

AWARD/CONTRACT		1. This Contract Is A Rated Order Under DPAS (15 CFR 700)	Rating DOA4	Page 1	Of 31	Pages
2. Contract (Proc. Inst. Ident.) No. W56HZV-14-C-0246		3. Effective Date 2014AUG29	4. Requisition/Purchase Request/Project No. SEE SCHEDULE			
5. Issued By U.S. ARMY CONTRACTING COMMAND D'ELLE V. REMSEY WARREN, MICHIGAN 48397-5000 HTTP://CONTRACTING.TACOM.ARMY.MIL		Code W56HZV	6. Administered By (If Other Than Item 5) OFFICE OF NAVAL RESEARCH CHICAGO REGIONAL OFFICE 230 SOUTH DEARBORN STREET, ROOM 380 CHICAGO, IL 60605-1595		Code N62880	

e-mail address: DELLE.V.REMSEY.CIV@MAIL.MIL

7. Name And Address Of Contractor (No., Street, City, County, State and Zip Code) MICHIGAN STATE UNIVERSITY 301 ADMINISTRATION BLDG EAST LANSING, MI 48824-1046		8. Delivery <input type="checkbox"/> FOB Origin <input checked="" type="checkbox"/> Other (See Below)	
		9. Discount For Prompt Payment	
Code 4B834		10. Submit Invoices (4 Copies Unless Otherwise Specified)	
Facility Code		Item 12	
		To The Address Shown In:	

11. Ship To/Mark For SEE SCHEDULE	Code	12. Payment Will Be Made By DFAS COLUMBUS-NAVY ACQUISITION 3990 E BROAD STREET BLDG 21 COLUMBUS OH 43213	Code HQ0251
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13. Authority For Using Other Than Full And Open Competition: <input checked="" type="checkbox"/> 10 U.S.C. 2304(c)(1) <input type="checkbox"/> 41 U.S.C. 253(c)	14. Accounting And Appropriation Data SEE SECTION G
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15A. Item No.	15B. Supplies/Services	15C. Quantity	15D. Unit	15E. Unit Price	15F. Amount
SEE SCHEDULE					
15G. Total Amount Of Contract →					\$74,480.00

16. Table Of Contents

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Contracting Officer Will Complete Item 17 (Sealed-Bid or Negotiated Procurement) Or 18 (Sealed-Bid Procurement) As Applicable

17. <input checked="" type="checkbox"/> Contractor's Negotiated Agreement (Contractor is required to sign this document and return 2 signed copies to issuing office.) Contractor agrees to furnish and deliver all items or perform all the services set forth or otherwise identified above and on any continuation sheets for the consideration stated herein. The rights and obligations of the parties to this contract shall be subject to and governed by the following documents: (a) this award/contract, (b) the solicitation, if any, and (c) such provisions, representations, certifications, and specifications, as are attached or incorporated by reference herein. (Attachments are listed herein.)	18. <input type="checkbox"/> Sealed-Bid Award (Contractor is not required to sign this document.) Your bid on Solicitation Number _____, including the additions or changes made by you which additions or changes are set forth in full above, is hereby accepted as to the items listed above and on any continuation sheets. This award consummates the contract which consists of the following documents: (a) the Government's solicitation and your bid, and (b) this award/contract. No further contractual document is necessary. (Block 18 should be checked only when awarding a sealed-bid contract.)
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19A. Name And Title Of Signer (Type Or Print)	20A. Name Of Contracting Officer JOHN M. HOPFNER JOHN.HOPFNER@US.ARMY.MIL (586)282-7359
19B. Name of Contractor	20B. United States Of America
19c. Date Signed	20C. Date Signed 2014AUG29
By _____ (Signature of person authorized to sign)	By _____ /SIGNED/ (Signature of Contracting Officer)

CONTINUATION SHEET**Reference No. of Document Being Continued****Page 2 of 31****PIIN/SIIN** W56HZV-14-C-0246**MOD/AMD****Name of Offeror or Contractor:** MICHIGAN STATE UNIVERSITY

SECTION A - SUPPLEMENTAL INFORMATION

Buyer Name: D'ELLE V. REMSEY
Buyer Office Symbol/Telephone Number: CCTA-ASGB/(586)282-3854
Type of Contract: Cost No Fee
Kind of Contract: Research and Development Contracts
Type of Business: Other Educational
Surveillance Criticality Designator: C
Weapon System: No Identified Army Weapons Systems

*** End of Narrative A000 ***

CONTINUATION SHEET

Reference No. of Document Being Continued
 PIIN/SIIN W56HZV-14-C-0246 MOD/AMD

Name of Offeror or Contractor: MICHIGAN STATE UNIVERSITY

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT									
	SECTION B - SUPPLIES OR SERVICES AND PRICES/COSTS													
0001	Optimization of Synt													
0001AA	<u>OPTIMIZATION OF NANOFUIDS</u>	1	LO	Estimated Cost Not to Exceed (Funding)	\$ 74,480.00 \$ 74,480.00									
	SERVICE REQUESTED: Optimization of Synt CLIN CONTRACT TYPE: Cost No Fee PRON: R34KJ023R3 PRON AMD: 01 ACRN: AA AMS CD: 6330005441 PSC: AZ11													
	<u>Inspection and Acceptance</u> INSPECTION: Destination ACCEPTANCE: Destination													
	<u>Deliveries or Performance</u> Period of Performance Start Date: 29-AUG-2014 End Date: 28-AUG-2015													
	<table border="0"> <tr> <td>DLVR SCH</td> <td></td> <td>PERF COMPL</td> </tr> <tr> <td><u>REL CD</u></td> <td><u>QUANTITY</u></td> <td><u>DATE</u></td> </tr> <tr> <td>001</td> <td>1</td> <td>28-AUG-2015</td> </tr> </table>	DLVR SCH		PERF COMPL	<u>REL CD</u>	<u>QUANTITY</u>	<u>DATE</u>	001	1	28-AUG-2015				
DLVR SCH		PERF COMPL												
<u>REL CD</u>	<u>QUANTITY</u>	<u>DATE</u>												
001	1	28-AUG-2015												
	\$ 74,480.00													
2000	CMR													
2000AA	<u>CONTRACTOR MANPOWER REPORTING (CMR)</u>	1	LO		\$ ** NSP **									
	SERVICE REQUESTED: CMR CLIN CONTRACT TYPE: Firm Fixed Price PSC: AZ11													
	<u>Inspection and Acceptance</u> INSPECTION: Destination ACCEPTANCE: Destination													
	<u>Deliveries or Performance</u> <table border="0"> <tr> <td>DLVR SCH</td> <td></td> <td>PERF COMPL</td> </tr> <tr> <td><u>REL CD</u></td> <td><u>QUANTITY</u></td> <td><u>DATE</u></td> </tr> <tr> <td>001</td> <td>1</td> <td>AS REQUIRED</td> </tr> </table>	DLVR SCH		PERF COMPL	<u>REL CD</u>	<u>QUANTITY</u>	<u>DATE</u>	001	1	AS REQUIRED				
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001	1	AS REQUIRED												

CONTINUATION SHEET

Reference No. of Document Being Continued
 PIIN/SIIN W56HZV-14-C-0246 MOD/AMD

Name of Offeror or Contractor: MICHIGAN STATE UNIVERSITY

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT									
	The Contractor shall provide the information required by the Contract Clause entitled CONTRACT MANPOWER REPORTING (CMR), TACOM Clause 52.237-4000. Manpower Reporting Not Separately Priced (NSP) (End of narrative F001)													
3000	CDRL													
3000AA	<p><u>CONTRACT DATA REQUIREMENTS LIST (CDRL)</u></p> <p>SERVICE REQUESTED: CDRL CLIN CONTRACT TYPE: Firm Fixed Price PSC: AZ11</p> <p><u>Inspection and Acceptance</u> INSPECTION: Destination ACCEPTANCE: Destination</p> <p><u>Deliveries or Performance</u></p> <table border="0" data-bbox="264 1157 769 1234"> <tr> <td>DLVR SCH</td> <td></td> <td>PERF COMPL</td> </tr> <tr> <td><u>REL CD</u></td> <td><u>QUANTITY</u></td> <td><u>DATE</u></td> </tr> <tr> <td>001</td> <td>1</td> <td>AS REQUIRED</td> </tr> </table> <p>Data as set forth in Contract Data Requirements List (CDRL), herein after referred to as Exhibit A.</p> <p>Data Items - Not Separately Priced (NSP)</p> <p>(End of narrative F001)</p>	DLVR SCH		PERF COMPL	<u>REL CD</u>	<u>QUANTITY</u>	<u>DATE</u>	001	1	AS REQUIRED	1	LO		\$ ** NSP **
DLVR SCH		PERF COMPL												
<u>REL CD</u>	<u>QUANTITY</u>	<u>DATE</u>												
001	1	AS REQUIRED												

CONTINUATION SHEET**Reference No. of Document Being Continued****Page 5 of 31****PIIN/SIIN** W56HZV-14-C-0246**MOD/AMD****Name of Offeror or Contractor:** MICHIGAN STATE UNIVERSITY**B.1 ESTIMATED COST & PAYMENT**

B.1.1 The ESTIMATED COST for performance of the work required under this contract is stated in Section B under CLINs 0001AA, which shall constitute the estimated cost for the purpose of the Contract Clause entitled LIMITATION OF COST, FAR 52.232-20.

B.1.2 Allowable cost shall be determined, and payment thereof shall be provided, in accordance with the Contract Clause hereof entitled ALLOWABLE COST AND PAYMENT, FAR 52.216-7, ALT II.

B.1.3 This contract is awarded on a Cost-Only basis; no fee is payable.

B.1.4 Funds Allotted. The amount of funds currently allotted to this contract is \$74,480.

B.2 NOTIFICATION REGARDING FUNDING

B.2.1 FUNDING: The Contractor shall notify the Government in accordance with the contract clause entitled "Limitation of Cost" whenever there is reason to believe that the funds allotted to this contract are either insufficient or excessive for performance of the work required.

B.3 FUNDING DETAILS

Estimated Contract Value: \$74,480

Total Fee: \$0

Total Estimated Costs: \$74,480

Total Amount Currently Obligated: \$74,480

*** END OF NARRATIVE B0001 ***

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Name of Offeror or Contractor: MICHIGAN STATE UNIVERSITY

SECTION C - DESCRIPTION/SPECIFICATIONS/WORK STATEMENT

<u>Regulatory Cite</u>	<u>Title</u>	<u>Date</u>
C-1 52.237-4000 (TACOM)	CONTRACTOR MANPOWER REPORTING (CMR)	FEB/2013

The Office of the Assistant Secretary of the Army (Manpower & Reserve Affairs) operates and maintains a secure Army data collection site where the contractor will report ALL contractor labor hours (including subcontractor labor hours) required for performance of services provided under this contract via secure data collection site. The contractor is required to completely fill in all required data fields in the format using the following web address: <https://cmra.army.mil> . The required information includes the following:

- (1) Contracting Office, Contracting Officer, Contracting Officer's Technical Representative;
- (2) Contract number, including task and delivery order number;
- (3) Beginning and ending dates covered by reporting period;
- (4) Contractor name, address, phone number, e-mail address, identity of contractor employee entering data;
- (5) Direct labor hours (including sub-contractors);
- (6) Direct labor dollars paid this reporting period (including sub-contractors);
- (7) Total payments (including sub-contractors);
- (8) Predominant Federal Service Code (FSC) reflecting services provided by contractor (and separate predominant FSC for each sub-contractor if different);
- (9) Data collection cost;
- (10) Organizational title associated with the Unit Identification Code (UIC) for the Army Requiring Activity (the Army Requiring Activity is responsible for providing the contractor with its UIC for the purposes of reporting this information);
- (11) 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);
- (12) Presence of deployment or contingency contract language; and
- (13) Number of contractor and sub-contractor employees deployed in theater this reporting period (by country).

