PERFORMANCE WORK STATEMENT (PWS)
NIGERIA BASED MOSQUITO SURVEILLANCE AND RESEARCH ACTIVITIES

1. GENERAL:

This is a new non-personal services contract for support of the Armed Forces Health Surveillance Division, Global Emerging Infections Surveillance (GEIS) Branch activity titled: "Monitoring of Insecticide resistance status of *Aedes* species field caught populations in Nigeria", performed by the Vector Biology Research program (VBRP), US Naval Medical Research Unit EURAFCENT (NAMRU EAC).

1.1. Description of Services/Introduction: Contractor shall be responsible for conducting field trips to collect vectors as well as sorting, identification, rearing and testing vector samples in lab and providing these results to the government appointed technical point of contract (TPOC). In addition, the contractor shall act as a coordinator for all aspects of the study as detailed in the study protocol. The anticipated high quality and accuracy of performance and data is a mandate to retain the contractor and sustain the contract.

1.2. Background:

1.2.1 US Naval Medical Research Unit EURAFCENT (NAMRU EAC) is an infectious diseases research institute of the United States Navy located as a detachment in Cairo, Egypt. NAMRU EAC conducts scientific research and public health initiatives throughout the Middle East, Eastern Europe, Central and Southeast Asia, North and West Africa.

1.2.2 Vector Biology Research program (VBRP) at NAMRU EAC has initiated research activities in collaboration with other research institutes in Nigeria. Currently, VBRP has received GEIS funding for monitoring of insecticide resistance status of *Aedes* species in Nigeria. This project will entail *Aedes* adult routine monitoring as well as *Aedes* larvae collection, identification, rearing and testing against the different classes of insecticides using the WHO tube bioassay test as well as molecular techniques followed by data entry. This ongoing expanding research plan mandate the need for a non-personal services contract to technically support the medical entomology working team/staff at VBRP, NAMRU EAC detachment, Cairo, Egypt.

1.2.2.1 There is no NAMRU EAC laboratory or office facility in Nigeria and accordingly research and surveillance activities require collaboration with local institutions. These projects provide vector- data to Department of War (DOW) and the Government of Nigeria.

1.2.2.2 Study entitled: "Monitoring of Insecticide resistance status of *Aedes* species field caught populations in Nigeria" aims to assess and determine the phenotypic and genotypic susceptibility status of field caught *Aedes* species against the 4 different classes of insecticides (Pyrethroids, Organophosphates, Organochlorines, Carbamates). Data from previous NAMRU EAC vector surveillance study conducted in Nigeria has demonstrated a high density of the *Aedes* mosquitoes. Almost a quarter of the collected mosquitoes belongs to the *Aedes* genus. This may pose a serious threat of arbovirus transmission within Nigerian cities. Wild populations of both *Aedes aegypti* and *Ae. albopictus* have progressively started to develop resistance against most of the currently used insecticides.

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Since resistance management strategy is the key recommendation for sound vector control interventions, there are urgent needs for continuous insecticide resistance monitoring by all vector control implementation agencies. Unfortunately, data coverage for the geographical distributions of records of resistance/susceptibility to insecticides in *Ae. aegypti* and *Ae. albopictus* is lacking for large parts of Africa. The goal of this study is to fill in this information gap by monitoring the susceptibility status of *Aedes* species against different insecticides.

1.3. Tasks:

1.3.1 The contractor shall coordinate both field and laboratory work of *Aedes* vector surveillance. This will entail obtaining Nigerian governmental permission/clearances, explanation of the studies, ensuring of adherence to safety and biosafety procedures and collection and processing of study specimens. This will require coordination between the contractor and Principal Investigator (PI) and TPOC at VBRP.

1.3.2 Employ and assign staff to conduct field work and larval mosquito sample collections from at least 2 sentinel sites as well as adult mosquito collection from at least 2 sites.

1.3.3 Provide quality personnel with the knowledge, skills and abilities required to perform the work and provide ongoing internal training to enhance technical capacities for local staff.

1.3.4 Be responsible for conducting the appropriate number of trips to each study site to collect a good number of adults for arbovirus testing and larvae for the insecticide resistance testing. The contractor will be responsible for arranging and providing field transportation and field gear. The contractor is responsible for identifying all species collected during these trips and providing species list and numbers for each location.

