

AWARD/CONTRACT		1. This Contract Is A Rated Order Under DPAS (15 CFR 700)		▶	Rating DOA4		Page 1 Of 21			
2. Contract (Proc. Inst. Ident) No. W56HZV-04-C-0776		3. Effective Date 2004SEP27		4. Requisition/Purchase Request/Project No. SEE SCHEDULE						
5. Issued By TACOM WARREN AMSTA-AQ-ABGD PHILLIP LAWRENCE (586)574-5273 WARREN, MICHIGAN 48397-5000 HTTP://CONTRACTING.TACOM.ARMY.MIL e-mail address: LAWRENCPT@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			
7. Name And Address Of Contractor (No. Street, City, County, State, And Zip Code) WAYNE STATE UNIVERSITY-OFFICE OF SPONSORED PROGRAMS 656 WEST KIRBY 4001 FACULTY ADMINISTRATION BUILDING DETROIT, MI. 48202-3622 TYPE BUSINESS: Other Educational		Code 2B019		Facility Code		8. Delivery <input type="checkbox"/> FOB Origin <input checked="" type="checkbox"/> Other (See Below) SEE SCHEDULE				
11. Ship To/Mark For SEE SCHEDULE		Code		12. Payment Will Be Made By DFAS-CH CODE FP P.O. BOX 118054 CHARLESTON SC 29423-8054			Code N68892			
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 ACRN: AA 21 42040000046N6N7EP611103255Y S20113 W56HZV								
15A. Item No. SEE SCHEDULE		15B. Schedule Of Supplies/Services CONTRACT TYPE: Cost Contract		15C. Quantity		15D. Unit		15E. Unit Price		15F. Amount
15G. Total Amount Of Contract ▶								\$1,200,000.00		
16. Table Of Contents										
(X)	Section	Description	Page(s)	(X)	Section	Description	Page(s)			
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X	D	Packaging and Marking	7	Part IV - Representations And Instructions						
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X	F	Deliveries or Performance	9		L	Instrs., Conds., and Notices to Offerors				
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Contracting Officer Will Complete Item 17 Or 18 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"/> Award (Contractor is not required to sign this document.) Your offer 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 offer, and (b) this award/contract. No further contractual document is necessary.						
19A. Name And Title Of Signer (Type Or Print)				20A. Name Of Contracting Officer MICHAEL L. CIONI CIONIM@TACOM.ARMY.MIL (586)574-7070						
19B. Name of Contractor			19c. Date Signed		20B. United States Of America			20C. Date Signed 2004SEP27		
By _____ (Signature of person authorized to sign)					By _____ /SIGNED/ (Signature of Contracting Officer)					

CONTINUATION SHEET**Reference No. of Document Being Continued****Page 3 of 21****PIIN/SIIN** W56HZV-04-C-0776**MOD/AMD****Name of Offeror or Contractor:** WAYNE STATE UNIVERSITY-OFFICE OF SPONSORED PROGRAMS**B.1** Estimated Cost and Payment

B.1.1 The estimated cost for performance of the work required under this contract is \$1,200,000 which shall constitute the estimated cost for the purpose of the Contract Clause hereof entitled LIMITATION OF COST.

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.

B.2 Payment

The contractor may submit public vouchers bi-monthly for payment under this contract. The Paying Office shall disburse funds in accordance with the paragraph G.3 of this contract entitled "Special Instructions - Pay Oldest Money First (MAR2000)".

*** END OF NARRATIVE B 001 ***

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SECTION C - DESCRIPTION/SPECIFICATIONS/WORK STATEMENT

Statement of Work

C.1 Summary - The Contractor shall conduct advanced research aimed at innovatively solving fundamental, critical low temperature energy and environmental problems for both military and commercial vehicles. The research will address key vehicle components and will include five interacting tasks examining low temperature phenomena within: engine combustion environments, alternate fuels, engine tribology, fuel cells, energy storage- including batteries, and natural environmental low temperature testing of both military and commercial vehicles. Within these areas, the Contractor will focus on the fundamental research needed to gain more insight and a better understanding of the the physical and chemical processes that impact the operation of military and commercial systems under extreme low temperature conditions. Contractor research efforts include formulation of mathematical models, techniques and strategies that can be applied to various significant systems under low temperature conditions. Also, these contractor outputs will be validated by unique and sophisticated low temperature experiments at both the component and systems levels, and will address the real issues that military vehicles/components face in the field. Building upon existing unique Contractor knowledge and experimental laboratory/test environment facilities, the Contractor shall perform fundamental research in the low temperature phenomena area for both military and commercial vehicles/components using new analysis and diagnostic techniques which build upon an existing expertise and low temperature equipment resource that has been previously, comprehensively demonstrated for both military and commercial ground vehicles. Advanced laser based diagnostic techniques will also be used in a unique ground breaking manner to better understand the complex interaction between the thermodynamics, combustion and dynamic processes in engines/vehicles under extreme low temperature ambient temperatures.

C.2 Engine Combustion Under Low Ambient Temperatures- The contractor shall focus on improving the cold starting of diesel engines by formulating and developing new strategies to control critical engine parameters to achieve prompt, reliable starting without the emission of unburned fuel that appears as white smoke. The contractor shall focus on using both commercial diesel fuel and the military unique JP-8 fuel. Sophisticated experimentation and validation shall be conducted within an existing state-of-the-art cold room and in an extreme natural extreme low temperature environment, and shall utilize a new optically accessible engine using low temperature diagnostic instrumentation.

C.2.1 Characteristics of Advanced Fuel Injection Systems During Cold Starting of Diesel Engines- The contractor shall perform fundamental low temperature phenomena investigations using relevant state-of-the-art advanced fuel injection systems, for example, Common Rail Injection Systems and HEUI Injection Systems. Within an extreme low temperature environment, perform analytical modeling and unique experimental validation of the injection system phenomenological characteristics. Determine fundamental insights into the mechanistic principles of these advanced injection systems under extreme low ambient temperature conditions and recommend approaches which would enhance performance under real world conditions for both military and commercial ground vehicle propulsion systems. Representative advanced fuel injection parameters of significance include, but are not limited to, fuel pressure, fuel injection timing, injection period(s) including multiple injections, and injection duration and lift profiles.

C.2.2 Formulation of Control Strategies to Improve Cold Starting of a Multi-cylinder Diesel Engine with a Common Rail Injection System at Low Ambient Temperatures- The contractor shall derive new theoretical foundations of the thermodynamics, combustion processes and engine dynamics during the cold start of multi-cylinder diesel engines. The significant factors controlling diesel cold start through a cycle-by-cycle and cylinder-by-cylinder set of synergies shall be analyzed and experimentally validated in order to provide recommendations regarding cold-start fuel injection control strategies and their application to current and future military and commercial vehicles under severe operating conditions, including both off-road and on-road scenarios.

