

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE	PAGE OF PAGES
2. AMENDMENT/MODIFICATION NO. P00003		3. EFFECTIVE DATE 03-Mar-2015	4. REQUISITION/PURCHASE REQ. NO. SEE SCHEDULE	J	1 14
6. ISSUED BY INSTAL & VEHICLE SUP CONTRACTING DIV 6501 E. 11 MILE ROAD WARREN MI 48397-5000		CODE W56HZV	7. ADMINISTERED BY (If other than item 6) INSTAL & VEHICLE SUP CONTRACTING DIV JASON D. LADD CCTA-HSA-1/MS 350 JASON.D.LADD2.CIV@MAIL.MIL WARREN MI 48397-5000		CODE W56HZV
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code) OAKLAND UNIVERSITY ANDREI N. SLAVIN 2200 N SQUIRREL RD ROCHESTER MI 48309-4401			9A. AMENDMENT OF SOLICITATION NO.		
			9B. DATED (SEE ITEM 11)		
			X 10A. MOD. OF CONTRACT/ORDER NO. W56HZV-14-P-A602		
CODE 5K597			X 10B. DATED (SEE ITEM 13) 19-May-2014		FACILITY CODE
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS					
<input type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer <input type="checkbox"/> is extended, <input type="checkbox"/> is not extended. Offer 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 amendment; (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) See Schedule					
13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.					
A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) 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 date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).					
X C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF: Mutual agreement between parties					
D. OTHER (Specify type of modification and authority)					
E. IMPORTANT: Contractor <input type="checkbox"/> is not, <input checked="" type="checkbox"/> is required to sign this document and return <u> 1 </u> copies to the issuing office.					
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) Modification Control Number: laddj15296 1. The purpose of this bilateral Modification P00003 is to update the contract as follows: a. Update the Period of Performance to September 30, 2015 b. Update previous SOW to the PWS included in Section C pursuant to FAR Clause 52.243-1. c. Add CLIN 0013 in the amount of \$25,000.00. d. Add FAR Clause 52.217-8 Option to Extend Services 2. As a result of this modification, the contract value is increased by \$25,000.00 from \$50,000.00 to \$75,000.00. 3. All other terms and conditions, except those addressed in this modification, remain in full force and effect.					
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) JEFFREY B. YEAGER / CONTRACTING OFFICER TEL: 586-282-6200 EMAIL: jeffrey.b.yeager2.civ@mail.mil		
15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)		15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY <i>Jeffrey B. Yeager</i> (Signature of Contracting Officer)		16C. DATE SIGNED 03-Mar-2015

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

SUMMARY OF CHANGES

SECTION SF 1449 - CONTINUATION SHEET

SOLICITATION/CONTRACT FORM

The total cost of this contract was increased by \$25,000.00 from \$50,000.00 to \$75,000.00.

SUPPLIES OR SERVICES AND PRICES

CLIN 0013 is added as follows:

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0013	Theory Development FFP Performance and deliverables Per SOW FOB: Destination PURCHASE REQUEST NUMBER: 0010653821	1	Job	\$25,000.00	\$25,000.00
				NET AMT	\$25,000.00
				ACRN AB CIN: GFEB001065382100001	\$25,000.00

ACCOUNTING AND APPROPRIATION

Summary for the Payment Office

As a result of this modification, the total funded amount for this document was increased by \$25,000.00 from \$50,000.00 to \$75,000.00.

CLIN 0013:

Funding on CLIN 0013 is initiated as follows:

ACRN: AB

CIN: GFEB001065382100001

Acctng Data: 0212015201620400000661611255 R.0014043.2.2 6100.9000021001

Increase: \$25,000.00

Total: \$25,000.00

Cost Code: A60FL

DELIVERIES AND PERFORMANCE

The following Delivery Schedule item for CLIN 0001 has been changed from:

DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	UIC
POP 01-MAY-2014 TO 30-APR-2015	N/A	TARDEC ELENA BANKOWSKI ELENA BANKOWSKI RDTA-RS/ MS 263 ELENA.N.BANKOWSK.CIVI@MAIL.MIL WARREN MI 48397-5000 586-282-6433 FOB: Destination	W91ATL

To:

DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	UIC
POP 01-MAY-2014 TO 30-SEP-2015	N/A	TARDEC ELENA BANKOWSKI ELENA BANKOWSKI RDTA-RS/ MS 263 ELENA.N.BANKOWSK.CIVI@MAIL.MIL WARREN MI 48397-5000 586-282-6433 FOB: Destination	W91ATL

