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National Aeronautics and
Space Administration
Langley Research Center
100 NASA Road
Hampton, VA 23681-2199



May 3, 2013

Reply to Attn of: 12

TO: 12/Research and Development Contracting Branch, Office of Procurement
Attn: C. Lynn Jenkins

FROM: 499/Jeffrey D. Flamm, Aerospace Engineer, Configuration Aerodynamics
Branch, Research Directorate

SUBJECT: Justification for Exception to the Fair Opportunity Process (JEFOP) for
The Boeing Company, Estimated Value \$2.5M – NNL10AA05B

In accordance with FAR 16.505, the following information is provided to support this justification:

I. Recommendation

NASA Langley Research Center (LaRC) intends to award a task order directly to Boeing under the existing Structures, Materials, Aerodynamics, Aerothermodynamics, and Acoustics Research and Technology (SMAAART) contract. The purpose of this task order is to develop detailed test requirements and provide Computational Fluid Dynamics (CFD) analysis for a subscale wind tunnel experiment with two test campaigns. The Environmentally Responsible Aviation (ERA) Project is planning these two test campaigns to understand operability issues that might result from an engine/airframe integration of an ultra-high bypass ratio (UHBR) engine on a low-noise Hybrid Wing Body (HWB) advanced vehicle concept as well as the low speed performance resulting from such integration. The data to be acquired from the low speed wind tunnel tests are considered critical information for the potential future development of a HWB Sub-scale Testbed Vehicle (STV) currently being considered for further development under NASA's ERA Project.

Boeing is the sole source capable of performing the required effort because it is the only contractor capable of developing the proprietary HWB advanced vehicle concept recently evaluated under an Advanced Vehicle Concepts (AVC) study completed in December 2011 under NASA Dryden contract NND11AG03C and furnishing the related highly specialized HWB design evaluation and computational analysis services.

Purchase Request (PR) 4200466974 has been generated for this proposed task order and includes a Total Estimated Value of \$2.5M and a Total Committed Amount of \$1.475M in incremental funding. LaRC plans to utilize the SMAAART contract, which is a multiple award, indefinite delivery/indefinite quantity (IDIQ), cost plus fixed fee (CPFF) contract.

II. Background

The ERA Project within the Integrated Systems Research Program (ISRP) of the NASA Aeronautics Research Mission Directorate (ARMD) has the responsibility to explore and document the feasibility, benefits, and technical risk of vehicle concepts and enabling technologies that will reduce the impact of aviation on the environment. The primary goal of the ERA Project is to select vehicle concepts and technologies that can simultaneously reduce noise, fuel burn, and emissions. In addition, the ERA Project will identify and mitigate technical risk and transfer knowledge to the aeronautics community at large so that new technologies and vehicle concepts can be incorporated into the future design of aircraft. The ERA Project is a 6-year, 2-phase project with several Integrated Technology Demonstration (ITD) work packages that are currently defined for Phase II (FY13-FY15).

III. Nature and/or Description of Required Supplies/Services

This proposed task order is for the development of detailed test requirements and CFD analysis for experiment development for two test campaigns required to understand operability issues that might result from an engine/airframe integration of an UHBR engine on a low-noise HWB advanced vehicle concept as well as the low speed performance resulting from such integration. In order to meet the ERA Project's goals and mission requirements, this proposed task order needs to be completed by June 30, 2015.

IV. Identification of the Exception to Fair Opportunity and Supporting Rationale

FAR 16.505(b)(1)(i) requires the Contracting Officer provide each awardee under a multiple award contract, a fair opportunity to be considered for each order exceeding \$3,000 unless a statutory exception applies. Specifically, the exception that precludes the fair opportunity process for this acquisition is FAR 16.505(b)(2)(i)(B), which states that "Only one awardee is capable of providing the services or supplies at the level of quality required because the service or supplies ordered are unique or highly specialized."

In June 2010, NASA Research Announcement (NRA) NNH10ZEA001N was released to solicit advanced vehicle concepts that would meet ERA Project goals. As a result of this full and open competition, eight proposals were received. The source selection process resulted in three contract awards, issued by NASA Dryden to Boeing (Contract # NND11AG03C), Lockheed Martin (Contract # NND11AG01C), and Northrop Grumman (Contract # NND11AG02C). Each company was required to develop an advanced vehicle concept that would simultaneously meet the noise, fuel burn, and emissions reduction goals for the ERA Project. Boeing developed an HWB concept, Lockheed Martin developed a box-wing concept, and Northrop Grumman developed a flying-wing concept. These advanced vehicle concepts are unique and proprietary to each of the three companies. Specifically, the HWB (also called Blended Wing Body or BWB) is an advanced vehicle concept that Boeing has been working for over 20 years, which was funded by both Government contracts and Boeing internal funds. Several patents have been filed and approved, others are pending. Based on the results from this NRA study, the HWB advanced vehicle concept was determined to be the

best concept to simultaneously meet all ERA Project goals for noise, fuel burn, and emissions reduction.

The ERA Project has developed a Phase II plan for advancing specific technologies of interest under several ITD work packages. In order to develop this plan, the ERA Project engaged in a series of market research activities to identify technologies that could be matured from a Technology Readiness Level (TRL) of 4 to a TRL of 5 or 6 with an emphasis on those technologies that would simultaneously enable meeting the ERA Project goals and be matured to a higher technology maturation level and those that have demonstrated commercial viability in the 2020 to 2025 timeframe. As part of this market research, the three companies mentioned above were requested to provide a list of technologies and identify the research required to develop them.

