

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. Contract ID Code
Cost No Fee

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2. Amendment/Modification No.

P00003

3. Effective Date

2014JAN29

4. Requisition/Purchase Req No.

SEE SCHEDULE

5. Project No. (If applicable)

6. Issued By

U.S. ARMY CONTRACTING COMMAND
JAMES J. GIACCHINA
WARREN, MICHIGAN 48397-5000
HTTP://CONTRACTING.TACOM.ARMY.MIL

Code

W56HZV

7. Administered By (If other than Item 6)

OFFICE OF NAVAL RESEARCH
CHICAGO REGIONAL OFFICE
230 SOUTH DEARBORN STREET, ROOM 380
CHICAGO, IL 60605-1595

Code

N62880

EMAIL: JAMES.J.GIACCHINA@US.ARMY.MIL

8. Name And Address Of Contractor (No., Street, City, County, State and Zip Code)

MICHIGAN STATE UNIVERSITY
301 ADMINISTRATION BLDG
EAST LANSING, MI 48824-1046

9A. Amendment Of Solicitation No.

9B. Dated (See Item 11)

10A. Modification Of Contract/Order No.

W56HZV-13-C-0340

10B. Dated (See Item 13)

2013AUG28

Code 4B834

Facility Code

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in item 14. The hour and date specified for receipt of Offers

is extended, is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods:
(a) By completing items 8 and 15, and returning _____ copies of the amendments; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. **FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER.** If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. Accounting And Appropriation Data (If required)

NO CHANGE TO OBLIGATION DATA

**13. THIS ITEM ONLY APPLIES TO MODIFICATIONS OF CONTRACTS/ORDERS
It Modifies The Contract/Order No. As Described In Item 14.**

- A. This Change Order is Issued Pursuant To: _____ The Changes Set Forth In Item 14 Are Made In _____
The Contract/Order No. In Item 10A.
- B. The Above Numbered Contract/Order Is Modified To Reflect The Administrative Changes (such as changes in paying office, appropriation data, etc.) Set Forth In Item 14, Pursuant To The Authority of FAR 43.103(b).
- C. This Supplemental Agreement Is Entered Into Pursuant To Authority Of: _____
Mutual Agreement by Both Parties
- D. Other (Specify type of modification and authority)

E. IMPORTANT: Contractor is not, is required to sign this document and return _____ copies to the Issuing Office.

14. Description Of Amendment/Modification (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

SEE SECOND PAGE FOR DESCRIPTION

Except as provided herein, all terms and conditions of the document referenced in item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. Name And Title Of Signer (Type or print)		16A. Name And Title Of Contracting Officer (Type or print)	
		PAMELA L. GROZDON PAMELA.L.GROZDON@US.ARMY.MIL (586)282-9700	
15B. Contractor/Offeror	15C. Date Signed	16B. United States Of America	16C. Date Signed
_____ (Signature of person authorized to sign)		By _____ /SIGNED/ (Signature of Contracting Officer)	2014JAN29

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MOD/AMD P00003

Name of Offeror or Contractor: MICHIGAN STATE UNIVERSITY

SECTION A - SUPPLEMENTAL INFORMATION

Buyer Name: JAMES J. GIACCHINA
Buyer Office Symbol/Telephone Number: CCTA-ASG-B/(586)282-9736
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 A0000 ***

Modification P00003

PRIOR NEGOTIATED CONTRACT AMOUNT: \$86,546.00
AMOUNT OF THIS ACTION: \$ 0.00
CURRENT NEGOTIATED CONTRACT AMOUNT: \$86,546.00

PREVIOUS OBLIGATED CONTRACT AMOUNT: \$86,546.00
OBLIGATE AMOUNT THIS ACTION: \$ 0.00
TOTAL OBLIGATED CONTRACT AMOUNT: \$86,546.00

- 1) This is a bilateral, no cost modification.
- 2) The purpose of Modification P00003 is incorporate a revision to the Scope of Work (SOW) for an increase in sample testing at no additional cost to the Government.
- 3) As a result of this modification, the contract Section C is modified in the following subparagraphs: C.1.1.1, C.1.1.2, Table 1, C.2.1.1, and C.2.1.2.
- 4) As a result of Modification P00003, the total contract value is neither increased nor decreased.
- 5) Except as provided herein, all other terms and conditions remain unchanged.