The following Delivery Schedule item for CLIN 0010 has been changed from:

DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	UIC
POP 01-MAY-2014 TO 30-APR-2015	N/A	TARDEC ELENA BANKOWSKI ELENA BANKOWSKI RDTA-RS/ MS 263 ELENA.N.BANKOWSK.CIVI@MAIL.MIL WARREN MI 48397-5000 586-282-6433 FOB: Destination	W91ATL

To:

DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	UIC
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POP 01-MAY-2014 TO 30-SEP-2015	N/A	TARDEC ELENA BANKOWSKI ELENA BANKOWSKI RDTA-RS/ MS 263 ELENA.N.BANKOWSK.CIVI@MAIL.MIL WARREN MI 48397-5000 586-282-6433 FOB: Destination	W91ATL
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The following Delivery Schedule item has been added to CLIN 0013:

DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	UIC
POP 01-MAY-2014 TO 30-SEP-2015	N/A	TARDEC ELENA BANKOWSKI ELENA BANKOWSKI RDTA-RS/ MS 263 ELENA.N.BANKOWSK.CIVI@MAIL.MIL WARREN MI 48397-5000 586-282-6433 FOB: Destination	W91ATL

INSPECTION AND ACCEPTANCE

The following Acceptance/Inspection Schedule was added for CLIN 0013:

INSPECT AT	INSPECT BY	ACCEPT AT	ACCEPT BY
N/A	N/A	N/A	Government

TABLE OF CONTENTS

The below Table of Contents has been added

Exhibit/Attachment Table of Contents

DOCUMENT TYPE	DESCRIPTION	PAGES	DATE
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The following have been added by reference:

52.217-8	Option To Extend Services	NOV 1999
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The following have been modified:

STATEMENT OF WORK

Part 1

General Information

Oakland University specialists will perform analytical calculations of the reflection and absorption of electromagnetic waves from magnetic metamaterials formed by arrays of magnetic dots and arrays of spintronic detectors. This is a theoretical research, which does not have safety requirements, does not require security clearances, and quality control requirements.

1. **GENERAL:** This is a non-personnel services contract to provide development of a theory of non-reciprocal magnetic metamaterials. The Government shall not exercise any supervision or control over the contract service providers performing the services herein. Such contract service providers shall be accountable solely to the Contractor who, in turn is responsible to the Government.

1.1 Description of Services/Introduction: The contractor shall provide all personnel, equipment, supplies, facilities, transportation, tools, materials, supervision, and other items and non-personal services necessary to perform development of a theory of non-reciprocal magnetic metamaterials as defined in this Performance Work Statement. The contractor shall perform to the standards in this contract.

1.2 Background: Oakland University has a long history of world-class research in metamaterials and spintronics. The Chair of Physics Department, Dr. Slavin, who is our Principal Investigator (PI), is a Fellow of IEEE and Physics Society. His research team will develop the theory and perform analytical calculations of the reflection and absorption of electromagnetic waves from magnetic metamaterials formed by arrays of magnetic dots and arrays of spintronic detectors.

1.3 Objectives:

- Analytical calculation of the reflection and absorption coefficients of incident electromagnetic waves from the magnetic metamaterials formed by arrays of magnetic dots.
- Numerical modeling of the electromagnetic wave reflection and absorption in surfaces made from magnetic metamaterials based on magnetic dot arrays. Optimization of array's parameters from the point of their reflective properties.
- Development of numerical model for the optimization of the electromagnetic wave reflection and absorption in surfaces made from magnetic metamaterials.
- Development of a general mathematical model for the calculation of the output power as a function of frequency for arrays of spintronic detectors in metamaterials.
- Development of a numerical model for the calculation of the output power as a function of frequency for a pair of spintronic detectors array in metamaterials.

1.4 Scope: Development of a theory of non-reciprocal magnetic metamaterials. Development of numerical model for the optimization of the electromagnetic wave reflection and absorption in surfaces made from magnetic metamaterials.

Services include: Development of the "effective medium" model for the magnetic metamaterials based on arrays of magnetic dots.

The contractor shall accomplish:

- Interim Report: "Calculation of reflection and absorption of electromagnetic waves in magnetic metamaterials based on an array of magnetic dots".
- Numerical model for calculating reflection and absorption coefficients of electromagnetic waves in magnetic metamaterials based on arrays of magnetic dots – application to a real life situation: use the model of a magnetic metamaterial coating to predict the spectrum of a reflected signal.

