

AGREEMENT NUMBER 232K260  
BETWEEN  
THE BOARD OF REGENTS OF THE  
UNIVERSITY OF WISCONSIN SYSTEM  
AND  
University of Notre Dame

This Agreement is executed by and between the Board of Regents of the University of Wisconsin System ("University"), and the University of Notre Dame ("Subgrantee").

WHEREAS the University has received an award entitled "Advanced Distribution and Control for Hybrid Intelligent Power Systems" from Odysian Technology, LLC ("Sponsor") under agreement number OT-UWM-11012009-03 ("Prime Award")(via an award from DOD Army, number W9132T-10-C-0008), (CFDA number 12.000)

NOW THEREFORE, it is agreed as follows:

**Article 1. Period of Performance**

The effective period of this Agreement shall be from May 18, 2010 through October 31, 2010, unless otherwise provided for by modification to this agreement. No expenses will be reimbursed which are incurred prior to the effective date or subsequent to the termination date unless specifically approved, in writing, by the University.

**Article 2. Scope of Work**

Unless otherwise specifically provided in this Agreement, the Subgrantee shall supply all the necessary personnel, equipment, and materials to accomplish the tasks set forth in Appendix A ("Scope of Work").

**Article 3. Technical Direction**

Robert Lasseter, as the Principal Investigator of the University, shall retain the responsibility for technical monitoring of this project. Any change to the Scope of Work must be approved, in writing, by the University.

**Article 4. Key Personnel**

The following person(s) ("Key Person") are considered to be essential to the work performed hereunder:

Michael Lemmon.

In the event that a Key Person becomes unable or unwilling to continue the project, the Subgrantee shall notify the University in writing and may propose an individual to replace such Key Person. Any replacement of a Key Person must be approved, in writing, by the University. In the event a mutually acceptable replacement is not available, the University shall have the option to terminate the project. The thirty (30) day prior notice provided under **Article 18** is not required for termination by the University under this Article. Such termination shall be in writing and the Subgrantee will be reimbursed for allowable documented costs and noncancellable obligations incurred prior to the termination date.

**Article 5. Limitation on Costs**

The cost, both direct and indirect, of performing the tasks under Article 2 of this Agreement will not exceed \$42,354 in United States Dollars as set forth in Appendix B. University is not, in the absence of a

modification, obligated to reimburse the Subgrantee for costs incurred by the Subgrantee which are in excess of the cost specified in this article.

**Article 6. Cost Sharing**

The Subgrantee is responsible for any cost sharing as detailed in Appendix B.

**Article 7. Method of Payment**

a) The Subgrantee will submit invoices in United States Dollars for work done not more often than monthly. The invoice shall reference the Agreement number and shall reflect summary detail, by budget category, of the costs incurred. A certified original and three copies of the invoice shall be submitted to:

The University of Wisconsin-Madison  
Research & Sponsored Programs  
21 N. Park St., Suite 6401  
Madison, Wisconsin 53715-1218  
Attention: John Freeman

b) Invoices received from the Subgrantee will be reviewed by the Principal Investigator and the Office of Research & Sponsored Programs prior to payment.

c) The final invoice shall be submitted by the Subgrantee within fifteen (15) days of the termination date of this Agreement.

**Article 8. Audit**

The Subgrantee will maintain adequate financial records, in accordance with generally accepted accounting practices, to clearly and easily identify expenses, to describe the nature of each expense, and to establish relatedness to this Agreement. All records related to this Agreement shall be available for audit by the University and the Cognizant Federal Audit Agency. If Subgrantee expends \$500,000 or more of federal funds in their fiscal year, Subgrantee agrees to provide University with notification of completion of required audits and of any adverse findings which impact this Agreement, in accordance with Office of Management and Budget Circular A-133.

The financial records of this Agreement will be retained for a period of three (3) years from the date of submission of the final report of expenditures except for records related to any audit initiated prior to the expiration date which shall be retained until the audit findings involving the records have been resolved.

**Article 9. Equipment Accountability**

Title to equipment purchased under this Agreement will reside with the Subgrantee. Inventory, accountability and disposition of equipment will be in accordance with the terms of the Prime Award.

**Article 10. Program Income**

The Subgrantee is accountable to the University for any program income generated as a result of this Agreement. The University is accountable to the funding agency for the records on the receipt and disposition of any such income. The Subgrantee will maintain such records as are necessary for the University to fulfill its responsibility and will report, in writing, to the University any program income generated as a result of this Agreement.

## **Article 11. Reports**

The Subgrantee is responsible for submitting the following reports:

- a) Progress Reports are to be submitted annually to the Principal Investigator.
- b) Invention Statements are to be submitted annually to the University, as applicable.
- c) Program Income Reports, if applicable, are to be submitted within sixty (60) days of the termination date of this agreement and thereafter, as may be required by the terms and conditions of the Prime Award as incorporated into this Agreement.
- d) Other Reports are to be submitted in accordance with the requirements of the delivery schedule set forth in Appendix E of the Prime Award.

## **Article 12. Publication and Copyrights**

It is understood that decisions about authorship on all publications resulting from research under this Agreement will be made by the Principal Investigator and the Key Person(s) prior to any such publication. The Federal Government shall have a royalty-free, nonexclusive and irrevocable right to reproduce, publish or otherwise use, and to authorize others to use, any copyrightable material that is developed under this Agreement. The University shall have the unrestricted right to use all data which is delivered or specified to be delivered under this Agreement.

## **Article 13. Patents and Inventions**

This Agreement is subject to 37 CFR 401. The Subgrantee will be required to obtain appropriate patent agreements from all persons who perform any part of the work under the Agreement, and for disclosing any subject inventions to the University.

## **Article 14. Care and Treatment of Laboratory Animals**

Should vertebrate animals be used in this project, the Subgrantee will comply with the Animal Welfare Act, as amended (7 U.S.C. 2131 et seq) and any other Prime Award requirements with regard to the care and treatment of laboratory animals.

## **Article 15. Protection of Human Subjects**

Should human subjects be used in this project, the Subgrantee will comply with all applicable Federal regulations on the protection of human subjects (45 CFR Part 46 as amended), as required by the terms of the Prime Award. In addition to assuring that the initial requirements for protection of human subjects are met, the Subgrantee agrees to assure continued monitoring and compliance with these requirements during the course of the project.

## **Article 16. Assurances**

By accepting this agreement, the Subgrantee certifies compliance with the following regulations and provides any other assurances not specifically listed below but required by the terms of the Prime Award:

- a) Debarment, Suspension, and Other Responsibility Matters: Neither the Subgrantee nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by a Federal department or agency.
- b) Certification Regarding Lobbying: No Federal appropriated funds have been paid or will be paid, by or on behalf of the Subgrantee, to any person for influencing or attempting to influence an officer or

employee of any Federal agency, Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or intending to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan or cooperative agreement, the Subgrantee shall certify and disclose accordingly. The Subgrantee shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreement) and that all subrecipients shall certify and disclose accordingly. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, USC. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

- c) Federal Debt Collection Procedures Act of 1990 (28 U.S.C. 3201(e)), also known as Nondelinquency on Federal Debt
- d) Drug-Free Workplace Act of 1988 (Public Law 100-690, Title V, Subtitle D, as amended)
- e) Title VI of the Civil Rights Act of 1964, the Age Discrimination Act of 1975, Title IX of the Education Acts of 1972, and Section 504 of the Rehabilitation Act of 1973.

**Article 17. Funding Agency Provisions**

This Agreement is also subject to all the terms and conditions of the Prime Award (Appendix C). All references in the Prime Award terms to the Funding Agency should be deemed to mean "University" and references to the "Grantee or Contractor" should be deemed to mean "Subgrantee".

**Article 18. Contract Termination**

This Agreement may be terminated by either party upon thirty (30) days written notice and, in such event, reimbursement will be limited to documented costs and noncancellable obligations incurred prior to termination. Notice of termination shall be given by personal delivery, certified mail or registered mail and shall be effective upon date of receipt.

**Article 19. Independent Contractor**

Subgrantee is an independent contractor, not a partner, joint venturer or agent of the University; nor are Subgrantee's employees considered employees of the University for any reason.

**Article 20 Notices**

Notices, invoices, reports, payments and other communications to either party by the other shall be delivered personally or sent by first class, postage prepaid to the following addresses and shall be deemed given on the date so delivered or deposited in the mail unless otherwise provided herein.

UNIVERSITY: Robert Andresen, Assistant Director Post-award  
Research & Sponsored Programs  
The University of Wisconsin-Madison  
21 N. Park St. Suite 6401  
Madison, Wisconsin 53715-1218

**PRINCIPAL INVESTIGATOR:** Robert Lasseter  
College of Engineering  
The University of Wisconsin-Madison  
2559A Engineering Hall  
1415 Engineering Drive  
Madison, WI 53706

**SUBGRANTEE INVESTIGATOR:** Michael Lemmon  
University of Notre Dame  
275 Fitzpatrick Hall  
Notre Dame, IN 46556

**SUBGRANTEE:** ~~Michelle LaCourt~~ Karen Pace  
~~Budget Specialist~~ Post Award Director  
~~Office of Research~~  
University of Notre Dame  
~~511 Main Building~~ 940 Grace Hall  
Notre Dame, IN 46556



**Article 21. Miscellaneous**

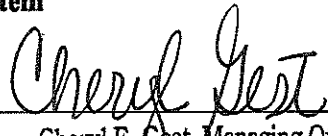
This Agreement may only be modified or amended by a written agreement signed by an authorized representative of both parties.

This Agreement shall be binding upon the parties hereto, their successors and assigns, upon due execution by both parties.

**University of Notre Dame**

**Board of Regents of the University of Wisconsin System**

By: (sign) 

By: (sign) 

Name: (print) Liz Rulli

Name: (print) Cheryl E. Gest, Managing Officer  
Research & Sponsored Programs

Title: (print) Assistant Vice President for Research

Title: (print) \_\_\_\_\_

Date: (print) June 16, 2010

Date: (print) JUN 22 2010



# UNIVERSITY OF NOTRE DAME

## OFFICE OF RESEARCH

October 6, 2009

Ms. Kim Moreland, Director  
University of Wisconsin  
Research and Sponsored Programs  
21 North Park Street, Suite 6401  
Madison, WI 53715

Dear Ms. Moreland,

Please accept this letter as an indication of our intention to participate as a subcontractor on the University of Wisconsin – Madison subcontractor proposal to Odysian Technology LLC. The proposal is for a Phase II Small Business Technology Transfer (STTR) award from the U.S. Army Corps of Engineers (USACE) Engineering Research and Development Center - Construction Engineering Research Lab (ERDC-CERL) and is entitled "Advanced Distribution and Control for Hybrid Intelligent Power Systems." The title of Notre Dame's proposed subcontract project is: "Design and Simulation of Intelligent Control Architecture for Military Microgrids." Notre Dame's technical contribution is under the direction of Dr. Michael Lemmon. Support is requested for a 24 month period and is in the amount of \$ 86,473.

If this proposal is successful, the University of Notre Dame will ensure compliance with pertinent sponsor regulations and policies. The sub-recipient agreement should be addressed to Mrs. Karen M. Pace, 511 Main Building, Notre Dame, IN 46556, for review and execution. Questions regarding the technical aspects of this proposal should be directed to Dr. Lemmon at 574-631-8309. Administrative questions should be directed to Michelle LaCourt 574-631-1589.

For your information, the Facilities and Administrative cost rate for the University of Notre Dame is 50.0% of MTDC. This rate was finalized with the Department of Health and Human Services on October 19, 2007.

Please let us know if you need additional information. We look forward to working with you.

Sincerely,

A handwritten signature in blue ink that reads "Liz Rulli".

Liz Rulli  
Assistant Vice President for Research

**Phase II STTR Proposal to Odysian Technology LLC.**  
**Submittal Date: March 16, 2009.**

**Title:**

**Design and Simulation of Intelligent Control Architecture for Military Microgrids**

**University of Notre Dame's Statement of Work (SOW)**

**Dr. Michael Lemmon** (Department of Electrical Engineering, University of Notre Dame) will be responsible for the following tasks.

**Task 1: Power System Simulation and Monitoring**

Odysian's Phase II STTR project will develop hardware and software for microgrid systems that can be later scaled up to field-deployable systems. An important component of that effort is the development of a comprehensive simulation that accurately models the microgrid sources, loads, controllers, and associated communication infrastructure.

The University of Notre Dame (UND) will develop a single-phase and three-phase simulation for candidate microgrids that are specified by the University of Wisconsin – Madison (UW). The University of Illinois – Urbana-Champaign (UIUC) will supply models of microsource inverters. UND will develop models of the eBoard load controllers in consultation with Odysian Technology LLC. UND will be responsible for integrating these models into the microgrid layouts specified by UW. UND will be responsible for integrating distributed load-shedding and power dispatch algorithms into the simulation using a realistic model of communication network. UND will validate the simulation against a bench-scale hardware microgrid. UND will perform simulation experiments to study the scalability of the proposed intelligent hybrid control architecture with regard to system cost, communication network performance, and overall network reliability.

The deliverables from this task will be 1) the source code for the microgrid simulation and 2) a technical report detailing the results of the scalability and performance studies.

**Task 2: Distributed Control Algorithm Development**

A two-layer control architecture is a major component of Odysian's proposed microgrid system. The lowest level of this architecture is a local controller for microsources that mimics droop controllers for synchronous machines. The highest level of the architecture is a supervisory layer that uses a distributed set of "decision agents" for economical power dispatch and intelligent load shedding. These agents function in a "distributed" manner by exchanging information over an ad hoc wireless communication network.

UND will develop distributed power dispatch and intelligent load-shedding algorithms for Odysian's microgrid system. These algorithms will be integrated into the power system simulation developed under task 1.

The distributed power dispatch algorithms were originally developed by UND as part of Odysian's Phase I STTR contract. For phase II of this project, UND will extend the power dispatch algorithms to account for limits on transmission line power. These algorithms will be locally embedded at the microsource inverter. UND, in consultation with UIUC, will be responsible for specifying the interface between the power dispatch agents and the inverter.

A preliminary load-shedding algorithm was developed by UND as part of Odysian's Phase I STTR contract. UND will continue development of these load shedding algorithms under Phase II. In particular, UND will develop automated load forecasting algorithms that in concert with measures of "power quality" can be used to manage load connection in a way that assures overall microgrid stability. These algorithms will be integrated into the simulation developed under task 1 and they will be embedded at the eBoard load controller. UND, in consultation with Odysian, will be responsible for specifying the interface between the load shedding agents and the eBoard load controller.

The deliverables of this task are 1) distributed power dispatch algorithm accounting for transmission line power limits, 2) load-shedding algorithms that incorporate load forecasting and power-quality measures, 3) interface specifications between the power dispatch agent and the microsource inverter, and 4) interface specifications between the load-shedding agents and the eBoard load controller.

### **Task 3: Wireless Distributed Control Software.**

This project's distributed algorithms for power dispatch and load shedding will be implemented as "agents" that are embedded at the generation and load assets. These agents will communicate over an ad hoc wireless network. The agent software will be embedded in wireless sensor network (WSN) modules. These modules will be interfaced to the microsource inverters developed by UIUC and the eBoard load control devices developed by Odysian LLC. UND will work with Odysian to develop the embedded software implementing the power dispatch and load shedding algorithms on the WSN modules. UND will be responsible for determining what information must be transmitted between cooperating agents in the system.

The deliverables from this task consist of 1) embedded implementation of the power dispatch and load-shedding algorithms and 2) interface specification characterizing the information exchanged over the system's communication network.



#### **Task 4: Wireless Communication**

This project uses an ad hoc wireless network to exchange messages supervising power dispatch and load connection. This wireless network will be formed from WSN modules that are connected to generation and load assets. These wireless networks have inherent reliability issues due to their reliance on radio frequency (RF) signaling. Assuring reliable real-time delivery of messages over such RF networks requires adaptable networking middleware that can reconfigure to changes in communication network topology and link connectivity.

UND will assist Odysian to 1) integrate the communication network with the distributed power dispatch and load-shedding algorithms and 2) improve the reliability and real-time performance of the communication network.

Appendix B

**Budget Request:**

Year 1		
PI - Salary	2.00 months summer	\$24,000
Fringe Benefits		\$4,236
Modified Total Direct Costs		\$28,236
F&A Costs	50% of MTDC	\$14,118
Total from Sponsor		\$42,354

Year 2		
PI - Salary	2.00 months summer	\$25,000
Fringe Benefits		\$4,413
Modified Total Direct Costs		\$29,413
F&A Costs	50% of MTDC	\$14,706
Total from Sponsor		\$44,119

Cumulative		
PI - Salary	4.0 months summer	\$49,000
Fringe Benefits		\$8,649
Modified Total Direct Costs		\$57,649
F&A Costs	50% of MTDC	\$28,824
Total from Sponsor		\$86,473

- 1) Faculty Summer Salary:** Dr. Lemmon will serve as PI for Notre Dame's part of the project. He's requesting 2.00 month of summer support in year 1 (\$25,000) and year 2 (\$26,000) of the project. Dr. Lemmon's will supervise a graduate student and coordinate between Odysian, UW, and UIUC to assure completion of Notre Dame's tasks. The graduate student supporting this project is a U.S. citizen. He is working towards his Ph.D. in electrical engineering and is currently supported from a University fellowship. This graduate student will assist Dr. Lemmon in developing the microgrid system simulation and in conducting simulation experiments studying the proposed architecture's performance.
- 3) Fringe Benefits:** Employee benefits are directly charged as a percentage of salaries and wages, excluding undergraduate students taking at least three credits and graduate research assistants. The rate used for summer salary for faculty is 17.65%.
- 4) Total Direct Costs** equals sum of all wages, salaries, fringe benefits, supplies, equipment, participant costs, and travel.
- 5) Modified Total Direct Costs (MTDC)** equals Total Direct Costs minus equipment and participant costs.
- 6) Facilities and administrative costs:** F & A costs are charged as a percentage of the modified total direct costs at a rate of 50% negotiated by the University's Cognizant Audit Agency, the Department of Health and Human Services.