Reporting inputs will be for the labor executed during the period of performance during each Government fiscal year (FY), which runs October 1 through September 30. While inputs may be reported any time during the FY, all data shall be reported no later than October 31 of each calendar year, beginning with 2013. Contractors may direct questions to the help desk at : <https://cmra.army.mil>.

End of Clause]

Scope of Work

"Optimization of Synthesized Nanofluids"

C.1 INTRODUCTION/OVERVIEW

C.1.1 The contractor, acting as an independent contractor and not as an agent of the Government, shall provide all of the personnel, facilities, materials and services necessary in order to complete the following Scope of Work ("SOW") for the project entitled "Optimization of Synthesized Nanofluids".

C.1.2 The objective of this work effort is for the contractor to synthesize stable graphene nanoplatelet dispersions in base oil. The contractor shall perform functionalization and characterization of the Exfoliated Graphene Nanoplatelet (xGnP) particles, in order to identify their individual properties, which will then be used to conduct tribological studies. Additionally, the Contractor shall develop and deliver samples of the synthesized nanofluids for further Government testing.

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C.2 REQUIREMENTS/TASKS

C.2.1 Using the results obtained from the work performed under contract W56HZV-C-13-0401, the contractor shall synthesize xGnP particles into the base oil, SpectraSyn Plus 4. It is recognized that the necessary concentration levels of these particles, as established in W56HZV-C-13-0401, may change based on results from the work performed under this contract (ref. C.2.2. and C.2.3).

C.2.1.1. The base oil will be supplied to the contractor as Government-Furnished Property (GFP) in a five gallon container at the start of the contract. If the contractor requires more base oil during the period of performance, the contractor shall furnish a written request, specifying the amount of base oil needed to continue the project, to the Contracting Officer's Representative (COR). The COR will coordinate the delivery of the additional Government-furnished base oil to the contractor. Note that the COR will not accept any requests for additional base oil during the final 60 days of the contract performance period.

C.2.2 Nanoplatelet Functionalization: Based on results obtained in previous contract W56HZV-13-C-0401, functionalization of the xGnP particles with low molecular weight compounds does not provide the level of stability required. Accordingly, under this contract, the contractor shall investigate a minimum of four new approaches to achieve the requisite stability (as defined in paragraph C.2.4.2 below).

C.2.2.1 Approach #1: Under previous contract W56HZV-13-C-0401, carboxylic acid groups (-COOH) have been successfully added to the xGnP particles. Under this Approach #1, the contractor shall further functionalize these reactive sites on the xGnP particles by reacting them with long chain polyether diamines (Jeffamine) and dicyclohexylcarbodiimide (DCC) in tetrahydrofuran (THF) at a weight ratio of Jeffamine to DCC to acid treated xGnP of 5:5:1 to yield amine-modified xGnP in at least the volume specified per C.4.1 below.

C.2.2.2 Approach #2: The contractor shall dissolve Polystyrene-block-poly (ethylene-ran-butylene)-block-polystyrene-graft-maleic anhydride (SESM) in THF via ultrasonication and combine the result with xGnP dispersion to allow SESM to adsorb on the xGnP as a stabilizing agent. After centrifugation, the contractor shall collect and evaluate the resulting black solid product (SESM-a-G) in at least the volume specified per C.4.1 below.

C.2.2.3 Approach #3: The contractor shall investigate a non-covalent approach utilizing the pi-pi interactions between the xGnP basal plane and pyrene as follows. 1-pyrene butyric acid will be functionalized by reacting it with long chain polyether diamines (Jeffamine) and dicyclohexylcarbodiimide (DCC) in tetrahydrofuran (THF) at a weight ratio of Jeffamine to DCC to acid treated xGnP of 5:5:1 to yield an amine functionalized pyrene compound to functionalize xGnP non-covalently via a simple ultrasonication approach at room temperature. The contractor shall generate at least the volume specified per C.4.1 below

C.2.2.4 Approach #4: The contractor shall covalently functionalize xGnP via Di-azo based compound followed by reaction with functionalized xGnP to produce amino-functionalized xGnP in at least the volume specified per C.4.1 below.

C.2.2.5 Refer to paragraph C.3.1 below regarding required weekly teleconferences with the COR.

C.2.3 Nanoplatelet Characterization: The contractor shall take and characterize the xGnP particles functionalized in the four Approaches described in section C.2.2 above, utilizing Scanning Electron Microscopy (SEM), Transmission Electron Microscopy (TEM), Thermo-Gravimetric Analysis (TGA), Fourier Transform Infrared Spectroscopy (FTIR), X-ray Photoelectron Spectroscopy (XPS), Atomic Force Microscopy (AFM) and Raman analyses to determine the properties of the nanoparticles at the nano scale both (i) before and (ii) after friction and wear testing (ref. C.2.5). This analysis for nanoplatelet characterization shall include the particle size, particle shape, and particle distribution.

C.2.4 Dispersability and Stability Analysis: The contractor shall conduct experimentation and analysis as necessary, in order to determine the dispersability and stability of dispersed xGnP particles in the Government-furnished base oil.

C.2.4.1 Dispersability: For this effort, dispersability is defined as the ease of suspending nanoparticles in a base oil. The dispersed particles shall not agglomerate to sizes large enough to settle and be evenly distributed throughout the solution.

C.2.4.2 Stability: For this effort, stability is defined as the change in xGnP particle size distribution over a sustained period of time. Stability shall be measured by comparing the nanoplatelet size distribution to the intended average nanoplatelet size of five microns in diameter and five to 10 nanometers (nm) in thickness. This distribution shall not deviate from the intended average by more than ten percent over a period of 24 consecutive hours. In addition, after the 24 consecutive hours, if the nanoplatelets become unstable in the nanofluid, the nanoplatelets shall be able to be re-dispersed in the nanofluid by no more than twenty minutes of ultrasonication.

C.2.4.3 Nanofluids resulting from the four functionalization approaches (ref. C.2.2) meeting the dispersability (ref. C.2.4.1) and stability (ref. C.2.4.2) requirements shall be sent to TARDEC (in clean, closed, individually labeled polyethylene plastic containers with the lids taped to prevent leakage) for bulk fluid property and friction and wear-testing on the sample coupon sets (ref. C.2.5 and C.4.1).

C.2.5 Government Bulk Fluid Property and Coupon Analysis Testing:

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(a) Using the graphene nanoplatelet nanofluids sent to TARDEC by the contractor (ref. C.2.4.3), TARDEC will perform bulk fluid property testing on the nanofluids and complete friction and wear testing on up to eight coupon sets (a coupon set consists of four half-inch steel balls).

(b) At the conclusion of Government testing, TARDEC will ship these used sample coupon sets to the contractor for further analysis. TARDEC will ship the last coupon set no later than 60 days prior to the completion of the contract.

(c) The contractor shall characterize the surface of all coupon sets TARDEC sends for analysis with SEM/FIB (Scanning Electron Microscopy/Focused Gallium Ion Beam), AFM, and XPS.

C.2.5.1 FIB is a sample-preparation method which makes thin (approximately 2.5nm) slices of a material perpendicular to the surface. The contractor shall further interrogate the morphology of the cut surface or thin slice (cracks, fissures, pores, pits, etc.) with SEM or TEM.

C.2.5.2 AFM provides a topographical image of the wear surface at the nanoscale. The contractor shall apply AFM to each sample coupon set provided by the Government for analysis.

C.2.5.3 XPS provides information about the chemistry of surfaces and documents changes in surface chemistry with wear exposure. The contractor shall apply XPS to each sample coupon set provided by the Government for analysis.

C.2.6 Lubricating Fluid Analysis: The contractor shall perform a characterization of the Government-furnished base oil both before and after the friction and wear testing (ref. C.2.5). The viscosity of the base oil will be measured using an ARES parallel-plate rheometer to determine the effect of the addition of the nano-particles and to quantify any changes which have taken place during the friction and wear testing.

C.3 MEETINGS AND MEETING MINUTES

C.3.1 Weekly Teleconferences: The contractor shall arrange, conduct and participate in weekly teleconferences with the COR in order to update TARDEC on the overall status of all work in progress, as well as any new or ongoing issues since the previous teleconference.

C.3.1.1 The first teleconference shall be held within seven calendar days after the Contract award date, and shall serve as a start-of-work meeting at which the contractor shall lay out its plan for executing the requirements of this Scope of Work.

C.3.1.2 The contractor shall prepare, in its chosen format, and distribute a set of Teleconference Meeting Minutes for each teleconference IAW CDRL A001 to the COR, Bridget Dwornick, via e-mail, at <mailto:bridget.l.dwornick.civ@mail.mil> and the alternate COR, Jill Bramer, via e-mail at <mailto:jill.m.bramer.civ@mail.mil>, within five days after each teleconference.

C.3.2 Project Review Meetings: The contractor shall schedule and conduct two Project Review Meetings, to be held at TARDEC facilities in Warren, MI. The Project Review Meetings shall take place on dates mutually agreeable to the parties, at (i) approximately six months after the Contract award date; and (ii) 30 days prior to the contractual completion date. Topics for discussion at these meetings include the results of the contractor's work up to that point in time and throughout the duration of the entire work effort, any problems encountered (whether new, updated, or resolved), as well as anything else either party wishes to discuss.

C.3.2.1 Within five days after each Project Review Meeting, the contractor shall prepare, in its chosen format, a set of Project Review Meeting Minutes IAW CDRL A002 to the COR, Bridget Dwornick, via e-mail, at <mailto:bridget.l.dwornick.civ@mail.mil> and the alternate COR, Jill Bramer, via e-mail at <mailto:jill.m.bramer.civ@mail.mil>. The contractor shall also provide Project Review Meeting Minutes to the Contract Specialist, and the Administrative Contract Officer (ACO).

C.4 DELIVERABLES / REPORTS

C.4.1 Stable Nanoplatelet Nanofluid Test Samples: The contractor shall provide a minimum of four 500 milliliter (ml) test samples of stable nanofluid (ref C.2.4.3) for TARDEC to complete section C.2.5 during the contract's period of performance. The stable 500 ml test samples shall be delivered every six-to-eight weeks, with the first test sample delivered to TARDEC by six-to-eight weeks after the contract award date, and the last test sample delivered to TARDEC at least 60 days prior to contract completion.

C.4.2 Final Nanoplatelet Nanofluid Formulations: The contractor shall deliver a one-liter sample of each of the two best formulations(2 x 1 L samples total) as determined by the COR (ref. C.4.2.1) no later than the end of the contract performance date. Each sample shall be packaged as per C.2.4.3 above.

C.4.2.1 The COR's best-formulation determination will be based on the nanofluid's performance after functionalization (ref C.2.2), characterization (ref. C.2.3), dispersability and stability analysis (ref. C.2.4), and bulk fluid property and friction and wear testing (ref. C.2.5).