C.2.3 Fuel Spray Dynamics, Autoignition and Combustion During Cold Starting of Diesel Engines - Extreme cold conditions have profound effects on the evolution of the spray in diesel engines and its interaction with cold cylinder wall boundary conditions. Some of these effects manifest themselves in spray dynamics, autoignition, and combustion processes, and within the profiles of unburned fuels in the form of white smoke. The contractor shall perform analysis and experimental validation to develop correlations and analytical models to determine characteristics of diesel sprays under the transient conditions of diesel cold start. Unique experimental validation will include use of optically accessible vessels and a research engine to obtain spray images by using high speed photography, laser light extinction and scattering, laser induced fluorescence and phase doppler particle analysis. Additional innovative instrumentation shall be used to isolate low temperature effects of fuel spray characteristics, as required. Analytical models derived will focus on developing detailed multi-zone versions covering the entire engine cycle, accounting for gas exchange, in-cylinder processes, pollutant emissions and engine dynamics.

C.2.4 Development of an Innovative Diesel Combustion Diagnostic and Control Sensor - The contractor shall develop and evaluate diesel combustion diagnostic and control sensors which would have high potential to perform functions such as: 1) replace the glow plug usually used to solve the diesel cold start problem, and 2) produce a signal initiated by the ionized combustion products, or indicative of initiation of combustion. These functions are critical to control and cold start enhancements in diesel engines and the contractor shall demonstrate evidence of success in meeting these goals under severe conditions, particularly under extreme low temperature condition, through both unique mathematical analysis modeling and sophisticated experimental verification on an optically accessed research engine.

C.3 Alternate Fuels and their Characteristics within the Low Temperature Environments of Advanced Diesel Engines- Obtain fundamental

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insights into the use of alternate fuels in diesel engines under extreme low temperature conditions. The primary issue in the use of alternate fuels in diesel engines is the lack of proper understanding of the effect of the different critical alternate fuel properties like volatility, cetane number, viscosity, compressibility, and density relative on engine performance characteristics including fuel economy, emissions, cold start, and transient power. The contractor shall perform the following: 1) analytical quantification of alternate fuel effects on advanced fuel injection system responses like fluid pressure wave transmittance, orifice metering efficiency, cavitation, lubricity, and bulk high pressure compressibility, 2) analytical model derivation describing the interactions between the sprays and the cold walls of the combustion chamber, and 3) the development of detailed reaction kinetics data for the autoignition and combustion reactions for these alternate fuels. Representative alternate fuels include JP-8, various viscosities of diesel fuel, biodiesel, natural gas, dimethyl ether, and Fischer-Tropsch. The use of alternate fuels on engine system wear and durability shall also be investigated and quantified by a combination of analytical modeling and innovative validation.

C.4 Engine Tribology Under Low Ambient Temperatures- The contractor shall determine the fundamental effects of low ambient temperature operation of diesel engines on the lubrication process, frictional loss mechanism, and engine wear/life. Quantify wear and fuel economy effects when starting an engine within an extremely cold environment, including operation near maximum power before complete engine warmup is reached.

C.4.1 Frictional Torque and Contributory Elements During Cold Start and Warm-up of Diesel Engines- In addition to the problems caused by combustion instability under cold starting conditions, the high viscosity of the lubricating oil increases engine friction thereby requiring a higher power from the electric starter. Reducing friction under such conditions will contribute to enhanced starting characteristics within a diesel engine. Within this task, the contractor shall identify possibilities to reduce friction at very low ambient temperatures, by 1) isolated engine testing to measure friction torque of its major components under low temperature conditions, and 2) detailed measurement of the power requirements of engine auxiliaries (injection pump, oil pump, water pump, etc.) at low temperature. In addition, in military applications, it is important that after a cold start, the engine may be subjected to a fairly high load. This operating phenomena shall be investigated from the standpoint of engine control, fuel consumption, and wear. Wear measurement of the liner and piston-ring assembly after repeated cold starting events followed by high load application shall be made and conclusions formulated. Mathematical analysis models for low temperature friction of different engine parts shall be developed and experimentally validated.

C.4.2 Behavior of Lubricating Oils Used in High Power Density Engines at Low Ambient Temperature: Petroleum Base Oils, Synthetic Oils, and Use of Selected Varying Additives- The contractor shall perform analytical modeling and experimental validation to describe the major influence of the quality of lubrication oils and selected additives on engine friction and wear, and on deposits produced in the intake manifold and in the combustion chamber. New, original experimental techniques have been developed to measure friction of different components of the engine in order to validate the simulation models. Quantify results with uncertainty considerations included, and formulate conclusions and recommendations which could be implemented within relevant military and commercial applications.

C.4.3 Prediction of the Instantaneous Frictional Losses in Internal Combustion Engines Under Low Ambient Temperatures - The contractor shall formulate an analytical model capable of yielding accurate predictions of the instantaneous frictional losses in internal combustion engines. Building upon the knowledge of deficiencies using currently known approaches, determine the pure rigid body angular velocity of the crankshaft by estimating the structural deformations of the crank-slider mechanism and use the estimations to extract the rigid body behavior of the crankshaft from the measured angular velocity signal. Determine uncertainty of this estimation approach as a result of disturbances and modeling uncertainties of the system. Validate the derived model through relevant engine test validation approaches.

C.4.4 Effect of Lubricants, Coatings and Surface Modifications on Friction and Wear of Engines Under Low Temperatures - The contractor shall formulate a theoretical model to predict the friction and wear of coating systems on cylinder bore and piston ring assemblies at low temperatures. Development of the application potential of solid lubricant coatings on engine parts at low temperatures is important for promoting engine fuel economy in cold regions. Low temperature may induce tribological problems on engine parts such as corrosion due to tribochemical reaction between condensed water and lubricant starvation at cold start. The synergistic effect of these factors may result in severe wear on cylinder bore and piston ring assemblies in extreme cold climate. The theoretical model shall address relevant additional critical factors which result in coating performance and wear tradeoffs and integrate the combination of fundamental analysis with detailed experimental model validation.

C.4.5 Effect of Low-temperature Lubricants on the Performance and Durability of Military and Civilian Vehicles - Develop an enhanced basic understanding of the effects of different lubricants on the friction and wear of relevant military and commercial vehicles/engines. To achieve this understanding for military and commercial vehicles/engines the contractor shall perform the following: 1) develop a data base of low-temperature lubricants, 2) identify physical, chemical, compositional and mechanical parameters of low temperature lubricants, 3) identify military and civilian specifications, test standards and procedures of low temperature lubricants, 4) identify testing equipment and requirements for low-temperature lubricants, 5) identify vehicle subsystems and components that affect the low-temperature performance of vehicles, 6) identify fundamental areas of concern such as friction, wear, emissions, cold start, pumpability, safety, comfort and their interactions, 7) identify and develop test procedures and equipment for the above areas of concern, 8) identify and develop simulation models, tools for the above areas of concern, and 9) identify and develop acceptance criteria related to low-temperature performance and durability of above vehicles.

C.5 Fuel Cell Characteristics at Low Temperatures - The contractor shall conduct experiments on a PEM fuel cell to determine the effect

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of membrane type on low temperature operation. Also, the investigation shall cover the effects of extreme environmental range through operation in excess of 120 C and examination of the effect of external hydration at elevated temperatures. The challenge is to develop non-intrusive sensors that can be inserted into stack components. The non-intrusive nature must be stressed, as shown by the various attempts that have been reported in the area of segmented fuel cells, where the total electrode area is broken into segments so that local current densities can be monitored. A second challenge, the contractor shall develop better diagnostics based on time and frequency domain methodologies, based on first principles as opposed to the common equivalent circuit approach.

