federal entity.

G. "Subject Invention" means any invention of the Contractor or Participant conceived or first actually reduced to practice in the performance of work under this CRADA.

H. "Intellectual Property" means Patents, Trademarks, Copyrights, Mask Works, Protected CRADA Information, and other forms of comparable property rights protected by Federal Law and foreign counterparts, except trade secrets.

I. "Trademark" means a distinctive mark, symbol, or emblem used in commerce by a producer or manufacturer to identify and distinguish its goods or services from those of others.

J. "Service Mark" means a distinctive word, slogan, design, picture, symbol, or any combination thereof, used in commerce by a person to identify and distinguish its services from those of others.

K. "Mask Work" means a series of related images, however fixed or encoded, having or representing the predetermined, three-dimensional pattern of metallic, insulating, or semiconductor material present or removed from the layers of a semiconductor chip product and in which series the relation of the images to one another is that each image has the pattern of the surface of one form of the semiconductor chip product.

L. "Background Intellectual Property" means the Intellectual Property identified by the Parties in Appendix B, Background Intellectual Property, which was in existence prior to or is first produced outside of this CRADA, except that in the case of inventions in those identified items, the inventions must have been conceived outside of this CRADA and not first actually reduced to practice under this CRADA to qualify as Background Intellectual Property.

M. "Foreign Interest" is defined as any of the following:

(1) A foreign government or foreign government agency;

(2) Any form of business enterprise organized under the laws of any country other than the U.S. or its possessions;

(3) Any form of business enterprise organized or incorporated under the laws of the U.S., or a State or other jurisdiction within the U.S., which is owned, controlled, or influenced by a foreign government, agency, firm, corporation or person; or

(4) Any person who is not a U.S. citizen.

N. "Foreign ownership, control, or influence (FOCI)" means the situation where the degree of ownership, control, or influence over a participant by a Foreign Interest is such that a reasonable basis exists for concluding that compromise of classified information or special nuclear material, as defined in 10 CFR Part 710, may result.

ARTICLE II: STATEMENT OF WORK

Appendix A, Statement of Work, is an integral part of this CRADA, and is hereby incorporated by reference into this CRADA.

ARTICLE III: FUNDING AND COSTS

A. The effective date of this CRADA shall be the latter date of (1) the date on which it is signed by the last of the Parties, (2) the date on which it is approved by DOE, or (3) the date on which the advance

funding referred to in Article III.E is received by the Contractor. The work to be performed under this CRADA shall be complete within three (3) years from the effective date.

B. Participant's estimated contribution is $243,175 funds-in and $50,000 in-kind for FY06 and $243,175 funds-in and $50,000 in-kind for FY07. The Government's estimated contribution, which is provided through the Contractor's contract with DOE, is $0 for FY06 and $0 for FY07 subject to available funding.

C. Neither Party shall have an obligation to continue or complete performance of its work at a contribution in excess of its estimated contribution as contained in Article III B, above, including any subsequent amendment.

D. Each Party agrees to provide at least thirty (30) days notice to the other Party if the actual cost to complete performance will exceed its estimated contribution.

E. Participant shall provide Contractor sufficient advance funds to maintain approximately a 90-day advance of funds during the entire period of work. No work will begin before the receipt of a cash advance. Failure of Participant to provide the necessary advance funding is cause for termination of this CRADA.

ARTICLE IV: PERSONAL PROPERTY

All tangible personal property produced or acquired under this CRADA shall become the property of the Participant or the Government, depending upon whose funds were used to obtain it. Such property, if any, is identified in Appendix A, Statement of Work. Personal Property shall be disposed of as directed by the owner at the owner's expense. All jointly funded property shall be owned by the Government.

ARTICLE V: DISCLAIMER

THE GOVERNMENT, PARTICIPANT, AND CONTRACTOR MAKE NO EXPRESS OR IMPLIED WARRANTY AS TO THE CONDITIONS OF THE RESEARCH OR ANY INTELLECTUAL PROPERTY, GENERATED INFORMATION, OR PRODUCT MADE OR DEVELOPED UNDER THIS CRADA, OR THE OWNERSHIP, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE OF THE RESEARCH OR RESULTING PRODUCT. NEITHER THE GOVERNMENT, PARTICIPANT, NOR CONTRACTOR SHALL BE LIABLE FOR SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES ATTRIBUTED TO SUCH RESEARCH OR RESULTING PRODUCT, INTELLECTUAL PROPERTY, GENERATED INFORMATION, OR PRODUCT MADE OR DEVELOPED UNDER THIS CRADA.

ARTICLE VI: LIABILITY

A. Except to the extent of any liability resulting from willful misconduct or negligent acts or omissions of Contractor, the Participant indemnifies the Government and Contractor for all damages, costs and expenses, including attorney's fees, arising from personal injury or property damage occurring as a result of the making, using, or selling of a product, process, or service by or on behalf of Participant, its assignees, or licensees, which was derived from the work performed under this CRADA. In respect to this Article, neither the Government nor Contractor shall be considered assignees or licensees of the Participant, as a result of reserved Government and Contractor rights. The indemnity

set forth in this paragraph shall apply only if Participant shall have been informed as soon and as completely as practical by the Contractor and/or the Government of the action alleging such claim and shall have been given an opportunity, to the maximum extent afforded by applicable laws, rules, or regulations, to participate in and control its defense, and the Contractor and/or the Government shall have provided all reasonably available information and reasonable assistance requested by the Participant. No settlement for which Participant would be responsible shall be made without Participant's consent unless required by final decree of a court of competent jurisdiction.