C.4.3 Contractor's Progress, Status and Management Reports: The contractor shall prepare, in its chosen format, and submit a Bimonthly Progress, Status, and Management Report (including project cost data) IAW CDRL A003. The first report shall be submitted 60 days after the contract award date, and subsequent reports shall be submitted every 60 days thereafter. Each report shall summarize the work

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completed, including test plans, experimental analyses, project milestones reached, problems and/or delays encounter (with resolution status), all project cost-related reporting data, and the status of any other significant contractually-related matters. The Bimonthly Progress, Status, and Management Reports shall be submitted to the COR, Bridget Dwornick, via e-mail, at <mailto:bridget.l.dwornick.civ@mail.mil> and the alternate COR, Jill Bramer, via e-mail at <mailto:jill.m.bramer.civ@mail.mil>.

C.4.4 Technical Reports: The contractor shall prepare and submit Technical Reports IAW CDRL A004 and CDRL A005 for this contract. Details are as follow:

C.4.4.1 Internal Report (CDRL A004): The contractor shall prepare and deliver a Draft Internal Technical Report, summarizing the synthesis of the xGnP and the creation of the xGnP nanofluids. This Report shall at a minimum include the detailed characterization of the synthesized xGnP and resulting nanofluid such as the chemical composition, size, and distribution of the xGnP, any functionalization to include surface chemistry of the xGnP, and any additional information. This Report shall be provided to the COR for review and concurrence NLT 30 calendar days before the Contract completion date. The COR will review and respond to the contractor within 15 calendar days of receipt, with any necessary suggestions and/or corrections. After receiving the COR's feedback, the contractor shall then revise the draft internal technical report to reflect any COR-recommended changes, and prepare and submit the final version of the Internal Technical Report within seven calendar days of receipt of COR comments or concurrence. The internal report shall be submitted to the COR, Bridget Dwornick, via e-mail, at <mailto:bridget.l.dwornick.civ@mail.mil> and the alternate COR, Jill Bramer, via e-mail at <mailto:jill.m.bramer.civ@mail.mil>.

C.4.4.2 External Report (CDRL A005): The contractor shall also prepare and deliver a Draft External Technical Report suitable for public release with the intent to publish in a peer reviewed forum. This report shall be provided to the COR for review and concurrence NLT 45 calendar days before the Contract completion date. The COR will review and respond to the contractor within 15 calendar days of receipt, with any necessary suggestions and/or corrections. The contractor shall then revise the draft external technical report to reflect any COR-recommended changes, and prepare and submit the final version of the External Technical Report (for any needed OPSEC review) within seven calendar days of receipt of the CORs feedback. The external report shall be submitted to the COR, Bridget Dwornick, via e-mail, at <mailto:bridget.l.dwornick.civ@mail.mil> and the alternate COR, Jill Bramer, via e-mail at <mailto:jill.m.bramer.civ@mail.mil>

C.5 GOVERNMENT-PROVIDED MATERIALS / INFORMATION

C.5.1 Material:

C.5.1.1 Base Oil (ref. C.2.1.1).

C.5.1.2 Used Sample Coupon Sets (ref C.2.5)

C.6 CONTRACTUAL PERIOD OF PERFORMANCE: all work to be performed for project effort, including all deliverables, shall be completed by the contractor no later than 12 months after the date of Contract award.

C.7 CONTRACTOR MANPOWER REPORTING

C.7.1 The contractor shall report all contractor labor hours (including subcontractor labor hours) required for performance of services provided under this contract for the U.S. Army via a secure data collection site. The contractor is required to completely fill in all required data fields using the Army CMR site, which you can access by clicking on the "Department of Army CMRA" link from the following gateway web address: <http://www.ecmra.mil/>

C.7.2 Reporting inputs will be for the labor executed during the period of performance during each Government fiscal year (FY), which runs October 1 through September 30. While inputs may be reported any time during the FY, all data shall be reported no later than October 31 of each calendar year, beginning with 2013. Contractors may direct questions to the Army CMR help desk, which can be contacted using the "Send an email" link on the right side of the sign-in screen at the Army CMR site.

C.7.3 Additional information can be found in the clause in this contract entitled CONTRACTOR MANPOWER REPORTING (52.237-4000).

*** END OF NARRATIVE C0001 ***

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SECTION D - PACKAGING AND MARKING

The Contractor shall package and pack all items deliverable under this contract in accordance with standard commercial practice to assure arrival at destination without damage or loss.

D.2 Marking:

D.2.1 Technical Data Marking: The Contractor shall ensure that all technical data, deliverable under this contract, is identified by contract number, Contractor name and address and, where applicable, the name and address of the subcontractor who generated the data.

D.2.2 Materials and Hardware Marking: The Contractor shall mark or tag all materials and hardware required to be delivered under this contract with the following information:

TACOM Contract Number

Contractor's Name

Contractor's Address

A Description of the Material or Hardware

*** END OF NARRATIVE D0001 ***

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Name of Offeror or Contractor: MICHIGAN STATE UNIVERSITY

SECTION E - INSPECTION AND ACCEPTANCE

This document 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 these addresses:

<http://farsite.hill.af.mil/VFFARA.HTM> or <http://farsite.hill.af.mil/VDFDARA.HTM> or <http://farsite.hill.af.mil/VFAFARA.HTM>

If the clause requires additional or unique information, then that information is provided immediately after the clause title.

	<u>Regulatory Cite</u>	<u>Title</u>	<u>Date</u>
E-1	52.246-8	INSPECTION OF RESEARCH AND DEVELOPMENT--COST REIMBURSEMENT	MAY/2001
E-2	52.246-16	RESPONSIBILITY FOR SUPPLIES	APR/1984

INSPECTION AND ACCEPTANCE

Inspection and acceptance of all deliverables under this contract shall be made at DESTINATION by the Contracting Officer or his duly authorized representative. The determination that the deliverables are complete and conform to the requirements of the contract will be made by the Contracting Officer's Representative (COR), to assure the work and the results thereof are in accordance with the terms of the contract.

*** END OF NARRATIVE E0001 ***

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MOD/AMD

Name of Offeror or Contractor: MICHIGAN STATE UNIVERSITY

SECTION F - DELIVERIES OR PERFORMANCE

This document 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 these addresses:

<http://farsite.hill.af.mil/VFFARA.HTM> or <http://farsite.hill.af.mil/VDFARA.HTM> or <http://farsite.hill.af.mil/VFAFARA.HTM>

If the clause requires additional or unique information, then that information is provided immediately after the clause title.

	<u>Regulatory Cite</u>	<u>Title</u>	<u>Date</u>
F-1	52.242-15	STOP-WORK ORDER (AUG 1989) -- ALTERNATE I (APR 1984)	APR/1984
F-2	52.242-17	GOVERNMENT DELAY OF WORK	APR/1984
F-3	52.247-34	F.O.B. DESTINATION	NOV/1991

F.1 DELIVERY

All deliveries shall be made in accordance with the contract, or as otherwise directed by the Contracting Officer or authorized representative and shall be packaged and marked in accordance with Section D.

F.1.1 Any deliverables requiring a physical address shall be shipped to:

U.S. ARMY TARDEC
BRIDGET DWORNICK, COR
MS110
6501 EAST 11 MILE ROAD
WARREN, MI 48397-5000

F.2 METHOD OF DELIVERY

F.2.1 All deliveries shall be made on a FOB DESTINATION basis.

F.3 PERIOD OF PERFORMANCE

F.3.1 The period of performance for this contract shall be 12 months from the contract award date.

*** END OF NARRATIVE F0001 ***

Name of Offeror or Contractor: MICHIGAN STATE UNIVERSITY

SECTION G - CONTRACT ADMINISTRATION DATA

PRON/ AMS CD/ LINE	MIPR/ GFEBs ATA	OBLG STAT	JO NO/ ACCT ASSIGN	ACRN	OBLIGATED AMOUNT
0001AA	R34KJ023R3 6330005441	2	R.0009809.1.3	AA	\$ 74,480.00
TOTAL					\$ 74,480.00

ACRN	ACCOUNTING CLASSIFICATION	OBLIGATED AMOUNT
AA	021 201420152040 A60FL 633005441RK17 2550 L036035623 R.0009809.1.3	021001 \$ 74,480.00
TOTAL		\$ 74,480.00

LINE ITEM	ACRN	EDI/SFIS ACCOUNTING CLASSIFICATION	OBLIGATED AMOUNT
0001AA	AA	021 201420152040 A60FL 633005441RK17 2550 L036035623 R.0009809.1.3	021001

Regulatory Cite	Title	Date
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G-1	252.232-7006 WIDE AREA WORKFLOW PAYMENT INSTRUCTIONS	MAY/2013
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(a) Definitions. As used in this clause--

"Department of Defense Activity Address Code (DoDAAC)" is a six position code that uniquely identifies a unit, activity, or organization.

"Document type" means the type of payment request or receiving report available for creation in Wide Area WorkFlow (WAWF).

"Local processing office (LPO)" is the office responsible for payment certification when payment certification is done external to the entitlement system.

(b) Electronic invoicing. The WAWF system is the method to electronically process vendor payment requests and receiving reports, as authorized by DFARS 252.232-7003, Electronic Submission of Payment Requests and Receiving Reports.

(c) WAWF access. To access WAWF, the Contractor shall--

(1) Have a designated electronic business point of contact in the System for Award Management at <https://www.acquisition.gov>; and

(2) Be registered to use WAWF at <https://wawf.eb.mil/> following the step-by-step procedures for self-registration available at this Web site.

(d) WAWF training. The Contractor should follow the training instructions of the WAWF Web-Based Training Course and use the Practice Training Site before submitting payment requests through WAWF. Both can be accessed by selecting the "Web Based Training" link on the WAWF home page at <https://wawf.eb.mil/>.

(e) WAWF methods of document submission. Document submissions may be via Web entry, Electronic Data Interchange, or File Transfer Protocol.

(f) WAWF payment instructions. The Contractor must use the following information when submitting payment requests and receiving reports in WAWF for this contract/order:

(1) Document type. The Contractor shall use the following document type(s).

Cost Vouchers & Receiving Reports

(2) Inspection/acceptance location. The Contractor shall select the following inspection/acceptance location(s) in WAWF, as specified by the contracting officer.

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(3) Document routing. The Contractor shall use the information in the Routing Data Table below only to fill in applicable fields in WAWF when creating payment requests and receiving reports in the system.

Routing Data Table*

Field Name in WAWF	Data to be entered in WAWF
Pay Official DoDAAC	-3-
Issue By DoDAAC	W56HZV
Admin DoDAAC	N62880
Inspect By DoDAAC	W91ATL
Ship To Code	W91ATL
Ship From Code	4B834
Mark For Code	W91ATL
Service Approver (DoDAAC)	W91ATL
Service Acceptor (DoDAAC)	W91ATL
Accept at Other DoDAAC	N/A
LPO DoDAAC	N/A
DCAA Auditor DoDAAC	N/A
Other DoDAAC(s)	N/A

(4) Payment request and supporting documentation. The Contractor shall ensure a payment request includes appropriate contract line item and subline item descriptions of the work performed or supplies delivered, unit price/cost per unit, fee (if applicable), and all relevant back-up documentation, as defined in DFARS Appendix F, (e.g. timesheets) in support of each payment request.

