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)

1. This document is a Justification for Other Than Full and Open Competition (JOFOC) prepared by the NASA Johnson Space Center (NASA/JSC) in accordance with the Federal Acquisition Regulation (FAR) Part 6.3, Other Than Full and Open Competition, and NASA FAR Supplement Part 1806.3, Other Than Full and Open Competition.

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 with the University of Alabama at Birmingham (UAB) Center for Biophysical Sciences for the continued design and build, sustaining and integration, operations, and deployment phases of the General Laboratory Active Cryogenic International Space Station Experiment Refrigerators (GLACIER), the Polar space freezer units, and the Microgravity Experiment Research Locker Incubators (MERLIN). These space refrigerators and freezers are used extensively in support of the International Space Station (ISS) Program.

3. Description of the supplies or services required, including an estimated value:

   This will be a hybrid contract with a cost reimbursable base and Indefinite-Delivery, Indefinite-Quantity (IDIQ) with cost reimbursable and fixed price delivery orders. [redacted]

   The base of this contract will cover the sustaining, integration, and operations support for GLACIER, Polar, and MERLIN units. The IDIQ portion will provide for continual research and development of additional hardware, software updates and or revisions, and spare parts for the units as required.

   This justification is to support the Engineering Directorate's Crew and Thermal Systems Division requirement to sustain the existing flight and ground inventory often GLACIER units (eight flight, one qualification, one development unit), fourteen Polar units, and six MERLIN units (deemed "freezers" in the remainder of this JOFOC). These units were procured under previous NASA contracts: Crew, Robotics, Avionics, and Vehicle Equipment (CRAVE I and II). Although CRAVE I and II were awarded as Multiple Award Contracts, the vehicle equipment portion of CRAVE I and II was sole-sourced to UAB for the design and build of the cold stowage units.

   The services required include: maintaining hardware in a flight ready state, maintaining adequate spare inventory and tracking of limited and cycle life items, and controlling and updating software configuration as required. In addition, the Crew and Thermal Systems Division requires services to conduct all of there-flight requirements and Pre-Installation

Acceptance criteria required to launch, operate on ISS, and return freezers on Visiting Vehicle. This entails reviewing Visiting Vehicle Interface Definition Documents, reviewing requirements changes associated with ISS Program levied requirements, conducting and submitting verifications associated with applicable requirements, and addressing any changes in requirements on a per flight basis.

Additional services are also required to maintain the capability to monitor hardware health and status while in transit or on ISS via a remote operations control center. This capability includes the ability to command freezers on ISS and monitor voice loops in order to provide real time notification in the event of an anomaly.

The GLACIER, Polar, and MERLIN units are part of a suite of cold stowage hardware utilized by the ISS Program to support science experiments on board the ISS. Cold Stowage is a critical function to the ISS, and one of the most limiting resources. GLACIER is a powered, double Middeck Locker Equivalent (MLE), cryogenic freezer, with temperature ranges from +4 to -160C. The primary function of GLACIER is to provide the capability to provide cryogenic preservation to science samples, with a wide variety of geometries aboard ISS. Polar is a single powered locker MLE equivalent refrigerator/freezer, -with temperature ranges of +4 to -SOC. Polar's primary function is to provide a -80°C environment for payload science to and from ISS, in visiting vehicles. MERLIN is a powered freezer/ refrigerator/incubator, with operating temperature ranges from 20°C to 48.5°C. Three units currently reside on orbit, two of which are used for galley accommodations. The third unit is used to provide incubation capabilities for payload science, as well as back up to existing refrigerator hardware on ISS.

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

The statutory authority permitting other than full and open competition for this action falls within FAR 6.302-l(a)(2)(iii)(B), "Only one responsible source," pursuant to 10 U.S.C 2304(c)(l), services required by the agency are available from only one responsible source and no other type of supplies or services will satisfY agency requirements, full and open competition need not be provided for. UAB is the only vendor capable of maintaining the space freezers that are critical to the ISS Program, and any delay would result in an unacceptable delay in fulfilling the Agency's requirements for the ISS Program.