Appendix C

Contract No.: OT-UWM-11062009-03

CONTRACTUAL AGREEMENT BETWEEN  
ODYSSIAN TECHNOLOGY LLC AND BOARD OF REGENTS OF THE UNIVERSITY OF WISCONSIN  
SYSTEM ON BEHALF OF THE **UNIVERSITY OF WISCONSIN - MADISON**  
AGREEMENT NO.: **OT-UWM-11012009-03**

Subcontract in support of  
USACE ERDC-CERL Phase II STTR Program entitled,  
"Advanced Distribution and Control for Hybrid Intelligent Power Systems"  
PRIME CONTRACT NO.: W9132T-10-C-0008

THIS AGREEMENT, effective as of the late date of signature, is by and between Odysian Technology L.L.C. with office at 511 East Colfax, South Bend Indiana (hereinafter referred to "ODYSSIAN") and The Board of Regents of the University of Wisconsin System on behalf of the University of Wisconsin-Madison (hereinafter referred to as "SUBCONTRACTOR"). This subcontract is funded through a Phase II Small Business Technology Transfer (hereafter referred to as "STTR") contract issued to ODYSSIAN from the U.S. Army Corp of Engineers Engineering Research and Development Center – Construction Engineering Research Center (hereafter referred to as "ERDC-CERL")..

Legal Name of Subcontractor: **The Board of Regents of the University of Wisconsin System**  
Tax Payer ID Number: 396006492  
Period of Performance: Signature Date to 31 October, 2011 (Base and Option)  
Funds and Contract Type: \$249,832 Firm Fixed Price (incrementally funded)

SUBCONTRACTOR agrees to furnish all deliverables to ODYSSIAN and to perform all services set forth in this Agreement and referenced Attachments for the consideration stated therein. The rights and obligations of the parties to this Agreement shall be subject to and governed by the Schedule, General Provisions, Attachments, Agreements, and Proposal contained or referenced herein.

Notwithstanding anything in this agreement to the contrary, the signatory of SUBCONTRACTOR represents that he/she has been duly authorized to execute contracts on behalf of SUBCONTRACTOR to make this agreement fully binding upon SUBCONTRACTOR when his/her signature is affixed hereto. The parties having read and understood the terms of this Agreement do by their respective signatures dated below hereby agree to the terms thereof.


IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the dates entered below.

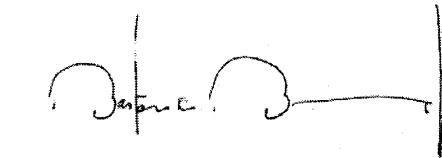
**THE UNIVERSITY OF WISCONSIN SYSTEM**

**ODYSSIAN TECHNOLOGY, L.L.C.**

By:

By:

  
\_\_\_\_\_

  
\_\_\_\_\_

for Kim Moreland

Barton E. Bennett

Director,  
Research and Sponsored Programs

President – Technology Development and  
Innovation

Date: 5/18/10

Date: 5 May 2010

## ARTICLE I. SCOPE, OBJECTIVE, AND SPECIFICATIONS

- A. This solicitation is issued pursuant to the Small Business Innovative Development Act of 1982, PL 97-219, PL 99-443, PL 102-564, and PL 106-554.
- B. This project was submitted in accordance with the Government's Small Business Technology Transfer Program Solicitation 2008.A, Topic Number A08-T031 entitled: "Scalable and Deployable Micro grids." The solicitation is hereby incorporated herein by reference and can be found and downloaded from the DoD Small Business Innovative Research website at:  
<http://www.acq.osd.mil/sadbu/sbir/solicitations/sbir022/index.htm>.
- C. SUBCONTRACTOR performance under this agreement shall be conducted within the overall objectives of technical proposal dated 07 October 2009, number **A2-3700**, entitled, "**Advanced Distribution and Control for Hybrid Intelligent Power Systems**", (incorporated in full by reference and herein referred to as "PROJECT"). SUBCONTRACTOR shall be responsible for assuring completion of all of its work and work of its subcontractors as described within PROJECT proposal.
  - i. The objectives of this Phase II effort focus on development of advanced distribution and control technology for hybrid intelligent microgrids, using a wireless mesh network to control distributed generation assets in concert with system loads through multi-layer intelligent load shedding.
  - ii. In order to accomplish the work under this contract, it shall be necessary for the SUBCONTRACTOR, and its subcontractors, to completely perform its work in Task I through Task III and Task V through Task IX as described in the PROJECT proposal and the SOW in Attachment A.
- D. The SUBCONTRACTOR agrees to perform the work described in the Statement of Work of Attachment A. SUBCONTRACTOR shall provide all necessary materials, labor, equipment and facilities needed for the on-time completion of work as planned in the Schedule of Attachment B.
- E. In the event of any discrepancies between the PROJECT Proposal and SUBCONTRACTOR'S Statement of Work, the PROJECT Proposal shall govern.
- F. The detailed technical content of the PROJECT proposal was an important factor in the award of this contract. The documents listed above are now contractually binding. The SUBCONTRACTOR shall not change or otherwise deviate from the content of these documents without prior written approval from the ERDC-CERL Contracting Officer and ODYSSEAN.
  - i. Although other Government personnel may clarify technical points or supply relevant information, only an ERDC-CERL Contracting Officer has the authority to revise any requirements in these specifications, including those resulting from verbal clarifications. All SUBCONTRACTOR communication with ERDC-CERL personnel that solicits a revision in PROJECT scope or requirements shall be coordinated through ODYSSEAN.

## ARTICLE II. PERIOD OF PERFORMANCE AND SCHEDULE

- A. This program is being incrementally funded by the ERDC-CERL customer and the Period of Performance (POP) is broken up into two parts; the Base Year (CLIN 0001) and the First Option Year (CLIN 0002).
- B. PERIOD OF SERVICE – All work to be performed under this contract shall be completed within twelve months after the date of contract award. If the option period is exercised, the period of service will be

extended an additional twelve months through written authorization from ODYSSEAN that will act as an addendum to this Contract.

- i. The POP for the Base Year will begin on **Date of Signatory Approval** and will terminate **31 October, 2010**, unless changed by mutual consent of the parties by written amendment to this Agreement or in pursuant to Article XIV and Article XV of this Agreement.
  - ii. If the Contract Line Item (CLIN) 0002, STTR Phase II Option Period, is exercised then this contract shall be extended through written addendum by an additional twelve (12) months. If exercised, it is anticipated that the POP for the First Year Option will begin on **01 November, 2010** and will terminate **31 October, 2011**, unless changed by mutual consent of the parties by written amendment to this Agreement or in pursuant to Article XIV and Article XV of this Agreement.
  - iii. All work to be performed under this contract (for Basic Program CLIN 0001) shall be completed within twelve months after the date of contract award. If the option period is exercised, the period of service will be extended an additional twelve months. The total duration of this contract, including the exercise of any option, shall not exceed twenty-four months.
- C. PROGRAM SCHEDULE – This work will be executed in accordance with the Schedule that is incorporated and hereby made a part of this Agreement as Attachment B, "Schedule". SUBCONTRACTOR agrees to use its best effort to execute SUBCONTRACTOR tasks within Schedule. SUBCONTRACTOR will inform ODYSSEAN of any required Schedule modification and causes for modification as soon as the need for such modification is known.
- D. DELIVERABLES SCHEDULE – SUB CONTRACTOR shall provide all deliverables to schedule, in accordance with Article VII and the Contract Data Requirements Lists (CDRL) shown in Attachment E.
- i. On-time submittal of CDRL deliverables to ODYSSEAN shall be required to ensure on-time submittal of full deliverables to ODYSSEAN'S customer, ERDC-CERL. On-time delivery of deliverables shall include comprehensive disclosure of all research methods, results, and data for research conducted during the reporting period.
  - ii. On-time delivery of deliverables shall be required to maintain contractual compliance and satisfactory status. Late submittal of deliverables or submittal of incomplete deliverables shall be grounds for delay of progress payments.

### ARTICLE III. COST AND PAYMENTS

- A. The cost to ODYSSEAN for SUBCONTRACTOR'S performance shall be on a **Firm Fixed Price** basis with the total price being **\$249,832** in U.S. currency in accordance with the Bid submitted to ODYSSEAN, incorporated and hereby made a part of this Agreement as Attachment C., "Bid". As shown in the CLIN list of Article III(C), this price shall consist of **\$135,555** for CLIN 0001 STTR Phase II – Basic Year and **\$114,277** for CLIN 0002 STTR Phase II – First Option Year. CLIN 0001 is incrementally funded and the sum of **\$123,215** is presently available for payment and allotment to this contract. SUBCONTRACTOR shall not bill ODYSSEAN for amount beyond CLIN 000101 funding without prior written notice that additional funding for CLIN 000102 and/or CLIN 0002 is allotted and available from the Government.
- B. Payments to SUBCONTRACTOR for effort under this contract shall be based on delivery of comprehensive reports and estimated progress in conducting research and development for services specified in the Line Item Description of Article III(C).
- i. At the SUBCONTRACTOR'S Option, (a) he/she may, upon completion of the work, submit one invoice for payment of the entire amount due under the contract, as applicable, in one lump sum,

or (b) he/she may submit invoices for services performed under the contract at any time during the period of performance, but not more frequently than once a month or for amounts less than \$1000. Such invoices shall include estimates of the total percent complete of work and services performed. Estimates of total work complete may be provided in monthly status reports (see CDRL A002 of Attachment E), as long as a correlation can be made between estimates of total work complete to total amount billed.

- ii. When partial payment is requested based on progress, the SUBCONTRACTOR may invoice for billing period to receive partial payment from ODYSSEIAN following acceptance and payment by ERDC-CERL.
  - (1) All invoices for partial payment shall be accompanied with the monthly status report (see CDRL A002 of Attachment E). SUBCONTRACTOR shall make reasonable effort to provide invoicing for effort associated with the reporting period of CDRL A002.
  - (2) Invoicing and associated monthly status reports from SUB CONTRACTOR shall clearly identify progress it and each of its subcontractors has made, and invoicing shall clearly itemize costs incurred including segregated cost of each of its primary subcontractors with their percent completion estimates.
  - (3) The Contracting Officer Representative (COR) will review all submitted monthly status reports, total completion estimates, and associated invoicing. Requested payments to SUBCONTRACTOR will be made by ODYSSEIAN upon approval and payment by ERDC-CERL of SUB CONTRACTOR'S status reports, total completion estimates, and associated billing.
- iii. The final invoice will be sent to ODYSSEIAN no later than thirty (30) days after the termination of this Agreement.
- iv. Upon completion of the work to be performed under this contract, acceptance of such work by the Government, and receipt of DD Form 882 (reference DFAR 252.227-7039), the Contractor will be paid the balance of any money due for work performed.

C. LINE ITEM DESCRIPTION – In accordance with this contract, SUBCONTRACTOR shall furnish all materials, labor, equipment and facilities, except as specified herein to be furnished by the Government (if applicable), and shall do all which is necessary or incidental to the satisfactory and timely performance of the following:

Article III(C) Contract Line Item List :

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001		135,555	U.S. Dollars	\$1.00	\$135,555
	STTR Phase II - Basic Year FFP Services inclusive of all supervision, labor, materials, supplies, equipment and travel necessary to perform Advance Distribution and Control for Hybrid Intelligent Power Systems in accordance with SUBCONTRACTOR'S work outlined in Phase II STTR Proposal incorporated herein by reference and the attached Statement of Work for a period of starting from signatory approval of agreement until 31 October, 2010.				

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
000101	Partial Funding for Basic Year (1 <sup>st</sup> Allotment) FFP	90.987	percent	\$135,555	\$123,215

CLIN 0001 is incrementally funded and the sum of \$123,215 is presently available for payment and allotted to this contract.

See Contract Clause 252.232-7007, Limitation of Government's Obligation

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
000102	Partial Funding for Basic Year (2 <sup>nd</sup> Allotment) FFP	9.013	percent	\$135,555	\$12,340

CLIN 0001 is incrementally funded and the Government contemplates that the remaining Base Year cost will be available for payment and allotted to this contract within 11 months after prime contract award, which is 01 October, 2010.

See Contract Clause 252.232-7007, Limitation of Government's Obligation

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0002		114,277	U.S. Dollars	\$1.00 \$1	14,277

OPTION STTR Phase II - First Option Year  
FFP  
Services inclusive of all supervision, labor, materials, supplies, equipment and travel necessary to perform Advance Distribution and Control for Hybrid Intelligent Power Systems in accordance with the Contractor's Phase II STTR Proposal incorporated herein by reference and the attached Statement of Work for a period of twelve months after date of exercise of option.

See Contract Clause 252.232-7007, Limitation of Government's Obligation



- D. GOVERNMENT FURNISHED INFORMATION AND SUPPLIES – Information required includes information on existing forward operating base in Afghanistan or Iraq or a notional FOB that is representative of an installation in Iraq or Afghanistan. This information is to be used for the design and simulation of an FOB microgrid. (see task I in technical proposal)
- E. The SUBCONTRACTOR agrees to provide prudent management of all expenditures and actions affecting the contract. Documentation for expenditures or actions affecting this contract must reflect appropriate organizational reviews or approvals which should be made in advance of the action. Organizational reviews are intended to help assure that expenditures are allowable, necessary and reasonable for the conduct of the Project, and that the proposed action:
- (i) is consistent with contract terms and conditions as set forth herein;
  - (ii) represents effective utilization of resources;
  - (iii) does not constitute a significant Project change; and
  - (iv) is consistent with organizational policies and procedures.

#### ARTICLE IV. FINANCIAL OBLIGATION

- A. The maximum ODYSIAN financial obligation to SUBCONTRACTOR for performance of this contract (CLIN 00 0101) is **\$123,215**. ODYSIAN is not obligated to make any additional, supplemental, continuation, renewal, or other award for the same or any other purpose.
- B. Upon formal written notice from ERDC-CERL that the remaining Basic Year funding (CLIN 000102) has been allotted, ODYSIAN will have an additional maximum financial obligation to SUBCONTRACTOR of **\$12,340** for remaining performance of STTR Phase II – Basic Year.
- C. Upon formal written notice and obligation from ERDC-CERL that they intend to exercise STTR Phase II – First Option Year (CLIN 0002), the maximum ODYSIAN financial obligation to SUBCONTRACTOR will be increased by an additional **\$114,277**.
- D. The total maximum ODYSIAN financial obligation to SUBCONTRACTOR for full performance of this contract including both Basic Year (CLIN 0001) and First Option Year (CLIN 0002) is **\$249,832**.

#### ARTICLE V. ACQUISITION REGULATIONS AND PRIME CONTRACT CLAUSES

SUBCONTRACTOR shall comply with the acquisition regulations and prime contract clauses of Attachment D, which are hereby incorporated by reference with the same force and effect as if they were given in full text.

#### ARTICLE VI. ACKNOWLEDGMENT OF SPONSORSHIP

SUBCONTRACTOR is responsible for assuring that an acknowledgment of ODYSIAN and ERDC-CERL support is made in any publication (including World Wide Web pages) of any material based on or developed under this Project, and during all news media interviews, including popular media such as radio, television and news magazines.

#### ARTICLE VII. REPORTING, DELIVERABLES, AND REVIEWS

- A. DATA DELIVERABLES – All progress plans, and detailed results of the research and development conducted under this PROJECT shall be fully documented and disclosed in comprehensive reports. The SUBCONTRACTOR shall submit all reports and deliverables to

ODYSSIAN in accordance with the requirements and delivery schedule set forth in the attached Contract Data Requirements Lists (CDRL) of Appendix E.

i. Data Deliverables to include:

Invention and Disclosure Reports – DD Form 882 (CDRL A001)  
Monthly Progress Reports (CDRL A002)  
Quarterly Technical Reports (CDRL A003)  
Interim Technical Report – Year 1 (CDRL A004)  
Final Technical Report – Year 2 (CDRL A005)  
Public Project Results Summary Report (CDRL A006)  
Accounting for Contractor Services (CDRL A007)  
Commercialization Updates (CDRL A008)

ii. The following information shall be listed in all data deliverables and slide presentations covering work completed under this contract,

- SUBCONTRACT NUMBER / PRIME CONTRACT NUMBER  
- SPONSOR: ODYSSIAN TECHNOLOGY / FUNDING AGENCY: USACE CERL  
- SUBCONTRACTOR'S POINT OF CONTACT NAME AND PHONE NUMBER

B. MEETINGS AND REVIEWS – The Key Personnel of SUBCONTRACTOR (and supporting subcontractors) shall participate in meetings and teleconferences, as may be required for program planning and reporting.

i. A project kick-off meeting will occur at the facility of USACE ERDC-CERL in Champaign, IL during or near the first month of the period of performance of the Basic Program (CLIN 0001).

ii. During the Basic Program (CLIN 0001), SUBCONTRACTOR Key Personnel and Key Personnel of its subcontractors agree to attend progress review meetings that will be held at ERDC-CERL (Champaign, IL) and ODYSSIAN (South Bend, IN) near Month 6 and Month 12 of the period of performance, respectively.

iii. During the Option Program (CLIN 0002), SUBCONTRACTOR Key Personnel and Key Personnel of its subcontractors agree to attend progress review meetings that will be held at UW-M (Madison, WI) and ODYSSIAN (South Bend, IN) near Month 18 and Month 24 of the period of performance, respectively.

iv. During duration of this PROJECT monthly teleconferences shall be held to present and discuss technical progress and programmatic issues. SUB CONTRACTOR'S key personnel and key personnel of its subcontractors shall make reasonable effort to participate in the monthly progress review meetings.

v. SUBCONTRACTOR and its subcontractors shall provide Microsoft PowerPoint files in advance of each meeting and teleconference that outline the latest progress and technical discovery. Reasonable effort shall be made to provide these files to ODYSSIAN and ERDC-CERL in advance with enough time to allow review of the slides prior to the meeting.

vi. SUBCONTRACTOR shall from time to time require meetings or teleconferences to occur between it and its subcontractor for coordination purposes. SUBCONTRACTOR maintain a record of such meetings/reviews when ODYSSIAN does not participate and shall provide documentation to ODYSSIAN that summarizes topics of discussion, status, action items, etc.

vii. Any of her meetings and reviews between the SUB CONTRACTOR and ODYSSIAN shall occur as needed or requested by either party.

