

National Aeronautics and  
Space Administration



**Headquarters**  
Washington, DC 20546-0001

August 23, 2010

Office of Procurement

TO: Goddard Space Flight Center (GSFC)  
Attn: 200/Associate Director of Procurement

FROM: LP/Assistant Administrator for Procurement

SUBJECT: GSFC's Justification for Other than Full and Open Competition (JOFOC) for the Joint Polar Satellite System Program's Spacecraft Delivery Order with Ball Aerospace under the Rapid Spacecraft Development Office's Rapid III Contract

The subject JOFOC was forwarded to Headquarters (HQs) for review and approval pursuant to FAR 6.304 and NASA FAR Supplement 1806.304-70.

Based on HQs review, the JOFOC is approved. The HQs point of contact for this action is Jerry P. Edmond, Program Operations Division. Mr. Edmond can be reached at 202-358-0247

A handwritten signature in black ink, appearing to read "W. McNally", written over the printed name.

William P. McNally

Enclosure

## **JUSTIFICATION FOR OTHER THAN FULL AND OPEN COMPETITION**

### **(JOFOC)**

**(In accordance with Federal Acquisition Regulation (FAR) 6.3 – Other than Full and Open Competition)**

**1. This document is a justification for other than full and open competition prepared by NASA's Goddard Space Flight Center (NASA's GSFC):**

This JOFOC supports the Joint Polar Satellite System (JPSS) Program and the award of a contract to Ball Aerospace and Technology Corporation (BATC) for the manufacture and integration of a BCP 2000 spacecraft to be used as a platform in polar orbit for weather and climate instruments, as a logical follow-on to the NPOESS Preparatory Project (NPP) spacecraft.

**2. The nature and/or description of the action being approved:**

This action is a sole source procurement to Ball Aerospace and Technology Corporation for one JPSS- Spacecraft.

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

This JOFOC will support the award of a sole source procurement, which will be accomplished through a non-competitive task order under the Rapid Spacecraft Development Office (RSDO III) contract<sup>1</sup> for a single polar orbiting spacecraft to meet NOAA requirements to act as a platform for a suite of instruments<sup>2</sup> providing weather forecasting and climate data collection in the afternoon orbit.<sup>3</sup> Specifically the spacecraft must be available for instrument integration and launch at the earliest possible date, with launch and on orbit check-out no later than mid 2014. It must also be compatible with the ground system currently under development for NPP.

The estimated value of \$214M for the JPSS spacecraft is based on the NPP award with some escalation and value to reflect the known instrument updates.

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

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<sup>1</sup> The RSDO III contract is a multiple award Indefinite Delivery, Indefinite Quantity contract, which provides the NASA with a catalog of available spacecraft busses that may be procured through delivery order. A contracting officer's memorandum for record, documenting an exception to the requirement for a fair opportunity to compete for delivery orders under this contract, reflecting the rationale and referencing this JOFOC, will be executed and placed in the file of the delivery order.

<sup>2</sup> The spacecraft must accommodate the following instruments currently being acquired under the NPOESS/JPSS program: Cross-track Infrared Sounder (CrIS), Advanced Technology Microwave Sounder (ATMS), Ozone Mapping and Profiler Suite (OMPS), and Visible/Infrared Imager/Radiometer Suite (VIIRS).

<sup>3</sup> The polar afternoon orbit refers to a high inclination sun-synchronous orbit in which the spacecraft crosses the plane of the equator during the afternoon hours at local longitude. Afternoon climate observations are required by NOAA, as the weather changes generated by the daily heating of the earth's atmosphere and surface are the best indicators of how future weather patterns will develop. In contrast, the Department of Defense has requirements for early morning weather observations that provide information of importance to the planning of military operations.

The statutory authority allowing other than full and open competition is 10 U.S.C. 2304 (c) (1), Only One Responsible Source.

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

The National Oceanographic and Atmospheric Administration have operated a series of polar orbiting meteorological observation and measurement satellites since the 1960s. The daily weather and climate data provided by the sensors carried by the NOAA polar weather satellites are a critical element in providing accurate weather forecast information to military and civilian Federal Agencies, state and local governments, International Partners, the news media and the general public. The continuity of weather and climate data is critical to the national interest and must be maintained in order to provide the timely warning of impending storms and other severe weather, thus protecting life and property, promoting the safety of international and domestic land, sea and air transportation systems, and facilitating the mitigation of the impacts of and recovery from the impact of significant weather events. Accurate and uninterrupted weather forecasting is also critical to the economic wellbeing of the nation in that it promotes efficient planning and allocation of resources in the areas of agriculture, resource management and recovery, and land use. Weather data is also critical for the orderly production of energy resources and the allocation of refinery capacity. Beyond day-to-day weather forecasting, accurate and comprehensive climate data is critical to the prediction of future climate trends and to the assessment of the magnitude and impact of global climate change.

