NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
LYNDON B. JOHNSON SPACE CENTER

JUSTIFICATION FOR OTHER THAN FULL AND OPEN COMPETITION PURSUANT TO 10 U.S.C. 2304 (C)(1) AND FEDERAL ACQUISITION REGULATION (FAR) 6.302-1

Development of the Expandable Coil Concept

1. This document is a justification for other than full and open competition prepared by the NASA, Johnson Space Center.

2. The nature and/or description of the action being approved:

This justification provides the rationale for contracting by other than full and open competition for the development of the expandable coil concept for active radiation shielding for crew protection during spaceflight missions.

3. Description of the supplies or services required (including the estimated value):

AML was awarded Contract No. NNJ12HB16P on November 4, 2011 through a Broad Agency Announcement (BAA) NNH12ZUA004N issued at Headquarters level. The BAA and NIAC process solicited the nation for advanced concepts that help address the challenges of human exploration of space. The NIAC process vetted hundreds of proposals across the NASA agency, universities, and among private industry. AML worked with the team in phase I to develop the expandable coil concept and was the largest contributor to the concept being pursued in phase II.

The services being procured are for further development of the expandable coil concept, devised by Advanced Magnet Lab, Inc (AML), designed for active radiation shielding for crew protection, a key challenge with human exploration of space. AML will evaluate the architecture to house such an assembly and refine the structure concept. AML will evaluate risks for this electromagnet system with the high temperature superconductor tape technology and the potential for quench, asymmetric loads, and concepts to manage these risks. The architecture will be baselined with propulsion and logistics modules to be provided by NASA. Active shielding performance analysis will be conducted by University of Perugia to provide a complete comparison of efficiency with passive shielding. In addition to these results, a study will be performed to consider the scalability of the architecture concept developed in phase 1.

The estimated value for this acquisition is approximately [redacted].

4. Statutory authority permitting other than full and open competition:

The statutory authority permitting other than full and open competition is 10 U.S.C 2304(c) (1), as contemplated by the provisions of to FAR 6.302-1(a)(2)(iii)(A), for the acquisition of supplies or services determined to be reasonably available from only one

source. Awarding to any other source would result in substantial duplication of cost to the Government that is not expected to be recovered through competition. More specifically, AML developed a large portion of the research NASA now possesses in the development of the expandable coil concept.

5. A demonstration that the proposed contractor's unique qualifications or the nature of the acquisition requires use of the authority cited:

AML has a patented coil configuration concept and approach for radiation shielding and has the proprietary software tool, CoilCAD which provides advanced 3D coil design. AML developed the 6 around 1 coil concept which includes state-of-the-art magnet tape for active radiation protection. AML also has patents on a "Double Helix" design for magnetic coils used in space shield. The Double Helix magnet technology allows nearly limitless configurations of magnetic field shapes.

6. Description of the efforts made to ensure that offers are solicited from as many potential sources as practicable:

A sole source synopsis was posted on FedBizOps on January 3, 2013, in an attempt to identify possible sources to fulfill the requirements of this contract. The synopsis provided industry with an opportunity to provide data indicating capabilities and qualifications regarding the Development of the Expandable Coil Concept acquisition. The closing date for this synopsis is January 16, 2013. The synopsis yielded no responses from industry.

7. Determination by the Contracting Officer that the anticipated cost to the Government will be fair and reasonable:

Upon approval of this justification, a request for proposal will be issued to AML. The proposal will be evaluated and negotiated to obtain a fair and reasonable price. Published catalog rates, historical cost data, and a market survey of comparable rate data will be used to obtain a fair and reasonable cost.

8. Description of the market survey conducted and the results, or a statement of the reasons a market survey was not conducted:

A market survey, consisting of a search on www.sam.gov and other federal registries for companies that perform research in active radiation shielding was conducted. Also, knowledgeable individuals in active radiation shielding provided input as it relates to radiation shielding. A sole source synopsis was posted on FedBizOps on January 3, 2013, in an attempt to identify possible sources to fulfill the requirements of this contract. The synopsis provided industry with an opportunity to provide data indicating capabilities and qualifications regarding the Development of the Expandable Coil Concept acquisition. The closing date for this synopsis is January 16, 2013. The synopsis yielded no responses from industry.

9. Other facts supporting the use of other than full and open competition, such as:

AML has the patented coil configuration concept and approach for radiation shielding and has the proprietary software tool, CoilCAD which provides advanced 3D coil design. AML developed the 6 around 1 coil concept which includes state-of-the-art magnet tape for active radiation protection. AML also has patents on a "Double Helix" design for magnetic coils used in space shield. The Double Helix magnet technology allows nearly limitless configurations of magnetic field shapes.

Awarding to any other source would result in substantial duplication of cost, in the amount of [redacted], to the Government that is not expected to be recovered through competition.AML is an industry leader of advanced magnet system development and related manufacturing technology. The company is a team member of the radiation shielding NIAC proposal which was vetted through the NIAC process and competed among hundreds of other advanced concept proposals across the nation for Broad Area Announcement (BAA) NNH12ZUA004N. The awarded proposal number is 12-12NIAC II -0023.

10. A listing of sources, if any, that expressed in writing an interest to this acquisition:

There were no responses received from industry.

11. A statement of the actions, if any, the Agency may take to remove or overcome any barriers to competition before any subsequent acquisition for the supplies or services required:

NASA will continue to monitor the market for companies that have developed technologies that can meet the requirements of this program. To do so, the procurement offices will coordinate with the COR to ensure any needs for publicizing formal RFIs and sources sought synopsis are met. These postings will enable the COR and technical community to gather crucial information regarding the options and available sources for the future testing needs of the Agency. The technical offices and COR will continue to monitor industry capabilities by attending related seminars and industry forums. The COR will also continue to review relevant technical journals, Government and commercial databases, and Internet resources for relevant information.