C.6 Low-Temperature Behavior of Batteries The contractor shall carry out low temperature battery characterization in a cold chamber using appropriate drive cycles and batteries for both hybrid-electric and conventional versions of the HMMWV (both traction batteries and engine start batteries shall be examined). The investigation as described above will allow an examination of battery efficiency under real-world conditions with temperature controlled independently, and will serve as a baseline study of battery performance for future military and commercial vehicles.

C.7 Natural Environmental Testing of Vehicles at Low Temperatures - The contractor shall utilize unique natural environmental resources to perform full-scale vehicle/component testing over extreme ambient temperature ranges from -50F to 90F. Using these unique natural environments, the contractor shall establish computer controlled testing environments which utilize extremely cold(to -50F) natural ambient air to complement other real low temperature field tests. The contractor shall perform vehicle/engine demonstration testing to validate the real world low temperature simulation accuracy of this task, and further justify expansion of the unique natural environment testing and evaluation segments of the task. Additionally, the task shall include investigating on-board instrumentation systems, including miniature wireless sensor and sensor arrays, for unique experimental data collection under extremely low temperatures. This work shall incorporate such miniature sensor concepts into low temperature military and commercial vehicle evaluations, and shall provide conclusions and recommendations concerning possible follow on work.

C.8 Deliverables - Quarterly progress reports will be provided for the contract beginning ninety days after award of the contract and every ninety days after until completion. A yearly final report will be prepared and delivered describing all the work done on the baseline task during the subject year.

*** END OF NARRATIVE C 001 ***

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SECTION D - PACKAGING AND MARKING

D.1 Packaging

D.1.1 The Contractor shall package all data deliverables under this contract in accordance with standard commercial practice to ensure arrival at destination without damage or loss.

D.2 Marking

D.2.1 Software. The Contractor shall mark all data deliverables under this contract with this contract number, the contractor's name and address and, where applicable, the name and address of the subcontractor who generated the data.

*** END OF NARRATIVE D 001 ***

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SECTION E - INSPECTION AND ACCEPTANCE

	<u>Regulatory Cite</u>	<u>Title</u>	<u>Date</u>
E-1	52.246-8	INSPECTION OF RESEARCH AND DEVELOPMENT--COST-REIMBURSEMENT (ALTERNATE I (APR 1984))	APR/1984
E-2	52.246-4030 (TACOM)	INSPECTION POINT: DESTINATION	AUG/1994

We'll make our Procurement Quality Assurance inspection at the destination(s) listed in the Schedule. We'll be checking the supplies to make sure they conform with applicable drawings and specifications.

[End of Clause]

E-3	52.246-4031 (TACOM)	ACCEPTANCE POINT: DESTINATION	AUG/1994
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The Government will accept the supplies at the destination(s) listed in the Schedule.

[End of Clause]

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SECTION F - DELIVERIES OR PERFORMANCE

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

F.1.1 Data

F.1.2 The delivery schedule for the data items is found on Exhibit A, The Contract Data Requirements List (DD Form 1423).

F.1.3. All data deliverables under this contract shall be delivered electronically to the email addresses specified in the Contract Data Requirements List (CDRL) DD Form 1423.

F.2 Period of Performance

F.2.1 The period of performance of this contract is 14 months from contract award.

F.3 All hardcopy documents shall be shipped FOB Destination to the following address:

U.S.Army TACOM
Attn: AMSTA-TR/MS 121 (Dr.Walter Brysik)
6501 E. 11 Mile Road
Warren, MI 48397-5000

All other deliverables must be sent by e-mail to the following addresses unless alternative arrangements are made with the Contracting Officer's Representative:

brysikw@tacom.army.mil, and lawrencp@tacom.army.mil.

F.3.1 The contractor shall deliver the following:

Contractor's Progress, Status, and Management Report in accordance with Contract Data Requirements List (CDRL)

Quarterly with first report due 90 days
after award

Final Scientific and Technical Report:

30 Days after completion of work

*** END OF NARRATIVE F 001 ***

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SECTION G - CONTRACT ADMINISTRATION DATA

LINE	PRON/ AMS CD/ ITEM	OBLG ACRN	STAT	ACCOUNTING CLASSIFICATION	JOB ORDER NUMBER	ACCOUNTING STATION	OBLIGATED AMOUNT
0001AA	R342C307R3 611103D5811	AA	2	21 42040000046N6N7EP611103255Y S20113	42C307	W56HZV \$	1,200,000.00
TOTAL							\$ 1,200,000.00

SERVICE NAME	TOTAL BY ACRN	ACCOUNTING CLASSIFICATION	ACCOUNTING STATION	OBLIGATED AMOUNT
Army	AA	21 42040000046N6N7EP611103255Y S20113	W56HZV	\$ 1,200,000.00
TOTAL				\$ 1,200,000.00

Regulatory Cite _____ Title _____ Date _____

G-1 *** THIS REFERENCE (GS6651) IS NO LONGER VALID ***

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

Name: Dr. Walter Brysik
e-mail: brysikw@tacom.army.mil

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

ACO: Andrew Cole
e-mail: onr.Chicago@onr.navy.mil

(c) 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-2 252.201-7000 CONTRACTING OFFICER'S REPRESENTATIVE DEC/1991

(a) Definition. Contracting Officer's Representative means an individual designated in accordance with subsection 201.602-2 of the Defense Federal Acquisition Regulation Supplement and authorized in writing by the contracting officer to perform specific technical or administrative functions.

(b) If the Contracting Officer designates a contracting officer's representative (COR), the Contractor will receive a copy of the written designation. It will specify the extent of the COR's authority to act on behalf of the contracting officer. The COR is not authorized to make any commitments or changes that will affect price, quality, quantity, delivery, or any other term or condition of the contract.

[End of Clause]

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SECTION H - SPECIAL CONTRACT REQUIREMENTS