- Final Report: “Calculation of the output power as a function of frequency for metamaterials based on arrays of spintronic detectors”. The report should include: (a) basic theory of a model; (b) application of a model to a real life situation.
- Numerical model calculating the output power as a function of frequency for a metamaterial based on arrays of spintronic detectors connected in parallel.
- Three research papers prepared for publication in the Journal of Magnetism and Magnetic Materials
- Two abstracts of conference presentations.

1.5 Period of Performance: The period of performance shall be *April 30, 2014 to September 30, 2015*.

1.6 General Information

1.6.1 Quality Control: Non-applicable. The contractor shall perform a theoretical research.

1.6.2 Quality Assurance: The government shall evaluate the contractor’s performance under this contract in accordance with the Quality Assurance Surveillance. This plan is primarily focused on what the Government must do to ensure that the contractor has performed in accordance with the performance standards. It defines how the performance standards will be applied, the frequency of surveillance, and the quality of research papers and technical reports.

1.6.3 Recognized Holidays: The contractor is not required to perform services on holidays.

New Year’s Day	Labor Day
Martin Luther King Jr.’s Birthday	Columbus Day
President’s Day	Veteran’s Day
Memorial Day	Thanksgiving Day
Independence Day	Christmas Day

1.6.4 Hours of Operation: The contractor is responsible for conducting business, at his own facility, which is the Oakland University, during their regular business hours. The Contractor must at all times maintain an adequate workforce for the uninterrupted performance of all tasks defined within this PWS. When hiring personnel, the Contractor shall keep in mind that the stability and continuity of the workforce are essential.

1.6.5 Place of Performance: The work to be performed under this contract will be performed at Oakland University, Rochester Hills, MI.

1.6.6 Type of Contract: The government will award a fixed price contract.

1.6.7 Security Requirements: N/A.

1.6.7.1 PHYSICAL Security: N/A.

1.6.7.2 Key Control: N/A.

1.6.7.3 Lock Combinations: N/A.

1.6.8 Special Qualifications: The contractor’s employees are expected to have completed Master’s degrees in Physics or Engineering.

1.6.9 Post Award Conference/Periodic Progress Meetings: The Contractor agrees to attend any post award conference convened by the contracting activity or contract administration office in accordance with Federal Acquisition Regulation Subpart 42.5. The contracting officer, Contracting Officers Representative (COR), and other Government personnel, as appropriate, may meet periodically with the contractor to review the contractor's performance. At these meetings the contracting officer will apprise the contractor of how the government views the contractor's performance and the contractor will apprise the Government of problems, if any, being experienced. Appropriate action shall be taken to resolve outstanding issues. These meetings shall be at no additional cost to the government.

1.6.10 Contracting Officer Representative (COR): The (COR) will be identified by separate letter. The COR monitors all technical aspects of the contract and assists in contract administration. The COR is authorized to perform the following functions: assure that the Contractor performs the technical requirements of the contract; perform inspections necessary in connection with contract performance; maintain written and oral communications with the Contractor concerning technical aspects of the contract; issue written interpretations of technical requirements, including Government drawings, designs, specifications; monitor Contractor's performance and notifies both the Contracting Officer and Contractor of any deficiencies; coordinate availability of government furnished property, and provide site entry of Contractor personnel. A letter of designation issued to the COR, a copy of which is sent to the Contractor, states the responsibilities and limitations of the COR, especially with regard to changes in cost or price, estimates or changes in delivery dates. The COR is not authorized to change any of the terms and conditions of the resulting order.

1.6.11 Key Personnel: The follow personnel are considered key personnel by the government: The Principal Investigator (PI) on Oakland University contract is Dr. Slavin. The Alternate PI is Dr. Tyberkevych. The contractor's PI and Alternate PI will be responsible for the performance of the work. The name of this person and an alternate who shall act for the contractor when the manager is absent shall be designated in writing to the contracting officer. The contractor's PI and Alternate PI shall have full authority to act for the contractor on all contract matters relating to daily operation of this contract. Qualifications for all key personnel are listed below: The contractor's employees are expected to have completed Master's degrees in Physics or Engineering. The contractor's PI and Alternate PI must have a high degree of expertise with numerical modeling and the Mathematica computer program.

1.6.12 Identification of Contractor Employees: All contract personnel attending meetings, answering telephones, and working in other situations where their contractor status is not obvious to third parties are required to identify themselves as such to avoid creating an impression in the minds of members of the public that they are Government officials. They must also ensure that all documents or reports produced by contractors are suitably marked as contractor products or that contractor participation is appropriately disclosed. The contractor personnel will not be required to obtain and wear badges in the performance of this service. The service will be performed at Oakland University.