- C. OTHER DELIVERABLES – SUBCONTRACTOR shall deliver to ODYSSIAN all works, devices, and software developed under PROJECT for submittal to ERDC-CERL including,
- i. Microgrid electrical designs
  - ii. Intelligent microgrid models and simulations
  - iii. Communications models and simulations
  - iv. Inverter power electronics and controls
  - v. Control algorithms, software, and any control hardware used in development and demonstration
  - vi. Lessons learned

### ARTICLE VIII. CONTROL AND DISCLOSURE OF DATA

A. PROJECT Reports and Information:

- i. All reports, publications, and presentation material generated under this contract shall contain the following disclaimer statement:

“The views, opinions, and findings contained in this report are those of the author(s) and should not be construed as an official Department of Defense position, policy, or decision unless so designated by other official documentation.”

- ii. The SUBCONTRACTOR shall be free to publish, permit to be published, or distribute for public consumption, any information, oral or written, concerning the results of conclusions made pursuant to performance of this contract; provided, however, that it shall provide copies of any such publication or release of information to ODYSSIAN for submittal to the Government's Contracting Officer for review and comment at least fourteen (14) days prior to any such release, and provided that publishing of said information does not violate the terms of Article VIII(D) or compromise the intellectual property rights of ODYSSIAN, any PROJECT participant, or the U.S. Government.

B. Security/National Agency Check Requirements:

- i. All SUBCONTRACTOR employees (U.S. citizens and Non-U.S. citizens) working under this contract (*to include grants, cooperative agreements and task orders*) who require access to Automated Information Systems (AIS), (stand alone computers, network computers/systems, e-mail) shall, at a minimum, be designated into an ADP-III position (non-sensitive) in accordance with DoD 52 20-22-R, Industrial Security Regulation. The investigative requirements for an ADP-III position are a favorable National Agency Check (NAC), SF-85P, Public Trust Position. The SUBCONTRACTOR shall have each applicable employee complete a SF-85P and submit to the ERDC-CERL Security Officer within three (3) working days after award of any contract or task order, and shall be submitted prior to the individual being permitted access to an AIS. SUBCONTRACTORS that have a commercial or government entity (CAGE) Code and Facility Security Clearance through the Defense Security Service shall process the NACs and forward visit requests/results of NAC to the ERDC-CERL Security Officer. For those SUBCONTRACTORS that do not have a CAGE Code or Facility Security Clearance, the ERDC-CERL Security Office will process the investigation in coordination with the SUBCONTRACTOR and SUBCONTRACTOR employees.

- ii. In accordance with Engineering Regulation, ER 380-1-18, Section 4, foreign nationals who work on Corps of Engineers' contracts or task orders shall be approved by the HQUSACE Foreign Disclosure Officer or his/her before beginning work on the contract/task order. This regulation includes SUBCONTRACTOR employees. (NOTE: exceptions to the above requirement include foreign nationals who perform janitorial and/or ground maintenance services.) The SUBCONTRACTOR shall submit to the Division/District Contract Office, the names of all foreign nationals proposed for performance under this contract/task order, along with documentation to verify that he/she was legally admitted into the United States and has authority to work and/or go to school in the US. Such documentation may include a US passport, Certificate of US citizenship (INS Form N-560 or N-561), Certificate of Naturalization (INS Form N-550 or N-570), foreign passport with I-551 stamp or attached INS Form I-94 indicating employment authorization, Alien Registration Receipt Card with photograph (INS Form I-151 or I-551), Temporary Resident Card (INS Form I-688), Employment Authorization Card (INS Form I-688A), Reentry Permit (INS Form I-327), Refugee Travel Document (INS Form I-571), Employment Authorization Document issued by the INS which contains a photograph (INS Form I-688B).

C. U.S. export control:

- i. SUBCONTRACTOR and ODYSSEAN agree that neither party shall be held responsible for assuring that the other party complies with U.S. export control laws.
- ii. SUBCONTRACTOR and ODYSSEAN agree to not disclose information to the other party that is known beyond reasonable doubt to be export controlled by the U.S. Government.

D. Disclosure and Control of Proprietary or Confidential Data:

SUBCONTRACTOR and ODYSSEAN agree to the following terms for the control and disclosure of proprietary or confidential data related to the PROJECT, SUBCONTRACTOR, or ODYSSEAN.

- i. Proprietary Information shall mean any and all information, financial data, marketing plans, know-how, and data, technical or non-technical, which belongs to either party which may be disclosed visually, orally, or in written form, provided that such information is marked or otherwise identified in writing as "confidential" or "proprietary" by the disclosing party at the time of disclosure. Oral disclosure of such information will be reduced to writing by the disclosing party, marked as "confidential" or "proprietary", and delivered to the receiving party within thirty (30) days.
- ii. The receiving party's obligation for holding Proprietary Information in confidence, under the terms of this agreement shall extend for **three (3) years** after receipt of information, but shall not pertain to information; (a) within public domain through no fault of the receiving party, (b) known to receiving party prior to disclosure as evident within documents, or (c) ordered to be disclosed by a court or governmental agency or by law, provided that the disclosing party is promptly notified and cooperation is provided in opposing such action if the disclosing party requests.
- iii. Proprietary Information provided by either party shall remain the property of the originating party.
- iv. SUBCONTRACTOR and ODYSSEAN agree to divulge Proprietary Information only to its employees, associates, consultants, and subcontractors who have a need to know, and who are under signed agreement not to disclose Proprietary or Confidential Information.

## ARTICLE IX. INTELLECTUAL PROPERTY

- A. SUBCONTRACTOR and ODYSSEAN shall comply with the Acquisition Regulation clauses for intellectual property (herein referred to as "IP") listed in Attachment D.
- i. SUBCONTRACTOR agrees to review and comply with Federal Acquisition Regulation (FAR) 52.227-11 "Patent Rights – Retention by the Contractor (Short Form)".
  - ii. SUBCONTRACTOR may retain the entire right, title, and interest throughout the world to each invention subject to the provisions of this clause and 35 U.S.C. 203. With respect to any subject invention in which the SUBCONTRACTOR retains title, the Federal Government shall have a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States the subject invention throughout the world.
  - iii. The SUBCONTRACTOR, through ODYSSEAN, will disclose each subject invention to the **ERDC-CERL** within 2 months after the inventor discloses it. The disclosure to **ERDC-CERL** shall be in the form of a written report and shall identify the contract under which the invention was made and the inventor(s). It shall be sufficiently complete in technical detail to convey a clear understanding to the extent known at the time of the disclosure of the nature, purpose, operation, and the physical, chemical, biological or electrical characteristics of the invention. The disclosure shall also identify any publication, on sale or public use of the invention and whether a manuscript describing the invention has been submitted for publication and, if so, whether it has been accepted for publication at the time of disclosure. In addition, after disclosure to the agency, the SUBCONTRACTOR will promptly notify the agency of the acceptance of any manuscript describing the invention for publication or of any on sale or public use planned by the SUBCONTRACTOR.
  - iv. SUBCONTRACTOR shall forward patent information in accordance with FAR 52.227-11, "Patent Rights – Retention by the Contractor (Short Form)," through ODYSSEAN to the **USACE ERDC-CERL** General Counsel, with a courtesy copy provided to the **CERL** Contracting Officer's Representative (COR).
  - v. The SUBCONTRACTOR will elect in writing whether or not to retain title to any such invention by notifying the Federal agency via ODYSSEAN within 2 years of disclosure to the Federal agency. However, in any case where publication, on sale or public use has initiated the 1-year statutory period wherein valid patent protection can still be obtained in the United States, the period for election of title may be shortened by the agency to a date that is no more than 60 days prior to the end of the statutory period.
- B. SUBCONTRACTOR agrees to the following terms for the disclosure, protection, and ownership of IP resulting from the Project.
- i. IP includes all and any (1) discovery, concept, idea, improvement, process, business or marketing practice, and know-how whether or not patentable, (2) trade secrets, (3) copyrightable works that are conceived or first reduced to practice in furtherance of this Agreement or the Project.
  - ii. Intellectual Property owned prior to this contract between SUBCONTRACTOR and ODYSSEAN will continue to be owned by the original owner/developer and is not subject to any obligations of this Agreement.
  - iii. SUBCONTRACTOR and ODYSSEAN agree that all inventions, information, data, findings, recommendations, proposal, etc. by whatever name described and by whatever form therein, secured, developed, written or produced solely by either party in furtherance of this Agreement, shall be the sole property of the originating party within

the rights and obligations set forth in the Federal Acquisition Regulation clauses of Attachment D.

- iv. The SUBCONTRACTOR and ODYSSEAN agree that all inventions, information, data, findings, recommendations, proposal, etc. by whatever name described and by whatever form therein, secured, developed, written or produced jointly by both inventors/creators of both parties in furtherance of this Agreement shall be the joint property of the SUBCONTRACTOR and ODYSSEAN with each Party having undivided interest therein within the rights and obligations set forth in the Federal Acquisition Regulation clauses of Attachment D.
- v. SUBCONTRACTOR will control the preparation and prosecution of all patent applications and maintenance of all patents on SUBCONTRACTOR IP.
- vi. Shortly following the identification of any jointly owned IP, SUBCONTRACTOR and ODYSSEAN representatives will discuss details of handling such jointly owned IP.
  - i. SUBCONTRACTOR and ODYSSEAN will determine who will be designated the "Lead Party" to take primary responsibility for protection of such jointly owned IP. If patent applications are to be filed, the Lead Party will ensure that the other Party is kept informed and has an opportunity to review and comment on patent prosecution.
  - ii. The Lead Party shall provide the other Party at least thirty (30) days notice prior to filing a patent application that includes jointly owned IP.
- vii. As with IP solely owned by SUBCONTRACTOR, ODYSSEAN shall have the option rights outlined in Section X for jointly owned IP.
- viii. In the event that ODYSSEAN decides not to exercise its option to SUBCONTRACTOR'S ownership interest in jointly owned IP, ODYSSEAN and SUBCONTRACTOR may agree to undertake a cooperative licensing effort. At that point, SUBCONTRACTOR and ODYSSEAN will decide on shared or sole responsibility for identifying potential commercial licensees and for negotiating the terms of commercial license agreements. Any revenues generated by such license agreements after deduction of any agreed upon expenses shall be divided equally between SUBCONTRACTOR and ODYSSEAN no less often than once per year. SUBCONTRACTOR and ODYSSEAN shall be solely responsible for calculating and distributing to its respective inventor(s) any share of net revenues payable to such inventor(s) in accordance with its own institutional policy.
- ix. For joint owned IP, SUBCONTRACTOR and ODYSSEAN agree that all reasonable costs associated with filing, prosecuting and maintaining intellectual property rights associated with the IP will be paid equally among all parties with claimed ownership as agreed upon in advance by SUBCONTRACTOR and ODYSSEAN.

#### **ARTICLE X. GRANT OF RIGHTS**

- A. Each party hereto may use IP of the other nonexclusively and without compensation in connection with research or development activities of this Project, including inclusion in required Project reports to ERDC-CERL and proposals to ERDC-CERL for continued funding of this Project through additional phases, when such proposals include the participation of the party contributing the IP.
- B. ODYSSEAN shall have a time-limited option to negotiate a license to the IP subject to any rights of the Government or other sponsors as follows:

- i. A license to SUBCONTRACTOR IP or SUBCONTRACTOR's share of any jointly owned IP developed under this Project, with the right to sublicense in the case of an exclusive license within a specified field-of-use, market segment, or geographic area.
- ii. Such option shall extend for a period of six (6) months after such IP has been disclosed to ODYSSEAN. During the period of such option, SUBCONTRACTOR will pursue and maintain, if it is legally able to, patent protection for any subject invention requested by ODYSSEAN provided ODYSSEAN agrees to reimburse SUBCONTRACTOR for its out-of-pocket expenses. SUBCONTRACTOR will not voluntarily discontinue the pursuit and maintenance of any US patent protection for the IP during this option period without advance written notice to ODYSSEAN. In the event ODYSSEAN does not exercise its option, ODYSSEAN shall relinquish all rights to said IP.
  - (1) Subject to any confidentiality obligations, prior to establishing a license agreement and during patent filing and prosecution, SUBCONTRACTOR shall provide ODYSSEAN with the following information if such information is available and known to SUBCONTRACTOR: (1) any identified filing deadlines, (2) restrictions or obligations on SUBCONTRACTOR IP imposed by other agreements, (3) background and description of the invention in enough detail that would allow for a U.S. patent search, (4) a copy of claims in patent applications once filed; copies of office actions, (5) known dates of public disclosures of SUBCONTRACTOR IP, (6) the existence of other executed or impending third party commercial licenses to SUBCONTRACTOR IP and, (7) the existence of other related IP previously developed by SUBCONTRACTOR Principal Investigator listed in Attachment G including invention disclosures, patent applications, and patents.
  - (2) ODYSSEAN shall have the option to discontinue any license without penalty during the patent application and prosecution phase (prior to issue of patent), if the patent is shown to not be patentable or if ODYSSEAN determines that the extent or value of patent protection is to be limited. If ODYSSEAN exercises said option to discontinue license, then ODYSSEAN shall reimburse SUBCONTRACTOR for all out-of-pocket patent expenses that have been incurred or committed prior to notice to discontinue.
- iii. At any time prior to the expiration or termination of an option, ODYSSEAN may exercise such option by providing written notice to SUBCONTRACTOR, whereupon SUBCONTRACTOR and ODYSSEAN will promptly and in good faith enter into negotiations for a license under SUBCONTRACTOR's rights in the IP. The terms of such license shall be consistent with Governmental regulations and will include terms standard for agreements between a university and industry, taking into consideration the specifics of the parties and the technology, including, but not be limited to: (i) payment of reasonable royalties to SUBCONTRACTOR on the sale, lease, license or other transfer for consideration of products or services which embody, or manufacture, use, or sale of which involve employment of, the IP; (ii) reimbursement by ODYSSEAN of expenses incurred by SUBCONTRACTOR in seeking and maintaining patent protection for the IP; (iii) development requirements – reasonable and customary obligations for ODYSSEAN to further develop and commercialize SUBCONTRACTOR IP within mutually agreed upon time limits; and (iv) a reservation of rights to grant non-profit research institutions and governmental agencies the right to practice and use SUBCONTRACTOR IP for non-commercial purposes. If after demonstrating a good faith effort, SUBCONTRACTOR and ODYSSEAN cannot agree on reasonable terms within nine (9) months after exercise

of the option, ODYSSEAN's option to a license shall terminate and SUBCONTRACTOR shall be free to license the inventions of the IP.

- iv. SUBCONTRACTOR agrees that the terms of any said license agreement to ODYSSEAN for SUBCONTRACTOR IP shall not include payment of any fees by ODYSSEAN for use of SUBCONTRACTOR IP in the research, development, or further improvement of SUBCONTRACTOR IP and that any fees owed by ODYSSEAN to SUBCONTRACTOR shall be based solely upon the sale of production products or commercial services without consideration given to research and development contracts, prototype installations, or validation and demonstration systems.
- C. SUBCONTRACTOR agrees to transfer and make available to ODYSSEAN and SUBCONTRACTOR'S primary subcontractors on PROJECT any SUBCONTRACTOR IP developed or first reduced to practice under this agreement as may be needed to accomplish the objectives of PROJECT.
- D. If ODYSSEAN exercises its option to obtain a license, SUBCONTRACTOR will have an irrevocable, royalty-free, non-exclusive and non-assignable right to use licensed SUBCONTRACTOR Intellectual Property and Joint Intellectual Property, for research, and educational use,
- E. Patent rights and obligations set forth in the Federal Acquisition Regulation clauses of Attachment D shall take precedence over any other agreements whether written or expressed herein.

#### **ARTICLE XI. BACKGROUND INTELLECTUAL PROPERTY**

Nothing in this Agreement grants to either party any rights or interest in the other Party's Background Intellectual Property. "Background Intellectual Property" means (a) all works of authorship created outside the scope of this Agreement, and (b) potentially patentable discoveries, including pending patent applications and issued patents, conceived or first reduced to practice outside the scope of this Agreement.