The most recent of the NOAA polar orbiting weather spacecraft, NOAA-19, was launched in 2009 and has an anticipated life of five years. The replacement for this spacecraft and the earlier spacecraft of the TIROS-POESS series (of which NOAA-19 was the final unit) was planned to be the initial spacecraft launched under the National Polar Orbiting Environmental Spacecraft System (NPOESS), which was intended to create a single weather and climate spacecraft program to meet the requirements of both NOAA and the Department of Defense. Unfortunately, delays in the NPOESS program resulted in the first NPOESS spacecraft not being available for launch in time to replace NOAA-19. As an interim "gap-filler" measure, the NPOESS Preparatory Project (NPP) spacecraft is scheduled to be launched in 2011. It is hoped that the early production units of the instruments that are being flown on NPP will provide service for four years. However, NPP was originally intended as a technology demonstration mission, to demonstrate in orbit the critical instruments for the NPOESS spacecraft. Further, there have been ongoing and documented concerns about the quality and reliability of the early production unit instruments that are to be flown on NPP and significant doubts exist as to whether these instruments will function for even a significant fraction of their designed lifetime. In spite of these concerns, the delays in the availability of the first NPOESS spacecraft resulted in a determination by NOAA that it will be necessary to use the NPP spacecraft operationally, with the intent that it provides continuity of weather and climate data until the availability of the first NPOESS Spacecraft. However, it is likely that a gap will exist between the end of the anticipated life of the NPP Spacecraft and the availability on orbit of the initial NPOESS Spacecraft.

Relying on the NPP spacecraft for polar orbit afternoon climate observations after 2011 puts the Nation's weather and climate programs at significant risk. Delays already experienced in the anticipated delivery of the first NPOESS spacecraft, coupled with the potential for failures during the launch of the NPP spacecraft,<sup>4</sup> or failures of individual instruments, create an unacceptable risk of a gap in weather and climate observations for which NOAA has no currently planned back-up. The purpose of this procurement is to reduce the risk of a gap in afternoon orbit weather and climate observation coverage to an acceptable level, and provide improved continuity of coverage than the current program provides. The Department of Commerce, through NOAA, has determined that this reduction of the risk of a coverage gap is the highest priority requirement for the spacecraft to be procured under this Justification document. As such, the primary requirement for this procurement is the acquisition of a gap-filler spacecraft that can be delivered at the earliest possible date so as to provide coverage of a potential gap at the earliest possible date, but no later than a launch readiness date of mid-2014.

NASA has determined that the only available course of action that meets the requirement to launch a spacecraft sufficiently early to reduce the risk of a coverage gap is to procure, on a sole source basis, a Ball Aerospace and Technology Corporation (BATC) BCP 2000 spacecraft bus. This spacecraft singularly meets this requirement having already retired the risks associated with spacecraft development and the associated schedule impact, through being virtually identical to the spacecraft that has been developed for the NPP mission. The spacecraft being acquired under this Justification document (hereinafter JPSS-1) will perform identical operational mission requirements as the NPP spacecraft, which it will fundamentally replace in the afternoon orbit. That mission is to assure the availability and continuity of the weather and climate data that will be collected by NPP. JPSS-1 will carry the same suite of instruments, which will collect the same data as NPP, which will be collected and processed using the same ground facilities as NPP and distributed to the same customers for the same purposes as the data collected by NPP. As such, the government considers the contract for the JPSS spacecraft to be a logical follow-on to the acquisition and development of the NPP spacecraft.

The BATC BCP 2000 spacecraft bus is uniquely able to provide the highly specialized equipment required to meet NOAA's primary mission requirement for JPSS-1 -- eliminating or reducing to the greatest extent possible the potential for a gap in coverage of the afternoon orbit in the case of an NPP failure. This unique capability is due to the development of the BCP 2000 bus that has already occurred in order to meet the NPP mission requirements. This has resulted in the NPP spacecraft being designed to accommodate the specific requirements of the meteorological and climate instruments developed under the NPOESS program, as well as the command and telemetry links between the NPP spacecraft and the existing ground networks.

Specifically, the BATC spacecraft was modified for NPP to accommodate a unique Command and Data Handling (C&DH<sup>5</sup>) architecture, including a specific data bus design

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<sup>4</sup> While any spacecraft carries some degree of risk as a result of a launch failure, or from a post launch failure of on board systems, including instruments, the risks currently assigned to the NPP mission are unusually high due to the above mentioned concerns with the instruments, and the potential impacts attendant to the NPP mission are particularly acute due to the operational nature of the mission, and the current lack of a back-up or follow-on mission until the first NPOESS launch in 2015 or 2016.