1.6.13 Contractor Travel: Non-applicable.

1.6.14 Other Direct Costs: Computer components and supplies (including books, printer cartridges, computer repair costs, computer components, internet service contracts, publication charges, etc.) \$1,167.

1.6.15 Organizational Conflict of Interest: Contractor and subcontractor personnel performing work under this contract shall not receive, have access to or participate in the development of proprietary or source selection information (e.g., cost or pricing information, budget information or analyses, specifications or work statements, etc.) or perform evaluation services which may create a current or subsequent Organizational Conflict of Interests (OCI) as defined in FAR Subpart 9.5. The Contractor shall notify the Contracting Officer immediately whenever it becomes aware that such access or participation may result in any actual or potential OCI and shall promptly submit a plan to the Contracting Officer to avoid or mitigate any such OCI. The Contractor's mitigation plan will be determined to be acceptable solely at the discretion of the Contracting Officer and in the event the Contracting Officer unilaterally determines that any such OCI cannot be satisfactorily avoided or mitigated, the Contracting Officer may effect other remedies as he or she deems necessary, including prohibiting the Contractor from participation in subsequent contracted requirements which may be affected by the OCI.

1.6.16 PHASE IN /PHASE OUT PERIOD Not applicable.

PART 2
DEFINITIONS & ACRONYMS

2. DEFINITIONS AND ACRONYMS:

2.1. DEFINITIONS:

2.1.1. **CONTRACTOR.** A supplier or vendor having a contract to provide specific supplies or service to the government. The term used in this contract refers to the prime.

2.1.2. **CONTRACTING OFFICER.** A person with authority to enter into, administer, and or terminate contracts, and make related determinations and findings on behalf of the government. Note: The only individual who can legally bind the government.

2.1.3. **CONTRACTING OFFICER'S REPRESENTATIVE (COR).** An employee of the U.S. Government appointed by the contracting officer to administer the contract. Such appointment shall be in writing and shall state the scope of authority and limitations. This individual has authority to provide technical direction to the Contractor as long as that direction is within the scope of the contract, does not constitute a change, and has no funding implications. This individual does NOT have authority to change the terms and conditions of the contract.

2.1.4. **DEFECTIVE SERVICE.** A service output that does not meet the standard of performance associated with the Performance Work Statement.

2.1.5. **DELIVERABLE.** Anything that can be physically delivered but may include non-physical things such as meeting minutes.

2.1.6. **KEY PERSONNEL.** Contractor personnel that are evaluated in a source selection process and that may be required to be used in the performance of a contract by the Key Personnel listed in the PWS. When key personnel are used as an evaluation factor in best value procurement, an offer can be rejected if it does not have a firm commitment from the persons that are listed in the proposal.

2.1.7. **PHYSICAL SECURITY.** Actions that prevent the loss or damage of Government property.

2.1.8. **QUALITY ASSURANCE.** The government procedures to verify that services being performed by the Contractor are performed according to acceptable standards.

2.1.9. **QUALITY ASSURANCE Surveillance Plan (QASP).** An organized written document specifying the surveillance methodology to be used for surveillance of contractor performance.

2.1.10. **QUALITY CONTROL.** All necessary measures taken by the Contractor to assure that the quality of an end product or service shall meet contract requirements.

2.1.11. **SUBCONTRACTOR.** One that enters into a contract with a prime contractor. The Government does not have privity of contract with the subcontractor.

2.1.12. **WORK DAY.** The number of hours per day the Contractor provides services in accordance with the contract.

2.1.12. **WORK WEEK.** Is defined as Monday through Friday, unless specified otherwise.