(5) WAWF email notifications. The Contractor shall enter the email address identified below in the "Send Additional Email Notifications" field of WAWF once a document is submitted in the system.

bridget.l.dwornick.civ@mail.mil

(g) WAWF point of contact. (1) The Contractor may obtain clarification regarding invoicing in WAWF from the following contracting activity's WAWF point of contact.

delle.v.remsey.civ@mail.mil

(2) For technical WAWF help, contact the WAWF helpdesk at 866-618-5988.

(End of clause)

G-2 52.242-4016 COMMUNICATIONS

FEB/2013

Communications on technical matters pertaining to the contract shall be direct between the contractor and the Contracting Officer Representative (COR). Communications for the COR shall be addressed to:

Name: Bridget Dwornick
E-mail: bridget.l.dwornick.civ@mail.mil

The Administrative Contracting Officer's (ACO) name and email address are also provided if known at this time:

ACO: Joshua Kabisch
E-mail: josh.kabisch@navy.mil

Please see the appointment letters prepared at time of contract award for functions the Technical Representative and ACO will perform on this contract.

[End of Clause]

G-3 252.204-0001 LINE ITEM SPECIFIC: SINGLE FUNDING

SEP/2009

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(DFARS PGI)

The payment office shall make payment using the ACRN funding of the line item being billed.

(End)

G-4

252.204-0005

PAYMENT INSTRUCTIONS FOR THE DEFENSE FINANCE AND ACCOUNTING SERVICE

SEP/2009

(DFARS PGI)

(DFAS) - Line Item Specific: by Cancellation Date

The payment office shall make payment using the ACRN with the earliest cancellation date first, exhausting all funds in that ACRN before disbursing funds from the next. In the event there is more than one ACRN associated with the same cancellation date, the payment amount shall be disbursed from each ACRN with the same cancellation date in the same proportion as the amount of funding obligated for each ACRN with the same cancellation date.

[End of Clause]

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SECTION H - SPECIAL CONTRACT REQUIREMENTS

<u>Regulatory Cite</u>	<u>Title</u>	<u>Date</u>
H-1 52.204-4005	REQUIRED USE OF ELECTRONIC CONTRACTING	AUG/2012

(a) All contract awards, modifications and delivery orders issued by Army Contracting Command - Warren (DTA) will be issued electronically. The contractor has the option to receive these actions either via the Worldwide Web (WWW) or Electronic Data Interchange (EDI). Many provisions/clauses that appear "by reference," meaning only clause titles and regulation site are listed; their full texts can be found at the website <http://farsite.hill.af.mil/>

(b) In order to be eligible to receive an award under this solicitation, the successful offeror must be registered with the Department of Defense (DOD) System for Award Management (SAM). The SAM registration process may be done electronically at the World Wide Web (WWW) site: <https://www.sam.gov/portal/public/SAM>. (In order to be registered to use EDI, you must use the long form for registration. Certification information, including information on the EDI 838 TPP, must be furnished to the Contracting Officer within 60 calendar days after contract award to complete networking requirements within the Government.)

(c) Worldwide Web Distribution. The contractor will receive an electronic Notice of the Award, Modification, or Delivery Order via e-mail. If you choose the WWW option, you must download the file from the appropriate Army Contracting Command - Warren webpage:

Warren: http://contracting.tacom.army.mil/CFDATA/AWARDS/AWARD_RPT01.cfm
 Rock Island - JMTC: <https://acquisition.army.mil/asfi/>
 Red River Army Depot: <https://acquisition.army.mil/asfi/>
 Anniston Army Depot: <https://acquisition.army.mil/asfi/>

(d) Electronic Data Interchange. If you choose to receive contract awards, modifications and delivery orders through EDI, they will be delivered electronically via the Federal Acquisition Network (FACNET). Federal Standard Version 3050 of Standard X12 from the American National Standards Institute (ANSI) will be used as the format for these electronic transactions.

(1) You must complete the EDI 838 Trading Partner Profile, and must agree (i) to subcontract with a DoD certified VAN or Value Added Service (VAS) provider, or (ii) to become DoD certified as a Value Added Network (VAN). The EDI 838 Training Partner Profile is contained in the basic SAM registration form and includes portions of the registration form which are titled "Optional".

(2) You must select a VAN from the official DoD approved list. DoD Certified VANs are listed at <http://www.acq.osd.mil/dpap/ebiz/VANs.htm>. If your VAN is later removed from the official list, or if you voluntarily drop your initially selected VAN, then you must switch to a VAN that remains on the official DoD approved list. You must maintain an active account on a DoD approved VAN for the entire duration of the contract, beginning no later than the 60th day after award.

(e) Unless otherwise specified elsewhere in the contract, all data items you are required to provide under this contract must be submitted electronically. Please go to the following webpage for detailed information about submitting your offer electronically: <http://contracting.tacom.army.mil/acqinfo/ebidnotice.htm>

(f) Additional information can be obtained by sending a message to: usarmy.detroit.acc.mbx.wrn-web-page@mail.mil or by calling (586) 282-7059.

H.1 Government-Furnished Property

H.1.1 The Government may furnish Government-owned property to assist the Contractor in the performance of the contract requirements.

H.1.2 Upon completion of the contract or in the event of termination of the contract, either partial or complete, all Government-owned property, including both property furnished to the Contractor and property acquired by the Contractor on the account of the Government, which will have become surplus or excess to any remaining contract requirements, shall be reported immediately by the Contractor to the Contracting Officer at the US Army Contracting Command, TACOM Contracting Center, ATTN: CCTA-ASG-B, Warren, MI 48397-5000 for redistribution, shipping instructions, release for disposal, or other actions.

H.1.3 Specific Government-Furnished Property to be provided is/are as follows:

Item: SpectraPlus4 Base Oil
 Qty: 5 Gallons
 Serial No./NSN: N/A
 Acquisition Value: N/A

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*** END OF NARRATIVE H0001 ***

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SECTION I - CONTRACT CLAUSES

This document 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 these addresses:

<http://farsite.hill.af.mil/VFFARA.HTM> or <http://farsite.hill.af.mil/VDFARA.HTM> or <http://farsite.hill.af.mil/VFAFARA.HTM>

If the clause requires additional or unique information, then that information is provided immediately after the clause title.

	<u>Regulatory Cite</u>	<u>Title</u>	<u>Date</u>
I-1	52.204-9	PERSONAL IDENTITY VERIFICATION OF CONTRACTOR PERSONNEL	JAN/2011
I-2	52.204-10	REPORTING EXECUTIVE COMPENSATION AND FIRST-TIER SUBCONTRACT AWARDS	JUL/2013
I-3	52.204-13	SYSTEM FOR AWARD MANAGEMENT MAINTENANCE	JUL/2013
I-4	52.209-6	PROTECTING THE GOVERNMENT'S INTEREST WHEN SUBCONTRACTING WITH CONTRACTORS DEBARRED, SUSPENDED, OR PROPOSED FOR DEBARMENT	AUG/2013
I-5	52.211-15	DEFENSE PRIORITY AND ALLOCATION REQUIREMENTS	APR/2008
I-6	52.215-15	PENSION ADJUSTMENTS AND ASSET REVERSIONS	OCT/2010
I-7	52.215-23	LIMITATIONS ON PASS-THROUGH CHARGES	OCT/2009
I-8	52.216-11	COST CONTRACT--NO FEE (APR 1984) -- ALTERNATE I (APR 1984)	APR/1984
I-9	52.222-20	CONTRACTS FOR MATERIALS, SUPPLIES, ARTICLES, AND EQUIPMENT EXCEEDING \$15,000	MAY/2014
I-10	52.222-21	PROHIBITION OF SEGREGATED FACILITIES	FEB/1999
I-11	52.222-26	EQUAL OPPORTUNITY	MAR/2007
I-12	52.222-35	EQUAL OPPORTUNITY FOR VETERANS	SEP/2010
I-13	52.222-36	AFFIRMATIVE ACTION FOR WORKERS WITH DISABILITIES	OCT/2010
I-14	52.222-37	EMPLOYMENT REPORTS ON VETERANS	SEP/2010
I-15	52.222-50	COMBATING TRAFFICKING IN PERSONS	FEB/2009
I-16	52.223-18	ENCOURAGING CONTRACTOR POLICIES TO BAN TEXT MESSAGING WHILE DRIVING	AUG/2011
I-17	52.225-13	RESTRICTIONS ON CERTAIN FOREIGN PURCHASES	JUN/2008
I-18	52.227-1	AUTHORIZATION AND CONSENT (DEC 2007) -- ALTERNATE I (APR 1984)	APR/1984
I-19	52.228-7	INSURANCE--LIABILITY TO THIRD PERSONS	MAR/1996
I-20	52.232-9	LIMITATION ON WITHHOLDING OF PAYMENTS	APR/1984
I-21	52.232-20	LIMITATION OF COST	APR/1984
I-22	52.232-23	ASSIGNMENT OF CLAIMS (MAY 2014) -- ALTERNATE I (APR 1984)	APR/1984
I-23	52.232-25	PROMPT PAYMENT	JUL/2013
I-24	52.232-39	UNENFORCEABILITY OF UNAUTHORIZED OBLIGATIONS	JUN/2013
I-25	52.232-40	PROVIDING ACCELERATED PAYMENTS TO SMALL BUSINESS SUBCONTRACTORS	DEC/2013
I-26	52.233-1	DISPUTES	MAY/2014
I-27	52.233-3	PROTEST AFTER AWARD (AUG 1996) -- ALTERNATE I (JUN 1985)	JUN/1985
I-28	52.233-4	APPLICABLE LAW FOR BREACH OF CONTRACT CLAIM	OCT/2004
I-29	52.242-1	NOTICE OF INTENT TO DISALLOW COSTS	APR/1984
I-30	52.243-2	CHANGES - COST REIMBURSEMENT (AUG 1987) -- ALTERNATE II (APR 1984)	APR/1984
I-31	52.244-6	SUBCONTRACTS FOR COMMERCIAL ITEMS	MAY/2014
I-32	52.245-1	GOVERNMENT PROPERTY (APR 2012) -- ALTERNATE II (APR 2012)	APR/2012
I-33	52.249-5	TERMINATION FOR CONVENIENCE OF THE GOVERNMENT (EDUCATIONAL AND OTHER NONPROFIT INSTITUTIONS)	SEP/1996
I-34	52.253-1	COMPUTER GENERATED FORMS	JAN/1991
I-35	252.203-7000	REQUIREMENTS RELATING TO COMPENSATION OF FORMER DOD OFFICIALS	SEP/2011
I-36	252.203-7002	REQUIREMENT TO INFORM EMPLOYEES OF WHISTLEBLOWER RIGHTS	SEP/2013
I-37	252.204-7000	DISCLOSURE OF INFORMATION	AUG/2013
I-38	252.204-7003	CONTROL OF GOVERNMENT PERSONNEL WORK PRODUCT	APR/1992
I-39	252.204-7012	SAFEGUARDING OF UNCLASSIFIED CONTROLLED TECHNICAL INFORMATION	NOV/2013
I-40	252.204-7015	DISCLOSURE OF INFORMATION TO LITIGATION SUPPORT CONTRACTORS	FEB/2014
I-41	252.225-7048	EXPORT-CONTROLLED ITEMS	JUN/2013
I-42	252.227-7013	RIGHTS IN TECHNICAL DATA--NONCOMMERCIAL ITEMS	FEB/2014
I-43	252.227-7014	RIGHTS IN NONCOMMERCIAL COMPUTER SOFTWARE AND NONCOMMERCIAL COMPUTER SOFTWARE DOCUMENTATION	FEB/2014
I-44	252.227-7015	TECHNICAL DATA--COMMERCIAL ITEMS	FEB/2014
I-45	252.227-7016	RIGHTS IN BID OR PROPOSAL INFORMATION	JAN/2011
I-46	252.227-7019	VALIDATION OF ASSERTED RESTRICTIONS--COMPUTER SOFTWARE	SEP/2011
I-47	252.227-7025	LIMITATIONS ON THE USE OR DISCLOSURE OF GOVERNMENT-FURNISHED INFORMATION MARKED WITH RESTRICTIVE LEGENDS	MAY/2013