These efforts included publishing a Request For Information in FEDBIZOPPS and the NASA Acquisition Internet Site on February 24, 2012, which solicited extensive information including (1) recommendations of technologies associated with the technology focus areas ready to be incorporated in ITD work packages and associated test campaigns and test assets to be completed by the end of FY 2015, raising TRL to 5 or 6 and thereby advancing integration readiness level; and (2) product-focused transition plans associated with the identified technologies.

In addition, the ERA Project conducted a Meeting of Experts forum involving potential industry partners on March 29, 2012, to gather additional information to set its Phase II planning strategy. As part of these market research efforts, the ERA Project leadership engaged in discussions with Lockheed Martin, Northrop Grumman, and Boeing to explore whether there was interest in pursuing follow-on activities in Phase II.

The planning process for Phase II involved several key decision points where these technologies were evaluated and some were selected for further development under several ITD work packages. The ERA Project received authority to proceed by the ARMD at NASA Headquarters for the planning and execution of an ITD work package to understand the engine operability issues of twin ultra high bypass ratio engines mounted on the upper surface of an HWB advanced vehicle concept at low speeds and high angles of attack and sideslip using the HWB concept design developed by Boeing under the NRA contract mentioned above (Contract # NND11AG03C). This ITD work package can only be accomplished in partnership with Boeing because the HWB advanced vehicle concept is proprietary.

As part of the overall approach for the mentioned ITD work package, this proposed Task Order is being worked in conjunction with a proposed nonreimbursable Space Act Agreement (SAA) SAA1-1018, Annex 7. See below requirements for each area identified to support each:

1. SMAAART Task Order: Boeing shall develop detailed test requirements and provide Computational Fluid Dynamics (CFD) analysis for a subscale wind tunnel experiment with two test campaigns.

2. **Space Act Agreement:** Boeing shall provide the HWB model and NASA will provide the 14x22 wind tunnel to conduct the two experiment test campaigns developed under the proposed task order. NASA will also furnish the Turbine-Powered Simulator systems for the tests. NASA and Boeing will collaboratively plan, conduct, and analyze the data from the two wind tunnel tests and share all results including the system-level assessments of the HWB advanced vehicle concept.

The design of the HWB advanced vehicle concept is a highly specialized research effort and due to its proprietary nature, the Boeing Company is the only source capable of developing detailed test requirements and performing CFD analysis for experiment development. Furthermore, Boeing has the necessary tools, methods, experience, and technical data available to further develop the HWB advanced vehicle concept. As such, Boeing is uniquely qualified and considered a highly specialized source for this proposed task order.

As a follow-on activity to the AVC NRA under NASA Dryden contract NND11AG03C that was originally competed, combined with Boeing's unique and highly specialized abilities, it is not advantageous for the Government to release this proposed task order as a competitive solicitation when there is no expectation that the other SMAAART contractors will submit a proposal. Additionally, because NASA has no known future requirements for this technology at this time, NASA lacks the ability to incentivize the other SMAAART contractors to invest the substantial sums that would be required to establish an alternate source for this service.

VII. Determination by the Contracting Officer That The Anticipated Cost to the Government Will Be Fair and Reasonable

The CPFF amount for this acquisition will be determined fair and reasonable by the Contracting Officer prior to award of the task order. Actions anticipated to ensure reasonableness will be accomplished using the procedures and criteria contained in the Federal Acquisition Regulation (FAR), NASA FAR Supplement (NFS), and other regulatory documents as applicable.

IX. Other Facts Supporting the Justification

None.

XI. Actions the Agency May Take to Remove or Overcome Any Barriers To Increasing Fair Opportunity Before Any Subsequent Acquisition For the Supplies or Services

NASA may have future requirements that can only be met by Boeing. However, the Contracting Officer will continue to scrutinize all SOWs received to ensure fair opportunity is appropriately given. NASA typically looks for proactive steps that can be taken to eliminate barriers to competition for future requirements and will do so should future requirements arise.

Technical Certification:

I certify that to the best of my knowledge and belief, the data furnished above is complete and accurate.



 Jeffrey D. Flamm
 Aerospace Engineer

5/3/2013

 Date

Contracting Officer Certification:

I hereby certify that the above justification is accurate and complete, to the best of my knowledge and belief, and the anticipated cost to the Government will be fair and reasonable.

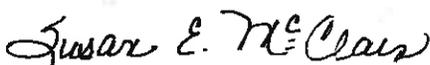


 Octavia L. Hicks
 Contracting Officer

5/3/2013

 Date

Concurrence:



 Susan E. McClain
 Head, Research and Development Contracting
 Branch, Office of Procurement

5/3/2013

 Date



 Michael I. Mark
 Office of Chief Counsel

3 May 13

 Date



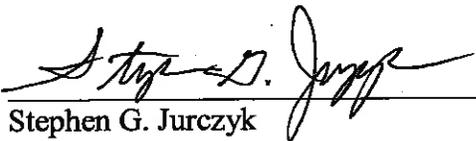
 Virginia C. Wycoff
 Procurement Officer

5/8/2013

 Date

LaRC Memo continued, dated May 3, 2013, re: Justification for Exception to the Fair Opportunity Process (JEFOP) for The Boeing Company, Estimated Value \$2.5M – NNL10AA05B

Approval:



Stephen G. Jurczyk
Competition Advocate

5/14/2013
Date

✓ cc:
12/OP
30/OCC
12/C. L. Jenkins
442/L. D. Leavitt
499/J. D. Flamm

12/OLHicks:bt 5/2/13 (48510)