2.2. ACRONYMS:

ACOR	Alternate Contracting Officer's Representative
AFARS	Army Federal Acquisition Regulation Supplement
AR	Army Regulation
CCE	Contracting Center of Excellence
CFR	Code of Federal Regulations
CONUS	Continental United States (excludes Alaska and Hawaii)
COR	Contracting Officer Representative
COTR	Contracting Officer's Technical Representative
COTS	Commercial Off the Shelf
DA	Department of the Army
DD250	Department of Defense Form 250 (Receiving Report)
DD254	Department of Defense Contract Security Requirement List
DFARS	Defense Federal Acquisition Regulation Supplement
DMDC	Defense Manpower Data Center
DOD	Department of Defense
FAR	Federal Acquisition Regulation
HIPAA	Health Insurance Portability and Accountability Act of 1996
KO	Contracting Officer
OCI	Organizational Conflict of Interest
OCONUS	Outside Continental United States (includes Alaska and Hawaii)
ODC	Other Direct Costs
PIPO	Phase In/Phase Out
POC	Point of Contact
PRS	Performance Requirements Summary
PWS	Performance Work Statement
QA	Quality Assurance
QAP	Quality Assurance Program
QASP	Quality Assurance Surveillance Plan
QC	Quality Control
QCP	Quality Control Program
TE	Technical Exhibit
PI	Principal Investigator

PART 3

GOVERNMENT FURNISHED PROPERTY, EQUIPMENT, AND SERVICES

3. GOVERNMENT FURNISHED ITEMS AND SERVICES:

3.1. Services: Not applicable.

3.2 Facilities: Not applicable.

3.3 Utilities: Not applicable.

3.4 Equipment: Not applicable.

3.5 Materials: Not applicable.

PART 4

CONTRACTOR FURNISHED ITEMS AND SERVICES

4. CONTRACTOR FURNISHED ITEMS AND RESPONSIBILITIES:

4.1 General: The Contractor shall furnish all supplies, equipment, facilities and services required to perform work under this contract that are not listed under Section 3 of this PWS.

4.2 Secret Facility Clearance: Not applicable.

4.3. Materials: The Contractor shall furnish materials, supplies, and equipment necessary to meet the requirements under this PWS.

4.4. Equipment: The Contractor shall furnish computers to meet the requirements under this PWS.

PART 5 SPECIFIC TASKS

5. SPECIFIC TASKS:

5.1. Basic Services. The contractor shall provide the following services:

5.1.1 Analytical calculation of the reflection and absorption coefficients of incident electromagnetic waves from the magnetic metamaterials formed by dipolarly coupled arrays of magnetic dots.

5.1.2 Development of the "effective medium" model for the magnetic metamaterials based on arrays of magnetic dots.

5.1.3 Numerical modeling of the electromagnetic wave reflection and absorption in vehicle protective covers made from magnetic metamaterials based on magnetic dot arrays. Optimization of dot array's parameters from the point of their reflective properties.

5.1.4 Numerical calculation of the absorption and isolation coefficients in non-reciprocal magnetic metamaterials based on multilayered arrays of magnetic dots for the applications in unbiased microwave isolators.

5.1.5 Development of numerical model and "Mathematica" program for the optimization of the electromagnetic wave reflection and absorption from magnetic metamaterials.

5.1.6 Development of a general mathematical model for the calculation of the output power as a function of frequency for arrays of spintronic diode detectors in metamaterials.

5.1.7 Development of a numerical model and "Mathematica" program for the calculation of the output power as a function of frequency for pair of spintronic diode detectors in metamaterials.

5.2. Task Heading.

5.2.1 Interim Report: "Calculation of reflection and absorption of electromagnetic waves in magnetic metamaterials based on an array of interacting magnetic dots ". This report should cover applications of metamaterial coating for survivability and camouflage or signature management/cloaking controllable reflection of EM spectrum and applications of these metamaterials for non-reciprocal microwave signal processing.

5.2.2 Computer program written in "Mathematica" calculating reflection and absorption coefficients of electromagnetic waves in magnetic metamaterials based on an array of interacting magnetic dots – application to a real life situation: use the model of a magnetic metamaterial coating to predict the spectrum of a reflected signal. (May 30, 2015).

- 5.2.3 Final Report: "Calculation of the output power as a function of frequency for arrays of spintronic diode detectors". The report should include: (a) basic theory of a model; (b) application of a model to a real life situation: use a model of a pair of spintronic diode detectors.
- 5.2.4 Computer program written in "Mathematica" calculating the output power as a function of frequency for a pair of spintronic diode detectors connected in parallel.
- 5.2.5 Three research papers prepared for publication in the Journal of Magnetism and Magnetic Materials
- 5.2.6 Two abstracts of conference presentations.