	<u>Regulatory Cite</u>	<u>Title</u>	<u>Date</u>
H-1	252.205-7000	PROVISION OF INFORMATION TO COOPERATIVE AGREEMENT HOLDERS	DEC/1991
H-2	252.225-7001	BUY AMERICAN ACT AND BALANCE OF PAYMENTS PROGRAM	APR/2003
H-3	252.225-7002	QUALIFYING COUNTRY SOURCES AS SUBCONTRACTORS	APR/2003
H-4	252.225-7004	REPORTING OF CONTRACT PERFORMANCE OUTSIDE THE UNITED STATES	APR/2003
H-5	252.225-7013	DUTY-FREE ENTRY	JAN/2004
H-6	252.226-7001	UTILIZATION OF INDIAN ORGANIZATIONS, INDIAN-OWNED ECONOMIC ENTERPRISES, AND NATIVE HAWAIIAN SMALL BUSINESS CONCERNS	OCT/2003
H-7	252.227-7036	DECLARATION OF TECHNICAL DATA CONFORMITY	JAN/1997
H-8	252.227-7037	VALIDATION OF RESTRICTIVE MARKINGS ON TECHNICAL DATA	SEP/1999
H-9	252.235-7011	FINAL SCIENTIFIC OR TECHNICAL REPORT	SEP/1999
H-10	252.246-7000	MATERIAL INSPECTION AND RECEIVING REPORT	MAR/2003
H-11	252.246-7001	WARRANTY OF DATA	DEC/1991
H-12	252.225-7003	REPORT OF INTENDED PERFORMANCE OUTSIDE THE UNITED STATES	APR/2003
	(a)	The offeror shall submit a Report of Contract Performance Outside the United States, with its offer, if-	
		(1) The offer exceeds \$10 million in value; and	
		(2) The offeror is aware that the offeror or a first-tier subcontractor intends to perform any part of the contract outside the United States and Canada that-	
		(i) Exceeds \$500,000 in value; and	
		(ii) Could be performed inside the United States or Canada.	
	(b)	Information to be reported includes that for-	
		(1) Subcontracts;	
		(2) Purchases; and	
		(3) Intracompany transfers when transfers originate in a foreign location.	
	(c)	The offeror shall submit the report using-	
		(1) DD Form 2139, Report of Contract Performance Outside the United States; or	
		(2) A computer-generated report that contains all information required by DD Form 2139.	
	(d)	The offeror may obtain a copy of DD Form 2139 from the Contracting Officer.	
		(End of provision)	
H-13	252.227-7039	PATENTS -- REPORTING OF SUBJECT INVENTIONS	APR/1990
		The Contractor shall furnish the Contracting Officer the following:	
	(a)	Interim reports every twelve (12) months (or such longer period as may be specified by the Contracting Officer) from the date of the contract, listing subject inventions during that period and stating that all subject inventions have been disclosed or that there are no such inventions.	
	(b)	A final report, within three (3) months after completion of the contracted work, listing all subject inventions or stating that there were no such inventions.	
	(c)	Upon request, the filing date, serial number and title, a copy of the patent application and patent number, and issue data for any subject invention for which the Contractor has retained title.	
	(d)	Upon request, the Contractor shall furnish the Government an irrevocable power to inspect and make copies of the patent application file.	
		(End of clause)	
H-14	52.204-4005	REQUIRED USE OF ELECTRONIC CONTRACTING	JUN/2004
	(a)	All contract awards, modifications and delivery orders issued by TACOM 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) Central Contractor Registration (CCR). The CCR registration process may be done electronically at the World Wide Web (WWW) site: http://www.ccr.gov/ . (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	

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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 TACOM webpage:

- Warren: http://contracting.tacom.army.mil/awards_official.htm
- Rock Island: <http://aais.ria.army.mil/AAIS/AWDINFO/index.htm>
- Picatinny: <http://procnet.pica.army.mil/Contracts/Index.htm>
- Red River Army Depot: <http://www.redriver.army.mil/contracting/Awards>
- Anniston Army Depot: <http://www.anadprocnet.army.mil>

(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 CCR 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/ec/ecip/index.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. Acceptable formats include:

- (1) Microsoft* 2002 Office Products (TACOM can currently read Office 2002* and lower.): Word, Excel, Powerpoint, or Access
- (2) 100 or 250 MEGABYTE ZIP*-DISK, 3 1/2 INCH DISK, or 650 MEGABYTE CD ROM
- (3) E-MAIL (Maximum size of each e-mail message is be three and one-half (3.5) megabytes).
- (4) Other electronic formats. Before submitting your data in any other electronic format, please e-mail the buyer identified on the face of the contract, with e-mail copy-furnished to amsta-idq@tacom.army.mil, to obtain a decision as to the format's acceptability. This e-mail must be received by the buyer not later than ten calendar days before the required data submission date.

NOTE: The above formats may be submitted in compressed form using self-extracting files.

(f) Additional information can be obtained by sending a message to: acqcenweb@tacom.army.mil or by calling (586) 574-7059.

[End of Clause]

H-15 52.216-4008 STATUS OF FUNDS ON COST REIMBURSEMENT CONTRACTS/CLINS JUN/1989
(TACOM)

(a) The Contractor shall review the funding as it relates to work performed on the cost-reimbursement Contract Line Item Numbers (CLINs) under this contract and shall provide to the Procuring Contracting Officer (PCO) a written determination of what, if any, funds are excess to requirements (leaving a reasonable amount for final overhead rate negotiations and other reasonably predicted requirements) and are available for deobligation. This review shall be coordinated with the Administrative Contracting Officer (ACO), and the written determination shall be accomplished within 120 days of completion of performance under the CLIN. The report shall be prepared in terms of dollars available per Purchase Request Order Number (PRON), unless requested otherwise by the PCO.

(b) This report may be requested in writing by the PCO on additional occasions during the course of performance of work on cost-reimbursable CLINs contained in this contract. On such occasions, the written report shall be provided to the PCO within 14 days of Contractor receipt of the written request.

(End of clause)

H-16 52.246-4026 LOCAL ADDRESSES FOR DD FORM 250 JAN/2002
(TACOM)

(a) The contractor must provide a copy of each Material Inspection and Receiving Report (DD 250) pertaining to this contract, to the addresses given below, using either of the following methods:

- (1) Our first preference is for you to use electronic mail (e-mail), using the following e-mail address: DD250@tacom.army.mil

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(2) Our second preference is for you to use data facsimile (datafax) transmission, using this fax number: (586) 574-5527 and use "DD250 mailbox" in the "to:" block of your fax cover or header sheet.

In either method, do not mix DD250s from more than one contract in a single transmission. That is, you may submit multiple DD250s in a single transmission, but they must all be against the same contract.

(b) These copies meet the requirements for the Purchasing Office copy and the Army Inventory Control Manager copy listed in tables 1 and 2 of DFARS Appendix F.

(c) The DD250 form may be found, in three different formats, on the World Wide Web at <http://web1.whs.osd.mil/icdhome/DD-0999.htm>

[End of Clause]

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SECTION I - CONTRACT CLAUSES

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 address: <http://farsite.hill.af.mil/>

[End of Clause]

