

**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**

Cascade Distillation Subsystem (CDS) Development

1. This document is a Justification for Other than Full and Open Competition prepared by the NASA Lyndon B. Johnson Space Center (JSC).

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 Honeywell, Inc., for tasks to support the technology development of the Cascade Distillation Subsystem (CDS).

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

The CDS is a wastewater processing subsystem based on centrifugal vacuum distillation and uses an efficient multistage thermodynamic process to produce purified water. The NASA Advanced Exploration Systems organization has identified the development of CDS as a JSC/EC3 water technology development task for fiscal years (FY) 2012-14.

The technology development task is to begin with the teardown of the CDS thermoelectric heat pump (THP) to define its electrical and mechanical design. This work will be integrated into a NASA-led trade study that will evaluate the relative benefit of various THP redesign efforts. Following the trade study, and if further THP development is warranted, Honeywell will support the redesign effort by collaborating with NASA JSC engineers.

Following completion of the above effort, Honeywell will test the CDS with new bearings (improved in a previous procurement) and new THP, provide support for Electrodialysis Metathesis (EDM) integration with the CDS and provide limited support for integrated testing of the CDS/EDM at JSC.

JSC is proposing to contract with Honeywell for an estimated period of performance from February 27, 2012, to September 30, 2014. The proposed contract value is estimated to be \$1,500,000.

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

The statutory authority for this procurement is "Only one responsible source and no other supplies or services will satisfy agency requirements," pursuant to 10 U.S.C. 2304(c)(1), and

implemented by FAR 6.302-1. The specific authority for the procurement of services is found at FAR 6.302-1(a)(2)(iii).

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

Recovery of potable water from wastewater is essential to the success of long-duration human spaceflight. In 2004, NASA grant NNJ04HF81G was awarded to Honeywell to improve upon the CDS, which is owned and maintained solely by Honeywell. The Honeywell CDS grant resulted in substantial testing through 2009 of a Honeywell-provided CDS test stand at the JSC Advanced Water Recovery Systems Development Facility (AWRSDF). In 2009, U.S. Patent #7610768 entitled "Apparatus and Methods for Water Regeneration from Waste" was awarded in relation to CDS. In 2010, a NASA-sponsored distillation technology down-select committee reviewed CDS results to date, along with other distillation technologies, and recommended NASA continue further development of the CDS. The Honeywell grant concluded in 2010.

Honeywell has unique qualifications that make them the only viable source capable of performing this effort. As the designer and the developer of the CDS technology, Honeywell has unique and proprietary knowledge and extensive operational experience with the CDS. The CDS hardware is owned by Honeywell and currently maintained at Honeywell facilities. Specific design information required for the requested tasks resides within Honeywell. Because previous grants and contracts were for the sole purpose of testing to determine the system's efficiency relative to similar technology, the Government has no existing rights to the CDS hardware or technology.

Honeywell is uniquely qualified to meet the Statement of Work requirements as the company has previous knowledge in the design, development, and testing of the CDS. Honeywell has conducted testing of the CDS hardware at Honeywell facilities and extensively supported testing of the CDS test stand at the NASA JSC AWRSDF. Honeywell possesses extensive experience with CDS performance data, test results, and hardware performance. Honeywell's qualifications, knowledge, and experience are required for the successful, timely, cost-effective completion of the requested tasks.

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

In accordance with the requirement at FAR 5.201, a synopsis for this effort was issued on the NASA Acquisition Internet Service on January 6, 2012. The Government solicited interested organization's capabilities and qualifications to determine other possible sources for the requirement. The synopsis closed without response on January 23, 2012.

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

The Defense Contract Management Agency (DCMA) has issued a Forward Pricing Rate Recommendation (FPRR) for the specific Honeywell division (Torrance Division) that will be performing on this contract. These rates have been audited by the Defense Contract Audit Agency and are considered to be fair and reasonable. Unless a Forward Pricing Rate Agreement (FPRA) is established prior to negotiations, the Government will use the FPRR rates to negotiate the contract.

The Government will negotiate the direct labor categories to be established in the contract based on historical information and experience from similar purchases. Work will be initiated by task/delivery orders under the contract. Prior to the award of any order, price analysis will be performed and documented to sufficiently determine that the order represents the best value and results in the lowest overall cost alternative to meet the Government's needs. The price analysis will include a comparison of the existing efforts performed by Honeywell for NASA and comparison with the cost of comparable engineering skills and comparable skills under other similar contracts. The labor hours and skill mix will be evaluated and approved by the CO's Technical Representative. The CO will then ensure that task order prices are fair and reasonable before award of an order.

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

From the experience and knowledge of Advanced Water Recovery and Life Support experts in the JSC Crew and Thermal Systems Division and the Contracting Officer's Representative, Honeywell is the unique developer of the CDS technology to its current stage of development for potential NASA-related applications. Honeywell also retains proprietary information rights related to the technology and required for the support of the requested tasks. Honeywell further developed CDS technology to its current stage of development and possesses unique experience and knowledge required for completing the requested tasks. Based on the above information, Honeywell is the only known vendor suitable for the requested tasks.

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

In order to determine the optimal THP design for the CDS to meet the Government's CDS operation requirements, the experience, expertise, and knowledge acquired from previous CDS technology refinement must be used again.

The cost and schedule impacts related to another source developing the expertise, hardware, knowledge, and experience to investigate the current THP, and potentially design a new one, are prohibitive and not in the best interest of the Government. Extensive time and duplicate costs would be required for any vendor to complete the required research and gain the required knowledge. Honeywell also controls the patent and only known CDS hardware critical to the further development of CDS technology.

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

No other sources have expressed 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:

The knowledge, expertise, experience, hardware ownership, and propriety rights possessed by Honeywell place them in a unique and solely qualified position for CDS technology development at this time. The Government will include in the terms and conditions of the resultant contract the appropriate data rights and intellectual property clauses. This will ensure Government rights to any technology that is developed under the performance of this contract and may allow competition for future acquisitions.

The Government will continue to assess the market for any new technologies which may be utilized for future water recovery technology requirements. No additional actions to remove or overcome barriers to competition are anticipated.