B. Other liability. Except to the extent of any liability resulting from willful misconduct or negligent acts or omissions of the Contractor, Participant indemnifies the Government and Contractor for all damages, costs and expenditures, including attorneys' fees, arising from any other claims or actions to which Contractor is subjected which result from any willful misconduct or negligent acts or omissions of Participant in the performance of this CRADA. Contractor agrees to give prompt written notice to Participant regarding any claim or action initiated against Contractor which Contractor has reason to believe is likely to give rise to a claim for indemnity hereunder. Upon such notice, Participant may provide and control an appropriate defense or settle such claim or action through counsel of its choice or, at its election, indemnify the costs of such actions under the direction and control of Contractor. To the extent that such claims or actions arise from the willful misconduct or negligent acts or omissions of any party other than Participant, Participant shall have no duty or obligation to Contractor.

C. To the extent necessary to effectuate the indemnity provisions herein, Participant hereby waives any immunity it may have under any applicable worker compensation law.

ARTICLE VII: OBLIGATIONS AS TO PROPRIETARY INFORMATION

A. Each Party agrees to not disclose Proprietary Information provided by another Party to anyone other than the CRADA Participant and Contractor without written approval of the providing Party, except to Government employees who are subject to the statutory provisions against disclosure of confidential information set forth in the Trade Secrets Act (18 USC 1905).

B. If Proprietary Information is orally disclosed to a Party, it shall be identified as such, orally, at the time of disclosure and confirmed in a written summary thereof, appropriately marked by the disclosing Party, within thirty (30) days as being Proprietary Information.

C. Proprietary Information in tangible form shall be returned to the disclosing Party or destroyed with a certificate of destruction submitted to the disclosing Party upon termination or expiration of this CRADA, or during the term of this CRADA upon request by the disclosing Party.

D. All information marked as Proprietary Information shall be protected by the recipient as Proprietary Information for a period of three (3) years from the date of disclosure, unless, as shown by the recipient, such Proprietary Information is in the public domain or thereafter becomes publicly known without the fault of the recipient, comes into recipient's possession from a third party without an obligation of confidentiality on the recipient, is independently developed by recipient's employees who did not have access to such Proprietary Information, is released by the disclosing Party to a third party without restriction, or is released for disclosure with the written consent of the disclosing Party.

E. Notwithstanding anything contained herein to the contrary, a recipient of Proprietary Information may disclose Proprietary Information of any disclosing Party to the extent required by law, regulation or valid court order. Immediately upon receipt of such a court order, the recipient shall notify the

disclosing Party of such order to afford the disclosing Party maximum opportunity to seek relief from such court order. In the case of disclosure required by law or regulation, the recipient shall notify the disclosing Party of the requirement of law or regulation immediately upon learning of such requirement to afford the disclosing party maximum opportunity to exercise its alternatives.

ARTICLE VIII: OBLIGATIONS AS TO PROTECTED CRADA INFORMATION

A. Each Party may designate as Protected CRADA Information any Generated Information produced by its employees which meets the definition of Article I.F and, with the agreement of the other Party, so designate any Generated Information produced by the other Party's employees which meets the definition of Article I.F. All such designated Protected CRADA Information shall be appropriately marked.

B. For a period of five (5) years from the date Protected CRADA Information is produced, pursuant to 15 U.S.C. 3710 a(c)(7)(B), the Parties agree not to further disclose such information and to use the same degree of care and discretion, but no less than reasonable care and discretion, to avoid disclosure, publication, or dissemination of such information to a third party, as the Party employs for similar protection of its own information which it does not desire to disclose, publish, or disseminate except:

   (1) as necessary to perform this CRADA;

   (2) as provided in Article XI [REPORTS AND ABSTRACTS];

   (3) as requested by the DOE Contracting Officer to be provided to other DOE facilities for use only at those DOE facilities with the same protection in place;

   (4) to existing or potential licensees, affiliates, customers, or suppliers of the Parties in support of commercialization of the technology with the same protection in place. Disclosure of the Participant's Protected CRADA Information under this subparagraph shall only be done with Participant's consent; or

   (5) as mutually agreed by the Parties in advance.

C. The obligations of paragraph B above shall end sooner for any Protected CRADA Information which shall become publicly known without fault of either Party, shall come into a Party's possession without breach by that Party of the obligations of paragraph B above, or shall be independently developed by a Party's employees who did not have access to the Protected CRADA Information.

ARTICLE IX: RIGHTS IN GENERATED INFORMATION

The Parties agree that they shall have no obligations of nondisclosure or limitations on their use of, and the Government shall have unlimited rights in all Generated Information produced and information provided by the Parties under this CRADA, except for (a) information which is marked as being Copyrighted (subject to Article XIII) or as Protected CRADA Information (subject to Article VIII) or as Proprietary Information (subject to Article VII), or (b) information that discloses an invention which may later be the subject of a U.S. or foreign Patent application.

ARTICLE X: EXPORT CONTROL

A. THE PARTIES UNDERSTAND THAT MATERIALS AND INFORMATION RESULTING FROM THE PERFORMANCE OF THIS CRADA MAY BE SUBJECT TO EXPORT CONTROL LAWS AND THAT EACH PARTY IS RESPONSIBLE FOR ITS OWN COMPLIANCE WITH SUCH LAWS.

