

**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA)
LYNDON B. JOHNSON SPACE CENTER (JSC)**

**JUSTIFICATION FOR OTHER THAN FULL AND OPEN COMPETITION (JOFOC)
Pursuant to 10 United States Code (U.S.C.) 2304(c)(1) and Federal Acquisition Regulation
(FAR) 6.302-1**

1. FAR 6.303-2(b)(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 Oceaneering International, Inc. (OII), to extend the base period of performance of the CSSS contract (NNJ09TA40C) by one year through September 30, 2016. Due to funding constraints on the CSSS contract over the past five years, this additional time is needed for the contractor to complete technology development and testing for a specific set of hardware and delivery of associated data. This extension will help remove barriers to any future spacesuit competition as the data related to this hardware will be provided in a Technical Library available to interested parties in any potential future spacesuit competition. Furthermore, any hardware developed under this contract will be made available to the successful offeror in any potential future spacesuit competition. The work to be continued under this extension is covered by the technical requirements of the base contract and will not require an increase in contract value. If this extension is not exercised, NASA will not have this final data to provide to competitors during the follow-on procurement or the associated final hardware to provide to the successful offeror.

2. FAR 6.303-2(b)(3) – A description of the supplies or services required, to meet the Agency’s needs (including the estimated value):

The CSSS is a Cost-Plus-Award-Fee (CPAF)/Firm-Fixed Price (FFP)/Indefinite Delivery, Indefinite Quantity (IDIQ) hybrid contract that was initially awarded in 2009 to provide portions of the Extravehicular Activity (EVA) System for the Constellation Program (CxP). From an EVA Systems perspective, the CxP mission required two capabilities of a spacesuit system: one to provide launch, entry, and abort and micro-gravity extravehicular activity (EVA) capability, and the second to provide partial gravity and surface EVA capability. These are referred to as Configuration 1 and Configuration 2. These two configurations share many components, which are referred to throughout this document as “common hardware.” A spacesuit system minimizes life cycle costs by incurring the Design, Development, Testing and Evaluation (DDT&E), production, logistics, and sustaining engineering costs only once to develop the technology for the common hardware and its associated data.

The CSSS contract was structured with a base and two options. The base period of performance is currently from March 2, 2009 to September 30, 2015 and includes the requirement to perform DDT&E for Configuration 1 as well as special studies and technology development. Option 1 was structured to add performance of DDT&E for Configuration 2, as well as to authorize the performance of special studies and technology development for Configuration 1, beginning October 1, 2011 through September 30, 2020. Option 2 was structured to add additional requirements to produce Configuration 1 and perform sustaining engineering, processing, and logistics for Configuration 1, with a period

of performance beginning October 1, 2015 through September 30, 2020. The total potential period of performance including options is therefore 11 years and 7 months.

Subsequent to award of the CSSS Contract, the CxP was cancelled in 2010. However, the Government determined it still had a requirement to continue development of Configuration 1 as well as perform special studies and technology development at a reduced funding level. Therefore, the Government directed the contractor to fulfill specific requirements within the base period Statement of Work which could be performed within the funding limitations of the CSSS contract. Due to the cancellation of the CxP, the Government did not have a need to exercise Option 1 or Option 2.

Under the base CSSS Contract, the contractor is advancing the design of the spacesuit system Configuration 1 from concepts to working prototypes. At this point in time, the Government has a requirement for the contractor to complete prototypes and testing of specific common hardware and deliver associated data, which reflects the requirements and contract value of the base contract. Therefore, the Government intends to extend the period of performance of the base period of the contract, without increasing contract value.

Specifically, this extension of the base period will allow additional time for DDT&E on a specific set of common hardware to proceed on the base contract and to provide a logical stopping point for suit system technology in five key areas: pressure garment, life support subsystems, power and communications, integrated testing, and EVA infrastructure support. The first four areas represent the common hardware and the fifth area, EVA infrastructure support, represents the data and software tools associated with the common hardware.

The completion of these prototypes and associated testing and evaluation would avoid technological and safety risks associated with the delivery of untested prototypes and hardware. This extension would also allow future contractors to understand and evaluate the current designs and continue development without having to duplicate the costs that would be associated with starting from concept development.

