NASA Glenn Research Center

# JUSTIFICATION FOR OTHER THAN FULL AND OPEN COMPETITION/ JUSTIFICATION FOR AN EXCEPTION TO FAIR OPPORTUNITY

(Certifications, Reviews, Concurrences, and Approval)

| TITLE OF PROCUREMENT | PURCHASE REQUEST NO. |
|---|---|
| VR-3A Advanced Upper Stage Engine System<br>Initial Engine System Requirements Study | 4200465254 |

## CERTIFICATIONS

1. I hereby certify that the attached Justification and its supporting data are accurate and complete.

| SIGNATURE OF PROCUREMENT INITIATOR | NAME *(Type or Print)* | DATE |
|---|---|---|
| Paul Senick | Gerald G. Sadler for Paul Senick | 02/06/2013 |

2. I hereby certify that the attached Justification is accurate and complete to the best of my knowledge and belief, and I have determined that the anticipated cost to the Government for this procurement will be fair and reasonable.

| SIGNATURE OF CONTRACTING OFFICER FOR THE PROCUREMENT | NAME *(Type or Print)* | DATE |
|---|---|---|
| Melissa A. Merrill | Melissa A. Merrill Contract Specialist | 2/8/13 |

## REVIEWS/CONCURRENCES

| TITLE AND NAME *(Type or Print)* | SIGNATURE | DATE |
|---|---|---|
| Jerald J. Kennemuth , Chief Counsel | | 2/8/13 |
| Karin E. Huth, Branch Chief | Karin Huth | 2/8/13 |
| Bradley J. Baker, Procurement Officer | | 2/11/2013 |
| Robyn N. Gordon, Director of Center Operations | for Mary C. Lester | 2/13/13 |
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## REVIEW FOR PIC 05-08 REPORTING POTENTIAL
***(JOFOC - SUPPORTED ACTIONS OVER $500,000.00 ONLY)***

| TITLE AND NAME | SIGNATURE | DATE |
|---|---|---|
| CH-JOFOC Reviewer<br>Robin H. Strohacker | Robin Strohacker | 2/12/13 |

## APPROVAL

| TITLE AND NAME *(Type or Print)* | SIGNATURE | DATE |
|---|---|---|
| James M. Free, Center Competition Advocate | James M. Free | 15 Feb 13 |

REMARKS

**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION**
**GLENN RESEARCH CENTER (GRC)**
**CLEVELAND, OHIO**

# JUSTIFICATION FOR AN EXCEPTION TO FAIR OPPORTUNITY

PR# 4200465254

## I. Description of Requirement

I recommend that GRC issue a task order on a noncompetitive basis to Orbital Technologies Corporation (Orbitec) under the Research and Technologies for Aerospace Propulsion Systems (RTAPS) contract mechanism, Technology Area 4, for a feasibility and systems study of their VR3-A Advanced Upper Stage Engine (AUSE). The estimated value of this requirement is $745,000.00, and it is anticipated that a fixed price arrangement will be negotiated with Orbitec under Task Order **NNC13TA42T** not to exceed this amount (unless Options (described more fully below) are exercised and funding becomes available at a later date). The total not to exceed value of all options is $800,000.00 and not-to-exceed value of each option is also described below.

## II. Regulatory Basis for Exception to Fair Opportunity

The regulatory exception permitting other than fair opportunity is

10 USC 2304c(b)(2); FAR 16.505(b)(2)(i)(B)

Only the aforementioned contractor is capable of providing the necessary supplies or services at the level of quality required because the supplies or services are unique or highly specialized.

## III. Rationale In Support of Statutory Authority

NASA and the United States Air Force (USAF) are currently interested in concepts and technologies which will enable a RL10 class AUSE which could be used in current and future upper stage applications. The VR3-A is an AUSE concept which contains two trademarked technologies which enable this system's promised performance, compactness, and overall efficiency. One of those technologies is Orbitec's patented Vortex thrust chamber technology which enables a much smaller, lighter weight, and easily manufactured component than current state-of-the-art chambers (SOA). It utilizes readily available, non-exotic or composite materials due to operating temperatures and pressures which are much lower than current SOA engine systems with comparable performance. The second technology is their patented SYREN acoustic resonance igniter which has no moving parts and provides stable ignition throughout a wide range of nominal and off-nominal conditions.

These two unique technologies enable a potentially compact, powerful, affordable, and robust AUSE concept. Further, this study was proposed under the recently competed and awarded Space Launch System Advanced Development Office (SLS ADO) NASA Research Announcement (NRA). While their overall proposal was not awarded due to a lack of available funding, their concept and systems study is of immediate interest to NASA and USAF due to current launch schedules and budgetary challenges. This engine, with its unique technologies, could fulfill near-term needs while at the same time improving performance and reducing costs with future upper stage system applications. The follow-on options reduce risks identified during the initial systems study task and may be awarded by the government unilaterally. The scope of the follow-on options includes:

- Option 1: More detailed requirements definition not done in the baseline effort (not-to-exceed $100,000.00)
- Option 2: Complete subsystem specifications and interface control documentation (not-to-exceed $100,000.00)
- Option 3: Additional subsystem conceptual design not done in the baseline effort (not-to-exceed $300,000.00)
- Option 4: Update project plans (not-to-exceed $200,000.00)
- Option 5: Finalize requirements for Conceptual Design and System Requirements Reviews (not-to-exceed $100,000.00)

## IV. Determination of Fair and Reasonable Cost

The contractor will be required to submit adequate cost support data as part of their proposal response to the government's SOW, and an analysis will be performed to determine the costs as fair and reasonable prior to awarding the task. The government plans to enter into a fixed-price contract based on the scope of the effort being predominantly analyses and trades to contain costs.

## V. Actions to Remove or Overcome Barriers to Competition

Both NASA and the USAF have recently held competitions related to an AUSE and related technologies. Competitors of Orbitec have been awarded tasks under SLS ADO NRA SLS-AD-00-NNM12ZPS002N with comparable scope. The collective actions of the SLS ADO NRA awards and USAF competitions combined with other planned opportunities applicable to AUSE and related technologies are anticipated to remove or overcome competitive barriers.