

DEPARTMENT OF VETERANS AFFAIRS

Justification and Approval

For

Other Than Full and Open Competition

1. Contracting Activity:

Service Area Office East
323 North Shore Dr.
Pittsburgh, PA 15212

Requesting Service

VISN 3, James J. Peters Medical Center
130 W. Kingsbridge Road, Bronx, NY 10468
Transaction: 526-14-3-1914-0410

2. Nature and/or Description of the Action Being Processed:

The James J. Peters Research Department would like to negotiate on a Sole Source basis with Baker Engineering and Risk Consultants Inc. to design, fabricate and deliver a Shock tube that will be utilized when conducting research studies for TBI (Traumatic Brain Injury).

3. Description of Supplies/Services Required to Meet the Agency's Needs:

A shock tube will be designed by Baker Engineering and Risk Consultants Inc. (BakerRisk) using a multi-step systematic design approach culminating in the development of design drawings suitable for fabrication of a shock tube. Upon finalization of the geometric design of the shock tube, a structural design phase will be completed, which includes sizing of all components for the pressure loads (both static and dynamic) within the shock tube.

BakerRisk will fabricate the shock tube and shock tube support structure. All steel components of the shock tube will be provided by the fabricator with all parts to be properly cleaned and painted with a high quality steel primer. BakerRisk will fabricate a compressed air delivery control system for shock tube operation. The compressed air delivery control system will consist of two major parts: a remote valve and pressure gauge station, and a control station with control switches for the valves and pressure readouts for the control pressure gauges. The two stations will be connected by two multi-wire cables, one for pressure instrumentation and one for valve control and each will require 110 volt power. BakerRisk will also prepare the shock tube at the test specimen location for dynamic pressure sensor installation, and other view or access ports that were not defined for the steel fabricator.

The completed shock tube will be assembled at BakerRisk's Wilfred E. Baker Test Facility in La Vernia, Texas and a series of proof tests will be performed before delivery to the Medical Center. The proof tests will serve to demonstrate the capabilities of the shock tube at the four extremes of the defined load regime: 1 psi with duration of 5 and 10 ms, and 14.5 psi with duration of 5 and 10 ms. An intermediate load will also be demonstrated for each duration case. The shock tube configuration used to deliver each load case will be documented and used to develop the framework for operational load curves to be used to determine the necessary shock tube configuration to deliver any load within the capabilities of the shock tube.

Medical Center personnel will attend the proof testing to learn basic operation of the shock tube from long-time shock tube operators. A three-day period will be utilized for BakerRisk and Medical Center personnel to gain experience in shock tube operation and incorporate the insertion of test specimen replicas during these tests to evaluate procedures for retention of the specimens within the shock tube specimen placement area. The testing will also be useful in evaluating the best methods for video documentation of tests and establishing lighting schemes for video documentation. Due to potential modifications in retention systems, lighting configuration, and camera placement, 10-12 tests would be anticipated over the three-day period. A design documentation package will be developed for the shock tube. This documentation will include the fabrication drawings, parts lists, and basic wiring diagrams for the control boxes, and a written summary of the shock tube capabilities. A rough shock tube configuration/test load operational curve will be provided with general shock tube operational guidance. A short section describing safe operation of the shock tube will be included for reference in developing internal safe operating procedures by the Medical Center.

BakerRisk will provide dynamic pressure measurement equipment including data acquisition hardware and software. A four-channel data acquisition system is proposed to accommodate the two planned dynamic pressure transducers for measurement of the test shock loads and two additional channels for additional dynamic measurements, if desired. Equipment provided would include two PCB Piezotronics Model 102M196 pressure transducers, a four-channel PCB signal conditioner, a four-channel National Instruments PXIe data acquisition system capable of a 1.25 MHz sample rate, a Windows-based laptop computer, and a custom data acquisition system interface program created using National Instruments LABVIEW software for controlling the data acquisition system and storing collected data. One set of associated instrument and computer connection cables will also be provided. A brief written instruction package, including documentation of the hardware and software packages, will be provided with the data acquisition

BakerRisk, will provide installation services at the medical center. This installation process will include two BakerRisk staff members traveling to New York for two days of on-site installation of the shock tube as well as additional training of medical center personnel.