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I-48	252.227-7027	DEFERRED ORDERING OF TECHNICAL DATA OR COMPUTER SOFTWARE	APR/1988
I-49	252.227-7030	TECHNICAL DATA--WITHHOLDING OF PAYMENT	MAR/2000
I-50	252.227-7037	VALIDATION OF RESTRICTIVE MARKINGS ON TECHNICAL DATA	JUN/2013
I-51	252.227-7039	PATENTS--REPORTING OF SUBJECT INVENTIONS	APR/1990
I-52	252.231-7000	SUPPLEMENTAL COST PRINCIPLES	DEC/1991
I-53	252.232-7003	ELECTRONIC SUBMISSION OF PAYMENT REQUESTS AND RECEIVING REPORTS	JUN/2012
I-54	252.232-7010	LEVIES ON CONTRACT PAYMENTS	DEC/2006
I-55	252.235-7011	FINAL SCIENTIFIC OR TECHNICAL REPORT	NOV/2004
I-56	252.244-7000	SUBCONTRACTS FOR COMMERCIAL ITEMS	JUN/2013
I-57	252.246-7000	MATERIAL INSPECTION AND RECEIVING REPORT	MAR/2008
I-58	252.246-7001	WARRANTY OF DATA--BASIC	MAR/2014
I-59	252.247-7023	TRANSPORTATION OF SUPPLIES BY SEA--BASIC	APR/2014
I-60	52.216-7	ALLOWABLE COST AND PAYMENT (JUN2013) -- ALTERNATE II (AUG 2012)	AUG/2012

(a) Invoicing.

(1) The Government will make payments to the Contractor when requested as work progresses, but not more often than once every two weeks, in amounts determined to be allowable by the Contracting Officer in accordance with FAR subpart 31.3 in effect on the date of this contract and the terms of this contract. The Contractor may submit to an authorized representative of the Contracting Officer, in such form and reasonable detail as the representative may require, an invoice or voucher supported by a statement of the claimed allowable cost for performing this contract.

(2) Contract financing payments are not subject to the interest penalty provisions of the Prompt Payment Act. Interim payments made prior to the final payment under the contract are contract financing payments, except interim payments if this contract contains Alternate I to the clause at 52.232-25.

(3) The designated payment office will make interim payments for contract financing on the -1- day after the designated billing office receives a proper payment request. In the event that the Government requires an audit or other review of a specific payment request to ensure compliance with the terms and conditions of the contract, the designated payment office is not compelled to make payment by the specified due date.

(b) Reimbursing costs.

(1) For the purpose of reimbursing allowable costs (except as provided in subparagraph (b)(2) of this clause, with respect to pension, deferred profit sharing, and employee stock ownership plan contributions), the term costs includes only --

(i) Those recorded costs that, at the time of the request for reimbursement, the Contractor has paid by cash, check, or other form of actual payment for items or services purchased directly for the contract;

(ii) When the Contractor is not delinquent in paying costs of contract performance in the ordinary course of business, costs incurred, but not necessarily paid, for --

(A) Supplies and services purchased directly for the contract and associated financing payments to subcontractors, provided payments determined due will be made

(1) In accordance with the terms and conditions of a subcontract or invoice; and

(2) Ordinarily within 30 days of the submission of the Contractors payment request to the Government;

(B) Materials issued from the Contractors inventory and placed in the production process for use on the contract;

(C) Direct labor;

(D) Direct travel;

(E) Other direct in-house costs; and

(F) Properly allocable and allowable indirect costs, as shown in the records maintained by the Contractor for purposes of obtaining reimbursement under Government contracts; and

(iii) The amount of financing payments that have been paid by cash, check or other form of payment to subcontractors.

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(2) Accrued costs of Contractor contributions under employee pension plans shall be excluded until actually paid unless

(i) The Contractors practice is to make contributions to the retirement fund quarterly or more frequently; and

(ii) The contribution does not remain unpaid 30 days after the end of the applicable quarter or shorter payment period (any contribution remaining unpaid shall be excluded from the Contractors indirect costs for payment purposes).

(3) Notwithstanding the audit and adjustment of invoices or vouchers under paragraph (g) of this clause, allowable indirect costs under this contract shall be obtained by applying indirect cost rates established in accordance with paragraph (d) of this clause.

(4) Any statements in specifications or other documents incorporated in this contract by reference designating performance of services or furnishing of materials at the Contractors expense or at no cost to the Government shall be disregarded for purposes of cost-reimbursement under this clause.

(c) Small business concerns. A small business concern may receive more frequent payments than every 2 weeks.

(d) Final indirect cost rates.

(1) Final annual indirect cost rates and the appropriate bases shall be established in accordance with Subpart 42.7 of the Federal Acquisition Regulation (FAR) in effect for the period covered by the indirect cost rate proposal.

(2)(i) The Contractor shall submit an adequate final indirect cost rate proposal to the Contracting Officer (or cognizant Federal agency official) and auditor within the 6-month period following the expiration of each of its fiscal years. Reasonable extensions, for exceptional circumstances only, may be requested in writing by the Contractor and granted in writing by the Contracting Officer. The Contractor shall support its proposal with adequate supporting data.

(ii) The proposed rates shall be based on the Contractors actual cost experience for that period. The appropriate Government representative and the Contractor shall establish the final indirect cost rates as promptly as practical after receipt of the Contractors proposal.

(iii) An adequate indirect cost rate proposal shall include the following data unless otherwise specified by the cognizant Federal agency official:

(A) Summary of all claimed indirect expense rates, including pool, base, and calculated indirect rate.

(B) General and Administrative expenses (final indirect cost pool). Schedule of claimed expenses by element of cost as identified in accounting records (Chart of Accounts).

(C) Overhead expenses (final indirect cost pool). Schedule of claimed expenses by element of cost as identified in accounting records (Chart of Accounts) for each final indirect cost pool.

(D) Occupancy expenses (intermediate indirect cost pool). Schedule of claimed expenses by element of cost as identified in accounting records (Chart of Accounts) and expense reallocation to final indirect cost pools.

(E) Claimed allocation bases, by element of cost, used to distribute indirect costs.

(F) Facilities capital cost of money factors computation.

(G) Reconciliation of books of account (i.e., General Ledger) and claimed direct costs by major cost element.

(H) Schedule of direct costs by contract and subcontract and indirect expense applied at claimed rates, as well as a subsidiary schedule of Government participation percentages in each of the allocation base amounts.

(I) Schedule of cumulative direct and indirect costs claimed and billed by contract and subcontract.

(J) Subcontract information. Listing of subcontracts awarded to companies for which the contractor is the prime or upper-tier contractor (include prime and subcontract numbers; subcontract value and award type; amount claimed during the fiscal year; and the subcontractor name, address, and point of contact information).

(K) Summary of each time-and-materials and labor-hour contract information, including labor categories, labor rates, hours, and amounts; direct materials; other direct costs; and, indirect expense applied at claimed rates.

(L) Reconciliation of total payroll per IRS form 941 to total labor costs distribution.

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(M) Listing of decisions/agreements/approvals and description of accounting/organizational changes.

(N) Certificate of final indirect costs (see 52.242-4, Certification of Final Indirect Costs).

(O) Contract closing information for contracts physically completed in this fiscal year (include contract number, period of performance, contract ceiling amounts, contract fee computations, level of effort, and indicate if the contract is ready to close).

(iv) The following supplemental information is not required to determine if a proposal is adequate, but may be required during the audit process:

(A) Comparative analysis of indirect expense pools detailed by account to prior fiscal year and budgetary data.

(B) General Organizational information and limitation on allowability of compensation for certain contractor personnel. See 31.205-6(p). Additional salary reference information is available at [://www.whitehouse.gov/omb/procurement_index_exec_comp/](http://www.whitehouse.gov/omb/procurement_index_exec_comp/).

(C) Identification of prime contracts under which the contractor performs as a subcontractor.

(D) Description of accounting system (excludes contractors required to submit a CAS Disclosure Statement or contractors where the description of the accounting system has not changed from the previous year's submission).

(E) Procedures for identifying and excluding unallowable costs from the costs claimed and billed (excludes contractors where the procedures have not changed from the previous year's submission).

(F) Certified financial statements and other financial data (e.g., trial balance, compilation, review, etc.).

(G) Management letter from outside CPAs concerning any internal control weaknesses.

(H) Actions that have been and/or will be implemented to correct the weaknesses described in the management letter from subparagraph (G) of this section.

(I) List of all internal audit reports issued since the last disclosure of internal audit reports to the Government.

(J) Annual internal audit plan of scheduled audits to be performed in the fiscal year when the final indirect cost rate submission is made.

(K) Federal and State income tax returns.

(L) Securities and Exchange Commission 10-K annual report.

(M) Minutes from board of directors meetings.

(N) Listing of delay claims and termination claims submitted which contain costs relating to the subject fiscal year.

(O) Contract briefings, which generally include a synopsis of all pertinent contract provisions, such as: Contract type, contract amount, product or service(s) to be provided, contract performance period, rate ceilings, advance approval requirements, pre-contract cost allowability limitations, and billing limitations.

(v) The Contractor shall update the billings on all contracts to reflect the final settled rates and update the schedule of cumulative direct and indirect costs claimed and billed, as required in paragraph (d)(2)(iii)(I) of this section, within 60 days after settlement of final indirect cost rates.

(3) The Contractor and the appropriate Government representative shall execute a written understanding setting forth the final indirect cost rates. The understanding shall specify

(i) the agreed-upon final annual indirect cost rates,

(ii) the bases to which the rates apply,

(iii) the periods for which the rates apply,

(iv) any specific indirect cost items treated as direct costs in the settlement, and

(v) the affected contract and/or subcontract, identifying any with advance agreements or special terms and the applicable rates.

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The understanding shall not change any monetary ceiling, contract obligation, or specific cost allowance or disallowance provided for in this contract. The understanding is incorporated into this contract upon execution.

(4) Failure by the parties to agree on a final annual indirect cost rate shall be a dispute within the meaning of the Disputes clause.

(5) Within 120 days (or longer period if approved in writing by the Contracting Officer) after settlement of the final annual indirect cost rates for all years of a physically complete contract, Contractor shall submit a completion invoice or voucher to reflect the settled amounts and rates. The completion invoice or voucher shall include settled subcontract amounts and rates. The prime contractor is responsible for settling subcontractor amounts and rates included in the completion invoice or voucher and providing status of subcontractor audits to the contracting officer upon request.