#### **ARTICLE XII. MANAGEMENT OF SUBCONTRACTORS AND CONSULTANTS**

- A. SUBCONTRACTOR shall be responsible for managing all of its subcontractors, suppliers, and consultants to achieve research objectives of PROJECT under the terms of this agreement.
- B. Per PROJECT, SUBCONTRACTOR'S primary subcontractors and/or consultants shall include:
  - 1. University of Illinois at Urbana-Champaign
  - 2. University of Notre Dame.
- C. SUBCONTRACTOR agrees not to change primary subcontractors without prior written authorization from ODYSSEAN.
- D. SUBCONTRACTOR shall negotiate contracts with all of its primary subcontractors with proposed said contracts including all of the terms and conditions of this agreement. If the terms and conditions within the final negotiated contracts between SUBCONTRACTOR and its primary subcontractors deviate from this agreement, then SUBCONTRACTOR shall have written approval from ODYSSEAN prior to signature approval and full execution of said



contracts. Such approval may be necessary to ensure compliance with ODYSSEAN'S prime contract with USACE ERDC-CERL.

#### **ARTICLE XIII. INDEMNIFICATION**

- A. Neither party to this Agreement shall be liable for any negligent or intentional acts or omissions chargeable to the other, unless such liability is imposed by law. This Agreement shall not be construed as seeking to either enlarge or diminish any obligation or duty owed by one party to the other or to a third party.
- B. NEITHER PARTY MAKES REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED, REGARDING ITS PERFORMANCE UNDER THIS AGREEMENT. BOTH PARTIES DISCLAIM ANY WARRANTY OF MERCHANTABILITY, USE OR FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT OF ANY INTELLECTUAL PROPERTY RIGHTS WITH REGARD TO DATA, IP, COPYRIGHTABLE WORKS, OR OTHER RESEARCH RESULTS PROVIDED BY EITHER PARTY.
- C. NEITHER PARTY SHALL BE LIABLE TO THE OTHER PARTY FOR INDIRECT, SPECIAL, CONSEQUENTIAL, PUNITIVE, INCIDENTAL OR OTHER DAMAGES (INCLUDING LOST REVENUE, PROFITS, USE, DATA OR OTHER ECONOMIC LOSS OR DAMAGE) HOWEVER CAUSED AND REGARDLESS OF THEORY OF LIABILITY (WHETHER FOR BREACH OR INTORT, INCLUDING NEGLIGENCE) ARISING FROM, RELATED TO, OR CONNECTED WITH USE OF DATA, IP, COPYRIGHTABLE WORKS, OR ANY OTHER RESEARCH RESULTS PROVIDED BY EITHER PARTY, EVEN IF THE RECEIVING PARTY WAS ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

#### **ARTICLE XIV. FUNDING CANCELLATION CLAUSE**

If **ERDC-CERL**, or other U.S. Government authority makes a determination that funds are not appropriated or otherwise available to support continuation of the prime Contract, this supporting Subcontract Agreement will be canceled.

#### **ARTICLE XV. SUSPENSIONS, MODIFICATIONS, TERMINATIONS**

- A. Unless otherwise terminated or modified, this Agreement will remain in force during the Term stated in Article II. Provisions of this Agreement which by their nature contemplate rights and obligations of the parties to be enjoyed or performed after the expiration or termination of this Agreement will survive until their purposes are fulfilled.
- B. ODYSSEAN reserves the right to modify this Agreement and reallocate funds, with 30 days advanced written notice to SUBCONTRACTOR. Any changes or reductions in effort shall result in equitable adjustment for actual work performed.
- C. In the event that SUBCONTRACTOR defaults, fails to perform or breaches any provision of this Agreement, ODYSSEAN may suspend or terminate this Agreement upon 30 days written notice to SUBCONTRACTOR.
- D. In the event that ODYSSEAN suspends or terminates the Project, this Agreement will be suspended or terminated in accordance with written notice and instruction from ODYSSEAN.
- E. No costs incurred during a suspension period or after the effective date of a termination will be allowable, except those costs which, the SUBCONTRACTOR could not reasonably avoid

or eliminate ("Non-cancelable Commitments"), or which were otherwise authorized by the suspension or termination notice, provided such costs would otherwise be allowable under the terms of this Agreement.

- F. Within 30 days of a termination date under this Article XV, the SUBCONTRACTOR will furnish a summary of progress under the Agreement and an itemized accounting of costs by major budget category incurred prior to the termination date. Final allowable costs under a termination settlement shall be in accordance with the terms of this Agreement, including this Article XV, giving due consideration to the progress under the Project and this Agreement.

#### **ARTICLE XVI. MISCELLANEOUS PROVISIONS**

- A. SUBCONTRACTOR may not assign this Agreement or any part of it without the written consent from ODYSIAN.
- B. The headings in this Agreement are intended solely for convenience or reference and will be given no effect in the construction or interpretation of this Agreement.
- C. This Agreement with all inclusions and attachments supersedes all prior oral and written proposals and communications, if any, and sets forth the entire Agreement of the parties with respect to the subject matter hereof and may not be altered or amended except in writing, signed by an authorized representative of each party hereto.
- D. This Agreement will be construed under and pursuant to the laws of the forum in which any controversy hereunder is adjudicated. Any suit and/or proceeding in connection herewith will be brought and prosecuted only in the home State of the party against whom that suit and/or proceeding is instituted.
- E. No waiver of any default, failure to perform, condition, provision or breach of this Agreement will be deemed to imply or constitute a waiver of any other like default, failure to perform, condition, provision or breach of this Agreement.
- F. If any paragraph, term, condition or provision of this Agreement will be found, by a court of competent jurisdiction, to be invalid or unenforceable, or if any paragraph, term, condition or provision is found to violate or contravene the laws of the home State of the party against whom a suit or proceeding is instituted, then the paragraph, term, condition or provision so found will be deemed severed from this Agreement, but all other paragraphs, terms, conditions and provisions will remain in full force and effect.
- G. The parties to the Agreement, in the performance of this Agreement, will be acting in an individual capacity and not as agents, employees, partners, joint ventures or associates of one another. The employees or agents of one party shall not be deemed or construed to be the employees or agents of any other party for any purposes whatsoever. No party will assume any liability for any injury (including death) to any persons, or any damage to any property arising out of the acts or omissions of the agents, employees or subagents of any other party.
- H. The SUBCONTRACTOR shall be responsible for providing all necessary unemployment and workers' compensation insurance for the SUBCONTRACTOR'S employees.
- I. PLACE OF PERFORMANCE - The research or research and development work under this contract shall be performed in the United States. "United States" means the fifty states, the Territories and possessions of the United States, the Commonwealth of Puerto Rico, the Commonwealth of the Northern Mariana Islands, the Trust Territory of the Pacific Islands, and the District of Columbia.

- J. PUBLIC LAW 102-564, SEC. 306., PURCHASE OF AMERICAN-MADE EQUIPMENT AND PRODUCTS- It is the sense of the Congress that an entity that is awarded a funding agreement under the SBIR/STTR program of a Federal agency under section 9 of the Small Business Act should, when purchasing any equipment or a product with funds provided through the funding agreement, purchase only American-made equipment and products, to the extent possible in keeping with the overall purposes of that program.
- K. No subcontract or modification thereof placed under this contract shall provide for payment on a cost-plus-a-percentage-of-cost basis, and any fee payable under cost-reimbursement type subcontracts shall not exceed the fee limitations in FAR 15.404-4(c)(4)(i).
- L. The SUBCONTRACTOR shall give the Government Contracting Officer prompt written notice of any action or suit filed and promptly notify the Government of any claim made against the SUBCONTRACTOR by any sub-tier subcontractor or vendor that, in the opinion of the SUBCONTRACTOR, may result in litigation related in any way to this contract, with respect to which the SUBCONTRACTOR may be entitled to reimbursement from the Government.
- M. The Government reserves the right to review the SUBCONTRACTOR'S purchasing system as set forth in FAR Subpart 44.3.

#### **ARTICLE XVII. ORDER OF PRECEDENCE**

In the event of any inconsistencies in this Agreement or referenced Agreements, unless otherwise provided herein, inconsistencies shall be resolved by giving precedence in the following order:

- A. Applicable Federal Acquisition Regulations (FAR) and Defense Federal Acquisition Regulations (DFAR) that are incorporated by reference or full text.
- B. Contract Agreement Clauses (ARTICLES I through XX)
- C. CDRL (attachment E)
- D. Statement of Work (Attachment A)
- E. Schedule (Attachment B)
- F. Proposal

#### **ARTICLE XVIII. KEY PERSONNEL**

- A. Key personnel are understood to be those individuals who will perform or personally direct the work being described, such as, but not limited to, project managers, principal investigators, and team leaders. SUBCONTRACTOR shall assign to this contract the following key personnel:

Dr. Robert Lasseter, University of Wisconsin – Madison

And, SUBCONTRACTOR shall have its subcontractors assign the following key personnel:

Dr. Phil Krein &/or Dr. Alejandro Dominguez-Garcia, University of Illinois at Urbana Champaign

Dr. Michael Lemmon, University of Notre Dame

- B. During the first ninety (90) calendar days of performance, SUBCONTRACTOR and its subcontractors shall make no substitutions of key personnel unless the substitution is necessitated by illness, death, or termination of employment. SUBCONTRACTOR shall notify the government Contracting Officer, through ODYSSEAN, immediately after the

occurrence of any of these events and provide the information required by paragraph "C" below. After the initial 90-day period, the Contractor shall submit the information required by paragraph "C" to ODYSSEIAN at least 17 calendar days prior to making any permanent substitutions (thirty (32) calendar days if security clearance is to be obtained.

- C. SUBCONTRACTOR shall provide a detailed explanation of the circumstances necessitating the proposed substitutions, complete resumes for the proposed substitutes, and any additional information requested by the government Contracting Officer needed to approve or disapprove the proposed substitution. Proposed substitutes shall be of equal or superior qualifications to those of the persons being replaced. The government Contracting Officer will notify SUBCONTRACTOR, through ODYSSEIAN, within 20 calendar days after receipt of all required information of the approval or disapproval on substitutions.

## ARTICLE XIX. COMMUNICATIONS

All correspondence and data submitted by SUBCONTRACTOR under this contract shall reference the contract number.

ODYSSEIAN shall be solely responsible for all liaison and coordination with the ODYSSEIAN customer, including the U.S. Government, as it affects the applicable Prime Contract, this Contract, and any related contract. Unless otherwise directed in writing by the authorized ODYSSEIAN representative, all documentation requiring submission to, or action by, the Government or the Contracting Officer shall be routed to, or through, ODYSSEIAN, or as otherwise permitted by this Contract.

ODYSSEIAN and SUBCONTRACTOR communications will be directed to the following individuals.

### A. **Odyssian Technology L.L.C.**

#### Technical Matters:

Barton Bennett  
Odyssian Technology, L.L.C.  
15270 Timber Trail  
Mishawaka, IN 46545  
Phone: ( 574) 257-7555  
Fax: ( 574) 257-7560  
E-mail: [Barton.Bennett@Odyssian.com](mailto:Barton.Bennett@Odyssian.com)

#### Contractual/Fiscal Matters:

Susan Bennett  
Odyssian Technology, L.L.C.  
15270 Timber Trail  
Mishawaka, IN 46545  
Phone: ( 574) 257-7555  
Fax: ( 574) 257-7560  
E-mail: [Susan.Bennett@Odyssian.com](mailto:Susan.Bennett@Odyssian.com)

### B. **University of Wisconsin-Madison**

#### Technical Matters:

Dr. Robert Lasseter  
University of Wisconsin-Madison  
Electrical and Computer Engineering  
2559A Engineering Hall  
1415 Engineering Drive  
Madison, WI 53706-1691  
Phone: ( 608) 262-0186  
Fax: ( 608) 262-1267  
E-mail: [lasseter@engr.wisc.edu](mailto:lasseter@engr.wisc.edu)

#### Contractual/Fiscal Matters:

Kim Moreland, Director  
University of Wisconsin-Madison  
Research and Sponsored Programs  
21N. Park Street  
Suite 6401  
Madison, WI 53715  
Phone: ( 608) 262-3822  
Fax: ( 608) 262-5111  
E-mail: [preaward@rsp.wisc.edu](mailto:preaward@rsp.wisc.edu)

## ARTICLE XX. DUTIES AND LIMITATIONS OF GOVERNMENT PERSONNEL

- A. CONTRACTING OFFICER'S REPRESENTATIVE (COR): The Engineer Research and Development Center – Construction Engineering Research Laboratory (ERDC-CERL) COR is Mr. Tar ek Abd allah, voice (217) 373-4432, fax (217) 373-6740, email: [t-abdallah@cecer.army.mil](mailto:t-abdallah@cecer.army.mil). The Alternate COR is Mr. Roch Ducey, voice (217) 373-6760, fax (217) 373-6740, email: [r-ducey@cecer.army.mil](mailto:r-ducey@cecer.army.mil).
- B. The Contracting Officer is Mrs. Del oras Adamson, voice (217) 373-7297; Fax: (217) 373-6773, and email: [d-adamson@cecer.army.mil](mailto:d-adamson@cecer.army.mil). Although other Government personnel may clarify technical points or supply relevant information, only a government Contracting Officer has the authority to revise any requirements in these specifications, including those resulting from verbal clarifications.
- C. SUBCONTRACTOR understand and agree that the services to be delivered under this contract are non-personal services and the parties recognize and agree that no employer-employee or master-servant relationships exist or will exist under the contract between the Government and SUBCONTRACTOR'S employees.
- D. Duties and Limitations of the Contracting Officer's Representative (COR) / Contracting Officer's Technical Representative (COTR):
- i. The prime duty of the COR/COTR is to assist a Contracting Officer in assuring the contractor's performance proceeds in accordance with the terms of the contract. The COR/COTR must be aware of the continuing responsibility to act in the best interests of the Government and the need to work closely with the contractor and the Contracting Officer to anticipate and resolve difficulties. The COR/COTR must objectively evaluate the contractor's performance and keep the Contracting Officer fully informed of progress, including problems with the contract.
  - ii. The technical area of the contract is one of the COR's/COTR's more important areas of responsibility. CORs/COTRs must take the lead under the guidance and direction of the Contracting Officer to determine that work performed fulfills contract requirements. The COR/COTR shall become familiar with all terms and conditions of the contract taking particular note of the project limitations specified by specifications or other approval documents/directives issued by appropriate authorities involving assigned contracts.
  - iii. The duties and limitations relative to appointment as the Contracting Officer's Representative (COR)/Contracting Officer's Technical Representative (COTR) are as follows:
    - (1) Promptly approve or disapprove contractor's invoices by processing invoices to take advantage of prompt payment discounts and avoid interest charges for late payments. The COR/COTR shall verify or obtain verification from other responsible parties as to the amount of work actually performed in relation to that claimed for payment before approving an invoice.
    - (2) Promptly execute appropriate receiving reports to document acceptance of services.
    - (3) Furnish, upon receipt, technical advice/opinion so that the Contracting Officer may have a technical basis for certifying for payment of all allowable costs under cost reimbursement contracts.

(4) Promptly report to the Contracting Officer any unusual circumstances involving the contract such as late technical deficiencies, potential or actual slip pages in contract performance, security violations or questions, property matters, etc. This includes monitoring of the CMR (Contractor Manpower Reporting) System, if applicable, to ensure that contractors report the information required in the contract (See <https://contractormanpower.army.pentagon.mil>). Further, the COR/COTR shall ascertain that adequate (but not excessive) competent contractor personnel have been assigned to the contract and are performing satisfactorily. Failure to do so on the part of the contractor shall be reported promptly to the Contracting Officer.

(5) Provide technical evaluation, coordination, and guidance to contractor technical staff with respect to clarification of government drawings, specifications, designs, statements of work, or performance requirements within limitations of this letter of appointment.

(6) Promptly consult with the Contracting Officer when in doubt about any matter involving the contract or contractor.

(7) Assist the Contracting Officer, when required, in negotiating and preparing modifications.

(8) Attend post-award conferences, if necessary.

(9) Work with appropriate offices when necessary in handling contractor matters concerning property, security, and funding.

(10) Give contractors fair and equal treatment.

(11) Otherwise perform strictly within the Contracting Officer's designation of the COR/COTR for specific responsibilities.

iv. CORs/COTRs are not authorized to:

(1) Encourage any contractor by words or actions, or failure to act, to undertake any work either on a new proposed effort or on an extension of work beyond the period set forth in an existing contract.

(2) Participate in any way with a contractor or his/her employees which may create an impression of favoritism toward one contractor.

(3) Provide any information relating to a competitive procurement to any potential offeror.

(4) Interfere with the contractor's management prerogatives by "supervising" contractor employees or otherwise directing their work efforts.

(5) Execute options in the contract.

(6) Make final determination of contractor's liability for loss, damage or unreasonable use of Government-furnished material.

(7) Authorize a contractor to obtain property for use under a contract or to use Government-furnished property (GFP) possessed under one contract for use under another contract.