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

The GLACIER and Polar hardware were fully developed by UAB under previous contracts with NASA, therefore, the technical expertise and inherent knowledge of these systems resides with UAB. The Glacier and Polar designs satisfY NASA requirements by employing unique technical innovations, which includes the following:

a. Cold enclosure's vacuum insulation subsystem and assembly.
b. Cold volume fan shaft insulation pass through that allows the drive motor to be external to the cryogenic cold volume.
c. Piezoelectric fan and motor drive controller.

d. Packaging of the commercially sourced Stirling cryocooler such that it can handle launch/landing loads.
e. Cryocooler electronics and control software subroutines that drive the cryocooler with sufficiently low electronic noise to meet NASA vehicle requirements. Includes drive routines that mitigate cryocooler vibrations and acoustics below levels acceptable to NASA. Includes routines that limit peak power that allow operation in power limited locations such as the Dragon, Cygnus, and future vehicles.
f. Overall control and telemetry software subsystem.
g. Ground control and on-board laptop user interface software.
h. Electromagnetic Interference and Electromagnetic Compatibility mitigation.
1. Response of the system to changes in visiting vehicle power, airflow, loads, or other resources or environment outside of the freezers existing certification.

In addition to UAB's unique technical knowledge ofthe GLACIER and Polar units, UAB maintains data rights and proprietary software for the MERLIN units. The internally generated data that contains technical data on the MERLIN units is exclusively controlled by UAB.

UAB possesses the demonstrated ability to assess new vehicle interface requirements, to build additional units, repair existing units, and provide maintenance. Additionally, UAB has developed unique manufacturing processes consistent to maintaining these space freezer units.

Re-competition at this stage would result in a substantial duplication of cost to NASA that could not be recovered through competition. Additionally, competition would result in unacceptable delays in fulfilling NASA requirements for these systems. Continued support by UAB is essential to prevent a lapse in space operations services to JSC and not to impact studies and experiments that are needed to be kept at extremely cold temperatures. The contractor's design has been determined to be the only system which satisfies NASA requirements.

6. Description of the efforts made to ensure that offers are solicited from as many potential sources as practicable, including whether a notice was or will be publicized as required by FAR 5.2:

On June 23, 2014, a synopsis was posted to NASA's Electronic Posting Site under solicitation number NNJ14505720R. The synopsis was posted for 17 days to account for the holiday, with a response deadline date of July 7, 2014. No responses or inquiries were submitted.

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

The Contracting Officer will ensure the contract price is fair and reasonable based upon a thorough cost evaluation of the contractor's proposal including the proposed terms and

conditions. Historical data from CRAVE II will be used as part of the evaluation of the new contract.

The proposed costs will be evaluated by the Contracting Officer's Representative and the Contracting Officer to determine that the labor rates, hours, skill mix, other direct costs, and indirect costs are fair and reasonable.

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

An Internet search and review of ISS inventory was conducted to evaluate the availability of any additional space grade freezers; however, none could be identified.

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

Due to the critical nature of the freezers provided by UAB, further actions to foster competition will not be provided. Competition would cause undue risk to space operation services which are vital to the NASA mission. Competition is not anticipated to result in any new and superior proposals. The sustaining, integration, and operations of GLACIER were previously completed under the CRAVE II contract. No other contractors provided proposals. The design, fabrication, and build of Polar were previously completed on CRAVE II. No other contractors provided proposals. In addition, UAB has special test equipment, facilities, and procedures unique to handling and sustaining the freezers. A duplication of these facilities would not be a prudent use of government resource. It is in the best interest of the Government to maintain its investment in UAB expertise and prevent the loss of the invaluable knowledge base and capabilities which provide an essential and unique service to NASA.

10. Sources, if any, that expressed an interest, in writing, in the acquisition:

No sources expressed an interest in this acquisition.

11. The actions the Agency may take to remove or overcome any barriers to competition before any subsequent acquisition for the supplies or services required:

NASA Technical organization will continue to research and assess the marketplace for alternative sources. No other actions are required at this time.