(6)(i) If the Contractor fails to submit a completion invoice or voucher within the time specified in paragraph (d)(5) of this clause, the Contracting Officer may--

(A) Determine the amounts due to the Contractor under the contract; and

(B) Record this determination in a unilateral modification to the contract.

(ii) This determination constitutes the final decision of the Contracting Officer in accordance with the Disputes clause.

(e) Billing rates. Until final annual indirect cost rates are established for any period, the Government shall reimburse the Contractor at billing rates established by the Contracting Officer or by an authorized representative (the cognizant auditor), subject to adjustment when the final rates are established. These billing rates --

(1) Shall be the anticipated final rates; and

(2) May be prospectively or retroactively revised by mutual agreement, at either party's request, to prevent substantial overpayment or underpayment.

(f) Quick-closeout procedures. Quick-closeout procedures are applicable when the conditions in FAR 42.708(a) are satisfied.

(g) Audit. At any time or times before final payment, the Contracting Officer may have the Contractor's invoices or vouchers and statements of cost audited. Any payment may be --

(1) Reduced by amounts found by the Contracting Officer not to constitute allowable costs; or

(2) Adjusted for prior overpayments or underpayments.

(h) Final payment.

(1) Upon approval of a completion invoice or voucher submitted by the Contractor in accordance with paragraph (d)(5) of this clause, and upon the Contractor's compliance with all terms of this contract, the Government shall promptly pay any balance of allowable costs and that part of the fee (if any) not previously paid.

(2) The Contractor shall pay to the Government any refunds, rebates, credits, or other amounts (including interest, if any) accruing to or received by the Contractor or any assignee under this contract, to the extent that those amounts are properly allocable to costs for which the Contractor has been reimbursed by the Government. Reasonable expenses incurred by the Contractor for securing refunds, rebates, credits, or other amounts shall be allowable costs if approved by the Contracting Officer. Before final payment under this contract, the Contractor and each assignee whose assignment is in effect at the time of final payment shall execute and deliver --

(i) An assignment to the Government, in form and substance satisfactory to the Contracting Officer, of refunds, rebates, credits, or other amounts (including interest, if any) properly allocable to costs for which the Contractor has been reimbursed by the Government under this contract; and

(ii) A release discharging the Government, its officers, agents, and employees from all liabilities, obligations, and claims arising out of or under this contract, except --

(A) Specified claims stated in exact amounts, or in estimated amounts when the exact amounts are not known;

(B) Claims (including reasonable incidental expenses) based upon liabilities of the Contractor to third parties arising out of the performance of this contract; provided, that the claims are not known to the Contractor on the date of the execution of the release, and that the Contractor gives notice of the claims in writing to the Contracting Officer within 6 years following the release date or notice of final payment date, whichever is earlier; and

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(C) Claims for reimbursement of costs, including reasonable incidental expenses, incurred by the Contractor under the patent clauses of this contract, excluding, however, any expenses arising from the Contractors indemnification of the Government against patent liability.

(End of Clause)

I-61 52.227-11 PATENT RIGHTS--OWNERSHIP BY THE CONTRACTOR

MAY/2014

(a) As used in this clause--

Invention means any invention or discovery that is or may be patentable or otherwise protectable under title 35 of the U.S. Code, or any variety of plant that is or may be protectable under the Plant Variety Protection Act (7 U.S.C. 2321, et seq.)

Made means--

(1) When used in relation to any invention other than a plant variety, the conception or first actual reduction to practice of the invention; or

(2) When used in relation to a plant variety, that the Contractor has at least tentatively determined that the variety has been reproduced with recognized characteristics.

Nonprofit organization means a university or other institution of higher education or an organization of the type described in section 501(c)(3) of the Internal Revenue Code of 1954 (26 U.S.C. 501(c)) and exempt from taxation under section 501(a) of the Internal Revenue Code (26 U.S.C. 501(a)), or any nonprofit scientific or educational organization qualified under a State nonprofit organization statute.

Practical application means to manufacture, in the case of a composition of product; to practice, in the case of a process or method; or to operate, in the case of a machine or system; and, in each case, under such conditions as to establish that the invention is being utilized and that its benefits are, to the extent permitted by law or Government regulations, available to the public on reasonable terms.

Subject invention means any invention of the Contractor made in the performance of work under this contract.

(b) Contractor's rights. (1) Ownership. The Contractor may retain ownership of each subject invention throughout the world in accordance with the provisions of this clause.

(2) License. (i) The Contractor shall retain a nonexclusive royalty-free license throughout the world in each subject invention to which the Government obtains title, unless the Contractor fails to disclose the invention within the times specified in paragraph (c) of this clause. The Contractor's license extends to any domestic subsidiaries and affiliates within the corporate structure of which the Contractor is a part, and includes the right to grant sublicenses to the extent the Contractor was legally obligated to do so at contract award. The license is transferable only with the written approval of the agency, except when transferred to the successor of that part of the Contractor's business to which the invention pertains.

(ii) The Contractor's license may be revoked or modified by the agency to the extent necessary to achieve expeditious practical application of the subject invention in a particular country in accordance with the procedures in FAR 27.302(i)(2) and 27.304-1(f).

(c) Contractor's obligations. (1) The Contractor shall disclose in writing each subject invention to the Contracting Officer within 2 months after the inventor discloses it in writing to Contractor personnel responsible for patent matters. The disclosure shall identify the inventor(s) and this contract under which the subject invention was made. It shall be sufficiently complete in technical detail to convey a clear understanding of the subject invention. The disclosure shall also identify any publication, on sale (i.e., sale or offer for sale), or public use of the subject invention, or whether a manuscript describing the subject invention has been submitted for publication and, if so, whether it has been accepted for publication. In addition, after disclosure to the agency, the Contractor shall promptly notify the Contracting Officer of the acceptance of any manuscript describing the subject invention for publication and any on sale or public use.

(2) The Contractor shall elect in writing whether or not to retain ownership of any subject invention by notifying the Contracting Officer within 2 years of disclosure to the agency. However, in any case where publication, on sale, or public use has initiated the 1-year statutory period during which valid patent protection can 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.

(3) The Contractor shall file either a provisional or a nonprovisional patent application or a Plant Variety Protection Application on

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an elected subject invention within 1 year after election. However, in any case where a publication, on sale, or public use has initiated the 1-year statutory period during which valid patent protection can be obtained in the United States, the Contractor shall file the application prior to the end of that statutory period. If the Contractor files a provisional application, it shall file a nonprovisional application within 10 months of the filing of the provisional application. The Contractor shall file patent applications in additional countries or international patent offices within either 10 months of the first filed patent application (whether provisional or nonprovisional) or 6 months from the date permission is granted by the Commissioner of Patents to file foreign patent applications where such filing has been prohibited by a Secrecy Order.

(4) The Contractor may request extensions of time for disclosure, election, or filing under paragraphs (c)(1), (c)(2), and (c)(3) of this clause.

(d) Government's rights--(1) Ownership. The Contractor shall assign to the agency, on written request, title to any subject invention--

(i) If the Contractor fails to disclose or elect ownership to the subject invention within the times specified in paragraph (c) of this clause, or elects not to retain ownership; provided, that the agency may request title only within 60 days after learning of the Contractor's failure to disclose or elect within the specified times.

(ii) In those countries in which the Contractor fails to file patent applications within the times specified in paragraph (c) of this clause; provided, however, that if the Contractor has filed a patent application in a country after the times specified in paragraph (c) of this clause, but prior to its receipt of the written request of the agency, the Contractor shall continue to retain ownership in that country.

(iii) In any country in which the Contractor decides not to continue the prosecution of any application for, to pay the maintenance fees on, or defend in reexamination or opposition proceeding on, a patent on a subject invention.

(2) License. If the Contractor retains ownership of any subject invention, the Government shall have a nonexclusive, nontransferable, irrevocable, paid-up license to practice, or have practiced for or on its behalf, the subject invention throughout the world.

(e) Contractor action to protect the Government's interest. (1) The Contractor shall execute or have executed and promptly deliver to the agency all instruments necessary to--

(i) Establish or confirm the rights the Government has throughout the world in those subject inventions in which the Contractor elects to retain ownership; and

(ii) Assign title to the agency when requested under paragraph (d) of this clause and to enable the Government to obtain patent protection and plant variety protection for that subject invention in any country.

(2) The Contractor shall require, by written agreement, its employees, other than clerical and nontechnical employees, to disclose promptly in writing to personnel identified as responsible for the administration of patent matters and in the Contractor's format, each subject invention in order that the Contractor can comply with the disclosure provisions of paragraph (c) of this clause, and to execute all papers necessary to file patent applications on subject inventions and to establish the Government's rights in the subject inventions. The disclosure format should require, as a minimum, the information required by paragraph (c)(1) of this clause. The Contractor shall instruct such employees, through employee agreements or other suitable educational programs, as to the importance of reporting inventions in sufficient time to permit the filing of patent applications prior to U.S. or foreign statutory bars.

(3) The Contractor shall notify the Contracting Officer of any decisions not to file a nonprovisional patent application, continue the prosecution of a patent application, pay maintenance fees, or defend in a reexamination or opposition proceeding on a patent, in any country, not less than 30 days before the expiration of the response or filing period required by the relevant patent office.

(4) The Contractor shall include, within the specification of any United States nonprovisional patent or plant variety protection application and any patent or plant variety protection certificate issuing thereon covering a subject invention, the following statement, "This invention was made with Government support under (identify the contract) awarded by (identify the agency). The Government has certain rights in the invention."

(f) Reporting on utilization of subject inventions. The Contractor shall submit, on request, periodic reports no more frequently than annually on the utilization of a subject invention or on efforts at obtaining utilization of the subject invention that are being made by the Contractor or its licensees or assignees. The reports shall include information regarding the status of development, date of first commercial sale or use, gross royalties received by the Contractor, and other data and information as the agency may reasonably specify. The Contractor also shall provide additional reports as may be requested by the agency in connection with any march-in proceeding undertaken by the agency in accordance with paragraph (h) of this clause. The Contractor also shall mark any utilization report as confidential/proprietary to help prevent inadvertent release outside the Government. As required by 35 U.S.C. 202(c)(5), the agency will not disclose that information to persons outside the Government without the Contractor's permission.

(g) Preference for United States industry. Notwithstanding any other provision of this clause, neither the Contractor nor any assignee

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shall grant to any person the exclusive right to use or sell any subject invention in the United States unless the person agrees that any products embodying the subject invention or produced through the use of the subject invention will be manufactured substantially in the United States. However, in individual cases, the requirement for an agreement may be waived by the agency upon a showing by the Contractor or its assignee that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture substantially in the United States, or that under the circumstances domestic manufacture is not commercially feasible.

(h) March-in rights. The Contractor acknowledges that, with respect to any subject invention in which it has retained ownership, the agency has the right to require licensing pursuant to 35 U.S.C. 203 and 210(c), and in accordance with the procedures in 37 CFR 401.6 and any supplemental regulations of the agency in effect on the date of contract award.