- (8) Initiate contracting actions by use of imp rest funds, blanket purchase agreements, or other simplified purchase methods unless specifically authorized, such as through the use of US Government Credit Cards or decentralized blanket purchase agreements.
- (9) Place calls or delive ry orders under basic agreements, basic ordering agreements, or indefinite delivery type contracts.
- (10) Under no circ umstances shall the C OR/COTR authorize the start or extension of work by a c ontractor. This is especially important when considering the extension of work under an existing contract.
- v. In ad dition to th e du ties and li mitations of the COR/COTR, if th e co ntract con tains Government Fur nished P roperty (GFP) or C ontractor Acquired Property (CAP), th e primary COR/COTR is also designated as the Prope rty Administrator in charge of s uch property. As Property Administrator under this contract, the COR/COTR shall ensure all contract req uirements regar ding G overnment Fu rnished Pro perty/Contractor-Acquired Property (GFP/CAP) a re m et. Pri or to cl oseout, th e C OR/COTR is responsible for verifying that disposition of any GFP/CAP equipment has been made in accordance with the contract.
- vi. The duties and responsibilities set forth herein are not intended to b e all-inclusive. As specific situations arise that have not been covered or that have c reated a question, the COR/COTR sho uld c onsult wi th the C ontracting O fficer and obtain a dvice on how to proceed in the best interests of the Government and the contractor.
- E. Technical Direction: Pe rformance o f th e work under th is co ntract s hall be s ubject to th e technical di rection o f C ontracting O fficer's Representa tive (COR). The term "tec hnical direction" is defined to include, without limitation:
- i. Directions to the Con tractor wh ich redirect the contrac t effort, shift work em phasis between work areas or task s, require pursuit of certain lines of inquiry, fill in details or otherwise serve to accomplish the contractual Statement of Work.
- ii. Provision of written information to the Contractor which assists in the interpretation of drawings, specifications or technical portions of the work description.
- iii. Review and, where re quired by th e co ntract, approval of technical re ports, dra wings, specifications and technical inform ation to be delivered by th e C ontractor to th e Government under the contract.
- F. Technical direction shall be within the scope of work st ated in the c ontract. The C OR does NOT have the authority to, and may not, issue any technical direction which:
- i. Constitutes an assignment of additional work outside the Statement of Work;
- ii. Constitutes a change as defined in the contract clause entitled "Changes";
- iii. In a ny m anner causes a n increase or decrease in th e to tal esti mated contract co st, the fixed fee (if any), or the time required for contract performance;
- iv. Changes any of the expressed terms, conditions or specifications of the contract; or
- v. Interferes with the Contractor's right to perform the terms and conditions of the contract.
- G. All technical directions shall be issued in writing by the COR.
- H. The C ontractor shal l pr oceed p romptly wit h the performance of techni cal directions duly issued by the POC or COR in the manner prescribed by this clause and within his authority under the provisions of this clause. If, in the opinion of the Contractor, any instruction or

direction by the POC or COR falls within one of the categories defined in b(1) through (5) above, the Contractor shall not proceed but shall notify the Contracting Officer in writing within five (5) working days after receipt of any such instruction or direction and shall request the Contracting Officer to modify the contract accordingly. Upon receiving the notification from the Contractor, the Contracting Officer shall:

- i. Advise the Contractor in writing within thirty (30) calendar days after receipt of the Contractor's letter that the technical direction is within the scope of the contract effort and does not constitute a change under the "Changes" clause of the contract; or
  - ii. Advise the Contractor within a reasonable time that the Government will issue a written change order.
- I. A failure of the Contractor and Contracting Officer to agree that the technical direction is within the scope of the contract, or a failure to agree upon the contract action to be taken with respect thereto shall be subject to the provisions of the clause entitled "Disputes".



**Attachment A – Statement of Work (from Prime Contract Modification, May 2010)**

**4.0 PHASE II WORK PLAN**

The proposed microgrid architecture consists of the following main components.

1. A mesh interconnection of power buses with microsources and loads attached.
2. An embedded mesh radio network to provide reliable communication between bus devices that are controlled using Odysian's e-board technology.
3. An intelligent load shedding and generation control scheme to assure microgrid stability

A detailed description of each of these architecture components is provided below.

**4.2 TASK I – Develop Microgrid Electrical Designs (UW-Madison)**

UW-Madison will develop a candidate electrical design for the lab-scale microgrid and an army field installation scale microgrids that will be used for simulations at ND and hardware development by other partners. UW-Madison faculty and student professionals will bring their expertise to this project in the design of the microgrid, strongly informed by their lessons learned through their extensive experience in microgrid technology.

The electrical design developed under this task will be used by UND to develop the model and simulation of the microgrid. Two designs will be developed under this task, first a design of the UW microgrid test bed, and second, a design of an Army installation. The Army CERL customer will be asked to identify an Army installation for focus of the design task. In addition, the Army technical personnel will be asked to provide layout design and high level existing electrical design of the installation. If such information is not provided in the time needed to complete this task, UW will create a "notional" electrical design of an Army installation

**4.3 TASK II – Model and Simulate Intelligent Microgrid (UND)**

Odysian's Phase II STTR project will develop hardware and software for microgrid systems that can be later scaled up to field-deployable systems. An important component of that effort is the development of a comprehensive simulation that accurately models the microgrid sources, loads, controllers, and associated communication infrastructure.

The University of Notre Dame (UND) will develop a single-phase and three-phase simulation for candidate microgrids that are specified by the University of Wisconsin – Madison (UW). The University of Illinois – Urbana-Champaign (UIUC) will supply models of microsource inverters. UND will develop models of the eBoard load controllers in consultation with Odysian Technology LLC. UND will be responsible for integrating these models into the microgrid layouts specified by UW. UND will be responsible for integrating distributed load-shedding and power dispatch algorithms into the simulation using a realistic model of communication network. UND will validate the simulation against a bench-scale hardware microgrid. UND will perform simulation experiments to study the scalability of the proposed intelligent hybrid control architecture with regard to system cost, communication network performance, and overall network reliability.

**4.3 TASK III – Develop Distributed Control Algorithms (UND, Odysian)**

A two-layer control architecture is a major component of Odysian's proposed microgrid system. The lowest level of this architecture is a local controller for microsources that mimics droop controllers for synchronous machines. The highest level of the architecture is a supervisory layer that uses a distributed set of "decision agents" for economical power dispatch and intelligent load shedding. These agents function in a "distributed" manner by exchanging information over an ad hoc wireless communication network.

UND will develop distributed power dispatch and intelligent load-shedding algorithms for Odysian's lab-scale microgrid system. These algorithms will be integrated into the power system simulation developed under task 1.

The distributed power dispatch algorithms were originally developed by UND as part of Odysian's Phase I STTR contract. For phase II of this project, UND will extend the power dispatch algorithms to account for limits on transmission line power. These algorithms will be locally embedded at the microsource inverter. UND, in consultation with UIUC, will be responsible for specifying the interface between the power dispatch agents and the laboratory test inverter.

A preliminary load-shedding algorithm was developed by UND as part of Odysian's Phase I STTR contract. UND and Odysian will work together to continue development of these load shedding algorithms under Phase II. In particular, UND will develop automated load forecasting algorithms that in concert with measures of "power quality" can be used to manage load connection in a way that assures overall microgrid stability. These algorithms will be integrated into the simulation developed under task 1 and they will be embedded at the eBoard load controller. UND, in consultation with Odysian, will be responsible for specifying the interface between the load shedding agents and the eBoard load controller.

#### **4.4 TASK IV – Develop Power Access and Load Control (Odysian)**

Power access and control technology will be further developed during phase II. This will include further development of the single phase 120 Volt eBoard™ power access and control prototype demonstrated in phase I.

The eBoard™ power access and load control will include further development of the low voltage power access track system demonstrated in phase I including, further development of eBoard™ power access system having a single power lead conductor, 120V single phase power source, smart power adapters, power control modules for single phase power track circuits, and simplified user interface devices configured for monitoring and control of the intelligent microgrid system.

#### **4.4 TASK V – Develop Microgrid Inverter (UIUC)**

Inverters are a critical link between energy sources and microgrids. Sources of energy, such as photovoltaic systems, wind turbines, microturbines, and others, produce different voltage and current characteristics and must be matched to the power grid. This matching must take place both in terms of matching the voltage and frequency of the microgrid, but also in terms of supplying power or voltage support as necessary to maintain the stability and operation of the microgrid.

In this task, UIUC will design and construct an inverter suitable for laboratory testing of microgrid control and communication concepts. Since inverter technology itself is mature, we do not anticipate fundamental advances are necessary in the hardware design of the inverter itself. However, the inverter will need to have the appropriate communication and control system to provide for mesh microgrid functionality. Therefore, this task will involve a degree of hardware construction, but will primarily focus on providing interface and control capability.

The University of Illinois has an inverter testbed that can be used for initial experimentation and validation of control and interface capabilities. The testbed consists of the power electronics (power transistors, gate drives, protection and sensors) and a DSP evaluation board that can be used to trigger the transistor gate drives. The testbed is physically large, and is far from a commercial product. However, it is generally sufficient for rapid testing of new control ideas.

For the first effort of this task, UIUC expects to use the inverter testbed to develop the software that will be used to run the inverter. In the second effort of this task, we will refine the hardware to be much more compact and repeatable than is presently available in the inverter testbed. This effort will require specification, hardware design, component selection, board layout, enclosure, and additional hardware testing. A potentially important variation to typical inverter hardware is the potential to supply single-

phase power, particularly when many smaller distributed resources may be brought online (such as small to medium photovoltaic arrays or wind turbines).

As a rough timeline, we expect the testbed-oriented work take about six months, with the hardware development to take approximately twelve months. At the completion of this task, UIUC plans to deliver inverter hardware to the contractor for testing on a bench-top microgrid for testing with load shedding devices.

To be specific on the testing arrangements, there will be a total of up to three scaled down versions of single phase inverters provided to be used by Odysian for preliminary testing in conjunction with their eBoard single phase load control. The inverters will be tested before and after shipment to Odysian. UIUC will provide. These inverters will have the communication and control system for mesh microgrid functionality within the inverter or as a separate plug-in module. Communication and control system hardware will be developed for an inverter source, static switch, synchronous source, and storage source. This interface needs to be compatible with the existing equipment at UW.

#### **4.6 TASK VI – Develop Wireless Communication (Odysian, UND)**

This project uses an ad hoc wireless network to exchange messages supervising power dispatch and load connection. This wireless network will be formed from WSN modules that are connected to generation and load assets. These wireless networks have inherent reliability issues due to their reliance on radio frequency (RF) signaling. Assuring reliable real-time delivery of messages over such RF networks requires adaptable networking middleware that can reconfigure to changes in communication network topology and link connectivity. UND will assist Odysian to 1) integrate the communication network with the distributed power dispatch and load-shedding algorithms and 2) improve the reliability and real-time performance of the communication network. This will be done for the specific lab-scale

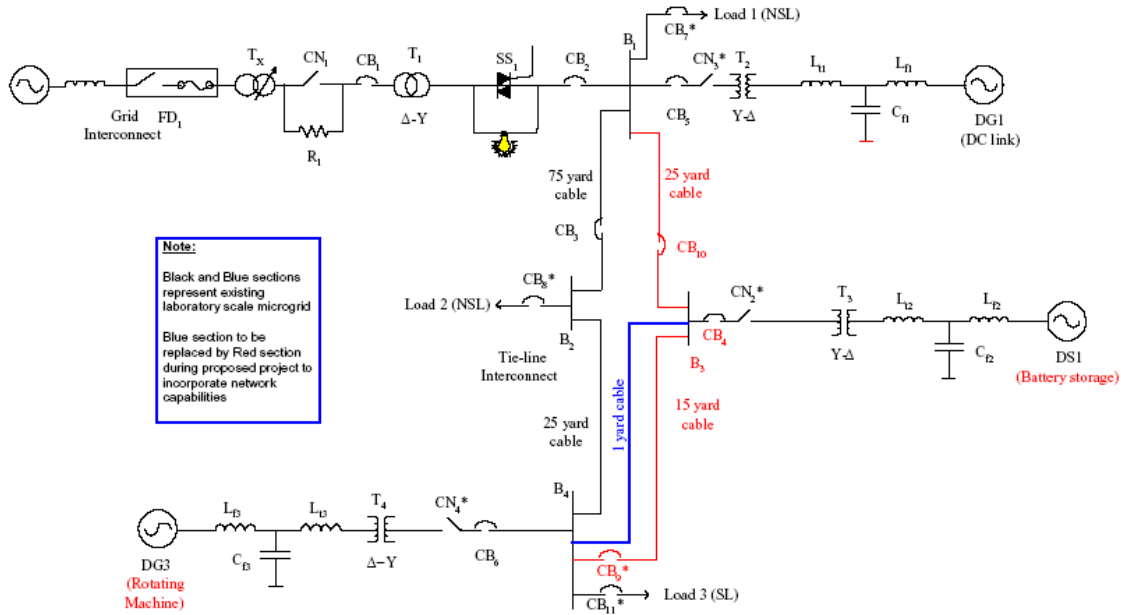
#### **4.7 TASK VII – Develop Wireless Distributed Control (Odysian, UND)**

This project's distributed algorithms for power dispatch and load shedding will be implemented as "agents" that are embedded at the generation and load assets. These agents will communicate over an ad hoc wireless network. The agent software will be embedded in wireless sensor network (WSN) modules. These modules will be interfaced to the microsource inverters developed by UIUC and the eBoard load control devices developed by Odysian LLC. UND, in consultation with Odysian, will be responsible for developing the embedded software implementing the power dispatch and load shedding algorithms on the WSN modules. UND will be responsible for determining what information must be transmitted between cooperating agents in the system.

#### **4.8 TASK VIII – System Test and Validation (UW-Madison)**

Where possible the UW-Madison will incorporate test hardware developed in other Tasks into the lab-scale microgrid and deliver test results documenting system performance.

The Department of Electrical and Computer Engineering at the University of Wisconsin-Madison is home to the Power System Engineering Research Center-Wisconsin (PSerc), Wisconsin Electric Machines and Power Electronics Consortium (WEMPEC). The mission of PSerc is to significantly and materially contribute to the restructuring of the electric power industry without compromising its standing as a critically reliable component of the civil infrastructure. This includes the use of distributed resources. Pioneering activities developed at UW-Madison under the CERTS have led to the emergence of Microgrids as an attractive approach for integrating various types of distributed generation with the electric grid. Professor Robert Lasseter and his colleagues at UW-Madison has developed extensive experience in the design and operation of microgrids, particularly through the development of a laboratory scale microgrid.



A schematic of the existing UW-Madison laboratory scale microgrid is shown in the figure above (illustrated in blue and black). As may be observed, the topology of the current system is a radial network, with loads and generation interspersed at the load center with appropriate protection and control. It is proposed to augment the radial network by replacing the blue branch with two additional red branches that provide network capability, rotating machine distributed generator, and storage device distributed energy resource. This would serve as a benchmark system for the studies to be conducted for computer simulations and experimental testing. All the parameters of the interconnecting branches, cables and loads of the laboratory benchmark are chosen to emulate an typical distribution system and will be used in developing computer simulation models for the system.

UW-Madison faculty and student professionals will bring their expertise to this project in the design of the microgrid and laboratory demonstration of the intelligent control concepts strongly informed by their lessons learned through their extensive experience.

**4.9 TASK IX – Program Management and Reporting (All)**

Odysian Technology will provide cost and technical progress reports to the Technical Manager and Contracting Officer, as required to satisfy contractual requirements. Reports shall include quarterly summary progress reports, an invention report delivered within 6 months following completion of the program, and a final technical report delivered no later than 3 months after completion of the program.

As shown in the schedule, a ‘kick-off’ technical coordination meeting will be held at CERL near the beginning of the program to review program plans and objectives. Quarterly teleconferences will be held with team participants to review and discuss progress. Other working meetings will help on an as-needed basis between team participants. A final program review will be held at Odysian Technology near conclusion of the program.

**Attachment B – Schedule**

The program start date on the prime contract: **1 November, 2009**. The program schedule is shown below. (per contract mod)

TASKS	CY2009	CY2010				CY2011		
		Program Year 1				Program Year 2		
	Q1 Nov 1 – Jan 31	Q2 Feb 1 – Apr 30	Q3 May 1 – Jul 31	Q4 Aug 1 – Oct 31	Q5 Nov 1 – Jan 31	Q6 Feb 1 – Apr 30	Q7 May 1 – Jul 31	Q8 Aug 1 – Oct 31
Task I – Dev Microgrid Electrical Designs			█					
Task II – Model and Simulate Intelligent Microgrid			█					
Task III – Develop Distributed Control Algorithms			█					
Task IV – Develop Power Access and Load Control	█							
Task V – Develop Microgrid Inverter			█					
Task VI – Develop Wireless Communication			█					
Task VII – Develop Wireless Distributed Control			█					
Task VIII – System Test and Validation						█		
Task IX – Program Management & Reporting	█							
Scheduled Progress Review Meetings (Monthly team coordination mtgs to occur as needed)	Kick-off Meeting @ CERL ▼		Review Mtg @ Odysian ▼		Review Mtg @ UIUC ▼	Review Mtg @ UW ▼		Final Program Teleconf. ▼

**Attachment C – Subcontractor Bid**



University of Wisconsin-Madison

**Research Services Office**

2630 Engineering Hall Phone: 608/263-1625  
1415 Engineering Drive Fax: 608/262-6400  
Madison, Wisconsin 53706-1691

Tuesday, October 06, 2009

Barton Bennett, President Tech Dev & Innovation  
ODYSSIAN TECHNOLOGY, L.L.C.  
511 East Colfax Avenue  
South Bend, Indiana 46617

RE: Commitment Letter to Odysian for STTR Proposal on Advanced Distribution and Control for Hybrid Intelligent Power Systems - Design and Laboratory Demonstration

UW Proposal # MSN125749 Professor Bob Lasseter

Dear Mr. Bennett,

The University of Wisconsin is pleased to collaborate with Odysian Technology in the STTR Proposal named above.