1.3.5 Be responsible for testing adult female *Aedes* vectors for the presence of arboviruses.

1.3.6 Be responsible for rearing collected *Aedes* larvae to the adult stage under the standard insectary conditions (25°C, 75–80% relative humidity and 12 h light: dark).

1.3.7 Be responsible for testing the F1 generation of *Aedes* mosquitoes against the 4 main classes of insecticides (pyrethroid, organophosphorus, organochlorines and carbamates) using the WHO tube bioassay test.

1.3.8 Be responsible for testing the *Aedes* mosquitoes for the presence of insecticide resistance mutations by molecular assays.

1.3.9 Be responsible for procuring and purchasing materials and supplies needed for the larval collection and rearing (larval dippers, collection cups, nets, mosquito cages, larval food, sugar solution, insectary consumables, pipettes, microscope, forceps, petridish) as well as batteries for adult mosquito trapping.

1.3.10 Provide and maintain a secure and suitable laboratory space for the visiting scientists from NAMRU EAC as well as for local contract personnel to process all arthropods specimens and subsequent testing.

1.3.11 Provide and maintain a secure and suitable office space for the visiting scientists from NAMRU EAC as well as for local contract personnel.

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1.3.12 Ensure all spaces are properly and adequately equipped and supplied with expendable and non-expendable items. This includes communication tools and all essential infrastructure utilities.

1.3.13 Maintain updated inventories of all samples, reagents and other supplies and assure availability of all related lab and field supplies.

1.3.14 Establish a mechanism to sustain and maintain all lab and field gears functional and in good condition.

1.3.15 Ensure that a mechanism is in place for timely payment of service to local contractors and/or subcontractors.

1.3.16 Provide written and verbal reports to NAMRU EAC PI on all laboratory and field activities once/month. These reports will include the number and species of each mosquito collected from each location, the description of the habitat that was surveyed and ecological setting, any adults that were collected, and data for insecticide resistance tests that were conducted.

1.4. Scope:

Contractor shall serve as the Nigerian coordinator to direct all the entomological studies. This individual shall serve as the primary point of contact (POC) and shall be responsible for coordinating all aspects of the study in strict accordance as detailed in the study protocol.

1.5. General Information

1.5.1 Period of Performance: Base plus two one-year option periods commencing from date of contract award.

1.5.2 Quality Control: N/A

1.5.3 Quality Assurance: Head of the VBRP will evaluate the contractor's performance under this contract in accordance with the Quality Assurance Surveillance Plan (QASP) to ensure that the contractor has performed in accordance with the performance standards. This includes but not limited to application of performance standards, frequency of surveillance and the minimum acceptable defect rate(s).

1.5.4 Recognized Holidays: The contractor is not required to work on the U.S. Federal Government holidays listed below or on the U.S. Embassy designated Nigerian 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

1.5.5 Place of Performance: All work shall be performed at the contractor's site.

1.5.6 Security Requirements Contractor personnel performing work under this contract will abide by the security measures required by their organization in which the work is performed.

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1.5.7 PHYSICAL Security: N/A

1.5.8 Key Control: N/A

1.5.9 Lock Combinations: N/A

1.5.10 Special Requirements: Contractor is responsible for ensuring that the lab and field research procedures are performed in a manner that will lead to the generation of interpretable data.

1.5.11 Identification of Contractor Employees: N/A

1.5.12 Contractor Travel: N/A

1.5.13 Data Rights: In accordance with DFARS 252.227-7015 and DFARS 252.227-7032.

1.5.14 Organizational Conflict of Interest: Contractor and subcontractor personnel performing work under this contract may 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 affect 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.

1.5.15. Safeguarding Of Biological Samples:

The contractor shall be responsible for safeguarding all biological samples required under this contract. Samples will be properly secured inside the contractor's facility. The contractor shall be responsible for preparing necessary supplies and equipment including refrigerators, freezers, liquid nitrogen tanks or incubators, to ensure that biological samples are properly stored according to conditions as stated in the contract.

The contractor shall be responsible for transporting biological samples to/from the study sites according to schedules set forth in the contract and in accordance with International Air Transport Association (IATA) regulations for shipping biological material in the appropriate shipping containers and at the specified temperatures. When transporting these samples, required storage temperatures will be maintained at all times.

1.5.16 Technical POC:

A TPOC will be provided upon contract award.