The total estimated cost breakdown is as follows:

Item	Cost
Shock Tube Design	\$28,500
Shock Tube Fabrication	\$42,500
Shock Tube Proof Testing	\$17,500
Shock Tube Design Documentation	\$13,500
VA Personnel Training and Specimen Trials	\$15,000
On-Site Installation	\$17,000
Delivery of Data Acquisition System with Instructional Document	\$32,000
Total cost	\$164,000

4. Statutory Authority Permitting Other than Full and Open Competition:

- ☐ (1) Only One Responsible Source and No Other Supplies or Services Will Satisfy Agency Requirements per FAR 6.302-1;
- ☐ (2) Unusual and Compelling Urgency per FAR 6.302-2;
- ☒ (3) Industrial Mobilization, Engineering, Developmental or Research Capability or Expert Services per FAR 6.302-3;
- ☐ (4) International Agreement per FAR 6.302-4
- ☐ (5) Authorized or Required by Statute FAR 6.302-5;
- ☐ (6) National Security per FAR 6.302-6;
- ☐ (7) Public Interest per FAR 6.302-7;

5. Demonstration that the Contractor's Unique Qualifications or Nature of the Acquisition Requires the Use of the Authority Cited Above (applicability of authority):

This is a specific research study funded under IRB protocol for the Neurobiology Blast-Related Brain Injury in a Rat Model of mTBI, and is not just an equipment request for laboratory use. A shock tube is a test apparatus that consists of two major sections, a driver section and an expansion section. Blast pressures are generated when a rupture disk placed between the two sections fails due to gas pressure in the driver section. A shock wave then travels down the expansion section for loading targets placed at the end of the expansion section. Shock tubes have been used for cost effectively generating compressed gas driven shock and blast waves. They are used to test the structural and biological effects of blast waves such as those generated by improvised explosive devices without the fireball and ground debris generated by live explosives. In the present context the shock tube will be used in to study the biological effects of blast injuries in rats and mice.

Shock tubes are custom built devices that are designed to fit specific needs. There are few manufacturers and there are no "off the shelf" tubes offered with a set of standard features. The services offered must include the custom design and manufacture of a highly specialized piece of equipment that will meet Medical Center specifications and can be installed onsite. Provided services must include installation and specialized training of medical center personnel in the use of the shock tube. The purchase thus involves manufacture and installation of a major system utilizing highly specialized equipment/services.

BakerRisk has a strong reputation in the area of blast testing and research. BakerRisk has over twenty years of experience in designing and operating shock tubes for various clients. The shock tubes designed and built by BakerRisk range from large shock tubes used for structural component testing sized to apply loads to 8-foot and 10-foot square targets down to small scale shock tubes used for simulating the effects of explosions such as occur with improvised explosive devices on small rodents. BakerRisk has built a similar shock tube for the VA Puget Sound. All essential performance data for the shock tube built by Baker Risk were confirmed by the investigators in Seattle and the shock tube has now been in use for several years. (See attached)

This requirement was written into VA Protocol and received IRB approval that was contingent on purchasing this noncommercial piece of equipment. Baker Risk has the expertise to fulfill this requirement.