B. Participant has a continuing obligation to provide Contractor written notice of any changes in the nature and extent of foreign ownership, control, or influence over Participant which would affect Participant's answers to the previously completed FOCI certification.

ARTICLE XI: REPORTS AND ABSTRACTS

A. The Parties agree to produce the following deliverables:

(1) an initial abstract suitable for public release at the time the CRADA is approved by DOE;

(2) other abstracts (final when work is complete, and others as substantial changes in scope and dollars occur);

(3) a final report, upon completion or termination of this CRADA, to include a list of Subject Inventions;

(4) reserved;

(5) other topical/periodic reports, when the nature of research and magnitude of dollars justify; and

(6) computer software in source and executable object code format as defined within the Statement of Work or elsewhere within the CRADA documentation.

B. The Parties acknowledge that the Contractor has the responsibility to provide the above information at the time of its completion to the DOE Office of Scientific and Technical Information.

C. Participant agrees to provide the above information to Contractor to enable full compliance with paragraph B of this article.

D. The Parties acknowledge that the Contractor and DOE have a need to document the long-term economic benefit of the cooperative research to be conducted under this CRADA. Therefore, Participant shall respond to Contractor's reasonable requests for pertinent information, during the term of this CRADA and for a period of five (5) years thereafter.

ARTICLE XII: PRE-PUBLICATION REVIEW

A. The Parties agree to secure pre-publication approval from each other, which shall not be unreasonably withheld or denied beyond thirty (30) days, in accordance with the following procedures:

(1) Each Party (hereinafter Submitter) shall submit to the other Party (hereinafter Recipient), in advance, proposed written and oral publications pertaining to work under this CRADA. Proposed oral publications shall be submitted to the Recipient in the form of a written presentation synopsis and a written abstract;

(2) Recipient shall provide a written response to the Submitter within thirty (30) days, either objecting or not objecting to the proposed publication. The Submitter shall consider all objections of the Recipient and shall not unreasonably refuse to incorporate the suggestions and meet the objections of the Recipient. The proposed publication shall be deemed not objectionable, unless the proposed publication contains Proprietary Information, Protected CRADA Information, export controlled information or material that would create potential statutory bars to filing the U.S. or corresponding foreign Patent applications, in which case express written permission shall be required for publication.

B. The Parties agree that neither will use the name of the other Party or its employees in any promotional activity, such as advertisements, with reference to any product or service resulting from this CRADA, without prior written approval of the other Party.

ARTICLE XIII: COPYRIGHTS

A. The Parties may assert Copyright in any of their Generated Information. Assertion of Copyright generally means to enforce or give an indication of an intent or right to enforce such as by marking or securing Federal registration.

B. Allocation of rights to Copyrights in Generated Information will be negotiated by the Parties.

C. For Generated Information, the Parties acknowledge that the Government has for itself and others acting on its behalf, a royalty-free, nontransferrable, nonexclusive, irrevocable worldwide Copyright license to reproduce, prepare derivative works, distribute copies to the public, and perform publicly and display publicly, by or on behalf of the Government, all Copyrightable works produced in the performance of this CRADA, subject to the restrictions this CRADA places on publication of Proprietary Information and Protected CRADA Information.

D. For all Copyrighted computer software produced in the performance of this CRADA, the Party owning the Copyright will provide the source code, an expanded abstract as described in Appendix A, the executable object code and the minimum support documentation needed by a competent user to understand and use the software to DOE's Energy Science and Technology Software Center, P.O. Box 1020, Oak Ridge, TN 37831. The expanded abstract will be treated in the same manner as Generated Information in paragraph C of this article.

E. Contractor and Participant agree that, with respect to any Copyrighted computer software produced in the performance of this CRADA, DOE has the right, at the end of the period set forth in paragraph B of Article VIII hereof and at the end of each two-year interval thereafter, to request Contractor and Participant and any assignee or exclusive licensee of the Copyrighted software to grant a nonexclusive, partially exclusive, or exclusive license to a responsible applicant upon terms that are reasonable under the circumstances, provided such grant does not cause a termination of any licensee's right to use the Copyrighted computer software. If Contractor, Participant, any assignee, or exclusive licensee refuses such request, the Contractor and Participant agree that DOE has the right to grant the license if DOE determines that the Contractor, Participant, assignee, or licensee has not made a satisfactory demonstration that it is actively pursuing commercialization of the Copyrighted computer software.

Before requiring licensing under this paragraph E, DOE shall furnish the Contractor/Participant written notice of its intentions to require the Contractor/Participant to grant the stated license, and the Contractor/Participant shall be allowed thirty (30) days (or such longer period as may be authorized

by the cognizant DOE Contracting Officer for good cause shown in writing by the Contractor/Participant) after such notice to show cause why the license should not be required to be granted.

Contractor/Participant shall have the right to appeal the decision by DOE to the grant of the stated license to the Invention Licensing Appeal Board as set forth in paragraphs (b)-(g) of 10 CFR 781.65, "Appeals."

F. The Parties agree to place copyright and other notices, as appropriate for the protection of copyright, in human readable form onto all physical media, and in digitally encoded form in the header of machine readable information recorded on such media such that the notice will appear in human readable form when the digital data are off loaded or the data are accessed for display or printout.

ARTICLE XIV: REPORTING INVENTIONS

A. The Parties agree to disclose to each other each Subject Invention which may be patentable or otherwise protectable under the Patent Act. The Parties agree that Contractor and Participant will disclose their respective Subject Inventions to DOE and each other within two (2) months after the inventor first discloses the Subject Invention in writing to the person(s) responsible for Patent matters of the disclosing Party.