Prof. Lasseter of the Dept. of Electrical and Computer Engineering will lead the UW team and has been involved in power engineering research within the Wisconsin Electric Machines and Power Electronics Consortium and NSF Power System Engineering Research Center. The thrust at UW team will focus on the area of design and demonstration of microgrids under intelligent control, in which UW researchers have made pioneering inroads in the recent years, through various research efforts funded by the the Department of Energy, National Science Foundation, California Energy Commission and the National Renewable Energy Laboratory.

The attached application has been administratively approved on behalf of the Board of Regents of the University of Wisconsin System and is submitted for your consideration.

During the evaluation process we ask that you use the University's above-referenced proposal number in any future correspondence. For questions regarding administrative or contractual matters please contact:  
Research and Sponsored Programs, 21 North Park Street, Suite 6401, Madison, WI 53715, Phone: (608) 262-3822, FAX: (608) 262-5111.

For questions regarding the technical nature of this application please contact: Dr Lasseter, UW-Madison, 1415 Engineering Drive, Madison, WI 53706 Phone: (608) 262-4439.

Sincerely,

  
Paul S. Percy, Dean  
College of Engineering

bp:

Kim Moreland  
Director, Research and Sponsored Programs

Proposed Budget

Agency: Odysian Technology

Period: Nov 1 2009-Oct 31 2011

	Months	Year 1	Year 2	Total
<b>A. Senior Personnel</b>				
1. Bob Lasseter	0.85	\$ 10,000	\$ 10,400	\$ 20,400
2.		\$ -	\$ -	\$ -
3.		\$ -	\$ -	\$ -
4.		\$ -	\$ -	\$ -
5.		\$ -	\$ -	\$ -
6.		\$ -	\$ -	\$ -
<b>Total Senior Personnel</b>		\$ 10,000	\$ 10,400	\$ 20,400
<b>B. Other Personnel</b>				
1. Post Doctoral Associates		\$ -	\$ -	\$ -
2. Other Professionals		\$ -	\$ -	\$ -
3. Graduate Student	3 40%	\$ 4,076	\$ 4,239	\$ 8,315
4. Project Asst		\$ -	\$ -	\$ -
5. Undergraduate Students		\$ -	\$ -	\$ -
6. Secretarial-Clerical		\$ -	\$ -	\$ -
7. Other - LTE		\$ -	\$ -	\$ -
<b>Total Salaries</b>		\$ 14,076	\$ 14,639	\$ 28,715
<b>C. Fringe Benefits</b>				
38.5% *A	50.5% *B5	\$ 4,971	\$ 5,170	\$ 10,141
27.5% *B1&B4	50.5% *B6			
27.5% *B3	17.5% *B7			
<b>Total S&amp;W + FB</b>		\$ 19,047	\$ 19,809	\$ 38,856
<b>D. Equipment</b>				
1.		\$ -	\$ -	\$ -
2.		\$ -	\$ -	\$ -
3.		\$ -	\$ -	\$ -
4.		\$ -	\$ -	\$ -
5.		\$ -	\$ -	\$ -
6.		\$ -	\$ -	\$ -
<b>Total Equipment</b>		\$ -	\$ -	\$ -
<b>E. Travel</b>				
1. Domestic		\$ 1,377	\$ 1,400	\$ 2,777
2. Foreign		\$ -	\$ -	\$ -
<b>F. Other Direct Costs</b>				
1. Materials & Supplies		\$ -	\$ -	\$ -
2. Publications		\$ -	\$ -	\$ -
3. Computer Services		\$ -	\$ -	\$ -
4. Subcontract (Notre Dame)		\$ 42,354	\$ 44,119	\$ 86,473
5. Subcontract (UIUC)		\$ 37,555	\$ 37,555	\$ 75,110
6. Tuition Remission \$8K/student		\$ 1,066	\$ 1,108	\$ 2,174
<b>Total Other Direct Costs</b>		\$ 80,975	\$ 82,782	\$ 163,757
<b>G. Total Direct Costs</b>		\$ 101,399	\$ 103,991	\$ 205,390
<b>H. Indirect Costs</b>		\$ 34,156	\$ 10,286	\$ 44,442
48.5% of G-D-F4-F5-F6				
<b>I. Total Costs</b>		\$ 135,555	\$ 114,277	\$ 249,832

## **Budget Justification**

**A.1) Faculty Summer Salary:** Dr. Lasseter will serve as Leade PI at UW-Madison project. He's requesting about 140 hours of support (\$10,000) in year 1 of the project. Second year salary request includes a 4% addition to reflect increased salary.

**B.3) Graduate Student Salaries:** Project activities require a support for one graduate student for 3 months per year working at 40% time. The estimate is made based on current graduate student stipend levels at UW, which are \$39192 per year, with an increase of 4% per year. Graduate student will assist Dr. Lasseter in developing the microgrid system design and in developing laboratory demonstrations.

**C) Fringe Benefits:** Employee benefits are directly charged as a percentage of salaries and wages. The rate used for salary for faculty is 38.5% and for graduate students at 27.5%

**E.1) Domestic Travel** includes estimated amount necessary for PI and/or graduate student to travel to partner locations in Indiana and Illinois, or participate in appropriate technical forums related to the conduct of the project.

**F) Other Direct Costs** equals includes all directs costs less, student tuition remission fees, that form the base amount on which indirect costs are charged under H.

**H) Indirects costs:** F & A costs are charged as a percentage of the total direct costs at a rate of 48.5 % negotiated by the University's Cognizant Audit Agency.



**Attachment D – Acquisition Regulations and Contract Clauses**

The Federal Acquisition Regulation (FAR) clauses and Defense Federal Acquisition Regulation Supplement (DFARS) clauses referenced below are incorporated herein by reference, with the same force and effect as if they were given in full text, and are applicable, including any notes following the clause citation, during the performance of this Contract.

The full text of a clause may be accessed electronically at this/these address(es):

FAR, <http://www.acqnet.gov/far/farqueryframe.html>  
(select HTML under ‘Current FAR’ menu and scroll to down to part 52.2)

FAR and DFAR, <http://farsite.hill.af.mil/>  
(select ‘FAR’ or ‘DFAR’ on left menu and then select FAR/DFAR prefix)

This Contract is entered into by the Parties in support of a U.S. Government contract. As used in the FAR and DFARS clauses referenced below and otherwise in this Contract:

1. “Contractor” or “Offeror” means the SUBCONTRACTOR, as defined previously in this document, acting as the immediate (first-tier) subcontractor to ODYSSEAN.
2. “Prime Contract” means the contract between ODYSSEAN and the U.S. Government
3. “Contract” means this Contract.
4. “Subcontract” means any contract placed by the SUBCONTRACTOR or lower-tier subcontractors under this Subcontract.

**A. FEDERAL ACQUISITION REGULATION (FAR) CONTRACT CLAUSES**

52.202-1	Definitions	JUL 2004
52.203-3	Gratuities	APR 1984
52.203-5	Covenant Against Contingent Fees	APR 1984
52.203-6	Restrictions On Subcontractor Sales To The Government	SEP 2006
52.203-7	Anti-Kickback Procedures	JUL 1995
52.203-8	Cancellation, Rescission, and Recovery of Funds for Illegal or Improper Activity	JAN 1997
52.203-10	Price Or Fee Adjustment For Illegal Or Improper Activity	JAN 1997
52.203-12	Limitation On Payments To Influence Certain Federal Transactions	SEP 2007
52.204-4	Printed or Copied Double-Sided on Recycled Paper	AUG 2000
52.204-7	Central Contractor Registration	APR 2008
52.209-6	Protecting the Government's Interest When Subcontracting With Contractors Debarred, Suspended, or Proposed for Debarment	SEP 2006
52.215-2 Alt II	Audit and Records--Negotiation - Alternate II	MAR 2009
52.215-8	Order of Precedence--Uniform Contract Format	OCT 1997
52.215-14	Integrity of Unit Prices	OCT 1997
52.219-6	Notice Of Total Small Business Set-Aside	JUN 2003
52.219-8	Utilization of Small Business Concerns	MAY 2004
52.219-14	Limitations On Subcontracting	DEC 1996
52.222-3	Convict Labor	JUN 2003
52.222-21	Prohibition Of Segregated Facilities	FEB 1999
52.222-26	Equal Opportunity	MAR 2007

52.222-35	Equal Opportunity For Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans	SEP 2006
52.222-36	Affirmative Action For Workers With Disabilities	JUN 1998
52.222-37	Employment Reports On Special Disabled Veterans, Veterans Of The Vietnam Era, and Other Eligible Veterans	SEP 2006
52.222-50	Combating Trafficking in Persons	FEB 2009
52.223-2	Affirmative Procurement of Biobased Products Under Service and Construction Contracts	DEC 2007
52.223-6	Drug-Free Workplace	MAY 2001
52.223-14	Toxic Chemical Release Reporting	AUG 2003
52.225-13	Restrictions on Certain Foreign Purchases	JUN 2008
52.227-1 Alt I	Authorization And Consent (Dec 2007) - Alternate I	APR 1984
52.227-2	Notice And Assistance Regarding Patent And Copyright Infringement	DEC 2007
52.227-11	Patent Rights--Ownership By The Contractor	DEC 2007
52.227-20	Rights in Data - SBIR Program	DEC 2007
52.229-3	Federal, State And Local Taxes	APR 2003
52.232-2	Payments Under Fixed-Price Research And Development Contracts	APR 1984
52.232-8	Discounts For Prompt Payment	FEB 2002
52.232-9	Limitation On Withholding Of Payments	APR 1984
52.232-17	Interest	OCT 2008
52.232-18	Availability Of Funds	APR 1984
52.232-23	Assignment Of Claims	JAN 1986
52.232-25	Prompt Payment	OCT 2008
52.232-33	Payment by Electronic Funds Transfer--Central Contractor Registration	OCT 2003
52.233-1	Disputes	JUL 2002
52.233-3 Alt I	Protest After Award - Alternate I	AUG 1996
52.242-13	Bankruptcy	JUL 1995
52.243-1 Alt V	Changes--Fixed-Price (Aug 1987) - Alternate V	APR 1984
52.244-5	Competition In Subcontracting	DEC 1996
52.244-6	Subcontracts for Commercial Items	AUG 2009
52.249-2	Termination For Convenience Of The Government (Fixed-Price)	MAY 2004
52.253-1	Computer Generated Forms	JAN 1991
52.246-9	Inspection Of Research And Development (Short Form)	APR 1984
52.246-16	Responsibility For Supplies	APR 1984
52.246-23	Limitation Of Liability	FEB 1997
52.246-25	Limitation Of Liability--Services	FEB 1997
52.242-15 Alt I	Stop-Work Order - Alternate I	AUG 1989
52.242-17	Government Delay Of Work	APR 1984
52.247-34	F.O.B. Destination	NOV 1991

**B. DEFENSE FEDERAL ACQUISITION REGULATION (DFAR) CONTRACT CLAUSES**

252.201-7000	Contracting Officer's Representative	DEC 1991
252.203-7000	Requirements Relating to Compensation of Former DoD Officials	JAN 2009
252.203-7001	Prohibition On Persons Convicted of Fraud or Other Defense-Contract-Related Felonies	DEC 2008
252.203-7002	Requirement to Inform Employees of Whistleblower Rights	JAN 2009
252.204-7003	Control Of Government Personnel Work Product	APR 1992
252.204-7004 Alt A	Central Contractor Registration (52.204-7) Alternate A	SEP 2007
252.204-7009	Requirements Regarding Potential Access to Export-Controlled Items	JUL 2008
252.209-7004	Subcontracting With Firms That Are Owned or Controlled By The Government of a Terrorist Country	DEC 2006
252.225-7006	Quarterly Reporting of Actual Contract Performance Outside the United States	MAY 2007
252.225-7012	Preference For Certain Domestic Commodities	DEC 2008
252.226-7001	Utilization of Indian Organizations and Indian-Owned Economic Enterprises, and Native Hawaiian Small Business Concerns	SEP 2004
252.227-7016	Rights in Bid or Proposal Information	JUN 1995
252.227-7017	Identification and Assertion of Use, Release, or Disclosure Restrictions	JUN 1995
252.227-7018	Rights in Noncommercial Technical Data and Computer Software--Small Business Innovation Research (SBIR) Program	JUN 1995
252.227-7019	Validation of Asserted Restrictions--Computer Software	JUN 1995
252.227-7030	Technical Data--Withholding Of Payment	MAR 2000
252.227-7037	Validation of Restrictive Markings on Technical Data	SEP 1999
252.227-7039	Patents--Reporting Of Subject Inventions	APR 1990
252.232-7003	Electronic Submission of Payment Requests and Receiving Reports	MAR 2008
252.232-7010	Levies on Contract Payments	DEC 2006
252.235-7010	Acknowledgment of Support and Disclaimer	MAY 1995
252.235-7011	Final Scientific or Technical Report	NOV 2004
252.243-7001	Pricing Of Contract Modifications	DEC 1991
252.243-7002	Requests for Equitable Adjustment	MAR 1998
252.244-7000	Subcontracts for Commercial Items and Commercial Components (DoD Contracts)	JAN 2009
252.247-7023	Transportation of Supplies by Sea	MAY 2002
252.247-7024	Notification Of Transportation Of Supplies By Sea	MAR 2000
252.246-7000	Material Inspection And Receiving Report	MAR 2008

**C. FAR AND DFAR CONTRACT CLAUSES IN FULL TEXT**

52.215-21 REQUIREMENTS FOR COST OR PRICING DATA OR INFORMATION OTHER THAN COST OR PRICING DATA--MODIFICATIONS (OCT 1997)—ALTERNATE IV (OCT 1997)

- (a) Submission of cost or pricing data is not required.
- (b) Provide information described below: See Section L.5., Informational Breakdown of Price Proposal.

(End of clause)

52.217-9 OPTION TO EXTEND THE TERM OF THE CONTRACT (MAR 2000)

(a) The Government may extend the term of this contract by written notice to the Contractor within 15 days prior to expiration of the contract provided that the Government gives the Contractor a preliminary written notice of its intent to extend at least 30 days before the contract expires. The preliminary notice does not commit the Government to an extension.

(b) If the Government exercises this option, the extended contract shall be considered to include this option clause.

(c) The total duration of this contract, including the exercise of any options under this clause, shall not exceed twenty-four months.

(End of clause)

52.219-28 POST-AWARD SMALL BUSINESS PROGRAM REREPRESENTATION (APR 2009)

(a) Definitions. As used in this clause--

Long-term contract means a contract of more than five years in duration, including options. However, the term does not include contracts that exceed five years in duration because the period of performance has been extended for a cumulative period not to exceed six months under the clause at 52.217-8, Option to Extend Services, or other appropriate authority.

Small business concern means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding on Government contracts, and qualified as a small business under the criteria in 13 CFR part 121 and the size standard in paragraph (c) of this clause. Such a concern is "not dominant in its field of operation" when it does not exercise a controlling or major influence on a national basis in a kind of business activity in which a number of business concerns are primarily engaged. In determining whether dominance exists, consideration shall be given to all appropriate factors, including volume of business, number of employees, financial resources, competitive status or position, ownership or control of materials, processes, patents, license agreements, facilities, sales territory, and nature of business activity.

(b) If the Contractor represented that it was a small business concern prior to award of this contract, the Contractor shall rerepresent its size status according to paragraph (e) of this clause or, if applicable, paragraph (g) of this clause, upon the occurrence of any of the following:

(1) Within 30 days after execution of a novation agreement or within 30 days after modification of the contract to include this clause, if the novation agreement was executed prior to inclusion of this clause in the contract.

(2) Within 30 days after a merger or acquisition that does not require a novation or within 30 days after modification of the contract to include this clause, if the merger or acquisition occurred prior to inclusion of this clause in the contract.

(3) For long-term contracts--

(i) Within 60 to 120 days prior to the end of the fifth year of the contract; and

(ii) Within 60 to 120 days prior to the date specified in the contract for exercising any option thereafter.

(c) The Contractor shall rerepresent its size status in accordance with the size standard in effect at the time of this rerepresentation that corresponds to the North American Industry Classification System (NAICS) code assigned to this contract. The small business size standard corresponding to this NAICS code can be found at <http://www.sba.gov/services/contractingopportunities/sizestandardsttopics/>.

(d) The small business size standard for a Contractor providing a product which it does not manufacture itself, for a contract other than a construction or service contract, is 500 employees.

(e) Except as provided in paragraph (g) of this clause, the Contractor shall make the rerepresentation required by paragraph (b) of this clause by validating or updating all its representations in the Online Representations and Certifications Application and its data in the Central Contractor Registration, as necessary, to ensure that they reflect the Contractor's current status. The Contractor shall notify the contracting office in writing within the timeframes specified in paragraph (b) of this clause that the data have been validated or updated, and provide the date of the validation or update.

(f) If the Contractor represented that it was other than a small business concern prior to award of this contract, the Contractor may, but is not required to, take the actions required by paragraphs (e) or (g) of this clause.

(g) If the Contractor does not have representations and certifications in ORCA, or does not have a representation in ORCA for the NAICS code applicable to this contract, the Contractor is required to complete the following rerepresentation and submit it to the contracting office, along with the contract number and the date on which the rerepresentation was completed:

The Contractor represents that it ( ) is, ( ) is not a small business concern under NAICS Code - assigned to contract number .