6. Description of Efforts Made to ensure that offers are solicited from as many potential sources as deemed practicable:

Market research began for a shock tube in 2012. We initially consulted with Dr. Stephen Ahlers of the Naval Medical Research Center in Silver Spring MD whose lab possessed a shock tube and with whom we had been collaborating on blast related research for several years. His lab was engaged in blast related research and had purchased a shock tube built by Baker Risk Management of San Antonio TX. Dr. Cook had extensive experience with the shock tube provided to him by Baker Risk and was highly complementary of the Baker Risk design staff, in particular in their willingness to work with clients to provide the highest quality custom designed tube. Dr. Cook was also complementary of Baker customer support. Dr. Ahlers also suggested another company named ORA Inc. in Fredericksburg, VA as a possible supplier. The VA Contracting Officer contacted ORA Inc. on September 11, 2014 to see if they could also perform the tasks being requested and no responses from ORA Inc. have been received to date. A sources sought notice was also posted on FBO to check for potential interested parties that would want to compete for this contract. No responses were received by the closing date and time of notice.

7. Determination by the Contracting Officer that the Anticipated Cost to the Government will be Fair and Reasonable:

Determination will be made by reviewing other contractor's invoices for similar projects in size and scope. A copy of the VA Puget Sound contract will also be reviewed to compare pricing. Additional discounts will be requested at the negotiation stage of this requirement.

8. Description of the Market Research Conducted and the Results, or a Statement of the Reasons Market Research Was Not Conducted:

We began market research for a shock tube in the summer of 2012. We initially consulted with Dr. Stephen Ahlers of the Naval Medical Research Center in Silver Spring MD whose lab possessed a shock tube and with whom we had been collaborating on blast related research for several years. Dr. Ahlers advised us on shock tube design and referred us to ORA Inc. in Fredericksburg, VA as a possible supplier. During the fall of 2012 we had discussions with ORA Inc. concerning the purchase of a shock tube and were provided a quote. Subsequently due to business changes at ORA, it became clear that ORA Inc. would not be able to provide us a shock tube. After it became clear that ORA Inc. was no longer a viable option we consulted with Dr. David Cook who is a VA investigator at the VA Puget Sound and the University of Washington in Seattle. His lab was engaged in blast related research and had purchased a shock tube built by Baker Risk Management from San Antonio TX. Dr. Cook had extensive experience with the shock tube provided him by Baker Risk and was highly complementary of the Baker Risk design staff, in particular in their willingness to work with clients to provide the highest quality custom designed tube. Dr. Cook was also complementary of Baker customer support. Subsequently I contacted Dr. Michael Lowak at Baker Risk. Following a conference call and several email exchanges during the fall of 2013, the first Baker Risk quote was generated on October 15, 2013. The quote provided to us by BakerRisk was reviewed by Dr. Cook who advised us that in his judgment it was reasonable given the scope of the work to be performed. In view of the highly specialized nature of the system required and the lack of other experienced suppliers a judgment was made that there would be little benefit to continuing market research at this point.

9. Any Other Facts Supporting the Use of Other than Full and Open Competition:

The tube will be used to continue VA funded research into mTBI (mild traumatic brain injury). The research previously conducted utilized the BakerRisk apparatus at the Naval Medical Research Center in Maryland and the VA Puget Sound. It is important to utilize equipment from the same manufacturer to ensure consistency and comparability of research results.

10. Listing of Sources that Expressed, in Writing, an Interest in the Acquisition:

Baker Engineering and Risk Consultants
3330 Oakwell Court, Suite 100
San Antonio TX 78218

11. A Statement of the Actions, if any, the Agency May Take to Remove or Overcome any Barriers to Competition before Making subsequent acquisitions for the supplies or services required:

N/A

12. Requirements Certification: I certify that the requirement outlined in this justification is a Bona Fide Need of the Department of Veterans Affairs and that the supporting data under my cognizance, which are included in the justification, are accurate and complete to the best of my knowledge and belief.

Title
Facility

13. Approvals in accordance with FAR 6.304

a. Contracting Officer's Certification (required): I certify that the foregoing justification is accurate and complete to the best of my knowledge and belief.

Date

b. NCM/PCM (Required \$3K and above): I certify the justification meets requirements for other than full and open competition.