(i) Special provisions for contracts with nonprofit organizations. If the Contractor is a nonprofit organization, it shall--

(1) Not assign rights to a subject invention in the United States without the written approval of the agency, except where an assignment is made to an organization that has as one of its primary functions the management of inventions, provided, that the assignee shall be subject to the same provisions as the Contractor;

(2) Share royalties collected on a subject invention with the inventor, including Federal employee co-inventors (but through their agency if the agency deems it appropriate) when the subject invention is assigned in accordance with 35 U.S.C. 202(e) and 37 CFR 401.10;

(3) Use the balance of any royalties or income earned by the Contractor with respect to subject inventions, after payment of expenses (including payments to inventors) incidental to the administration of subject inventions for the support of scientific research or education; and

(4) Make efforts that are reasonable under the circumstances to attract licensees of subject inventions that are small business concerns, and give a preference to a small business concern when licensing a subject invention if the Contractor determines that the small business concern has a plan or proposal for marketing the invention which, if executed, is equally as likely to bring the invention to practical application as any plans or proposals from applicants that are not small business concerns; provided, that the Contractor is also satisfied that the small business concern has the capability and resources to carry out its plan or proposal. The decision whether to give a preference in any specific case will be at the discretion of the Contractor.

(5) Allow the Secretary of Commerce to review the Contractor's licensing program and decisions regarding small business applicants, and negotiate changes to its licensing policies, procedures, or practices with the Secretary of Commerce when the Secretary's review discloses that the Contractor could take reasonable steps to more effectively implement the requirements of paragraph (i)(4) of this clause.

(j) Communications. N/A

(k) Subcontracts. (1) The Contractor shall include the substance of this clause, including this paragraph (k), in all subcontracts for experimental, developmental, or research work to be performed by a small business concern or nonprofit organization.

(2) The Contractor shall include in all other subcontracts for experimental, developmental, or research work the substance of the patent rights clause required by FAR Subpart 27.3.

(3) At all tiers, the patent rights clause must be modified to identify the parties as follows: references to the Government are not changed, and the subcontractor has all rights and obligations of the Contractor in the clause. The Contractor shall not, as part of the consideration for awarding the subcontract, obtain rights in the subcontractor's subject inventions.

(4) In subcontracts, at any tier, the agency, the subcontractor, and the Contractor agree that the mutual obligations of the parties created by this clause constitute a contract between the subcontractor and the agency with respect to the matters covered by the clause; provided, however, that nothing in this paragraph is intended to confer any jurisdiction under the Contract Disputes statute in connection with proceedings under paragraph (h) of this clause.

(End of clause)

(a) Definitions. Contracting Officer, as used in this clause, does not include any representative of the Contracting Officer.

Specifically Authorized Representative (SAR), as used in this clause, means any person the Contracting Officer has so designated by written notice (a copy of which shall be provided to the Contractor) which shall refer to this subparagraph and shall be issued to the

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designated representative before the SAR exercises such authority.

(b) Notice. The primary purpose of this clause is to obtain prompt reporting of Government conduct that the Contractor considers to constitute a change to this contract. Except for changes identified as such in writing and signed by the Contracting Officer, the Contractor shall notify the Administrative Contracting Officer in writing promptly, within ten (10) calendar days from the date that the Contractor identifies any Government conduct (including actions, inactions, and written or oral communications) that the Contractor regards as a change to the contract terms and conditions. On the basis of the most accurate information available to the Contractor, the notice shall state --

(1) The date, nature, and circumstances of the conduct regarded as a change;

(2) The name, function, and activity of each Government individual and Contractor official or employee involved in or knowledgeable about such conduct;

(3) The identification of any documents and the substance of any oral communication involved in such conduct;

(4) In the instance of alleged acceleration of scheduled performance or delivery, the basis upon which it arose;

(5) The particular elements of contract performance for which the Contractor may seek an equitable adjustment under this clause, including --

(i) What contract line items have been or may be affected by the alleged change;

(ii) What labor or materials or both have been or may be added, deleted, or wasted by the alleged change;

(iii) To the extent practicable, what delay and disruption in the manner and sequence of performance and effect on continued performance have been or may be caused by the alleged change;

(iv) What adjustments to contract price, delivery schedule, and other provisions affected by the alleged change are estimated; and

(6) The Contractors estimate of the time by which the Government must respond to the Contractors notice to minimize cost, delay or disruption of performance.

(c) Continued performance. Following submission of the notice required by paragraph (b) of this clause, the Contractor shall diligently continue performance of this contract to the maximum extent possible in accordance with its terms and conditions as construed by the Contractor, unless the notice reports a direction of the Contracting Officer or a communication from a SAR of the Contracting Officer, in either of which events the Contractor shall continue performance; provided, however, that if the Contractor regards the direction or communication as a change as described in paragraph (b) of this clause, notice shall be given in the manner provided. All directions, communications, interpretations, orders and similar actions of the SAR shall be reduced to writing promptly and copies furnished to the Contractor and to the Contracting Officer. The Contracting Officer shall promptly countermand any action which exceeds the authority of the SAR.

(d) Government response. The Contracting Officer shall promptly, within ten (10) calendar days after receipt of notice, respond to the notice in writing. In responding, the Contracting Officer shall either --

(1) Confirm that the conduct of which the Contractor gave notice constitutes a change and when necessary direct the mode of further performance;

(2) Countermand any communication regarded as a change;

(3) Deny that the conduct of which the Contractor gave notice constitutes a change and when necessary direct the mode of further performance; or

(4) In the event the Contractors notice information is inadequate to make a decision under subparagraphs (d)(1), (2), or (3) of this clause, advise the Contractor what additional information is required, and establish the date by which it should be furnished and the date thereafter by which the Government will respond.

(e) Equitable adjustments.

(1) If the Contracting Officer confirms that Government conduct effected a change as alleged by the Contractor, and the conduct causes an increase or decrease in the Contractors cost of, or the time required for, performance of any part of the work under this contract, whether changed or not changed by such conduct, an equitable adjustment shall be made --

(i) In the contract price or delivery schedule or both; and

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(ii) In such other provisions of the contract as may be affected.

(2) The contract shall be modified in writing accordingly. In the case of drawings, designs or specifications which are defective and for which the Government is responsible, the equitable adjustment shall include the cost and time extension for delay reasonably incurred by the Contractor in attempting to comply with the defective drawings, designs or specifications before the Contractor identified, or reasonably should have identified, such defect. When the cost of property made obsolete or excess as a result of a change confirmed by the Contracting Officer under this clause is included in the equitable adjustment, the Contracting Officer shall have the right to prescribe the manner of disposition of the property. The equitable adjustment shall not include increased costs or time extensions for delay resulting from the Contractors failure to provide notice or to continue performance as provided, respectively, in paragraphs (b) and (c) of this clause.

NOTE: The phrases contract price and cost wherever they appear in the clause, may be appropriately modified to apply to cost-reimbursement or incentive contracts, or to combinations thereof.

(End of Clause)

I-63 252.235-7010 ACKNOWLEDGMENT OF SUPPORT AND DISCLAIMER MAY/1995

(a) The Contractor shall include an acknowledgment of the Government's support in the publication of any material based on or developed under this contract, stated in the following terms: This material is based upon work supported by the Army Contracting Command - Warren under Contract No. (TBD).

(b) All material, except scientific articles or papers published in scientific journals, must, in addition to any notices or disclaimers by the Contractor, also contain the following disclaimer: Any opinions, findings and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the Army Contracting Command - Warren.

(End of clause)

I-64 52.219-28 POST-AWARD SMALL BUSINESS PROGRAM REREPRESENTATION JUL/2013

(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.

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(h) The Government's rights in data furnished under this contract with respect to hazardous material are as follows:

(1) To use, duplicate and disclose any data to which this clause is applicable. The purposes of this right are to --

(i) Apprise personnel of the hazards to which they may be exposed in using, handling, packaging, transporting, or disposing of hazardous materials;

(ii) Obtain medical treatment for those affected by the material; and

(iii) Have others use, duplicate, and disclose the data for the Government for these purposes.

(2) To use, duplicate, and disclose data furnished under this clause, in accordance with subparagraph (h)(1) of this clause, in precedence over any other clause of this contract providing for rights in data.

(3) The Government is not precluded from using similar or identical data acquired from other sources.

(End of Clause)

I-66 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:

<http://www.acq.osd.mil/dpap/dars/far.html> or <http://www.acq.osd.mil/dpap/dars/index.htm> or <http://farsite.hill.af.mil/VFAFARA.HTM>

(End of Clause)

I-67 52.252-6 AUTHORIZED DEVIATIONS IN CLAUSES APR/1984

(a) The use in this solicitation or contract of any Federal Acquisition Regulation (48 CFR Chapter 1) clause with an authorized deviation is indicated by the addition of (DEVIATION) after the date of the clause.

(b) The use in this solicitation or contract of any DoD FAR SUPPLEMENT (48 CFR 2) clause with an authorized deviation is indicated by the addition of (DEVIATION) after the name of the regulation.

(End of Clause)

I-68 52.204-4009 MANDATORY USE OF CONTRACTOR TO GOVERNMENT ELECTRONIC COMMUNICATION MAR/2005

(a) All references in the contract to the submission of written documentation shall mean electronic submission. All electronic submissions shall be in the formats and media described in the website:

<http://contracting.tacom.army.mil/acqinfo/ebidnotice.htm>

(b) This shall include all written unclassified communications between the Government and the Contractor except contract awards and contract modifications which shall be posted on the internet. Return receipt shall be used if a commercial application is available. Classified information shall be handled in full accordance with the appropriate security requirements.

(c) In order to be contractually binding, all Government communications requiring a Contracting Officer signature must be sent from the Contracting Officer's e-mail address. The Contractor shall designate the personnel with signature authority who can contractually bind the contractor. All binding contractor communication shall be sent from this contractor e-mail address(es).

(d) Upon award, the Contractor shall provide the Contracting Officer with a list of e-mail addresses for all administrative and technical personnel assigned to this contract.

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(e) Unless exempted by the Procuring Contracting Officer in writing, all unclassified written communication after contract award shall be transmitted electronically.

[End of Clause]

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SECTION J - LIST OF ATTACHMENTS

<u>List of</u> <u>Addenda</u>	<u>Title</u>	<u>Date</u>	<u>Number</u> <u>of Pages</u>	<u>Transmitted By</u>
Exhibit A	CONTRACT DATA REQUIREMENTS LIST			

1. DATA ITEM NO.: A001
2. TITLE OF DATA ITEM: Report, Record of Meeting Minutes
3. SUBTITLE.....: Teleconference Meeting Minutes
4. AUTHORITY.....: DI-ADMN-81505
5. CONTRACT REFERENCE: C.3.1.2
6. REQUIRING OFFICE...: RDTA-SIE-ES-FPT-FLT
7. DD250 REQ: DD
8. APP CODE: N/A
9. DIST. STATEMENT REQUIRED: DISTRIBUTUION STATEMENT B. Distribution authorized to U.S. Government agencies only (Administrative or Operational Use) (17 June 2014). Other requests for this document shall be referred to US Army RDECOM-TARDEC, RDTA-SIE-ES-FPT-FLT, MS 110.
10. FREQUENCY.....: After each weekly teleconference
11. AS OF DATE.....: Date of Contract Award
12. DATE OF FIRST SUB: See Item 16a
13. DATE OF SUBS. SUB: See Item 16a
14. DISTRIBUTION ADDRESSEES: SUBMIT REPORTS ELECTRONICALLY TO THE E-MAIL ADDRESSES SHOWN IMMEDIATELY BELOW:

14a) Bridget Dwornick, Contracting Officer's Representative (COR)
Email: bridget.l.dwornick.civ@mail.mil

14b) Jill Bramer, Alternate COR
Email: jill.m.bramer.civ@mail.mil

15. TOTAL: One copy per addressee listed in block 14.

16. REMARKS:

16a. The initial teleconference shall be held within seven days after the contract award date, and subsequent teleconferences are required to be held every week thereafter until the period of performance is complete. The contractor shall prepare and deliver a set of teleconference meeting minutes (for each teleconference) within five days after the teleconference.