B. These disclosures should be in sufficiently complete technical detail to convey a clear understanding, to the extent known at the time of disclosure, of the nature, purpose, and operation of the Subject Invention. The disclosure shall also identify any known actual or potential statutory bars, i.e., printed publications describing the Subject Invention or the public use or "on sale" of the Subject Invention in this country. The Parties further agree to disclose to each other any subsequent known actual or potential statutory bar that occurs for a Subject Invention disclosed but for which a Patent application has not been filed. All Subject Invention disclosures shall be marked as confidential under 35 U.S.C. 205.

ARTICLE XV: TITLE TO INVENTIONS

Wherein DOE has granted Participant and Contractor the right to elect to retain title to their respective Subject Inventions, and wherein Participant has the option to choose an exclusive license, for reasonable compensation, for a pre-negotiated field of use to Contractor's Subject Inventions,

A. Each Party shall have the first option to elect to retain title to any Subject Invention made by its employees and that election shall be made: (1) for the Participant, within twelve (12) months of disclosure of the Subject Invention to DOE or (2) for the Contractor, within twelve (12) months of disclosure of the Subject Invention to DOE. If a Party elects not to retain title to any Subject Invention of its employees, the other Party shall have the second option to elect to retain title to such Subject Invention. DOE shall retain title to any Subject Invention which is not retained by any Party.

For Subject Inventions conceived or first actually reduced to practice under this CRADA, which are joint Subject Inventions made by Contractor and Participant, title to such Subject Inventions shall be jointly owned by Contractor and Participant.

B. The Parties acknowledge that DOE may obtain title to each Subject Invention reported under Article XIV for which a Patent application or applications are not filed pursuant to Article XVI and for which any issued Patents are not maintained by any Party to this CRADA.

C. The Parties acknowledge that the Government retains a non-exclusive, nontransferrable, irrevocable, paid-up license to practice or to have practiced for or on behalf of the U.S. every Subject Invention under this CRADA throughout the world. The Parties agree to execute a Confirmatory License to affirm the Government's retained license.

D. During the term of this CRADA and for a period of six months after the respective disclosure of each Contractor Subject Invention to Participant, if any, Participant shall have the opportunity, pursuant to 15 U.S.C. 3710a, to obtain a license to Contractor Subject Inventions. In particular, Participant shall have the option to obtain, up to and including, an exclusive license to Contractor Subject Inventions within a defined field of use on mutually agreed- upon reasonable terms and conditions, including the payment of negotiated license fees and royalties.

ARTICLE XVI: FILING PATENT APPLICATIONS

A. The Parties agree that the Party initially indicated as having an ownership interest in any Subject Invention (hereinafter Inventing Party) shall have the first opportunity to file U.S. and foreign Patent applications. If Participant does not file such applications within one (1) year after election, or if Contractor does not file such applications within the filing time specified in its prime contract, the other Party to this CRADA exercising an option pursuant to Article XV may file Patent applications on such Subject Inventions. If a Patent application is filed by the other Party (hereinafter Filing Party), the Inventing Party shall reasonably cooperate and assist the Filing Party, at the Filing Party's expense, in executing a written assignment of the Subject Invention to the Filing Party and in otherwise perfecting the Patent application, and the Filing Party shall have the right to control the prosecution of the Patent application. The Parties shall agree between themselves as to who will file Patent applications on any joint Subject Invention.

B. The Parties agree that DOE has the right to file patent applications in any country if neither Party desires to file a patent application for any Subject Invention. Notification of negative intent shall be made in writing to the DOE Contracting Officer within three (3) months of the decision of the non-Inventing Party to not file a patent application for the Subject Invention pursuant to Article XV or not later than sixty (60) days prior to the time when any statutory bar might foreclose filing of a U.S. patent application.

C. The Parties agree to include within the beginning of the specification of any U.S. Patent application and any patent issuing thereon (including foreign Patents) covering a Subject Invention, the following statement: "This invention was made under a Cooperative Research and Development Agreement between Baard Energy LLC and Battelle Energy Alliance, LLC under Contract No. DE-AC07-05ID14517, awarded by the U.S. Department of Energy. The U.S. Government has certain rights in the invention."

D. A Party electing title or filing a Patent application in the U.S. or in any foreign country shall advise the other Party and DOE if it no longer desires to continue prosecution, pay maintenance fees, or retain title in the U.S. or any foreign country. The other Party and then DOE will be afforded the opportunity to take title and retain the Patent rights in the U.S. or in any such foreign country.

ARTICLE XVII: TRADEMARKS

The Parties may seek to obtain Trademark/Service Mark protection on products or services generated under this CRADA in the U.S. or foreign countries. The ownership and other rights relating to this Trademark shall be as mutually agreed to in writing by the Parties. The Parties hereby acknowledge that the Government shall have the right to indicate on any similar goods or services produced by or for the Government that such goods or services were derived from and are a DOE version of the goods or services protected by such Trademark/Service Mark with the Trademark and the owner thereof being specifically identified. In addition, the Government shall have the right to use such Trademark/Service Mark in print or communications media.

