Mississippi State University  
Notice of Proposed Sole Source Purchase

189-51

Mississippi State University anticipates purchasing the item(s) listed below as a sole source purchase. Anyone objecting to this purchase shall follow the procedures outlined below.

1. Commodity or commodities to be purchased (make, model, description):

GeGI Gamma-Ray Imaging Detector with Compton Vision, Pinhole Imaging, Isotope Identification and Quantitative Imaging Assay, Imager32, SPECTR32HR, 2 external lithium ion batteries, battery charger, tablet PC, GeGI Pinhole Imagining Platform, Laser Range Finder, 1 mm Pb pinhole aperture insert, 5 mm Pb pinhole aperture insert, and custom modifications.

1. Explanation of the need to be fulfilled by this item(s), how is it unique from all other options, and why it is the only one that can meet the specific needs of the department:

PHDS is the only manufacturer who uses segmented planar HPGe detectors for imaging purposes. Two segmented planar detectors are placed within the system one behind the other. The two detectors are oriented 90 degrees from each other. Internal electrical components monitor each segment of each crystal and record coincident events that occur in both crystals. This crystal configuration and coincidence monitoring effectively creates a pixel analogous to those in charge-coupled device (CCD) sensors. This system is sensitive to x and gamma ray radiation instead of the traditional visual photos on the electromagnetic spectrum; and therefore allows for the generation of images of radiation fields. These radiation field images can be overlaid with a traditional digital image to effetely show where radioactive materials are located.

The Institute for Clean Energy Technology’s (ICET) Cooperative Agreement with the U.S. Army’s Corp of Engineers Engineering Research and Development Center (USACE-ERDC) out of Vicksburg, MS is responsible for the procurement, development, construction, and testing of radiological detection and surveying technologies for nuclear remediation activities. The infrastructure is being developed for conducting site characterization surveys, remediation surveys, and final status surveys (FSS) under the Multi-Agency Radiological Survey and Site Investigation Manual.

There are several facilities where military facilities that have been impacted with depleted uranium (DU). Some of these sites also contain vegetation that are endangered species. These species cannot be disturbed, but regulatory requirements will require that these sites have 100% complete survey coverage, including under and around vegetation. In regions where there are not endangered species, vegetation is typically removed during the remediation process, but that is not possible for these endangered species. This detector system can also be used in scenarios where surveying systems typically can be reached.

The requested GeGI detector is capable of taking an image of the radiation field around obstacles, identify if there is any residual contamination, and identify the type of contaminant using gamma ray spectroscopy. The GeGI detector is the only available technology capable of collecting this type of data. This technology will allow surveys to be conducted around endangered species without disturbing them or their surroundings. This technology has been valuable for a variety of nuclear defense and remediation activities, but not has been used in remediation activities in relation to DU.

The GeGI detector’s performance in relation nuclear remediation efforts will be evaluated. It has also been hypothesized that this detector can be used for performing in-situ tomography for mapping sub-surface contaminants. If a successful tomography system is configured, the technology will also be used for monitoring the development of uranium oxides under a variety of environmental conditions. The purchasing of this detector is required to complete the research described in our cooperative agreement with the USACE-ERDC.

1. Name of company/individual selling the item and why that source is the only possible source that can provide the required item(s):

PHDS is the only manufacturer of segmented planar high-purity germanium (HPGe) crystals for use in imaging systems. The manufacturing of HPGe crystals requires very extensive and expensive infrastructure and a level of expertise that is virtually impossible to replicate. Most manufacturers focus on using growing large crystals for use in HPGe gamma spectrometers; however, PHDS is the only ones growing, slicing, and segmenting HPGe crystals for use in imaging applications.

1. Estimated cost of item(s) and an explanation why the amount to be expended is considered reasonable:

$115,335.00, this amount is reasonable because of the difficulty of manufacturing these systems. The systems are very specialized and standard traditional non-imaging HPGe systems are on par with the price of this system. The fact we are getting a customized imaging HPGe system for this price is more than reasonable.

1. Explanation of the efforts taken by the department to determine this is the only source and the efforts used to obtain the best possible price:

There are essentially only three manufacturers of HPGe crystal on the planet: PHDS, Ortec, and Canberra. Both Ortec and Canberra do not manufacture segmented HPGe detectors. They also do not manufacture any kind of portable gamma imaging system using segmented HPGe detectors.

Any person or entity that objects and proposes that the commodity listed is not sole source and can be provided by another person or entity shall submit a written notice to:

Don Buffum, CPPO  
Director of Procurement & Contracts  
[dbuffum@procurement.msstate.edu](mailto:dbuffum@procurement.msstate.edu)  
**Subject Line must read “Sole Source Objection”**

The notice shall contain a detailed explanation of why the commodity is not a sole source procurement. Appropriate documentation shall also be submitted if applicable.

If after a review of the submitted notice and documents, MSU determines that the commodity in the proposed sole source request can be provided by another person or entity, then MSU will withdraw the sole source request publication from the procurement portal website and submit the procurement of the commodity to an advertised competitive bid or selection process.

If MSU determines after review that there is only one (1) source for the required commodity, then MSU will appeal to the Public Procurement Review Board. MSU will have the burden of proving that the commodity is only provided by one (1) source.

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