(Contractor to sign and date and insert authorized signer's name and title).

(End of clause)

#### 52.222-54 EMPLOYMENT ELIGIBILITY VERIFICATION (SEP 2009)

(a) Definitions. As used in this clause--Commercially available off-the-shelf (COTS) item—

(1) Means any item of supply that is--

(i) A commercial item (as defined in paragraph (1) of the definition at 2.101);

(ii) Sold in substantial quantities in the commercial marketplace; and

(iii) Offered to the Government, without modification, in the same form in which it is sold in the commercial marketplace; and

(2) Does not include bulk cargo, as defined in section 3 of the Shipping Act of 1984 (46 U.S.C. App. 1702), such as agricultural products and petroleum products. Per 46 CFR 525.1(c)(2), "bulk cargo" means cargo that is loaded and carried in bulk onboard ship without mark or count, in a loose unpackaged form, having homogenous characteristics. Bulk cargo loaded into intermodal equipment, except LASH or Seabee barges, is subject to mark and count and, therefore, ceases to be bulk cargo.

Employee assigned to the contract means an employee who was hired after November 6, 1986, who is directly performing work, in the United States, under a contract that is required to include the clause

prescribed at 22.1803. An employee is not considered to be directly performing work under a contract if the employee--

- (1) Normally performs support work, such as indirect or overhead functions; and
- (2) Does not perform any substantial duties applicable to the contract.

Subcontract means any contract, as defined in 2.101, entered into by a subcontractor to furnish supplies or services for performance of a prime contract or a subcontract. It includes but is not limited to purchase orders, and changes and modifications to purchase orders.

Subcontractor means any supplier, distributor, vendor, or firm that furnishes supplies or services to or for a prime Contractor or another subcontractor.

United States, as defined in 8 U.S.C. 1101(a)(38), means the 50 States, the District of Columbia, Puerto Rico, Guam, and the U.S. Virgin Islands.

(b) Enrollment and verification requirements.

(1) If the Contractor is not enrolled as a Federal Contractor in E-Verify at time of contract award, the Contractor shall--

(i) Enroll. Enroll as a Federal Contractor in the E-Verify program within 30 calendar days of contract award;

(ii) Verify all new employees. Within 90 calendar days of enrollment in the E-Verify program, begin to use E-Verify to initiate verification of employment eligibility of all new hires of the Contractor, who are working in the United States, whether or not assigned to the contract, within 3 business days after the date of hire (but see paragraph (b)(3) of this section); and

(iii) Verify employees assigned to the contract. For each employee assigned to the contract, initiate verification within 90 calendar days after date of enrollment or within 30 calendar days of the employee's assignment to the contract, whichever date is later (but see paragraph (b)(4) of this section).

(2) If the Contractor is enrolled as a Federal Contractor in E-Verify at time of contract award, the Contractor shall use E-Verify to initiate verification of employment eligibility of--

(i) All new employees. (A) Enrolled 90 calendar days or more. The Contractor shall initiate verification of all new hires of the Contractor, who are working in the United States, whether or not assigned to the contract, within 3 business days after the date of hire (but see paragraph (b)(3) of this section); or

(B) Enrolled less than 90 calendar days. Within 90 calendar days after enrollment as a Federal Contractor in E-Verify, the Contractor shall initiate verification of all new hires of the Contractor, who are working in the United States, whether or not assigned to the contract, within 3 business days after the date of hire (but see paragraph (b)(3) of this section); or

(ii) Employees assigned to the contract. For each employee assigned to the contract, the Contractor shall initiate verification within 90 calendar days after date of contract award or within 30 days after assignment to the contract, whichever date is later (but see paragraph (b)(4) of this section).

(3) If the Contractor is an institution of higher education (as defined at 20 U.S.C. 1001(a)); a State or local government or the government of a Federally recognized Indian tribe; or a surety performing under a takeover agreement entered into with a Federal agency pursuant to a performance bond, the Contractor may choose to verify only employees assigned to the contract, whether existing employees or new hires. The Contractor shall follow the applicable verification requirements at (b)(1) or (b)(2), respectively, except that any requirement for verification of new employees applies only to new employees assigned to the contract.

(4) Option to verify employment eligibility of all employees. The Contractor may elect to verify all existing employees hired after November 6, 1986, rather than just those employees assigned to the contract. The Contractor shall initiate verification for each existing employee working in the United States who was hired after November 6, 1986, within 180 calendar days of--

(i) Enrollment in the E-Verify program; or

(ii) Notification to E-Verify Operations of the Contractor's decision to exercise this option, using the contact information provided in the E-Verify program Memorandum of Understanding (MOU).

(5) The Contractor shall comply, for the period of performance of this contract, with the requirements of the E-Verify program MOU.

(i) The Department of Homeland Security (DHS) or the Social Security Administration (SSA) may terminate the Contractor's MOU and deny access to the E-Verify system in accordance with the terms of the MOU. In such case, the Contractor will be referred to a suspension or debarment official.

(ii) During the period between termination of the MOU and a decision by the suspension or debarment official whether to suspend or debar, the Contractor is excused from its obligations under paragraph (b) of this clause. If the suspension or debarment official determines not to suspend or debar the Contractor, then the Contractor must reenroll in E-Verify.

(c) Web site. Information on registration for and use of the E-Verify program can be obtained via the Internet at the Department of Homeland Security Web site: <http://www.dhs.gov/E-Verify>.

(d) Individuals previously verified. The Contractor is not required by this clause to perform additional employment verification using E-Verify for any employee--

(1) Whose employment eligibility was previously verified by the Contractor through the E-Verify program;

(2) Who has been granted and holds an active U.S. Government security clearance for access to confidential, secret, or top secret information in accordance with the National Industrial Security Program Operating Manual; or

(3) Who has undergone a completed background investigation and been issued credentials pursuant to Homeland Security Presidential Directive (HSPD)-12, Policy for a Common Identification Standard for Federal Employees and Contractors.

(e) Subcontracts. The Contractor shall include the requirements of this clause, including this paragraph (e) (appropriately modified for identification of the parties), in each subcontract that--

(1) Is for--(i) Commercial or noncommercial services (except for commercial services that are part of the purchase of a COTS item (or an item that would be a COTS item, but for minor modifications), performed by the COTS provider, and are normally provided for that COTS item); or

(ii) Construction;

(2) Has a value of more than \$3,000; and

(3) Includes work performed in the United States.

(End of clause)

United States law will apply to resolve any claim of breach of this contract.

(End of clause)

52.244-2 SUBCONTRACTS (JUN 2007)

(a) Definitions. As used in this clause--

Approved purchasing system means a Contractor's purchasing system that has been reviewed and approved in accordance with Part 44 of the Federal Acquisition Regulation (FAR).

Consent to subcontract means the Contracting Officer's written consent for the Contractor to enter into a particular subcontract.

Subcontract means any contract, as defined in FAR Subpart 2.1, entered into by a subcontractor to furnish supplies or services for performance of the prime contract or a subcontract. It includes, but is not limited to, purchase orders, and changes and modifications to purchase orders.

(b) When this clause is included in a fixed-price type contract, consent to subcontract is required only on unpriced contract actions (including unpriced modifications or unpriced delivery orders), and only if required in accordance with paragraph (c) or (d) of this clause.

(c) If the Contractor does not have an approved purchasing system, consent to subcontract is required for any subcontract that—

(1) Is of the cost-reimbursement, time-and-materials, or labor-hour type; or

(2) Is fixed-price and exceeds—

(i) For a contract awarded by the Department of Defense, the Coast Guard, or the National Aeronautics and Space Administration, the greater of the simplified acquisition threshold or 5 percent of the total estimated cost of the contract; or

(ii) For a contract awarded by a civilian agency other than the Coast Guard and the National Aeronautics and Space Administration, either the simplified acquisition threshold or 5 percent of the total estimated cost of the contract.

(d) If the Contractor has an approved purchasing system, the Contractor nevertheless shall obtain the Contracting Officer's written consent before placing the following subcontracts:

**Any subcontract not identified in the contractor's proposal.**

(e)(1) The Contractor shall notify the Contracting Officer reasonably in advance of placing any subcontract or modification thereof for which consent is required under paragraph (b), (c), or (d) of this clause, including the following information:

(i) A description of the supplies or services to be subcontracted.

(ii) Identification of the type of subcontract to be used.

(iii) Identification of the proposed subcontractor.



- (iv) The proposed subcontract price.
- (v) The subcontractor's current, complete, and accurate cost or pricing data and Certificate of Current Cost or Pricing Data, if required by other contract provisions.
- (vi) The subcontractor's Disclosure Statement or Certificate relating to Cost Accounting Standards when such data are required by other provisions of this contract.
- (vii) A negotiation memorandum reflecting—
  - (A) The principal elements of the subcontract price negotiations;
  - (B) The most significant considerations controlling establishment of initial or revised prices;
  - (C) The reason cost or pricing data were or were not required;
  - (D) The extent, if any, to which the Contractor did not rely on the subcontractor's cost or pricing data in determining the price objective and in negotiating the final price;
  - (E) The extent to which it was recognized in the negotiation that the subcontractor's cost or pricing data were not accurate, complete, or current; the action taken by the Contractor and the subcontractor; and the effect of any such defective data on the total price negotiated;
  - (F) The reasons for any significant difference between the Contractor's price objective and the price negotiated; and
  - (G) A complete explanation of the incentive fee or profit plan when incentives are used. The explanation shall identify each critical performance element, management decisions used to quantify each incentive element, reasons for the incentives, and a summary of all trade-off possibilities considered.
- (2) The Contractor is not required to notify the Contracting Officer in advance of entering into any subcontract for which consent is not required under paragraph (c), (d), or (e) of this clause.
  - (f) Unless the consent or approval specifically provides otherwise, neither consent by the Contracting Officer to any subcontract nor approval of the Contractor's purchasing system shall constitute a determination—
    - (1) Of the acceptability of any subcontract terms or conditions;
    - (2) Of the allowability of any cost under this contract; or
    - (3) To relieve the Contractor of any responsibility for performing this contract.
  - (g) No subcontract or modification thereof placed under this contract shall provide for payment on a cost-plus-a-percentage-of-cost basis, and any fee payable under cost-reimbursement type subcontracts shall not exceed the fee limitations in FAR 15.404-4(c)(4)(i).
  - (h) The Contractor shall give the Contracting Officer immediate written notice of any action or suit filed and prompt notice of any claim made against the Contractor by any subcontractor or vendor that, in the opinion of the Contractor, may result in litigation related in any way to this contract, with respect to which the Contractor may be entitled to reimbursement from the Government.
  - (i) The Government reserves the right to review the Contractor's purchasing system as set forth in FAR Subpart 44.3.

(j) Paragraphs (c) and (e) of this clause do not apply to the following subcontracts, which were evaluated during negotiations:

**All subcontracts identified in the contractor's proposal.**

(End of clause)

52.252-2 CLAUSES INCORPORATED BY REFERENCE (FEB 1998)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this/these address(es):

<http://www.arnet.gov/far>

<http://www.acq.osd.mil/dpldars.html>

(End of clause)

252.232-7007 LIMITATION OF GOVERNMENT'S OBLIGATION (MAY 2006)

(a) Contract line item 0001 is incrementally funded. For this item, the sum of \$375,000.00 of the total price is presently available for payment and allotted to this contract. An allotment schedule is set forth in paragraph (j) of this clause.

(b) For item(s) identified in paragraph (a) of this clause, the Contractor agrees to perform up to the point at which the total amount payable by the Government, including reimbursement in the event of termination of those item(s) for the Government's convenience, approximates the total amount currently allotted to the contract. The Contractor is not authorized to continue work on those item(s) beyond that point. The Government will not be obligated in any event to reimburse the Contractor in excess of the amount allotted to the contract for those item(s) regardless of anything to the contrary in the clause entitled "TERMINATION FOR THE CONVENIENCE OF THE GOVERNMENT." As used in this clause, the total amount payable by the Government in the event of termination of applicable contract line item(s) for convenience includes costs, profit and estimated termination settlement costs for those item(s).

(c) Notwithstanding the dates specified in the allotment schedule in paragraph (j) of this clause, the **Contractor will notify the Contracting Officer in writing at least ninety days prior to the date when, in the Contractor's best judgment, the work will reach the point at which the total amount payable by the Government, including any cost for termination for convenience, will approximate 85 percent of the total amount then allotted to the contract for performance of the applicable item(s).** The notification will state (1) the estimated date when that point will be reached and (2) an estimate of additional funding, if any, needed to continue performance of applicable line items up to the next scheduled date for allotment of funds identified in paragraph (j) of this clause, or to a mutually agreed upon substitute date. The notification will also advise the Contracting Officer of the estimated amount of additional funds that will be required for the timely performance of the item(s) funded pursuant to this clause, for subsequent period as may be specified in the allotment schedule in paragraph (j) of this clause, or otherwise agreed to by the parties. If after such notification additional funds are not allotted by the date identified in the Contractor's notification, or by an agreed substitute date, the Contracting Officer will terminate any item(s) for which additional funds have not been allotted, pursuant to the clause of this contract entitled "TERMINATION FOR THE CONVENIENCE OF THE GOVERNMENT".

(d) When additional funds are allotted for continued performance of the contract line item(s) identified in paragraph (a) of this clause, the parties will agree as to the period of contract performance which will be covered by the funds. The provisions of paragraph (b) through (d) of this clause will apply in like manner to the additional allotted funds and agreed substitute date, and the contract will be modified accordingly.

(e) If, solely by reason of failure of the Government to allot additional funds, by the dates indicated below, in amounts sufficient for timely performance of the contract line item(s) identified in paragraph (a) of this clause, the Contractor incurs additional costs or is delayed in the performance of the work under this contract and if additional funds are allotted, an equitable adjustment will be made in the price or prices (including appropriate target, billing, and ceiling prices where applicable) of the item(s), or in the time of delivery, or both. Failure to agree to any such equitable adjustment hereunder will be a dispute concerning a question of fact within the meaning of the clause entitled "disputes."

(f) The Government may at any time prior to termination allot additional funds for the performance of the contract line item(s) identified in paragraph (a) of this clause.

(g) The termination provisions of this clause do not limit the rights of the Government under the clause entitled "DEFAULT." The provisions of this clause are limited to work and allotment of funds for the contract line item(s) set forth in paragraph (a) of this clause. This clause no longer applies once the contract is fully funded except with regard to the rights or obligations of the parties concerning equitable adjustments negotiated under paragraphs (d) or (e) of this clause.

(h) Nothing in this clause affects the right of the Government to terminate this contract pursuant to the clause of this contract entitled "TERMINATION FOR CONVENIENCE OF THE GOVERNMENT."

(i) Nothing in this clause shall be construed as authorization of voluntary services whose acceptance is otherwise prohibited under 31 U.S.C. 1342.

(j) The parties contemplate that the Government will allot funds to this contract in accordance with the following schedule:

On execution of contract, \$--375,000.00 (Prime Contract), \$123,215 (SUBCONTRACTOR Contract)

Within 11 months after contract award, \$37,554.39 (Prime Contract), \$12,340 (SUBCONTRACTOR Contract)

(End of clause)

**Attachment E – Contract Deliverable Requirements List (CDRL)**

ITEM	TITLE AND DESCRIPTION	DUE DATE*
<b>A001</b>	<b>Contract Line Item No.:</b> 0001 & 0002 <b>Reference:</b> Contract FAR Clause 52.227-11 <b>Quantity:</b> As required	<u>Invention Disclosure</u> <b>2 months</b> after inventing <u>Patent Filing/Assign</u> <b>1 year</b> (if disclosed publicly) <b>2 years</b> (if not disclosed) <u>Interim Patent Report DD882</u> <b>1 Nov 2010</b> <u>Final Patent Report DD882</u> <b>6mon After Contract</b> <b>(1 May 2012)</b>
<b>Title of Date Item:</b> REPORT OF INVENTION AND DISCLOSURE		

Invention Disclosure

SUBCONTRACTOR shall disclose each subject invention to the U.S. Government via ODYSSIAN within 2 months after the inventor discloses it. The disclosure to the U.S. Government shall be in the form of a written report and shall be sufficiently complete in technical detail to convey a clear understanding to the extent known at the time of the disclosure

Patent Application Filing

SUBCONTRACTOR shall apply for patent protection or assign patent rights to U.S. Government for inventions developed under PROJECT in accordance with;

A Patent application prepared in accordance with the Rules of Practice of the United States Patent and Trademark Office (PTO) (as set forth in 37 CFR Chapter 1), including Specification, Drawings, Abstract, and one or more Claims, together with an appropriate declaration executed by the inventor or inventors, all in accordance with 37 CFR. The Patent Applications shall be accompanied by one of the two instruments described below:

1. An assignment of the invention by SUBCONTRACTOR to the Government of the United States of America as represented by the Secretary of Defense shall be delivered to the Contracting Officer via ODYSSIAN upon exercise of the SUBCONTRACTOR'S election under FAR 52.227-11 to not apply to the PTO for Patent (the Government applies for patent and you receive use license).
2. A confirmatory instrument identifying the Patent by PTO application serial number and filing date and confirming non exclusive, non transferable, irrevocable, paid-up license to practice or have practiced the invention for or on behalf of the United States, and also granting the Government in irrevocable power to inspect and make copies of the application and related papers in the PTC, shall be delivered to the Contracting Officer via ODYSSIAN upon exercise of the SUBCONTRACTOR'S selection under FAR 52.227-11 to apply to the PTO for Patent. (The Government receives license to use your Patent.)