ARTICLE XVIII: MASK WORKS

Reserved

ARTICLE XIX: COST OF INTELLECTUAL PROPERTY PROTECTION

Each Party shall be responsible for payment of all costs relating to Copyright, Trademark, and Mask Work filing; U.S. and foreign patent application filing and prosecution; and all costs relating to maintenance fees for U.S. and foreign Patents hereunder which are solely owned by that Party. Government/DOE laboratory funds contributed as DOE's cost share to a CRADA cannot be given to Participant for payment of Participant's costs of filing and maintaining patents or filing for Copyrights, Trademarks, and Mask Works. With respect to jointly owned Intellectual Property, the costs associated in protecting such jointly owned Intellectual Property will be shared by the Parties as mutually agreed.

ARTICLE XX: REPORTS OF INTELLECTUAL PROPERTY USE

Participant agrees to submit, for a period of three (3) years from the date of termination or completion of this CRADA and upon request of DOE, a nonproprietary report no more frequently than annually on Participant's efforts to utilize any Intellectual Property arising under the CRADA.

ARTICLE XXI: DOE MARCH-IN RIGHTS

The Parties acknowledge that DOE has certain march-in rights to any Subject Inventions in accordance with 48 CFR 27.304-1(g) and 15 U.S.C. 3710 a (b)(1)(B) and (C).

ARTICLE XXII: U.S. COMPETITIVENESS

The Parties agree that a purpose of this CRADA is to provide substantial benefit to the U.S. economy.

A. In exchange for the benefits received under this CRADA, the Participant therefore agrees to the following:

(1) Products embodying Intellectual Property developed under this CRADA shall be substantially manufactured in the U.S. except where Participant can demonstrate to the satisfaction of the DOE that it is not commercially feasible to do so. In such case, Participant agrees to recognize Government's support of the technology by providing to DOE a statement for providing a net benefit to the U.S. economy.

(2) Processes, services, and improvements thereof which are covered by Intellectual Property developed under this CRADA shall be incorporated into Participant's manufacturing facilities in the U.S. either prior to or simultaneously with implementation outside the U.S. Such processes, services, and improvements, when implemented outside the U.S. shall not result in reduction of the use of the same processes, services, or improvements in the U.S.

B. Contractor agrees to a U.S. Industrial Competitiveness clause in accordance with its prime contract with respect to any licensing and assignments of its Intellectual Property arising from this CRADA, except that any licensing or assignment of its Intellectual Property rights to Participant shall be in accordance with the terms of paragraph A of this article.

ARTICLE XXIII: ASSIGNMENT OF PERSONNEL

A. Each Party may assign personnel to the other Party's facility as part of this CRADA to participate in or observe the research to be performed under this CRADA. Such personnel assigned by the assigning Party shall not during the period of such assignments be considered employees of the receiving Party for any purpose.

B. The receiving Party shall have the right to exercise routine administrative and technical supervisory control of the occupational activities of such personnel during the assignment period and shall have the right to approve the assignment of such personnel and/or to later request their removal by the assigning Party.

C. The assigning Party shall bear any and all costs and expenses with regard to its personnel assigned to the receiving Party's facilities under this CRADA. The receiving Party shall bear facility costs of such assignments.

ARTICLE XXIV: FORCE MAJEURE

No failure or omission by Contractor or Participant in the performance of any obligation under this CRADA shall be deemed a breach of this CRADA or create any liability if the same shall arise from any cause or causes beyond the control of Contractor or Participant, including but not limited to the following, which, for the purpose of this CRADA, shall be regarded as beyond the control of the Party in question: Acts of God, acts or omissions of any government or agency thereof, compliance with requirements, rules, regulations, or orders of any governmental authority or any office, department, agency, or instrumentality thereof, fire, storm, flood, earthquake, accident, acts of the public enemy, war, rebellion, insurrection, riot, sabotage, invasion, quarantine, restriction, transportation embargoes, or failures or delays in transportation.

ARTICLE XXV: ADMINISTRATION OF CRADA

Contractor enters into this CRADA under the authority of its prime contract with DOE. Contractor is authorized to and will administer this CRADA in all respects unless otherwise specifically provided for

herein. Administration of this CRADA may be transferred from Contractor to DOE or its designee with notice of such transfer to Participant, and Contractor shall have no further responsibilities except for the confidentiality, use, and/or non-disclosure obligations of this CRADA.

ARTICLE XXVI: RECORDS AND ACCOUNTING FOR GOVERNMENT PROPERTY

Participant shall maintain records of receipts, expenditures, and the disposition of all Government property in its custody related to this CRADA.

ARTICLE XXVII: NOTICES

Any communications required by this CRADA, if given by postage prepaid first class U.S. Mail or other verifiable means addressed to the Party to receive the communication, shall be deemed made as of the day of receipt of such communication by the addressee, or on the date given if by verified facsimile. Address changes shall be given in accordance with this Article and shall be effective thereafter. All such communications, to be considered effective, shall include the number of this CRADA.

The addresses, telephone numbers and facsimile numbers for the Parties are as follows:

For Contractor:

Agreements Administrator
Technology Transfer and Commercialization
Battelle Energy Alliance, LLC
2525 North Fremont Avenue
P.O. Box 1625, M.S. 3805
Idaho Falls, ID 83415-3805
Telephone: (208) 526-6141
Facsimile: (208) 526-0876

For Participant:

Attn: President
Baard Energy, LLC
9013 NE Hwy 99, Ste 9
Vancouver, WA 98665

ARTICLE XXVIII: DISPUTES

The Parties shall attempt to jointly resolve all disputes arising from this CRADA. If the Parties are unable to jointly resolve a dispute within a reasonable period of time, the dispute shall be decided by the DOE Contracting Officer, who shall reduce his/her decision to writing within sixty (60) days of receiving in writing the request for a decision by either Party to this CRADA. The DOE Contracting Officer shall mail or otherwise furnish a copy of the decision to the Parties. The decision of the DOE Contracting Officer is final unless, within 120 days, the Participant brings an action for adjudication in a court of competent jurisdiction in the State of Idaho. To the extent that there is no applicable U.S. Federal law, this CRADA and performance thereunder shall be governed by the law of the State of Idaho.