*** END OF NARRATIVE A0003 ***

CONTINUATION SHEET**Reference No. of Document Being Continued**

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MOD/AMD P00003

Name of Offeror or Contractor: MICHIGAN STATE UNIVERSITY

SECTION C - DESCRIPTION/SPECIFICATIONS/WORK STATEMENT

C.1 STATEMENT OF WORK

C.1.0 Mathematical Model Development for Predicting Synthetic Renewable Fuel Blend Properties

The objectives of this effort are to develop a correlation method for Cetane Number (CN) and a mathematical model for compressibility allowing the prediction of these properties for blends comprised of JP-8 and synthetic or renewable aviation-grade kerosene.

C.1.1 Correlation Development for Predicting Cetane Number (CN) of Fuel Blends

*C.1.1.1 The contractor shall receive (as Government Furnished Material (GFM) 15-gallon samples each of up to six different synthetic/renewable kerosene products meeting aviation-grade kerosene specifications (Contracting Officer Representative (COR) to advise the contractor at the start of work meeting regarding the total number of samples they can expect to receive).

*C.1.1.2 The contractor shall receive (as GFM) 20-gallons of petroleum-derived jet fuel, specifically JP-8 or a key constituent of JP-8 such as Jet A-1 or Jet A. Using a portion of this jet fuel and the synthetic/renewable kerosene products from C.1.1.1, the contractor shall produce the 30 fuel blends listed in Table 1 below.

Table 1 Jet Fuel and Synthetic/Renewable Kerosene Test Sample Matrix

Sample	As Is Samples	Distillates			Blend Ratios (Percentages)				
		T10	T50	T90	15/85	35/65	50/50	65/35	85/15
Jet Fuel	X	X	X	X	--	--	--	--	--
Synthetic 1	X	X	X	X	Jet/S1	Jet/S1	Jet/S1	Jet/S1	Jet/S1
Synthetic 2	X	X	X	X	Jet/S2	Jet/S2	Jet/S2	Jet/S2	Jet/S2
Synthetic 3	X	X	X	X	Jet/S3	Jet/S3	Jet/S3	Jet/S3	Jet/S3
Synthetic 4	X	X	X	X	Jet/S4	Jet/S4	Jet/S4	Jet/S4	Jet/S4
Synthetic 5	X	X	X	X	Jet/S5	Jet/S5	Jet/S5	Jet/S5	Jet/S5
*Synthetic 6	X	X	X	X	Jet/S6	Jet/S6	Jet/S6	Jet/S6	Jet/S6

C.1.1.3 The contractor shall also produce T10, T50, and T90 distillate fraction samples of each of the synthetic kerosene samples and the jet fuel sample, also shown per Table 1 using an ASTM D86 apparatus.

C.1.1.4 The contractor shall produce volumes of the fuel blends and distillates sufficient to permit it to (a) perform the tests recommended and approved per 1.1.5 below, and also (b) supply the following volumes to TARDEC (Warren, MI): (i) a half-gallon sample of each blend (25 blends total) and (ii) a 150 mL sample of each distillate sample (18 samples total). TARDEC will then provide the contractor testing results per ASTM D6890 and selected MIL-DTL-83133 specification properties for each of the GFE synthetic/renewable kerosene products and the jet fuel within 60 days of receipt.

