STATEMENT OF WORK

Safe and Legal MBE System Removal, Shipping, Decontamination and Rebuilding.

1. **SCOPE:**

The Naval Research Laboratory (NRL) has a requirement for the safe and legal transportation and decontamination of a heavily arsenic (As) and phosphorus (P) contaminated Varian Gen II MBE system, and the return of the cleaned, reassembled, rebuilt MBE system to NRL in like-new status with a warrantee.

2. REQUIREMENT:

a. **Pre-Site Survey**- The Contractor shall perform a pre-site survey of the MBE system and related equipment including:

i. Survey of toxic monitoring systems

ii. Survey of maintenance laboratory books

iii. Survey of arsenic and phosphorus content in the MBE system and surrounding laboratory

iv. Inspection of the NRL Site and Laboratory for present and future rigging and installation purposes to facilitate use of this MBE system

v. Identification of any walls and/or doors that must be removed for system transport

vi. Inspection of the air handling system including exhaust air fume hoods and scrubbers, loading dock and hallways leading to the loading dock

vii. Review of the evacuation plan for the building in case of fire, earthquake, or toxic gas release. A briefing will be conducted prior to the commencement of any work which will include the contractor and area personnel in order to review the NRL emergency evacuation plan.

viii. **Note:** The Contractor shall advise NRL personnel of all modifications in doors, walls, hallways, flooring material, and any other building modifications necessary to remove the MBE system from NRL building and facility, and also advise briefly on the ventilation on what is needed for safe reinstallation of the system at NRL in its new laboratory. (If required, NRL will provide the carpenters and construction personnel needed to remove any doors or de-install and re-install any walls as needed for safe MBE system removal. Any costs for removing fixtures, doors, walls, etc. and any costs needed to put proper procedures for evacuation and toxic monitoring are outside this statement of work, and costs shall be borne by the NRL).

b. Decontamination and Refurbishment

i. The Contractor shall perform a complete disassembly, decontamination and refurbishment of all Growth Chamber components and parts (this includes the main growth chamber, the buffer/preparation chamber, the load-lock and the phosphorus regeneration arm).

1. **Note:** It is acknowledged that certain parts and subsystems of an MBE system cannot be fully decontaminated. In the cases where decontamination of a subsystem is not possible without destroying the subsystem, the Contractor shall dispose of contaminated parts or non-cleanable subsystems in a manner consistent with the requirements as listed below in the safety/environmental section. The Contractor shall document the disposal of all such disposed parts and subsystems at NRL, with a list and photograph of all such disposed parts.

ii. After decontamination, the Contractor shall document the cleanliness and decontamination of the system by providing the results of wipe testing conducted by an independent environmental chemical analysis firm to verify the internal system cleanliness after system decontamination is complete.

iii. The Contractor shall reassemble the cleansed MBE system and prepare it and its component parts for shipment from the Contractor's facility to NRL located in the District of Columbia, The United States. The System shall be baked in the Contractor's facility and the Contractor shall use an RGA and new vacuum gauge to demonstrate post-bakeout pressure in the 10E-10 range using the growth system ion pump and a newly rebuilt NRL CT-8 cryopump (included in cost of rebuild). As the current MBE system does not use a cryopump on the growth chamber, the contractor will rebuild and move the CT-8 from the load-lock to the growth chamber. The Contractor's RGA to be supplied for use in testing the rebuilt MBE system shall remain the property of the Contractor. Any and all leaks found will be repaired using best practices of UHV and MBE technology including but not limited to clean TIG welding and new gaskets.

iv. OPTION TO CONTRACT: The Contractor shall assess viability of specific chamber modifications to install two new effusion cell ports. The contractor will supply engineering and 3D CAD drawings for complete approval by NRL. If approved, under an Option to this Contract the Contractor will then bore the main growth chamber and LN2 shrouds as needed and weld 2 new effusion cell ports with water cooling into the system. In addition, the Contractor will weld two new effusion cell shutter ports into the chamber and provide two new linear shutters and shutter blades with bakeable pneumatic actuators.

v. The Contractor will rebuild one standard effusion cell and provide a 6 month warrantee.