16b. Complete the reports IAW DI-ADMN-81505, Report, Record of Meeting Minutes. The COR is responsible for accepting or rejecting the meeting minutes.

17. PRICE GROUP: N/A

18. ESTIMATED TOTAL PRICE: N/A

1. DATA ITEM NO.: A002
2. TITLE OF DATA ITEM: Report, Record of Meeting Minutes
3. SUBTITLE.....: Project Review Meeting Minutes
4. AUTHORITY.....: DI-ADMN-81505
5. CONTRACT REFERENCE: C.3.2.1
6. REQUIRING OFFICE...: RDTA-SIE-ES-FPT-FLT
7. DD250 REQ: DD
8. APP CODE: N/A
9. DIST. STATEMENT REQUIRED: DISTRIBUTUION STATEMENT B. Distribution authorized to U.S. Government agencies only (Administrative or Operational Use) (17 June 2014). Other requests for this document shall be referred to US Army RDECOM-TARDEC, RDTA-SIE-ES-FPT-FLT, MS 110.
10. FREQUENCY.....: After each Project Review Meeting; First Project Review Meeting is six months after contract award date and the Second Project Review Meeting is 30 days prior to contract completion date.
11. AS OF DATE.....: Six months after contract award date and 30 days prior to contract completion date.
12. DATE OF FIRST SUB: See Item 16a
13. DATE OF SUBS. SUB: See Item 16a
14. DISTRIBUTION ADDRESSEES: SUBMIT REPORTS ELECTRONICALLY TO THE E-MAIL ADDRESSES SHOWN IMMEDIATELY BELOW:

14a) Bridget Dwornick, Contracting Officer's Representative (COR)
Email: bridget.l.dwornick.civ@mail.mil

14b) Jill Bramer, Alternate COR
Email: jill.m.bramer.civ@mail.mil

14c) Delle Ramsey, Contract Specialist
Email: delle.v.ramsey.civ@mail.mil

14d) Cognizant ACO, Office of Naval Research
Email: joshua.kabisch@navy.mil

15. TOTAL: One copy per addressee listed in block 14.

16. REMARKS:

16a. The contractor shall prepare and deliver a set of project meeting minutes (for each project review meeting) within five days after each project review meeting to the COR.

16b. Complete the reports IAW DI-ADMN-81505, Report, Record of Meeting Minutes. The COR is responsible for accepting or rejecting the meeting minutes.

17. PRICE GROUP: N/A

18. ESTIMATED TOTAL PRICE: N/A

1. DATA ITEM NO: A003
2. TITLE OF DATA ITEM: Contractor's Progress, Status, and Management Report
3. SUBTITLE: Bi-Monthly Progress, Status and Management Report
4. AUTHORITY: DI-MGMT-80227
5. CONTRACT REFERENCE: C.4.3
6. REQUIRING OFFICE.: RDTA-SIE-ES-FPT-FLT
7. WAWF/DD250 REQ.: LT
8. APP CODE: N/A
9. DIST. STATEMENT REQUIRED: DISTRIBUTUION STATEMENT B. Distribution authorized to U.S. Government agencies only (Proprietary Information) (17 June 2014). Other requests for this document shall be referred to US Army RDECOM-TARDEC, RDTA-SIE-ES-FPT-FLT, MS 110.
10. FREQUENCY: See Block 16
11. AS OF DATE: See Block 16
12. DATE OF FIRST SUB: See Block 16
13. DATE OF SUBS. SUB: See Block 16
14. DISTRIBUTION ADDRESSEES: DELIVER REPORTS ELECTRONICALLY TO THE E-MAIL ADDRESSES SHOWN IMMEDIATELY BELOW:

14a) Bridget Dwornick, Contracting Officer's Representative (COR)
Email: bridget.l.dwornick.civ@mail.mil

14b) Jill Bramer, Alternate COR
Email: jill.m.bramer.civ@mail.mil

14c) Delle Ramsey, Contract Specialist
Email: delle.v.ramsey.civ@mail.mil

14d) Cognizant ACO, Office of Naval Research
Email: joshua.kabisch@navy.mil

15. TOTAL: See Block 16

16. REMARKS:

a. Complete this report in accordance with (IAW) Data Item Description (DID) DI-MGMT-80227, Contractor's Progress, Status and Management Report. For instructions on completing this CDRL, see DID DI-MGMT-80227 at the following internet address:
http://assistdocs.com/search/document_details.cfm?ident_number=204779&StartRow=1&PaginatorPageNumber=1&doc%5Fid=DI%2DMGMT%2D80227&status%5Fall=ON&search%5Fmethod=BASIC. DI-MGMT-80227 is tailored by deleting 10.2, 10.3(k), and 10.3(1)

b. The Contractor shall prepare, in its chosen format, and submit a Bimonthly Progress, Status, and Management Report (including project

cost data). The first report shall be submitted 60 days after the contract award date, and subsequent reports shall be submitted every 60 days thereafter.

c. Each report shall summarize the work completed, including test plans, experimental analyses, project milestones reached, problems and/or delays encounter (with resolution status), all project cost-related reporting data, and the status of any other significant contractually-related matters.

- 17. PRICE GROUP: N/A
- 18. ESTIMATED TOTAL PRICE: N/A
- 1. DATA ITEM NO.: A004
- 2. TITLE OF DATA ITEM: Scientific and Technical Reports
- 3. SUBTITLE: Internal Technical Reports
- 4. AUTHORITY: DI-MISC-80711A
- 5. CONTRACT REFERENCE: C.4.4 & C.4.4.1
- 6. REQUIRING OFFICE: RDTA-SIE-ES-FPT-FLT
- 7. WAWF/DD250 REQ: DD
- 8. APP CODE: A
- 9. DIST. STATEMENT REQUIRED: DISTRIBUTUION STATEMENT B. Distribution authorized to U.S. Government agencies only (Proprietary Information) (17 June 2014). Other requests for this document shall be referred to US Army RDECOM-TARDEC, RDTA-SIE-ES-FPT-FLT, MS 110.
- 10. FREQUENCY: See Block 16
- 11. AS OF DATE: See Block 16
- 12. DATE OF FIRST SUB: See Block 16
- 13. DATE OF SUBS. SUB: See Block 16
- 14. DISTRIBUTION ADDRESSEES: DELIVER REPORTS ELECTRONICALLY TO THE E-MAIL ADDRESSES SHOWN IMMEDIATELY BELOW:

14a) Bridget Dwornick, Contracting Officer's Representative (COR)
Email: bridget.l.dwornick.civ@mail.mil

14b) Jill Bramer, Alternate COR
Email: jill.m.bramer.civ@mail.mil

14c) Delle Ramsey, Contract Specialist
Email: delle.v.ramsey.civ@mail.mil

14d) Cognizant ACO, Office of Naval Research
Email: joshua.kabisch@navy.mil

15. TOTAL: See Block 16

16. REMARKS:

a. Complete the internal technical reports (draft and final) in accordance with (IAW) Data Item Description (DID) DI-MISC-80711A, Scientific and Technical Reports. For instructions on completing this required report, see DID DI-MISC-80711A at the following internet address:
http://assistdocs.com/search/document_details.cfm?ident_number=204944&StartRow=1&PaginatorPageNumber=1&doc%5Fid=DI%2DMISC%2D80711A&status%5Fall=ON&search%5Fmethod=BASIC. DI-MISC-80711A is tailored by deleting 10.2.

b. The contractor shall prepare and deliver a Draft Internal Technical Report, summarizing the synthesis of the xGnP and the creation of the xGnP nanofluids. This Report shall at a minimum include the detailed characterization of the synthesized xGnP and resulting nanofluid such as the chemical composition, size, and distribution of the xGnP, any functionalization to include surface chemistry of the xGnP, and any additional information.

c. This Report shall be provided in draft form to the COR for review and concurrence NLT 30 calendar days before the Contract completion date. The COR will review and respond to the contractor within 15 calendar days of receipt, with any necessary suggestions and/or corrections. After receiving the CORs feedback, the contractor shall then revise the draft to incorporate any COR-recommended changes, and prepare and submit the final revision of the Internal Technical Report within seven calendar days of receipt of COR comments or concurrence.

17. PRICE GROUP: N/A

18. ESTIMATED TOTAL PRICE: N/A

1. DATA ITEM NO.: A005
2. TITLE OF DATA ITEM: Scientific and Technical Reports
3. SUBTITLE: External Technical Reports
4. AUTHORITY: DI-MISC-80711A
5. CONTRACT REFERENCE: C.4.4 & C.4.4.2
6. REQUIRING OFFICE: RDTA-SIE-ES-FPT-FLT
7. WAWF/DD250 REQ: DD
8. APP CODE: A
9. DIST. STATEMENT REQUIRED: DISTRIBUTION STATEMENT A. Approved for public release.
10. FREQUENCY: See Block 16
11. AS OF DATE: See Block 16
12. DATE OF FIRST SUB: See Block 16
13. DATE OF SUBS. SUB: See Block 16
14. DISTRIBUTION ADDRESSEES: DELIVER REPORTS ELECTRONICALLY TO THE E-MAIL ADDRESSES SHOWN IMMEDIATELY BELOW:

14a) Bridget Dwornick, Contracting Officer's Representative (COR)
Email: bridget.l.dwornick.civ@mail.mil

14b) Jill Bramer, Alternate COR
Email: jill.m.bramer.civ@mail.mil

14c) Delle Ramsey, Contract Specialist
Email: delle.v.ramsey.civ@mail.mil

14d) Cognizant ACO, Office of Naval Research
Email: joshua.kabisch@navy.mil

15. TOTAL: See Block 16

16. REMARKS:

a. Complete the external technical reports (draft and final) in accordance with (IAW) Data Item Description (DID) DI-MISC-80711A, Scientific and Technical Reports. For instructions on completing this required report, see DID DI-MISC-80711A at the following internet address:

http://assistdocs.com/search/document_details.cfm?ident_number=204944&StartRow=1&PaginatorPageNumber=1&doc%5Fid=DI%2DMISC%2D80711A&status%5Fall=ON&search%5Fmethod=BASIC. DI-MISC-80711A is tailored by deleting 10.2.

b. The contractor shall prepare and deliver a Draft External Technical Report for public release with the intent to publish in a peer reviewed forum.

c. This report shall be delivered in draft form to the COR for review and concurrence NLT 30 calendar days before the Contract completion date. The COR will review and respond to the contractor within 15 calendar days of receipt, with any necessary suggestions and/or corrections. The contractor shall then revise the draft report to incorporate any COR-recommended changes and prepare and submit the final revision of the External Technical Report (for any needed OPSEC review) within seven calendar days of receipt of the CORs feedback.

17. PRICE GROUP: N/A

18. ESTIMATED TOTAL PRICE: N/A