The five key technology areas under the existing scope of the contract, which the Government has a requirement to complete technology development and testing, as well as deliver associated data are as follows:

- Pressure Garment (PG): A hybrid upper torso made out of a combination of soft and hard materials has been developed. However, the extension of the base contract would provide the additional time necessary to complete the following hardware prototypes:
 - Liquid Cooling Ventilation Garment
 - Suit Control Assembly (SCA) for integration into the Neutral Buoyancy Lab (NBL) compatible Pressure Garment Sub-System (PGS)

The extension of the base contract would also provide additional time for the following testing and evaluation:

- Complete design and fabrication of an NBL Compatible PGS, including a Hybrid Upper Torso, Prototype Exploration Suit (PXS) Shoulder, and

Microgravity Lower Torso

- Evaluation of the effectiveness of the PG technology
 - Documentation of test results
- Life Support Subsystems: A concept for life support subsystems has been developed. The extension of the base contract would provide the additional time necessary to finish design and fabrication of life support subsystem component prototypes such as:
 - Thermal loop pump
 - Vent loop fan
 - CO2 sensor
 - Swing bed CO2 scrubber
 - Negative Pressure Relief Valve

This extension of the base contract would also provide additional time necessary to complete testing of life support brassboards, which integrates the individual components into a functional system and allows testing of the life support subsystem prototypes to evaluate and document their performance.

- Power and Communications: A concept has been developed for an audio system integrated into the helmet with electronic noise cancellation technology as well as a software-defined radio, prototype exploration suit-compatible battery, and data processing and storage assembly. The extension of the base contract would provide the additional time necessary to complete design and fabrication of these power and communication prototypes and to complete testing to evaluate and document their effectiveness.
- Integrated Testing: A concept has been developed for integrating the prototypes together into a Neutral Buoyancy Laboratory (NBL)-compatible prototype exploration suit that could be evaluated with human-in-the-loop and cycle performance testing for its effectiveness. The extension of the base contract would provide the additional time necessary for the integrated testing of the prototypes together to be completed, as well as completion of updates to the integrated model for the extravehicular activity suit, which would provide NASA valuable insight into this new technology.
- EVA Infrastructure Support: Associated with the common hardware are data products which are equally important as the hardware itself. A tool for the integration of NASA suit processing data is being developed and O2 test rig components and design documentation are being completed. The extension of the base contract would provide the additional time necessary to complete these products, thereby avoiding unnecessary duplication of effort and costs that would be associated with a follow-on contractor being required to start over in developing and completing the data products associated with the common hardware. In addition, during the extension period of this contract, the contractor will be required to provide data deliverables such as test plans, status updates, and test reports to document progress in completion of the common hardware prototypes and associated testing. This data will be made

available to all potential offerors in a technical library, which will facilitate a fair competition of any subsequent procurement.

Successful completion of design, fabrication, and testing of these prototypes, and their associated data, is valuable to the Government for advancing the maturity of spacesuit technologies and reducing technical and safety risk. The completion of fully integrated, working prototypes will avoid costs associated with duplication of effort during the preliminary design phase of any subsequent spacesuit contract, enable the reduction of barriers to future competition, and reduce development cost and schedule risk associated with the establishment and transition to any potential future spacesuit contracts.

3. FAR 6.303-2(b)(4) – An identification of the statutory authority permitting other than full and open competition:

The applicable statutory authority is 10 U.S.C. 2304(c)(1), implemented in FAR 6.302-1(a)(2)(iii), which allows for other than full and open competition when services are available only from the original source in the case of follow-on contracts for the continued provision of highly specialized services when it is likely that award to any other source would result in substantial duplication of cost to the Government that is not expected to be recovered through competition. Pursuant to 10 U.S.C. 2304 (d)(1)(B) and FAR 6.302-1(b)(1)(ii), this authority is applicable when there is a reasonable basis to conclude that the agency's minimum needs can only be satisfied by unique supplies or services available from only one or a limited number of sources or from only one or a limited number of suppliers with unique capabilities.