	<u>Regulatory Cite</u>	<u>Title</u>	<u>Date</u>
I-1	52.202-1	DEFINITIONS	JUL/2004
I-2	52.203-3	GRATUITIES	APR/1984
I-3	52.203-5	COVENANT AGAINST CONTINGENT FEES	APR/1984
I-4	52.203-6	RESTRICTIONS ON SUBCONTRACTOR SALES TO THE GOVERNMENT	JUL/1995
I-5	52.203-7	ANTI-KICKBACK PROCEDURES	JUL/1995
I-6	52.203-8	CANCELLATION, RESCISSION AND RECOVERY OF FUNDS FOR ILLEGAL OR IMPROPER ACTIVITY	JAN/1997
I-7	52.203-10	PRICE OR FEE ADJUSTMENT FOR ILLEGAL OR IMPROPER ACTIVITY	JAN/1997
I-8	52.203-12	LIMITATION ON PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS	JUN/2003
I-9	52.204-4	PRINTING/COPYING DOUBLE-SIDED ON RECYCLED PAPER	AUG/2000
I-10	52.209-6	PROTECTING THE GOVERNMENT'S INTEREST WHEN SUBCONTRACTING WITH CONTRACTORS DEBARRED, SUSPENDED, OR PROPOSED FOR DEBARMENT	JUL/1995
I-11	52.215-2 (ALT II)	AUDIT AND RECORDS - NEGOTIATION (ALTERNATE II--APR 1998)	JUN/1999
I-12	52.215-8	ORDER OF PRECEDENCE--UNIFORM CONTRACT FORMAT	OCT/1997
I-13	52.215-10	PRICE REDUCTION FOR DEFECTIVE COST OR PRICING DATA	OCT/1997
I-14	52.215-12	SUBCONTRACTOR COST OR PRICING DATA	OCT/1997
I-15	52.215-14	INTEGRITY OF UNIT PRICES (ALTERNATE I, (OCT 1997))	OCT/1997
I-16	52.216-7	ALLOWABLE COST AND PAYMENT note: Delete from paragraph (a) the words SUBPART 31.2 and substitute SUBPART 31.3	DEC/2002
I-17	52.216-11	COST CONTRACT--NO FEE (ALTERNATE I (1984 APR))	APR/1984
I-18	52.216-15	PREDETERMINED INDIRECT COST RATES	APR/1998
I-19	52.219-8	UTILIZATION OF SMALL BUSINESS CONCERNS	MAY/2004
I-20	52.219-9	SMALL BUSINESS SUBCONTRACTING PLAN	JAN/2002
I-21	52.219-16	LIQUIDATED DAMAGES - SUBCONTRACTING PLAN	JAN/1999
I-22	52.222-1	NOTICE TO THE GOVERNMENT OF LABOR DISPUTES	FEB/1997
I-23	52.222-20	WALSH-HEALEY PUBLIC CONTRACTS ACT	DEC/1996
I-24	52.222-21	PROHIBITION OF SEGREGATED FACILITIES	FEB/1999
I-25	52.222-26	EQUAL OPPORTUNITY	APR/2002
I-26	52.222-35	AFFIRMATIVE ACTION FOR DISABLED VETERANS AND VETERANS OF THE VIETNAM ERA	DEC/2001
I-27	52.222-36	AFFIRMATIVE ACTION FOR WORKERS WITH DISABILITIES	JUN/1998
I-28	52.222-37	EMPLOYMENT REPORTS ON SPECIAL DISABLED VETERANS, VETERANS OF THE VIETNAM ERA, AND OTHER ELIGIBLE VETERANS	DEC/2001
I-29	52.223-6	DRUG FREE WORKPLACE	MAY/2001
I-30	52.225-13	RESTRICTIONS ON CERTAIN FOREIGN PURCHASES	JAN/2004
I-31	52.227-1	AUTHORIZATION AND CONSENT (ALTERNATE I dated April 1984)	JUL/1995
I-32	52.227-2	NOTICE AND ASSISTANCE REGARDING PATENT AND COPYRIGHT INFRINGEMENT	AUG/1996
I-33	52.227-11	PATENT RIGHTS--RETENTION BY THE CONTRACTOR (SHORT FORM)	JUN/1997
I-34	52.228-7	INSURANCE--LIABILITY TO THIRD PERSONS	MAR/1996
I-35	52.230-5	COST ACCOUNTING STANDARDS - EDUCATIONAL INSTITUTIONS	APR/1998
I-36	52.230-6	ADMINISTRATION OF COST ACCOUNTING STANDARDS	NOV/1999
I-37	52.232-9	LIMITATION ON WITHHOLDING OF PAYMENTS	APR/1984
I-38	52.232-17	INTEREST	JUN/1996
I-39	52.232-20	LIMITATION OF COST	APR/1984
I-40	52.232-23	ASSIGNMENT OF CLAIMS	JAN/1986
I-41	52.232-25	PROMPT PAYMENT	OCT/2003
I-42	52.232-33	PAYMENT BY ELECTRONIC FUNDS TRANSFER--CENTRAL CONTRACTOR REGISTRATION	OCT/2003
I-43	52.233-1	DISPUTES	JUL/2002
I-44	52.233-3	PROTEST AFTER AWARD -- (ALTERNATE I, dated JUN 1985)	AUG/1996
I-45	52.242-1	NOTICE OF INTENT TO DISALLOW COSTS	APR/1984
I-46	52.242-3	PENALTIES FOR UNALLOWABLE COSTS	MAY/2001
I-47	52.242-13	BANKRUPTCY	JUL/1995
I-48	52.243-2	CHANGES--COST-REIMBURSEMENT (ALTERNATE V, dated April 1984))	AUG/1987
I-49	52.243-7	NOTIFICATION OF CHANGES	APR/1984

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I-50	52.244-2	SUBCONTRACTS (ALT I--AUG 1998)	AUG/1998
I-51	52.244-5	COMPETITION IN SUBCONTRACTING	DEC/1996
I-52	52.245-5	GOVERNMENT PROPERTY (COST-REIMBURSEMENT, TIME-AND-MATERIAL, OR LABOR-HOUR CONTRACTS) (Deviation, per DAR Tracking Number 99-00008, 13 July 99)	MAY/2004
I-53	52.246-23	LIMITATION OF LIABILITY	FEB/1997
I-54	52.249-5	TERMINATION FOR CONVENIENCE OF THE GOVERNMENT (EDUCATIONAL AND OTHER NONPROFIT INSTITUTIONS)	SEP/1996
I-55	52.249-14	EXCUSABLE DELAYS	APR/1984
I-56	52.253-1	COMPUTER GENERATED FORMS	JAN/1991
I-57	252.203-7001	PROHIBITION ON PERSONS CONVICTED OF FRAUD OR OTHER DEFENSE CONTRACT-RELATED FELONIES	MAR/1999
I-58	252.204-7003	CONTROL OF GOVERNMENT PERSONNEL WORK PRODUCT	APR/1992
I-59	252.209-7000	ACQUISITION FROM SUBCONTRACTORS SUBJECT TO ON-SITE INSPECTION UNDER THE INTERMEDIATE-RANGE NUCLEAR FORCES (INF) TREATY	NOV/1995
I-60	252.209-7004	SUBCONTRACTING WITH FIRMS THAT ARE OWNED OR CONTROLLED BY THE GOVERNMENT OF A TERRORIST COUNTRY per DoD interim rule, Federal Register 27 Mar 98	MAR/1998
I-61	252.209-7005	MILITARY RECRUITING ON CAMPUS	JAN/2000
I-62	252.211-7005	SUBSTITUTIONS FOR MILITARY OR FEDERAL SPECIFICATIONS AND STANDARDS	FEB/2003
I-63	252.215-7000	PRICING ADJUSTMENTS	DEC/1991
I-64	252.219-7003	SMALL, SMALL DISADVANTAGED AND WOMEN-OWNED SMALL BUSINESS SUBCONTRACTING PLAN (DOD CONTRACTS)	APR/1996
I-65	252.225-7016	RESTRICTION ON ACQUISITION OF BALL AND ROLLER BEARINGS	MAY/2004
I-66	252.225-7025	RESTRICTION ON ACQUISITION OF FORGINGS	APR/2003
I-67	252.225-7031	SECONDARY ARAB BOYCOTT OF ISRAEL	APR/2003
I-68	252.227-7013	RIGHTS IN TECHNICAL DATA --NONCOMMERCIAL ITEMS	NOV/1995
I-69	252.227-7030	TECHNICAL DATA--WITHHOLDING OF PAYMENT	MAR/2000
I-70	252.227-7034	PATENTS--SUBCONTRACTS	APR/1984
I-71	252.243-7002	REQUESTS FOR EQUITABLE ADJUSTMENT	MAR/1998
I-72	252.244-7000	SUBCONTRACTS FOR COMMERCIAL ITEMS AND COMMERCIAL COMPONENTS (DoD CONTRACTS)	MAR/2000

I-73 52.222-2 PAYMENT FOR OVERTIME PREMIUMS JUL/1990

(a) The use of overtime is authorized under this contract if the overtime premium cost does not exceed -\$0- or the overtime premium is paid for work--

- (1) Necessary to cope with emergencies such as those resulting from accidents, natural disasters, breakdown of production equipment, or occasional production bottlenecks of a sporadic nature;
- (2) By indirect-labor employees such as those performing duties in connection with administration, protection, transportation, maintenance, standby plant protection, operation of utilities, or accounting;
- (3) To perform tests, industrial processes, laboratory procedures, loading or unloading of transportation conveyances, and operations in flight or afloat that are continuous in nature and cannot reasonably be interrupted or completed otherwise; or
- (4) That will result in lower overall costs to the Government.