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DEFINITIONS AND ACRONYMS:

a. DEFINITIONS:

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

ii. 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.

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

iv. DELIVERABLE. Anything that can be physically delivered, but may include non-manufactured things such as meeting minutes or reports.

v. 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.

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

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

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

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

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

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

xii. WORK WEEK. Monday through Friday, unless specified otherwise.

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ACRONYMS:

DFARS	Defense Federal Acquisition Regulation Supplement
DOW	Department of War
FAR	Federal Acquisition Regulation
GEIS	Global Emerging Infections Surveillance
KO	Contracting Officer
NAMRU-EAC	US Naval Medical Research Unit EURAFCENT
NIMR	Nigerian Institute of Medical Research
OCI	Organizational Conflict of Interest
PI	Principal Investigator
POC	Point of Contact
PRS	Performance Requirements Summary
PWS	Performance Work Statement
QA	Quality Assurance
QASP	Quality Assurance Surveillance Plan
QC	Quality Control
TE	Technical Exhibit
VBRP	Vector Biology Research Program

CONTRACTOR FURNISHED ITEMS AND RESPONSIBILITIES:

Services: The Contractor shall furnish all services required under this contract.

Facilities: The Contractor shall furnish facilities required under this contract.

Materials: The Contractor shall furnish materials and supplies needed for the larval collection and rearing (larval dippers, collection cups, nets, mosquito cages, larval food, sugar solution, insectary consumables, pipettes, microscope, forceps, petridish) as well as batteries for adult mosquito trapping.

Equipment: The Contractor shall furnish all equipment required for testing and safeguarding of the biological samples including, but not limited to, incubators, refrigerators and freezers to ensure that biological samples are properly.

GOVERNMENT FURNISHED ITEMS AND RESPONSIBILITIES:

Materials: NAMRU EAC will provide entomological tools needed for mosquito collection and insecticide resistance kit needed for insecticide resistance bioassay testing.
NAMRU EAC will also provide the required molecular testing kits and specialized reagents following the successful completion of Government Quality Assurance and confirmation of final sample counts. Alternatively, the Government reserves the right to modify the contract to authorize the Contractor to procure the required kits directly if it is determined to be the most efficient or legally compliant method of procurement.

APPLICABLE PUBLICATIONS (CURRENT EDITIONS)

The Contractor must abide by all applicable regulations, publications, manuals, and local policies and procedures, as in the Declaration of Helsinki, the Code of Federal Regulation, GCP and the research ethics guideline of NAMRU-EAC. (http://www.gpo.gov/, http://www.ich.org/home.html) (Revised Common Rule found at

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https://www.hhs.gov/ohrp/regulations-and-policy/regulations/finalized-revisions-common-rule/index.html), the study protocol and NAMRU-EAC Standard Operating procedures written and provided by NAMRU-EAC.

Attachment/Technical Exhibit List:

a. Attachment 1 / Technical Exhibit 1 – Performance Requirement Summary

b. Attachment 2/Technical Exhibit 2 – Deliverables Schedule

c. Attachment3/Technical Exhibit 3 – Estimated Workload Data

d. Attachment 4/ Technical Exhibit 4– Special License Agreement

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TECHNICAL EXHIBIT 1

1.**Purpose**: To ensure that the Government has an effective and systematic method of surveillance for the services in the PWS. The QASP will be used primarily as a tool to verify that the contractor is performing all services required by the PWS in a timely, accurate and complete fashion.

2. **Performance Standards**

a. Schedule - The due dates for deliverables and the actual accomplishment of the schedule will be assessed against original due dates and milestones established for the contract.

b. Deliverables – The deliverables required to be submitted will be assessed against the specifications for the deliverables detailed in the PWS for the required content, quality, timeliness, and accuracy.

c. Past Performance - In addition to any schedule, deliverables, and cost aspects of performance discussed above, pursuant to FAR 42.15, the Government will assess the contractor's record of conforming to contract requirements and to standards of good workmanship, the contractor's adherence to contract schedules including the administrative aspects of performance, the contractor's history of reasonable and cooperative behavior and commitment to customer satisfaction, and the contractor's business-like concern for the interest of the customer.