C.1.1.5 Along with the samples, the contractor shall provide a list of recommended tests to verify achievement of the objectives stated in Section 1 of this statement of work (e.g.: Fourier-Transform Infrared Spectroscopy (FTIR) or Nuclear Magnetic Resonance (NMR) to the COR for approval. Once approved, the contractor shall test all samples in test sample matrix (Table 1).

C.1.1.6 The contractor shall develop a correlation method for predicting the CN of jet fuel blends containing synthetic and/or renewable kerosene using all of the data per items C.1.1.4 and C.1.1.5 above. The contractor shall also use, as a basis for this correlation, the method developed by Ghosh and Jaffe in 2006 (Ghosh, P.; Jaffe, S. B., Detailed Composition-Based Model for Predicting the Cetane Number of Diesel Fuels. Industrial & Engineering Chemistry Research 2006, 45, (1), 346-351).

C.1.2 Mathematical Model Development for Predicting Compressibility of Fuel Blends

C.1.2.1 The contractor shall develop a mathematical model that will predict the compressibility of a fuel blend based on its constituent components. TARDEC will conduct isentropic bulk modulus testing of the fuel blends shipped per C.1.1.4 above to generate the necessary data to provide to the contractor to aid in the development of this mathematical model.

C.2.0 Deliverables

C.2.1 Mathematical Model Development for Predicting Synthetic Renewable Fuel Blend Properties

*C.2.1.1 The contractor shall deliver a half-gallon sample of 30 fuel blends per 1.1.4 within 30 days of receipt of the raw samples.

*C.2.1.2 The contractor shall deliver 150 mL distillate fraction samples for 21 distillates per C.1.1.3 and C.1.1.4 within 60 days of receipt of the raw materials.

C.2.1.3 The contractor shall deliver minutes from bi-weekly teleconferences, arranged by the COR, to update TARDEC on the status of the work progress. The contractor shall supply minutes NLT 2 working days after each teleconference.

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C.2.1.4 The contractor shall prepare and submit monthly status reports to the COR by the 15th of each month summarizing the work completed to include cost and schedule and percent complete.

C.2.1.5 The contractor shall prepare and deliver to the COR a draft technical report summarizing (i) the development of the correlation method for predicting the CN of fuel blends and (ii) the model for predicting the compressibility of fuel blends. This report shall include, but is not limited to, the description of the correlation and model developed, the basis for their development, a summary of the data used in their development and the analysis of this data, an assessment as to how well the correlation and model are able to predict the properties, and suggested future work that would improve them. This report shall be available for review and concurrence by the COR NLT 60 days prior to contract conclusion. The COR will respond with suggestions and corrections or concurrence within 30 days of receipt.

C.2.1.6 The contractor shall then write and deliver to the COR the final technical report specifically intended for submission to the OPSEC-review process with the intent to publish or present in a peer-reviewed forum. The contractor shall also write and deliver to the COR a set of accompanying briefing slides to be submitted to the OPSEC review process in order to be able to use them at the peer-reviewed forum.

C.3.0 Travel

C.3.1 Mathematical Model Development for Predicting Synthetic and/or Renewable Fuel Blend Properties

C.3.1.1 The contractor shall travel to TARDEC (Warren, MI) twice during the task order performance period to present the results of this work in a COR-arranged meeting.

C.3.1.2 The contractor shall make a trip to brief these results at a national conference recommended by the contractor to the COR at least 60 days prior to the conference start date. As a guideline, the conference should preferably be within the contractor's home state and should not last longer than three days. Abstracts, briefing slides and papers shall be provided to the COR a minimum of two weeks prior to public release in order to obtain OPSEC approval (per C.2.1.5).

C.4.0 Schedule

C.4.1 All work appearing on this SOW shall be completed within 12 months of award.

C.5 MANPOWER REPORTING

C.5.1 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.5.2 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.5.3 Additional information can be found in the clause in this contract entitled CONTRACTOR MANPOWER REPORTING (52.237-4000).

*Revised by Modification P00003

*** END OF NARRATIVE C0001 ***