(b) Any request for estimated overtime premiums that exceeds the amount specified above shall include all estimated overtime for contract completion and shall--

- (1) Identify the work unit; e.g., department or section in which the requested overtime will be used, together with present workload, staffing, and other data of the affected unit sufficient to permit the Contracting Officer to evaluate the necessity for the overtime;
- (2) Demonstrate the effect that denial of the request will have on the contract delivery or performance schedule;
- (3) Identify the extent to which approval of overtime would affect the performance or payments in connection with other Government contracts, together with identification of each affected contract; and
- (4) Provide reasons why the required work cannot be performed by using multishift operations or by employing additional personnel.

(End of clause)

I-74 52.204-7 CENTRAL CONTRACTOR REGISTRATION OCT/2003

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

"Central Contractor Registration (CCR) database" means the primary Government repository for contractor information required for the conduct of business with the Government.

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"Commercial and Government Entity (CAGE) code" means-

- (1) A code assigned by the Defense Logistics Information Service (DLIS) to identify a commercial or Government entity; or
- (2) A code assigned by a member of the North Atlantic Treaty Organization that DLIS records and maintains in the CAGE master file. This type of code is known as an "NCAGE code."

"Data Universal Numbering System (DUNS) number" means the 9-digit number assigned by Dun and Bradstreet, Inc. (D&B) to identify unique business entities.

"Data Universal Numbering System +4 (DUNS+4) number" means the DUNS number assigned by D&B plus a 4-character suffix that may be assigned by a business concern. (D&B has no affiliation with this 4-character suffix.) This 4-character suffix may be assigned at the discretion of the business concern to establish additional CCR records for identifying alternative Electronic Funds Transfer (EFT) accounts (see Subpart 32.11 of the Federal Acquisition Regulation) for the same parent concern.

"Registered in the CCR database" means that-

- (1) The Contractor has entered all mandatory information, including the DUNS number or the DUNS+4 number, into the CCR database;
- (2) The Contractor's CAGE code is in the CCR database; and
- (3) The Government has validated all mandatory data fields and has marked the records "Active."

(b)

(1) By submission of an offer, the offeror acknowledges the requirement that a prospective awardee shall be registered in the CCR database prior to award, during performance, and through final payment of any contract, basic agreement, basic ordering agreement, or blanket purchasing agreement resulting from this solicitation.

(2) The offeror shall enter, in the block with its name and address on the cover page of its offer, the annotation DUNS or DUNS+4 followed by the DUNS or DUNS+4 number that identifies the offerors name and address exactly as stated in the offer. The DUNS number will be used by the Contracting Officer to verify that the offeror is registered in the CCR database.

(c) If the offeror does not have a DUNS number, it should contact Dun and Bradstreet directly to obtain one.

(1) An offeror may obtain a DUNS number

(i) If located within the United States, by calling Dun and Bradstreet at 1-866-705-5711 or via the Internet at <http://www.dnb.com/> ; or

(ii) If located outside the United States, by contacting the local Dun and Bradstreet office.

(2) The offeror should be prepared to provide the following information:

(i) Company legal business name.

(ii) Tradestyle, doing business, or other name by which your entity is commonly recognized.

(iii) Company physical street address, city, state and Zip Code.

(iv) Company mailing address, city, state and Zip Code (if separate from physical).

(v) Company telephone number.

(vi) Date the company was started.

(vii) Number of employees at your location.

(viii) Chief executive officer/key manager.

(ix) Line of business (industry).

(x) Company Headquarters name and address (reporting relationship within your entity).

(d) If the Offeror does not become registered in the CCR database in the time prescribed by the Contracting Officer, the Contracting Officer will proceed to award to the next otherwise successful registered Offeror.

(e) Processing time, which normally takes 48 hours, should be taken into consideration when registering. Offerors who are not registered should consider applying for registration immediately upon receipt of this solicitation.

(f) The Contractor is responsible for the accuracy and completeness of the data within the CCR database, and for any liability resulting from the Governments reliance on inaccurate or incomplete data. To remain registered in the CCR database after the initial registration, the Contractor is required to review and update on an annual basis from the date of initial registration or subsequent updates its information in the CCR database to ensure it is current, accurate and complete. Updating information in the CCR does not alter the terms and conditions of this contract and is not a substitute for a properly executed contractual document.

(1)

(i) If a Contractor has legally changed its business name, doing business as name, or division name (whichever is shown on the contract), or has transferred the assets used in performing the contract, but has not completed the necessary requirements regarding novation and change-of-name agreements in Subpart 42.12, the Contractor shall provide the responsible Contracting Officer a minimum of one business days written notification of its intention to:

(A) Change the name in the CCR database;

(B) Comply with the requirements of Subpart 42.12 of the FAR;

(C) Agree in writing to the timeline and procedures specified by the responsible Contracting Officer. The Contractor must provide with the notification sufficient documentation to support the legally changed name.

(ii) If the Contractor fails to comply with the requirements of paragraph (g)(1)(i) of this clause, or fails to perform the agreement at paragraph (g)(1)(i)(C) of this clause, and, in the absence of a properly executed novation or change-of-name agreement, the CCR information that shows the Contractor to be other than the Contractor indicated in the contract will be considered to be incorrect information within the meaning of the Suspension of Payment paragraph of the electronic funds transfer (EFT) clause of this contract.

(2) The Contractor shall not change the name or address for EFT payments or manual payments, as appropriate, in the CCR record to reflect an assignee for the purpose of assignment of claims (see FAR Subpart 32.8, Assignment of

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Claims). Assignees shall be separately registered in the CCR database. Information provided to the Contractors CCR record that indicates payments, including those made by EFT, to an ultimate recipient other than that Contractor will be considered to be incorrect information within the meaning of the Suspension of payment paragraph of the EFT clause of this contract.

(g) Offerors and Contractors may obtain information on registration and annual confirmation requirements via the Internet at <http://www.ccr.gov/> or by calling 1-888-227-2423, or 269-961-5757.

(End of clause)

I-75

52.223-11

OZONE-DEPLETING SUBSTANCES

MAY/2001

(a) Definition. Ozone-depleting substance, as used in this clause, means any substance the Environmental Protection Agency designates in 40 CFR part 82 as--

(1) Class I, including, but not limited to, chlorofluorocarbons, halons, carbon tetrachloride, and methyl chloroform; or

(2) Class II, including but not limited to, hydrochlorofluorocarbons.