5.3. **CONTRACTOR MANPOWER REPORTING (CMR)** (Only applies to Army Customers): The Office of the Assistant Secretary of the Army (Manpower & Reserve Affairs) operates and maintains a secure Army data collection site where the Contractor shall report ALL Contractor manpower (including subcontractor manpower) required for performance of this contract. The Contractor shall completely fill in all the information in the format using the following web address <https://cmra.army.mil>. The required information includes: (1) Contracting Office, Contracting Officer, Contracting Officer's Technical Representative (COTR) or also know as the Contracting Officer's Representative (COR); (2) Contract number, including task and delivery order number; (3) Beginning and ending dates covered by reporting period; (4) Contractor's name, address, phone number, e-mail address, identity of Contractor employee entering data; (5) Estimated direct labor hours (including sub-Contractors); (6) Estimated 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) Estimated 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- Non-applicable; and (13) Number of Contractor and sub-Contractor employees deployed in theater this reporting period - Non-applicable. As part of its submission, the Contractor shall provide the estimated total cost (if any) incurred to comply with this reporting requirement. Reporting period shall be the period of performance not to exceed 12 months ending September 30 of each government fiscal year and must be reported by 31 October of each calendar year. Contractors may use a direct XML data transfer to the database server or fill in the fields on the website. The XML direct transfer is a format for transferring files from a Contractor's system to the secure website without the need for separate data entries for each required data element at the website. The specific formats for the XML direct transfer may be downloaded from the website.

PART 6 APPLICABLE PUBLICATIONS

6. **APPLICABLE PUBLICATIONS (CURRENT EDITIONS)**

6.1. The Contractor must abide by all applicable regulations, publications, manuals, and local policies and procedures.

TECHNICAL EXHIBIT 1

Performance Requirements Summary

The contractor service requirements are summarized into performance objectives that relate directly to mission essential items. The performance threshold briefly describes the minimum acceptable levels of service required for each requirement. These thresholds are critical to mission success.

Performance Objective (The Service required—usually a shall statement)	Standard	Performance Threshold (This is the maximum error rate. It could possibly be “Zero deviation from standard”)	Method of Surveillance
PRS # 1. The contractor shall perform analytical calculation of the reflection and absorption coefficients of incident electromagnetic waves from the magnetic metamaterials formed by dipolarly coupled arrays of magnetic dots. PWS Para 5.1.1	Compliance with DoD directive 5000.1	90% error free draft reports / documents corrected to 100% error free within one revision cycle.	100% Inspection
PRS # 2 The contractor must provide technical support of “Mathematica” program for the calculation of the output power as a function of frequency for spintronic diode detectors in metamaterials. PWS paragraph 5.1.7.	98% uptime per month.	No more than 2% deviation from the standard.	Recorded down time by technical support
PRS # 3 Contractor shall collect and maintain selected data elements, conduct analysis and provide analytical support. PWS Para 5.2.1 and 5.2.3	Complies with DoD, Army Policy and Regulations listed in Part 6 of the PWS.	Data analysis reports and briefings are submitted with no more than one revision.	100% Inspection

TECHNICAL EXHIBIT 2

DELIVERABLES SCHEDULE

<u>Deliverable</u>	<u>Frequency</u>	<u># of Copies</u>	<u>Medium/Format</u>	<u>Submit To</u>
Interim Report: “Calculation of reflection and absorption of electromagnetic waves in magnetic metamaterials based on an array of interacting magnetic dots “.	May 30, 2015	1	Electronic file by e-mail as an MS Word attachment.	COR
Computer program written in “Mathematica” calculating reflection and absorption coefficients of electromagnetic	May 30, 2015	1	Electronic file by e-mail	COR

<u>Deliverable</u>	<u>Frequency</u>	<u># of Copies</u>	<u>Medium/Format</u>	<u>Submit To</u>
waves in magnetic metamaterials.				
Final Report: “Calculation of the output power as a function of frequency for arrays of spintronic diode detectors”.	September 30, 2015	1	Electronic file by e-mail as an MS Word attachment.	COR
Computer program written in “Mathematica” calculating the output power as a function of frequency Three research papers prepared for publication in the Journal of Magnetism and Magnetic Materials Two abstracts of conference presentations.	September 30, 2015	1	Electronic file by e-mail	COR

**TECHNICAL EXHIBIT 3
ESTIMATED WORKLOAD DATA**

Below are the descriptions and estimated annual labor hours for the requirements of this PWS based on historical data. These hours do not project actual requirements for the new contract, nor does it reflect hours required of subcontractors. The contractor is responsible for proposing the appropriate hours and labor mix to perform the requirements of this PWS. This data is provided for informational purposes only.

ITEM	NAME	ESTIMATED QUANTITY	
1	Principal Investigator		500
2	Associate Researcher		625
3	Researcher (numerical modeling)		400
		Total:	1525

(End of Summary of Changes)