vi. Note: The cost of replacement shutters for MBE and the cost of ion pump elements and ion pump internal parts and manipulator parts shall be included in the rebuild price for the system. Also, all gaskets, bolts, ion gauge components, gate valve components, cryo-pump rebuilds, frame repairs, heating stages shall be included in the rebuild price. The cost of other parts that might need replacement lie mainly on the manipulator and this cost shall also be included in the quoted price.

vii. Four (4) standard (non-cracking) effusion cells will be outgassed. First, the status and good operating conditions of the effusion cells is confirmed using a voltmeter to measure filament and TC resistance. Next, crucible and source materials are removed and discarded as chemical waste in a safe and legal manner. The outgassing of effusion cells proceeds in a UHV clean chamber at a maximum temperature of the particular model of effusion cell, and proceeds for one day. NRL acknowledges that outgassing of used effusion cells can highlight problems or issues of needed repairs in the effusion cells that are not included in this statement of work. The Contractor shall outgas effusion cells on a best-effort basis and under conditions that do not damage the effusion cell under normal UHV-MBE operating conditions.

viii. One P-Cracking effusion cell will be cleaned to remove white and red P, and will be outgassed until clean over at least a 3 day period. The outgassing will proceed in a clean UHV chamber designed for this type of outgassing with appropriate LN2 trapping for P.

ix. The Contractor shall include all rigging and rigging services in this work with the exception of removal and re-installation of doors and walls needed for transport of packed MBE system components from the NRL laboratory to the loading dock.

x. After delivery of the completely rebuilt MBE system to NRL and reassembly, if necessary, the Contractor will provide installation assistance in the new laboratory location to include the initial pumpdown and leak checking of this system as well as cabling and preparation for bakeout. This contractor is not expected to provide design details for the ventilation system in this new location.

c. **Safety/Environmental Requirements -** The Contractor shall submit to NRL Staff for approval an overall plan of activities for the work to be completed at NRL with particular attention to the following:

i. Site-Specific Safety Plan to include:

1. Sketch of Equipment
2. Accident prevention plan
3. Job hazard analysis

4. Copies of qualification/training certificates for this job in accordance with EM-385-1-1
5. Methods to be used for adherence to requirement 29 CFR 1910.1018, Inorganic arsenic
6. Steps to secure lab space (Rm 112, Bldg 250) where the decontamination work will occur including regulation of the ventilation, e.g. closing of ventilation registers.

ii. Site-Specific Environmental Plan to include:

1. Methods to be used for pollution prevention and minimization of generated waste
2. Documentation of the types of waste and quantity which will be generated
3. Methods to be used to obtain baseline survey of workplace for arsenic before decontamination work and final clearance sample after completion of work to be reviewed by the industrial hygienist with a copy submitted to NRL

iii. The Contractor MUST obtain the services of an Industrial Hygienist certified by the American Board of Industrial Hygiene to certify training, perform exposure monitoring and review and approve of the decontamination work and implement the contractor's approved safety plan

iv. A List of Tasks for External Cleaning and Decontamination

v. Lab space preparation before commencement of decontamination

vi. On-Site internal system cleaning required for safe transport

vii. Schedule for removal and re-installation of doors and walls needed to safely transport MBE system to the loading dock. The Contractor shall schedule the time for removal of system from the laboratory and transport down the required halls and elevators to the loading dock of NRL. NRL environmental health and safety staff shall assist in preventing any walking traffic in the path of transport of the system while MBE system is being removed to the loading dock by Contractor staff and riggers.

viii. Other safety/environmental requirements:

1. All decontamination work performed by the contractor at NRL shall occur out-of-hours in order to limit the possibility of unintentional exposure of personnel to toxic material.