(b) The Contractor shall label products which contain or are manufactured with ozone-depleting substances in the manner and to the extent required by 42 U.S.C. 7671j(b), (c), and (d) and 40 CFR Part 82, Subpart E, as follows:

WARNING: Contains (or manufactured with, if applicable) _____ * _____, a substance(s) which harm(s) public health and environment by destroying ozone in the upper atmosphere.

*The Contractor shall insert the name of the substance(s).

[End of Clause]

I-76

52.244-6

SUBCONTRACTS FOR COMMERCIAL ITEMS AND COMMERCIAL COMPONENTS

JUL/2004

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

(1) "Commercial item" has the meaning contained in Federal Acquisition Regulation 2.101, Definitions.

(2) "Subcontract," as used in this clause, includes a transfer of commercial items between divisions, subsidiaries, or affiliates of the Contractor or subcontractor at any tier.

(b) To the maximum extent practicable, the Contractor shall incorporate, and require its subcontractors at all tiers to incorporate, commercial items or nondevelopmental items as components of items to be supplied under this contract.

(c)

(1) The contractor shall insert the following clauses in subcontracts for commercial items:

(i) 52.219-8, Utilization of Small Business Concerns (May 2004)(15U.S.C. 637(d)(2) and (3)), in all subcontracts that offer subcontracting opportunities. If the subcontract (except subcontracts to small business concerns) exceeds \$500,000 (\$1,000,000 for construction of any public facility), the subcontractor must include 52.219-8 in lower tier subcontracts that offer subcontracting opportunities.

(ii) 52.222-26, Equal Opportunity (APR 2002)(E.O. 11246);

(iii) 52.222-35, Equal Opportunity for Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans (Dec 2001) (38 U.S.C. 4212(a));

(iv) 52.222-36, Affirmative Action for Workers with Disabilities (JUN 1998)(29 U.S.C. 793);

(v) 52.247-64, Preference for Privately Owned U.S.-Flag Commercial Vessels (APR 2003) (46 U.S.C. Appx 1241 and 10 U.S.C. 2631) (flow down required in accordance with paragraph (d) of FAR clause 52.247-64).

(2) While not required, the Contractor may flow down to subcontracts for commercial items a minimum number of additional clauses necessary to satisfy its contractual obligations.

(d) The Contractor shall include the terms of this clause, including this paragraph (d), in subcontracts awarded under this contract.

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[End of Clause]

I-77 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 (DFARS) (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-78 252.247-7023 TRANSPORTATION OF SUPPLIES BY SEA MAY/2002

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

(1) Components means articles, materials, and supplies incorporated directly into end products at any level of manufacture, fabrication, or assembly by the Contractor or any subcontractor.

(2) Department of Defense (DoD) means the Army, Navy, Air Force, Marine Corps, and defense agencies.

(3) Foreign flag vessel means any vessel that is not a U.S.-flag vessel.

(4) Ocean transportation means any transportation aboard a ship, vessel, boat, barge, or ferry through international waters.

(5) Subcontractor means a supplier, materialman, distributor, or vendor at any level below the prime contractor whose contractual obligation to perform results from, or is conditioned upon, award of the prime contract and who is performing any part of the work or other requirement of the prime contract. However, effective May 1, 1996, the term does not include a supplier, materialman, distributor, or vendor of commercial items or commercial components.

(6) Supplies means all property, except land and interests in land, that is clearly identifiable for eventual use by or owned by the DoD at the time of transportation by sea.

(i) An item is clearly identifiable for eventual use by the DoD if, for example, the contract documentation contains a reference to a DoD contract number or a military destination.

(ii) Supplies includes (but is not limited to) public works; buildings and facilities; ships; floating equipment and vessels of every character, type, and description, with parts, subassemblies, accessories, and equipment; machine tools; material; equipment; stores of all kinds; end items; construction materials; and components of the foregoing.

(7) U.S.-flag vessel means a vessel of the United States or belonging to the United States, including any vessel registered or having national status under the laws of the United States.

(b)

(1) The Contractor shall use U.S.-flag vessels when transporting any supplies by sea under this contract.

(2) A subcontractor transporting supplies by sea under this contract shall use U.S.-flag vessels if-

(i) This contract is a construction contract; or

(ii) The supplies being transported are-

(A) Noncommercial items; or

(B) Commercial items that-

(1) The Contractor is reselling or distributing to the Government without adding value (generally, the Contractor does not add value to items that it subcontracts for f.o.b. destination shipment);

(2) Are shipped in direct support of U.S. military contingency operations, exercises, or forces

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deployed in humanitarian or peacekeeping operations; or

(3) Are commissary or exchange cargoes transported outside of the Defense Transportation System in accordance with 10 U.S.C. 2643.

(c) The Contractor and its subcontractors may request that the Contracting Officer authorize shipment in foreign-flag vessels, or designate available U.S.-flag vessels, if the Contractor or a subcontractor believes that--

- (1) U.S.-flag vessels are not available for timely shipment;
- (2) The freight charges are inordinately excessive or unreasonable; or
- (3) Freight charges are higher than charges to private persons for transportation of like goods.

(d) The Contractor must submit any request for use of other than U.S.-flag vessels in writing to the Contracting Officer at least 45 days prior to the sailing date necessary to meet its delivery schedules. The Contracting Officer will process requests submitted after such date(s) as expeditiously as possible, but the Contracting Officer's failure to grant approvals to meet the shipper's sailing date will not of itself constitute a compensable delay under this or any other clause of this contract. Requests shall contain at a minimum--

- (1) Type, weight, and cube of cargo;
- (2) Required shipping date;
- (3) Special handling and discharge requirements;
- (4) Loading and discharge points;
- (5) Name of shipper and consignee;
- (6) Prime contract number; and

(7) A documented description of efforts made to secure U.S.-flag vessels, including points of contact (with names and telephone numbers) with at least two U.S.-flag carriers contacted. Copies of telephone notes, telegraphic and facsimile message or letters will be sufficient for this purpose.

(e) The Contractor shall, within 30 days after each shipment covered by this clause, provide the Contracting Officer and the Division of National Cargo, Office of Market Development, Maritime Administration, U.S. Department of Transportation, Washington, DC 20590, one copy of the rated on board vessel operating carrier's ocean bill of lading, which shall contain the following information--

- (1) Prime contract number;
- (2) Name of vessel;
- (3) Vessel flag of registry;
- (4) Date of loading;
- (5) Port of loading;
- (6) Port of final discharge;
- (7) Description of commodity;
- (8) Gross weight in pounds and cubic feet if available;
- (9) Total ocean freight in U.S. dollars; and
- (10) Name of the steamship company.

(f) The Contractor shall provide with its final invoice under this contract a representation that to the best of its knowledge and belief--

- (1) No ocean transportation was used in the performance of this contract;

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(2) Ocean transportation was used and only U.S.-flag vessels were used for all ocean shipments under the contract;

(3) Ocean transportation was used, and the Contractor had the written consent of the Contracting Officer for all non-U.S.-flag ocean transportation; or

(4) Ocean transportation was used and some or all of the shipments were made on non-U.S.-flag vessels without the written consent of the Contracting Officer. The Contractor shall describe these shipments in the following format:

ITEM DESCRIPTION	CONTRACT LINE ITEMS	QUANTITY	TOTAL
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(g) If the final invoice does not include the required representation, the Government will reject and return it to the Contractor as an improper invoice for the purposes of the Prompt Payment clause of this contract. In the event there has been unauthorized use of non-U.S.-flag vessels in the performance of this contract, the Contracting Officer is entitled to equitably adjust the contract, based on the unauthorized use.