4. FAR 6.303-2(b)(5)&(9) – A demonstration that the proposed contractor's unique qualifications or the nature of the acquisition requires use of the authority cited and any other facts supporting the use of other than full and open competition:

OII is the incumbent contractor under CSSS that has been working on the Configuration 1 spacesuit system and common hardware for the past 6 ½ years. OII's experience in developing the spacesuit system provides a level of familiarity that reduces time and risk in troubleshooting, the ability to quickly integrate and make changes, and further DDT&E efforts. It is not feasible for another contractor, by the end of fiscal year FY 2016, to create procedures to work with life-critical hardware used in human-in-the-loop testing, and obtain all 6 ½ years of suit development data and synthesize it into a unified product for the completion and delivery of the common hardware and its associated data, within one year. Transferring this work to another contractor team exposes NASA to significant safety risk for human-in-the-loop spacesuit testing because a new contractor team will have to completely understand all of the data, hardware, and operating procedures associated with the new suit design prior to commencement of safe testing.

The impacts to cost and schedule to competitively award this required work would represent a duplication of cost to the Government that could not be recovered through competition and would significantly delay the delivery schedule for the common hardware and its associated data, which NASA requires to ensure the continued advancement of spacesuit technologies.

5. **FAR 6.303-2(b)(6) – A 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 Subpart 5.2 and, if not, which exception under 5.202 applies:**

The proposed contract action is a modification to extend the period of performance of an existing contract without adding contract value. Therefore, a synopsis was not required for this action as the proposed contract action does not meet the \$25,000 threshold at FAR 5.201(b)(1)(i).

6. **FAR 6.303-2(b)(7) – A determination by the contracting officer that the anticipated cost to the Government will be fair and reasonable:**

The contemplated extension to the base period of performance will not require additional contract value. The CSSS contract was initially awarded on a competitive basis and includes pre-established IDIQ labor rates through 2020 that were determined to be fair and reasonable upon award. The Government has also performed an analysis of OII's rates compared to contractors with similar capabilities and has determined OII's rates to be comparable, and therefore fair and reasonable. Furthermore, the Defense Contract Management Agency (DCMA) has provided OII's provisional billing rates through December 31, 2015. After execution of this one year extension, DCMA will continue to evaluate OII's rates and will provide their recommendation on the reasonableness of those rates to the Contracting Officer. In addition, as this is a cost-type contract, all incurred costs will be subject to audit prior to the closeout of the contract, to ensure all incurred costs were reasonable, allocable, and allowable.

7. **FAR 6.303-2(b)(8) – Description of the market survey conducted, and the results, or a statement of the reasons a market survey was not conducted:**

Market research was conducted to assess if other sources exist which could fulfill the Government's requirements to complete working prototypes and testing of specific common hardware and its associated data in support of the Configuration 1 spacesuit system. The market research indicated the requirements cannot be met by commercial items, commercial items with modifications, or non-developmental items. Although there is a limited number of other sources that possess some of the capabilities required to support spacesuit development of the common hardware, OII is the only company that possesses the complete set of unique capabilities necessary to complete the DDT&E of the common hardware and associated data without resulting in a substantial duplication of cost to the Government that would not be expected to be recovered through competition.

8. **FAR 6.303-2(b)(9) – Any other facts supporting the use of other than full and open competition, such as:**

The contractor has continued spacesuit technology development while paying particular attention to areas of spacesuit design that will reduce risk. This extension provides the additional time necessary to advance the Technology Readiness Level (TRL) of the hardware. Having hardware at a more advanced TRL adds value to the Government and reduces the cost and complexity of any future efforts to complete spacesuit design.

9. FAR 6.303-2(b)(10) – A listing of the sources, if any, that expressed an interest in writing in the acquisition:

The proposed contract action is a modification to extend the period of performance of an existing contract without adding contract value. Therefore, a synopsis was not required for this action as the proposed contract action does not meet the \$25,000 threshold at FAR 5.201(b)(1)(i).

10. FAR 6.303-2(b)(11) – A statement of 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:

The CSSS contract was competitively awarded and all of the intellectual property belongs to the Government and may be used in support of any future spacesuit acquisitions. As future spacesuit requirements materialize, NASA will assess the Government's need with the capabilities and qualifications available in the spacesuit industry to competitively fulfill the requirement. The contemplated extension of the CSSS base contract will allow the Government to obtain working prototypes and complete testing of the common hardware and associated data, which will help remove barriers to any future spacesuit competition by enabling the Government to provide data related to this common hardware in a Technical Library to be accessed by interested parties in any potential future competition, and subsequently, to provide the common hardware and associated data to any future contractor. Failure to exercise this extension will prevent NASA from obtaining the final data that NASA intends to provide to competitors during the follow-on procurement or associated final hardware to provide to the successful offeror.