2. The Contractor shall prepare the MBE system for shipping by performing the appropriate internal and external decontamination and cleansing procedures of the MBE system on-site at NRL. Only on-site cleansing sufficient to allow safe and legal shipping (as defined by US DOT regulations) shall be conducted on site. The Contractor shall supply the appropriate DOT paperwork and exemption paperwork to NRL at the time of shipment that show the Contractor's compliance with federal regulations pertaining to the shipment of toxic MBE and CBE systems. NRL shall provide local disposal for up to two, 55 gallon drums of toxic material potentially generated from the Contractor's on-site cleaning of the MBE system.
3. The Contractor shall dispose of all hazardous waste, cleaning products, and cleaning materials in a safe and legal manner through their local hazardous waste disposal facilities. The Contractor shall document all materials identified as "hazardous waste" on a Hazardous Waste Manifest and dispose of this hazardous waste in a state-compliant manner, to include verification and documentation of the waste transporter and disposal facility. A copy of the signed manifest, as returned by the Treatment, Storage and/or Disposal Facility (TSDF), is to be forwarded to the NRL Code 3546, Hazardous Waste Coordinator within 30 days of disposition. In the event that hazardous waste is accumulated at the NRL, the contractor will immediately transfer this waste to the NRL Hazardous Waste Coordinator for proper disposal. The Contractor shall provide NRL with a complete indemnification of the waste generated at their facility.
4. Contractor must meet with safety and environmental prior to performance of contract in order to verify compliance with NRL safety/environmental regulations.

d. **Additional requirements:**

i. The Contractor shall provide three references demonstrating experience and safe removal and handling of toxic CBE or MBE equipment and systems. References shall be asked to verify that the Contractor has demonstrated the capability to disassemble and safely transport toxic MBE equipment and reassemble and install the MBE systems for proper functionality after decontamination.

ii. The Contractor shall transport the MBE system and related equipment to its facility using an experienced driver having shipped at least 10 MBE shipments for the Contractor using Air Ride suspension in the Semi Trailer before and after the complete decontamination and rebuilding of the system.

iii. The Contractor shall provide NRL with a complete indemnification for all decontamination, and cleaning services provided. The Contractor shall provide all tools, safety equipment, materials, and supplies to complete the entire scope of work, except as stated in the statement of work.

3. SHIPMENT: The cleansed system shall be shipped back to NRL, FOB Destination (Bldg A11, Rm 105). The Contractor shall, if necessary, provide delivery of the system in modules to ensure safe clearance of the system into Room 105, Bldg A11. The Contractor will provide all necessary equipment and personnel for the delivery and reassembly of the system in Room 105, Bldg A11.

4. INSURANCE: The toxic MBE system and components shall be shipped from NRL under the Contractor's insurance and liability coverage to the Contractor's facility. The Contractor shall carry a minimum of $5,000,000 in umbrella liability insurance coverage for this job. Certificates of insurance will be provided to NRL when the proper purchase orders are received. The Contractor shall name NRL as additional insured and will provide a Certificate of Insurance for $5,000,000.00 in aggregate liability insurance coverage for the proposed work.

5. SITE VISIT:

A site visit will be conducted on **13 Aug 2007 at 10:00am EST**

Offerors are urged and expected to inspect the site where services are to be performed and to satisfy themselves regarding all general and local conditions that may affect the cost of contract performance, to the extent that the information is reasonably obtainable. In no event shall failure to inspect the site constitute ground for a claim after contract award.

All questions shall be submitted in writing at the site visit or within one week of the site visit via telecopies (202) 767-6197. You are required to supply your own writing materials. Inquires should contain the Solicitation Number (N00173-07-R-JR03) and must be addressed to the attention of Code 3230.JR, Mr.Jerry Riles.

To make arrangements to attend, offerors should contact Mr.Jerry Riles, Contracts Specialist, via E-mail at **jerry.riles@nrl.navy.mil** by 3:00 PM on 10 Aug 2007.
The E-mail request MUST include the following information:

REQUIRED INFORMATION TO ATTEND SITE VISIT:

- The Name of the Contractor
- The Name of Each Individual to Attend*
- The Telephone Number of Each Individual to Attend

** Please try to limit the number of people to two (2) from each contractor, as the areas to visit may be fairly small.*

Offerors are hereby notified that the site visit will take place at the Naval Research Laboratory, Washington, DC. Offerors who are scheduled to attend the site visit should meet at Building A11, 10:00a.m. EST. No cameras, firearms, or alcoholic beverages are allowed on the Laboratory.

All Attendees Must Be U.S. Citizens With Valid I.D., And/Or Must Have A Valid Green Card In Their Possession The Day Of The Site Visit To Enter The Naval Research Laboratory *(No Exceptions Will Be Made).*

NOTE: OFFERORS MAY PROPOSE WITHOUT ATTENDING THE SITE VISIT

6. **PERIOD OF PERFORMANCE**: The required completion date is 31 Nov 2007.