(h) In the award of subcontracts for the types of supplies described in paragraph (b)(2) of this clause, the Contractor shall flow down the requirements of this clause as follows:

(1) The Contractor shall insert the substance of this clause, including this paragraph (h) in all subcontracts that exceed the simplified acquisition threshold in Part 2 of the Federal Acquisition Regulation.

(2) The Contractor shall insert the substance of paragraphs (a) through (e) of this clause, and this paragraph (h), in subcontracts that are at or below the simplified acquisition threshold in Part 2 of the Federal Acquisition Regulation.

[End of Clause]

I-79	52.204-4009	MANDATORY USE OF CONTRACTOR TO GOVERNMENT ELECTRONIC COMMUNICATION	JUN/1999
	(TACOM)		

(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 "Electronic Quotations/Offers/Bids Required in Response to this Request for Quotations/Proposals/Bids" clause elsewhere in this document. (See Section K for commercial acquisitions, Section L for RFPs, and Section I for RFQs.)

(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.

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

[End of Clause]

CONTINUATION SHEET

Reference No. of Document Being Continued

Page 21 of 21

PIIN/SIIN W56HZV-04-C-0776

MOD/AMD

Name of Offeror or Contractor: WAYNE STATE UNIVERSITY-OFFICE OF SPONSORED PROGRAMS

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	DD FORM 1423 CONTRACT DATA REQUIREMENTS LIST	14-SEP-2004	001	

CONTRACT DATA REQUIREMENT LIST

Form Approval OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 440 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503. Please DO NOT RETURN your form to either these addresses. Send completed form to the Government Issuing Contracting Officer for the Contract/PR No. listed in Block E.

A. CONTRACT LINE ITEM NO.: D. SYSTEM/ITEM.....: Low Temperature Research
B. EXHIBIT : A E. CONTRACT/PR NO.:W56HZV-04-C -0776
C. CATEGORY.....: F. CONTRACTOR.....:Wayne State University.

1. DATA ITEM NO.: A001
2. TITLE OF DATA ITEM : Contractor's Progress Status and Management Report
3. SUBTITLE:
4. AUTHORITY: DI-MGMT-80227(T) (see 16a. below)
5. CONTRACT REFERENCE: C.X.X
6. REQUIRING OFFICE .: AMSRD-TAR / MS 121 9. DIST. STATEMENT REQUIRED: 12. DATE OF FIRST SUB: 90 DAC
7. DD250 REQ: LT 10. FREQUENCY : Quarterly 13. DATE OF SUBS. SUB:
8. APP CODE: N/A 11. AS OF DATE:

14. DISTRIBUTION ADDRESSEES: SUBMIT REPORTS ELECTRONICALLY TO THE E-MAIL ADDRESSES SHOWN IMMEDIATELY BELOW:

Dr. Walt Brysik, Contracting officers Representative, E-MAIL: brysikw@TACOM.ARMY.MIL
Phil Lawrence, CONTRACT SPECIALIST, E-MAIL: lawrencp@TACOM.ARMY..MIL

15. TOTAL:

16. REMARKS:

a. DI-MGMT-80227 is tailored by deleting 10.2, 10.3(j) 10.3(k), and 10.3(l).

1. DATA ITEM NO.: A002
2. TITLE OF DATA ITEM : SCIENTIFIC AND TECHNICAL REPORT
3. SUBTITLE: DRAFT/FINAL TECHNICAL REPORT
4. AUTHORITY: DI-MISC-80711A(T) (see 16a. below)
5. CONTRACT REFERENCE: C.8
6. REQUIRING OFFICE .: AMSRD-TAR / MS 121 9. DIST. STATEMENT REQUIRED: 12. DATE OF FIRST SUB: SEE ITEM 16
7. DD250 REQ: DD 10. FREQUENCY : SEE ITEM 16 13. DATE OF SUBS. SUB: SEE ITEM 16
8. APP CODE: A 11. AS OF DATE:

14. DISTRIBUTION ADDRESSEES: SUBMIT REPORTS ELECTRONICALLY TO THE E-MAIL ADDRESSES SHOWN IMMEDIATELY BELOW:

Dr. Walt Brysik, CONTRACTING OFICER'S REPRESENTATIVE, E-MAIL: brysikw@TACOM.ARMY.MIL
Phil Lawrence, CONTRACT SPECIALIST, E-MAIL: lawrencp@TACOM.ARMY..MIL

15. TOTAL:

16. REMARKS:

a. DI-MISC-80711A is tailored by deleting 10.2.

b. The Draft of the Final Technical Report (C.8) shall be delivered 12 months after date of contract award. The Government will review and respond within 30 days of receipt. The contractor shall submit the Final Technical Report within 30 days after receipt of draft comments/approval.

d. Prepare the reports in the Contractor's format. Submit the reports using any of the following electronic formats:

(1) Files readable using these Microsoft* 97 Office Products (TACOM can currently read OFFICE 97* and lower): Word, Excel, PowerPoint, or Access. Spreadsheets must be sent in a file format that includes all formulae, macro and format information. Print image is not acceptable. Executable files are unacceptable.

(2) Files in Adobe PDF (Portable Document Format). Scanners should be set to 200 dots per inch.

(3) Files in HTML (Hypertext Markup Language). HTML documents must not contain active links to live Internet sites or pages. All linked information must be contained within your electronic report, and be accessible offline.

(4) Other electronic formats. Before preparing your report in any other electronic format, please e-mail the COR, with an e-mail copy-furnished to amsta-idq@tacom.army.mil, to obtain a decision as to the format's acceptability. This e-mail must be received by the COR not later than ten calendar days before the draft report's due date. All alternate methods must be a no cost to the Government.

NOTES: (a) The above formats may be submitted in compressed form using self-extracting files.

(b) Files may be read-only, password protected.

e. Acceptable media: The Contractor shall submit reports via e-mail. If e-mail is not workable, other acceptable media include 100 or 250 Megabyte Zip*-disk, 3 inch disk, or 650 megabyte CD ROM. Identify the software application and version used to create each file submitted.

(1) E-MAIL. Maximum size of each e-mail message shall be three and one-half (3.5) megabytes. Any compressed files must be self-extracting, and you must provide appropriate instructions. You may use multiple e-mail messages if necessary, however, you must annotate the subject lines in this manner: "Message 1 of 3, 2 of 3, 3 of 3."

(2) 100 or 250 MEGABYTE ZIP*-DISK, 3 INCH DISK, OR 650 MEGABYTE CD ROM via U.S. Mail or other carrier. The Contractor shall label and all submitted disks with the Contract number, the Contractor's name and address, and a contact's phone number.

NOTE: Please select only one medium by which to transmit each report. For instance, do not submit a report via e-mail and 100 megabyte Zip*-disk.

* Registered Trademark

17. PRICE GROUP: 18. ESTIMATED TOTAL PRICE :