ARTICLE XXIX: ENTIRE CRADA AND MODIFICATIONS

A. Except for a nondisclosure agreement between the Parties, if any, this CRADA with its appendixes contains the entire agreement between the Parties with respect to the subject matter hereof, and all other prior representations or agreements relating hereto have been merged into this document and are thus superseded in totality by this CRADA. This CRADA shall not be effective until approved by DOE and signed by the Parties.

B. Any agreement to materially change any terms or conditions of this CRADA or the appendices shall be valid only if the change is made in writing, executed by the Parties hereto, and approved by DOE.

ARTICLE XXX: TERMINATION

This CRADA may be terminated by either Party upon thirty (30) days written notice to the other Party. This CRADA may also be terminated by the Contractor in the event of failure by the Participant to provide the necessary advance funding, as agreed in Article III.

In the event of termination by either Party, each Party shall be responsible for its share of the costs incurred through the effective date of termination, as well as its share of the costs incurred after the effective date of termination, and which are related to the termination.

The confidentiality, use, and/or non-disclosure obligations of this CRADA shall survive any termination of this CRADA.

BATTELLE ENERGY ALLIANCE, LLC:

BY: Tom Harrison for

PRINTED NAME: A. Ray Barnes

TITLE: Director, Technology Transfer & Commercialization

DATE: 7/28/06

BAARD ENERGY, LLC:

BY: John A. Baardson

PRINTED NAME: John Baardson

TITLE: President and CEO

DATE: 7/27/06

APPENDIX A
STATEMENT OF WORK
CRADA 06-CR-14
Coal-to-Liquids Modeling and Gas Separations Technology Work

I. Introduction & Background:

The Participant is engaged in developing a design, engineering and constructing a coal-to-liquids (CTL) plant that will utilize a Fischer-Tropsch (FT) process to produce synthetic fuels. The Contractor and the Participant will collaborate in developing a steady-state Aspen Plus process modeling software. The code will include a modular construct that will address air separations, gasification, syngas cleaning, FT fuel synthesis, product refining and upgrading, and power generation. In addition, kinetic-based models for the gasifier island and the FT reactors will be developed. The gasifier will be modeled using Fluent software.

The steady-state process model will also be used to evaluate the trade-off of a tail gas recycle process versus increased power generation. The Contractor has developed technology that may be utilized for separation for liquefied natural gas (LNG) and hydrogen from natural gas pipelines. The technology utilizes the joule Thompson expansion phenomena and cryogenic liquefaction. The Contractor and the Participant will investigate the feasibility of using the same thermodynamic principles to separate gas species generated in the FT tail gas.

Points of Contact:

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II. Work Scope:

The project will consist of two principle Tasks: (1) Coal-to-Liquids Modeling; (2) FT Reactor Tail Gas Separation Assessment.

Task 1: Coal-to-Liquids Process Modeling.

The Contractor and the Participant will collaborate in developing a steady-state CTL process model using Aspen Plus software The custom code developed under this research will include modular constructs for air separations, gasification, syngas cleaning, FT fuel synthesis, product refining and upgrading, and power generation. Kinetic-based models for the Gasifier Island and FT reactor(s) will also be incorporated. In addition, GT-Pro Software will be used to model the power island. The Participant will select the FT reactor and gasifier designs for use in this Task. The gasifier unit will also be modeled in

Fluent software. Once the code is converged, the Aspen Plus software modeling code of the gasifier unit will be converted to Aspen Dynamics software to simulate plant start-up and to allow upset conditions and the time response of operator adjustments to be investigated.

Sub-Tasks:	CONTRACTOR	PARTICIPANT
1. Acquisition and/or purchase of licenses and/or user seats for GT-Pro software, Fluent software, and/or Star 3-D software	X	X
2. Acquire GT-Pro Software License	-	X
3. Acquisition of Aspen Dynamics software user seat	X	X
4. Acquire baseline FT plant process for use as a reference and/or baseline case in the modeling Task.		X
5. Develop a steady-state Aspen Plus process software model of the reference case, incorporating kinetic models for the gasifier island and FT reactor(s), and a GT Pro software model for the power island.	X	-
6. Model validation with commercial data.	X	X
7. Develop dynamic model from existing steady-state model.	X	-
8. Develop computational fluid dynamics (CFD) model of the gasifier using Fluent software.	X	X
9. Use dynamic model to evaluate simulated plant operation including: start-up, upset conditions and process transient responses.	X	X
10. Prepare a final summary report of research findings	X	X

Task 2. FT Reactor Tail Gas Separations Assessment.

The Tail Gas Separations Task will focus on recovery and separation of tail gas generated from the FT process. The FT reactor tail gas contains significant amounts of methane, hydrogen and/or other light gas components that may have higher value provided that they can be separated and recovered. The Task will draw upon Contractor-developed technologies based on joule Thompson and cryogenic principles to research the feasibility of separating methane and hydrogen from FT tail gas species. The second part of the Task will focus on engineering and integrating the gas separation process with the gasification/FT processes and estimating overall system performance.