Applicable guidance from DFARS 227.304-1 General: "Interim and final invention reports and notification of all subcontracts for experimental, developmental, or research work (FAR 27.304-1(e)(2)(ii)) may be submitted on DD Form 882, Report of Inventions and Subcontracts." This form can be reviewed and downloaded at: <http://web1.whs.osd.mil/forms/DD0882.PDF>

Interim and Final Patent Reports

SUBCONTRACTOR and its subcontractors shall submit an interim and final invention report using DD Form 882 to U.S. Government via ODYSSIAN on 1 Nov 2010 and no later than (NLT) six months after completion of work under this contract. A submission is required even if it's negative. SUBCONTRACTOR shall provide the report to ODYSSIAN by due dates (above).

Distribution statement required – "Distribution authorized to US Government agencies only. Other requests for this document must be referred to ERDC/CERL", to protect information not owned by the US Government and protected by a SBIR Contractor's "Limited Rights" as described in the SBIR Solicitation. Date of Limited Rights determination is the date of Contractor's proposal to employ proprietary information in conduct of a SBIR/STTR contract.

ITEM	TITLE AND DESCRIPTION	DUE DATES
<b>A002</b>	<p><b>Contract Line Item No.:</b> 0001 &amp; 0002  <b>Reference:</b> CERL website;  <a href="http://owww.cecer.army.mil/contracts/formindex.html">http://owww.cecer.army.mil/contracts/formindex.html</a></p> <p><b>Quantity:</b> 12 base program, 12 option program</p>	<b>NLT the 5<sup>TH</sup> Day of each Month</b>

**Title of Date Items:** MONTHLY PROGRESS REPORTS

Obligation for CDRL A002 data deliverables for option program (2<sup>nd</sup> year) to occur upon written notice of government allotment and availability of funds, and ODYSIAN written addendum to this contract.

Monthly Progress Reports - One (1) typed letter report describing progress on the project in the format and content specified at <http://owww.cecer.army.mil/contracts/formindex.html> and shown in Attachment F. SUBCONTRACTOR shall use this format for reporting its monthly progress and shall transmit such reports provided to it from its primary subcontractors and consultants, along with corresponding estimates of percent complete of PROJECT technical work.

The report shall be as of the last day of the month and shall be transmitted to ODYSIAN via electronic mail no later than (NLT) the 5th calendar day following the end of the reporting period. If the 5<sup>th</sup> calendar day falls on a weekend or holiday, the report shall be submitted earlier unless approved in writing by ODYSIAN. The first and last report may cover more than a month with prior concurrence of the government.

Copies of invoices for partial payment shall be submitted in accordance with instructions in Article III, to coincide with submission of the monthly progress reports to the ERDC-CERL COR. No partial payment will be approved unless the government has received and approved all progress reports and invoices having corresponding reporting and billing periods. SUBCONTRACTOR and its primary subcontractors or consultants shall use an invoice format similar to the one shown in Attachment F, unless approved by ODYSIAN.

These reports shall provide a complete summary of all work conducted during the report period. Summarize work planned for the next month. Inventions and computer programs originated during the report period shall be identified in the report; if none are originated, a statement to that effect shall be made. Additional pages shall be used if needed to fully summarize progress, future plans, and inventions.

The following distribution statement is required on CDRL A002 documents:

"Distribution authorized to US Government agencies only. Other requests for this document must be referred to USACE ERDC-CERL", to protect information not owned by the US Government and protected by a contractor's "limited rights" statement, or received with the understanding that it not be routinely transmitted outside the U.S. Government. Date of Limited Rights determination is the date of Contractor's proposal to employ proprietary information in the conduct of a SBIR contract.

ITEM	TITLE AND DESCRIPTION	DUE DATES
<b>A003</b>	<b>Contract Line Item No.:</b> 0001 & 0002 <b>Reference:</b> contractor format  <b>Quantity:</b> 2 base program, 3 option program	<u><b>Base Program:</b></u> <b>15 July, 2010</b>  <u><b>Option Program:</b></u> <b>15 January, 2011</b> <b>15 April, 2011</b> <b>15 July, 2011</b>

**Title of Date Items:** QUARTERLY TECHNICAL REPORTS

Obligation for CDRL A003 data deliverables for option program to occur upon written notice of government allotment and availability of funds, and ODYSSIAN written addendum to this contract.

SUBCONTRACT shall deliver quarterly reports to ODYSSIAN near the end of each calendar quarter. These reports shall provide complete and comprehensive documentation of all work conducted during the report period. It shall also include a discussion of work planned for the next quarter. As in the Monthly Progress Reports (CDRL A002), inventions and computer programs originated during the quarter shall be identified and if none are originated, a statement to that effect shall be made.

SUBCONTRACTOR shall deliver Quarterly Status Report to ODYSSIAN no later than (NLT) the 15<sup>th</sup> day past the end of the reporting quarter.

SUBCONTRACTOR shall coordinate all activity with all of its subcontractors and consultants to ensure that they provide full and comprehensive reporting of their accomplishments that occurred during the reporting period. SUBCONTRACTOR shall merge their subcontractors and consultants reports with SUBCONTRACTOR'S report to provide ODYSSIAN with a single report having common format and reasonable flow of technical discussion.

SUBCONTRACTOR shall format report to ODYSSIAN'S provided format and shall make any edits that may be required to satisfy government or ODYSSIAN reporting requirements.

The following distribution statement is required on CDRL A003 documents:

"Distribution authorized to US Government agencies only. Other requests for this document must be referred to USACE ERDC-CERL", to protect information not owned by the US Government and protected by a contractor's "limited rights" statement, or received with the understanding that it not be routinely transmitted outside the U.S. Government. Date of Limited Rights determination is the date of Contractor's proposal to employ proprietary information in the conduct of a SBIR contract.

ITEM	TITLE AND DESCRIPTION	DUE DATE
<b>A004</b>	<b>Contract Line Item No.:</b> 0001 <b>Reference:</b> CERL website <a href="http://owww.cecer.army.mil/contracts/formindex.html">http://owww.cecer.army.mil/contracts/formindex.html</a>  <b>Quantity:</b> 1 Draft 1 Final	<b>Draft, 17 September, 2010</b> <b>Final, 18 October, 2010</b>

**Title of Date Item:** INTERIM DRAFT AND FINAL REPORT (BASE PROGRAM)

Draft - SUBCONTRACTOR shall submit one (1) electronic file of the interim draft report no later than 17 September, 2010. ODYSSIAN will merge this report with its content for submittal of a single report to the Government. The Government will review and provide comments, if any, within 15 days. This report shall be formatted in accordance with ERDC-CERL "Guidance for Preparing USACERL Technical Report Manuscripts". The Guidance for Preparing USACERL Technical Report Manuscripts may be downloaded from the CERL website at: <http://owww.cecer.army.mil/contracts/formindex.html>.

Final - SUBCONTRACTOR shall submit one (1) electronic file of the interim final report, incorporating Government review comments, if any, no later than 7 days after receipt of the Government's review comments, which is expected to be NLT 18 October 2010

The following distribution statement is required:

"Distribution authorized to US Government agencies only. Other requests for this document must be referred to USACE ERDC-CERL" to protect information not owned by the US Government and protected by a SBIR/STTR Contractor's "Limited Rights" as described in the SBIR Solicitation. Date of Limited Rights determination is the date of Contractor's proposal to employ proprietary information in the conduct of a SBIR/STTR contract.

ITEM	TITLE AND DESCRIPTION	DUE DATE
<b>A005</b>	<b>Contract Line Item No.:</b> 0001& 0002 <b>Reference:</b> CERL website <a href="http://owww.cecer.army.mil/contracts/formindex.html">http://owww.cecer.army.mil/contracts/formindex.html</a>  <b>Quantity:</b> 1 Draft 1 Final	<b>Draft, 16 September, 2011</b> <b>Final, 17 October, 2011</b>

**Title of Date Item:** DRAFT AND FINAL REPORT (BASE & OPTION PROGRAM)

Obligation for CDRL A005 data deliverables to occur upon written notice of government allotment and availability of funds, and ODYSSEAN written addendum to this contract.

Draft - SUBCONTRACTOR shall submit one (1) electronic file of the interim draft report no later than 16 September, 2011. ODYSSEAN will merge this report with its content for submittal of a single report to the Government. The Government will review and provide comments, if any, within 15 days. This report shall be formatted in accordance with ERDC-CERL "Guidance for Preparing USACERL Technical Report Manuscripts". The Guidance for Preparing USACERL Technical Report Manuscripts may be downloaded from the CERL website at: <http://owww.cecer.army.mil/contracts/formindex.html>.

Final - SUBCONTRACTOR shall submit one (1) electronic file of the interim final report, incorporating Government review comments, if any, no later than 7 days after receipt of the Government's review comments, which is expected to be NLT 17 October 2011. This Final report shall include findings and outcomes of each of the outlined tasks and information regarding the following:

- Microgrid electrical designs
- Intelligent Modeling and Simulation
- Wireless communications and distributed control
- Inverters and interconnections
- Lessons learned

The Contractor shall utilize tables, figures, charts, and photos to complete the Report.

The following distribution statement is required:

"Distribution authorized to US Government agencies only. Other requests for this document must be referred to USACE ERDC-CERL" to protect information not owned by the US Government and protected by a SBIR/STTR Contractor's "Limited Rights" as described in the SBIR Solicitation. Date of Limited Rights determination is the date of Contractor's proposal to employ proprietary information in the conduct of a SBIR/STTR contract.



ITEM	TITLE AND DESCRIPTION	DUE DATE
<b>A006</b>	<b>Contract Line Item No.:</b> 0001 & 0002 <b>Reference:</b> <b>Quantity:</b> 1 draft 1 final	<b>Draft, 30 September, 2010 or 2011</b> <b>Final, 30 October, 2010 or 2011</b>

**Title of Data Item:** PUBLIC PROJECT RESULTS SUMMARY REPORT

Draft and Final STTR Phase II R&D Project Summary – SUBCONTRACTOR, with input from its primary subcontractors and consultants, will provide input to ODYSSEAN to submit a publicly releasable STTR Phase II R&D Project Summary at the end of contract. The summary is an unclassified, non-sensitive, and non-proprietary summation of results that is intended for public viewing on the Army SBIR / STTR Small Business Portal. It should address the requirements on a summary basis and must not exceed 700 words.

Since the Department of Defense (DOD) will be publishing the summary, it must not contain any proprietary, classified, or ITAR restricted data. The summary must be submitted electronically and be in HTML format.

SUBCONTRACTOR shall work with ODYSSEAN to deliver one (1) draft "STTR Phase II R&D Project Summary" no later than one month prior to the end of the contract period. The COR shall review the draft report and return it to the Contractor within fifteen (15) days of receipt with comments. The Contractor shall submit one (1) final "STTR Phase II R&D Project Summary" within fifteen (15) days after receipt of draft comments.

The following distribution statement is required:

"Distribution authorized to US Government agencies only. Other requests for this document must be referred to USACE ERDC-CERL" to protect information not owned by the US Government and protected by a SBIR/STTR Contractor's "Limited Rights" as described in the SBIR Solicitation. Date of Limited Rights determination is the date of Contractor's proposal to employ proprietary information in the conduct of a SBIR/STTR contract.

<u>ITEM</u>	<u>TITLE AND DESCRIPTION</u>	<u>DUE DATE</u>
<b>A007</b>	<b>Contract Line Item No.:</b> 0001 & 0002 <b>Reference:</b> <a href="https://cmra.army.mil">https://cmra.army.mil</a> <b>Quantity:</b> 2	Base Program <b>15 October, 2010</b> Option Program <b>15 October, 2011</b>

**Title of Data Item:** ACCOUNTING FOR CONTRACTOR SERVICES

Obligation for CDRL A007 data deliverables for option program (2<sup>nd</sup> year) to occur upon written notice of government allotment and availability of funds, and ODYSSIAN written addendum to this contract.

The Office of the Assistant Secretary of the Army (Manpower & Reserve Affairs) operates and maintains a secure Army data collection site where the ODYSSIAN is required to report ALL contractor manpower (including subcontractor manpower) that is required for performance of ODYSSIAN'S prime contract.

This CDRL requires SUBCONTRACTOR and its subcontractors and consultants to provide information that is needed for ODYSSIAN to satisfy the Army manpower reporting requirement.

The required information includes: (1) Estimated direct labor hours (including sub-contractors); (2) Estimated direct labor dollars paid this reporting period (including sub-contractors); (3) Total payments (including sub-contractors); (4) Predominant Federal Service Code (FSC) reflecting services provided by contractor (and separate predominant FSC for each sub-contractor if different); (5) Estimated data collection cost; and (6) Locations where contractor and sub-contractors perform the work (specified by zip code in the United States and nearest city, country, when in an overseas location, using standardized nomenclature provided on website).

Reporting period will be the period of performance not to exceed 12 months ending 30 September of each government fiscal year and must be reported by 31 October of each calendar year.

The following distribution statement is required:

"Distribution authorized to US Government agencies only. Other requests for this document must be referred to USACE ERDC-CERL" to protect information not owned by the US Government and protected by a SBIR/STTR Contractor's "Limited Rights" as described in the SBIR Solicitation. Date of Limited Rights determination is the date of Contractor's proposal to employ proprietary information in the conduct of a SBIR/STTR contract.

ITEM	TITLE AND DESCRIPTION	DUE DATE
<b>A008</b>	<b>Contract Line Item No.:</b> 0001 & 0002 <b>Reference:</b> para 5.4 STTR Solicitation <b>Quantity:</b> 2	Base Program <b>15 October, 2010</b> Option Program <b>15 October, 2011</b>

**Title of Data Item:** COMMERCIALIZATION DATA

Obligation for CDRL A008 data deliverables for option program (2<sup>nd</sup> year) to occur upon written notice of government allotment and availability of funds, and ODYSIAN written addendum to this contract.

In accordance with paragraph 5.4 of the STTR solicitation the ODYSIAN shall be required to periodically update the following commercialization results of the Phase II project through the Web Site at [www.dodsbir.net/submission](http://www.dodsbir.net/submission).

It is recognized that SUBCONTRACTOR is an academic institution, yet may realize commercialization of technology by licensing technology and/or providing support to encourage spin-off or creation of commercial business, typically within affiliated technology parks. Therefore, SUB CONTRACTOR is asked to provide information on commercialization of technology created under PROJECT, when such commercialization activity occurs.

Input to ODYSIAN that will be needed includes,

- a. Sales revenue from new products and non-R&D services resulting from the Phase II technology;
- b. Additional investment from sources other than the federal SBIR/STTR program in activities that further the development and/or commercialization of the Phase II technology;
- c. Whether the Phase II technology has been used in a fielded DoD system or acquisition program and, if so, which system or program;
- d. The number of patents resulting from the contractor's participation in the SBIR/STTR program;
- e. Growth in number of firm employees; and
- f. Whether the firm has completed an initial public offering of stock (IPO) resulting, in part, from the Phase II project.

This commercialization data on the project will need to be submitted to ODYSIAN at the dates above.

The following distribution statement is required:

"Distribution authorized to US Government agencies only. Other requests for this document must be referred to USACE ERDC-CERL" to protect information not owned by the US Government and protected by a SBIR/STTR Contractor's "Limited Rights" as described in the SBIR Solicitation. Date of Limited Rights determination is the date of Contractor's proposal to employ proprietary information in the conduct of a SBIR/STTR contract.

**Attachment F – CERL forms – Monthly Progress Report**

MONTHLY PROGRESS REPORT	
C	Contractor Name:
C	Contractor Address:
Contract/Purchase Order No.	Task Order No.
Project Title:	
Period Covered:	
POC/COR (Reference Paragraph 5 of the SOW):	
Achievements (Describe by task. Add additional tasks, if needed.):	
Task	1:
Task	2:
Task	3:
Problems Encountered (Describe by task. Add additional tasks, if needed):	
Task	1:
Task	2:
Task	3:
Open Items (List items that require action by the Contractor or the Government):	
Summary Assessment and Forecast (Provide an overall assessment of the work and a forecast of contract completion):	

## INVOICE FORMAT

<b>Contractor Name</b>	<b>Date of Invoice :</b> <i>(as close as possible to mailing date.)</i>
<b>Contractor Address</b>	<b>Voucher No. :</b> <i>(Encouraged but not required.)</i>
<b>Contract/Order No. :</b>	<b>Period of Performance :</b> <i>(Dates covered by this invoice - Must be within contract performance dates.)</i>
<b>Remit to Address:</b> <i>(For electronic funds transfer payments, this must be the address to which the notification of payment is to be sent, not the bank address.)</i>	

Title/Description	Quantity/ Unit of Measure		Unit Price		Extended Price
<i>(Title and/or description of services for each line item invoiced.)</i>	<i>(e.g. 1 JOB)</i>		\$xxx.xx		\$XXX.XX
<b>Other :</b> <i>(Other information as required by the contract, e.g., evidence of shipment.)</i>					

**Shipping and Payment Terms :** *(As appropriate, please include shipment number, prompt payment discount offered, etc.)*

**In case of defective invoice, please notify :** *(Include name, title, phone number, and address.)*

**CERTIFICATION:** I certify that this invoice is correct and in accordance with the contract, and that the costs included herein have been incurred, represent payments made by the Contractor except as otherwise authorized in the payment provisions of the contract, and properly reflect the work performed.

\_\_\_\_\_  
*(Signature)*

\_\_\_\_\_  
*(Title)*