3. 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	**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 coordinate both field and part of laboratory surveillance work through employing well trained subcontractors See PWS 1.3.1-1.3.4	One field subcontractor and one lab subcontractor	At least one field subcontractor and one lab subcontractor	TPOC
PRS # 2 The contractor shall conduct the WHO tube bioassay and the molecular assays on the collected *Aedes* mosquitoes See PWS 1.3.5-1.3.8		0% error	TPOC

PRS #3 The contractor shall procure and maintain 100% of required larval collection, rearing, and trapping supplies as required in the PWS. See PWS 1.3.9		100%	TPOC
PRS # 4 The contractor shall maintain a secure and suitable laboratory space as well as field gears in good condition and functional See PWS 1.3.10 - 1.3.15	Testing equipment and materials before use	10% error	TPOC
PRS # 4 The contractor shall provide written reports to NAMRU-EAC PI on all laboratory and field activities once/month See PWS 1.3.16	Monthly report to include the number and species of mosquito collected from each location, process and results for pathogen and insecticide resistance testing.	0% error	TPOC

4. Reporting

The Contractor's performance under this purchase order will be documented by the Technical Point of Contract. Satisfactory performance is required to maintain the current order and will be considered during evaluations of any future requirements.

For each item that does not meet acceptable levels, the Government may issue a Contract Discrepancy Report (CDR). CDRs will be forwarded to the Contracting Officer with a copy sent to the contractor. The contractor must reply in writing within 5 days of receipt identifying how future occurrences of the problem will be prevented. Based upon the contractor's past performance and plan to solve the problem, the Contracting Officer will determine if any further action will be taken.

In accordance with FAR 52.246-4 – Inspection of Services, the inspection of services provisions of the contract, the contractor will be incentivized to provide quality products in a timely manner since the Government can require the Contractor, at no additional cost, to replace or correct work that fails to meet contract requirements.

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TECHNICAL EXHIBIT 2

DELIVERABLES SCHEDULE

Deliverable	Frequency	# of Copies	Medium/Format	Submit To
The contractor to ensure conducting field trips to collect a total of mosquito adults (between 50-100 mosquitoes according to the mosquito season). Contractor will provide monthly summary of the number and species of mosquitoes collected. See PWS 1.3.4	3 nights every month or as requested by the PI	N/A	electronic reports	TPOC
The contractor to ensure conducting field trips to collect *Aedes* larvae and rear them to adults. Contractor will provide summary of the larval habitat sampled from. See PWS 1.3.4	At least 2 trips per month during the rainy season from June-September	N/A	electronic reports	TPOC
The contractor to test at least 200 adult female *Aedes* vectors for the presence of arboviruses See PWS 1.3.5	At the end of the one year collection or as requested by the PI after the QA/QC visit of NAMRU EAC personnel	N/A	electronic reports	TPOC
The contractor to conduct the WHO bioassay test to identify insecticide resistance in *Aedes* mosquitoes (at least a total of 100 mosquito for each insecticide from each site) See PWS 1.3.7	Once/month during the rainy season June-September or as requested by the PI	N/A	electronic reports	TPOC
The contractor to conduct the molecular assays to identify insecticide resistance in *Aedes* mosquitoes (at least a total of 100 mosquito for each insecticide from each site) See PWS 1.3.8	At the end of of one year collection or as requested by the PI after the QA/QC visit of NAMRU EAC personnel	N/A	electronic reports	TPOC
The contractor to provide regular field and lab work progress report including sample collections, rearing and insecticide resistance testing. See PWS 1.3.16	once/month or as requested by the PI	N/A	electronic reports	TPOC

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TECHNICAL EXHIBIT 3

ESTIMATED WORKLOAD DATA

ITEM	NAME	ESTIMATED QUANTITY	
1	SURVEILLANCE AND RESEARCH ACTIVITIES SERVICES: SUPPLIES AND COST OF FIELD WORK		

TECHNICAL EXHIBIT 4

SPECIAL LICENSE AGREEMENT

Data Rights: The Government has unlimited rights to all documents/material produced under this contract. All documents and materials, to include the source codes of any software, produced under this contract shall be Government owned and are the property of the Government with all rights and privileges of ownership/copyright belonging exclusively to the Government. These documents and materials may not be used or sold by the contractor without written permission from the Contracting Officer. All materials supplied to the Government shall be the sole property of the Government and may not be used for any other purpose. This right does not abrogate any other Government rights.

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