Sub-Task A: The Contractor and the Participant will perform a preliminary assessment on the feasibility of separating FT reactor tail gas species. The research and performance modeling will make assumptions on the amount of tail gas to be diverted in the separation's process as well as gas composition and flow rate.

Sub-Tasks A:	CONTRACTOR	PARTICIPANT
1. Perform a screening assessment based on current INL models	X	X
2. Define critical performance criteria for gas separation system evaluation	X	X
3. Conduct preliminary feasibility assessment on the thermodynamics and performance of the gas separation based on summed tail gas composition and conditions.	X	-
4. Identification of major interfaces and impact to the FT-Reactor process, including system performance.	X	X
5. Estimate the amount of FT-Reactor tail gas that can be	X	X

diverted from the combustion turbine while still maintaining the mass and energy balance in the gasification/FT process.		
6. Develop an estimate of the gas separation process economics, including lost revenue from reduced electric power production, cost of recovered gas spices (i.e. methane, hydrogen) and major changes in gasification/FT process equipment.	X	X
7. Prepare report documenting the feasibility assessment.	X	X

Sub-Task B: Based upon results from Sub-Task A, a more detailed assessment of an integrated FT Reactor/Gas Separation process will be undertaken and benchmarked against an FT reactor without the Gas Separations system. The integrated system will be modeled using the ASPEN software steady-state model developed under Task 1, and adapted for the specific configuration being designed by the Participant.

Sub-Tasks B:	**CONTRACTOR**	**PARTICIPANT**
1. Configure ASPEN steady-state software model to reflect the Participant's plant configuration.	X	X
2. Validate the ASPEN software model against existing mass and energy data provided by others as a part of the Participant's plant design.	X	X
3. Develop baseline process performance data.	X	-
4. Modify ASPEN process softwaremodel to incorporate a Gas Separation subsystem including input and output interfaces.	X	-
5. Develop process performance for the integrated system configuration including the Gas Separation subsystem.	X	-
6. Develop cost/benefit assessment of integrating the gas separation process into the overall FT reactor plant configuration and operation.	X	X
7. Develop path forward for optimization of the Gas Separation subsystem for a FT Reactor application including equipment, process controls, etc.	X	X
8. Develop cost and schedule for path forward plan.	X	X
9. Prepare final summary report of research findings.	X	X

III. Schedule:

A. Task 1. Four (4) months
B. Task 2. Twenty Four (24) months

IV. Deliverables:

A. Task 1.
1. A Coal-to-Liquids steady-state FT Process Model (i.e., source code and onsite user training) with empirical FT reactor and empirical Gasifier, including GT-Pro software modeling, and case studies.
2. A dynamic Coal-to-Liquids model based on the steady-state Aspen Plus modeling software, including source code and onsite user training.
3. A Fluent computational fluid dynamics software modeling of the gasifier, including source code.

B. Task 2.

1. Screening level assessment of the gas separation process for separation and recovery of gases from the FT tail gas
2. A summary report of an integrated system performance analysis comparing a baseline FT reactor process with a FT reactor process configured to include a Gas Separation sub-system. The deliverable will include a conceptual integrated process configuration, performance comparison with baseline configuration including cost-benefit analysis of integrating the Gas Separation subsystem into a FT-Reactor.

APPENDIX B
BACKGROUND INTELLECTUAL PROPERTY
Coal-to-Liquids Modeling and Gas Separations Technology Work
CRADA NO. 06-CR-14

Contractor Background Intellectual Property

1. BEA Invention Disclosure Record No. ____, submitted on ____, entitled "Light Gas Separations Process." submitted by Carrington et al. (This is pending acceptance by BEA Legal Department.)

2. Canada Patent Application # 2,315,014, filed on 12/16/1998, entitled "Apparatus and Process for the Refrigeration, Liquefaction and Separation of Gases with Varying Levels of Purity", BEA Docket # LIT-PI-401.

3. European Patent Convention Application # 98 964 201.2, filed on 12/16/1998, entitled "Apparatus and Process for the Refrigeration, Liquefaction and Separation of Gases with Varying Levels of Purity", BEA Docket # LIT-PI-401.

4. United States Patent # 6105390, granted 8/22/2000, entitled "Apparatus and Process for the Refrigeration, Liquefaction and Separation of Gases with Varying Levels of Purity", BEA Docket # LIT-PI-401.

5. Japan Patent Application # 2000-539305, filed on 6/16/2000, entitled "Apparatus and Process for the Refrigeration, Liquefaction and Separation of Gases with Varying Levels of Purity", BEA Docket # LIT-PI-401.

6. United States Patent # 6425263, granted 7/30/2002, entitled "Apparatus and Process for the Refrigeration, Liquefaction and Separation of Gases with Varying Levels of Purity", BEA Docket # LIT-PI-401A.

7. United States Patent # 6581409, granted 6/24/2003, entitled "Apparatus for the Liquefaction of Natural Gas and Methods Relating to Same" , BEA Docket # B-156.

8. Armenia, Azerbaijan, Belarus, Kazakstan, Kyrgyzstan, Moldova, Russian Federation, Tajikistan, Turkmenistan (PCT/Eurasian Patent Convention) Patent # 006270 granted on 10/27/2005, entitled "Apparatus for the Liquefaction of Natural Gas and Methods Relating to Same", BEA Docket # B-156.

9. Australia Patent Cooperation Treaty Application #2002346035, filed on 7/1/2002, entitled "Apparatus for the Liquefaction of Natural Gas and Methods Relating to Same", BEA Docket # B-156.

10. Brazil Patent Cooperation Treaty Application # PI0215515, filed on 7/1/2002, entitled "Apparatus for the Liquefaction of Natural Gas and Methods Relating to Same", based on BEA Docket # B-156.

11. Canada Patent Cooperation Treaty Application # 2,473,185, filed on 7/1/2002, entitled "Apparatus for the Liquefaction of Natural Gas and Methods Relating to Same", BEA Docket # B-156.

12. Chile Patent Application # 1541-2004, filed on 7/1/2002, entitled "Apparatus for the Liquefaction of Natural Gas and Methods Relating to Same", BEA Docket # B-156.

13. China P.R. Patent Cooperation Treaty Application # 02827305.2, filed on 7/1/2002, entitled "Apparatus for the Liquefaction of Natural Gas and Methods Relating to Same", BEA Docket # B-156.

14. Colombia Patent Cooperation Treaty Application # 04067546, filed on 7/1/2002, entitled "Apparatus for the Liquefaction of Natural Gas and Methods Relating to Same", BEA Docket # B-156.

15. Ecuador Patent Cooperation Treaty Application # 04-5189PCT, filed on 7/1/2002, entitled "Apparatus for the Liquefaction of Natural Gas and Methods Relating to Same", BEA Docket # B-156.

16. Eurasian Patent Cooperation Treaty Patent # 006270, granted on 10/27/2005, entitled "Apparatus for the Liquefaction of Natural Gas and Methods Relating to Same", BEA Docket # B-156.

17. European Patent Convention Application # 02744788.7, filed on 7/1/2002, entitled "Apparatus for the Liquefaction of Natural Gas and Methods Relating to Same", BEA Docket # B-156.

18. India Patent Cooperation Treaty Application # 01065/KOL NP/04, filed on 7/1/2002, entitled "Apparatus for the Liquefaction of Natural Gas and Methods Relating to Same", BEA Docket # B-156.

19. Indonesia Patent Cooperation Treaty Application # W-00200401506, filed on 7/1/2002, entitled "Apparatus for the Liquefaction of Natural Gas and Methods Relating to Same", BEA Docket # B-156.

20. Japan Patent Cooperation Treaty Application # 2003-571640, filed on 7/1/2002, entitled "Apparatus for the Liquefaction of Natural Gas and Methods Relating to Same", BEA Docket # B-156.

21. Korea South Patent Cooperation Treaty Application # 10-2004-7010919, filed on 7/1/2002, entitled "Apparatus for the Liquefaction of Natural Gas and Methods Relating to Same", BEA Docket # B-156.

22. Mexico Patent Cooperation Treaty Application # PA/a/2004/006605, filed on 7/1/2002, entitled "Apparatus for the Liquefaction of Natural Gas and Methods Relating to Same", Docket # B-156.

23. New Zealand Patent Cooperation Treaty Application # 733794, filed on 7/1/2002, entitled "Apparatus for the Liquefaction of Natural Gas and Methods Relating to Same", BEA Docket # B-156.

24. Philippines Patent Cooperation Treaty Application # 1-2004-501026, filed on 7/1/2002, entitled "Apparatus for the Liquefaction of Natural Gas and Methods Relating to Same", BEA Docket #B-156.

25. Poland Patent Cooperation Treaty Application # P-369726, filed on 7/1/2002, entitled "Apparatus for the Liquefaction of Natural Gas and Methods Relating to Same", BEA Docket # B-156.

26. Qatar Patent Application Published, filed on 7/1/2002, entitled "Apparatus for the Liquefaction of Natural Gas and Methods Relating to Same", BEA Docket # B-156.

27. South Africa Patent Cooperation Treaty # 2004/4910, granted on 3/30/2005, entitled "Apparatus for the Liquefaction of Natural Gas and Methods Relating to Same",BEA Docket #B-156.

28. United States Patent # 6886362, granted on 5/3/2005, entitled "Apparatus for the Liquefaction of Natural Gas and Methods Relating to Same", BEA Docket # B-156D2

29. United States Patent # 6962061, granted on 11/8/2005, entitled "Apparatus for the Liquefaction of Natural Gas and Methods Relating to Same", BEA Docket # B-156D1.

30. BEA IDR # BA-087, entitled "Small Scale Liquefaction Refrigeration Option".

31. Hong Kong Patent Cooperation Treaty Application # 05110093.0, filed on 11/11/2005, entitled "Apparatus for the Liquefaction of Natural Gas and Methods Relating to Same", BEA Docket # B-156.

32. United States Patent Application # 11/124,589, filed on 5/5/2005, entitled "Apparatus for the Liquefaction of Natural Gas and Methods Relating to same", BEA Docket # B-156D1.C1.

33. BEA IDR # BA-135, entitled "Small-Scale High Efficiency Liquefaction M2 Core".

34. Unites States Patent Application # 11/381,904, filed on 5/5/2006, entitled "State and Improvements on Liquefaction System", BEA Docket # B-395.

35. United States Patent Application # 11/383,411, filed on 5/15/2006, entitled "Apparatus for the liquefaction of Natural Gas and Methods Relating to Same", BEA Docket # BA-080.

Participant Background Intellectual Property

None Listed.