<sup>5</sup> The C&DH subsystem receives commands from the communications subsystem, performs validation and decoding of the commands, and distributes the commands to the appropriate spacecraft subsystems and components. The C&DH also receives housekeeping data and science data from the other spacecraft

that is compatible with the C&DH interfaces of the instruments. Two of the instruments that are to fly on JPSS-1, which are currently in the fabrication and integration stage, have been designed incorporating this specific unique C&DH architecture. Redesigning the instruments to accommodate a different C&DH architecture is an unacceptable solution as such would require a complete re-evaluation and revalidation of a currently mature instrument design, which would introduce cost, technical and schedule risk into the program. Adapting another spacecraft bus to accommodate the NPOESS C&DH architecture, while technically more feasible to accomplish than redesigning the instruments, is also not a viable solution due to the time that would be required for the spacecraft redesign. Adapting the BATC BCP 2000 spacecraft to the instrument C&DH architecture for the NPP spacecraft required a period of approximately 12 months to complete. Government technical experts estimate that a similar period would be required to adapt another spacecraft to duplicate the already accomplished effort to accommodate the C&DH architecture necessary to support the JPSS-1 instruments. In view of NOAA's primary requirement for the JPSS-1 mission, to launch as early as possible to reduce or eliminate the post NPP coverage gap, the time required for such a spacecraft design would constitute an unacceptable delay in the JPSS-1 mission<sup>6</sup> and unreasonable duplication of effort. Based on these facts, the Agency has concluded that no other available spacecraft bus can meet the agency technical requirements and be available for launch by the required date. Only the Ball BCP 2000 spacecraft, configured as a copy of the existing NPP spacecraft, can be produced and launched in sufficient time to eliminate or sufficiently mitigate a gap in coverage either due to premature failure of NPP or at the end of the NPP operational life.

**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 Federal Acquisition Regulation (FAR) 5.202:**

This effort was synopsised in accordance with FAR 5.202 on June 25, 2010 to ensure all potential sources were reached.

**7. A determination by the contracting officer that the anticipated cost to the Government will be fair and reasonable:**

The Government will perform a cost analysis on the proposed costs for this contract and negotiate a cost that is fair and reasonable.

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

No additional market research, beyond a review of the spacecraft available under the RSDO contract, has been conducted on these requirements. Based on the presidential decision to divide NPOESS between DOD and NASA/NOAA and direction to restructure these requirements as quickly and cost effectively as possible, only a spacecraft already

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subsystems and components, and packages the data for storage on a data recorder or transmission to the ground via the communications subsystem. Other functions of the C&DH include maintaining the spacecraft clock and state-of-health monitoring.

<sup>6</sup> The necessity to redesign another spacecraft to accommodate the C&DH architecture would also duplicate the previous effort conducted for the NPP spacecraft, without any likelihood that the costs for such an effort would be recouped through competition.

under an existing contractual vehicle would be available in time to serve in the gap filler role. Considering any other possible spacecraft would involve the normal competitive procurement cycle, which would involve an unacceptable delay in the availability of the spacecraft.

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

The JPSS program and the contracting officer did consider the possibility of attempting to meet this requirement through a competitive procurement under the current RSDO contract at Goddard Space Flight Center. The RSDO III contract is a multiple award IDIQ contract that has established a catalog of existing “off the shelf” spacecraft designs, which compete for spacecraft requirement delivery orders. While the BATC BCP 2000 spacecraft is in the rapid catalog and, as noted above, meets the requirement<sup>7</sup>, no other spacecraft available under RSDO will be compatible with the current NPP design requirements, in particular the C&DH requirements of the existing instruments, without incurring an unacceptable delay involved with redesigning the C&DH architecture. Competitions under the RSDO contract are being considered for future JPSS spacecraft. A non-competitively awarded task order under RSDO will be used to procure the BATC BCP 2000 spacecraft under this Justification

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

The synopsis response period expired on 12 July 2010. NASA received two responses expressing interest in JPSS-1 acquisition, which were Orbital Sciences Corporation (OSC) and Northrop Grumman Corporation. The JPSS Program Office, in concert with the GSFC Resource Analysis Office, conducted an evaluation of each of the responses. With regard the response by OSC, the JPSS Program has determined that the developmental activities associated with making the offered spacecraft acceptable for the JPSS mission requirements, particularly making the Command and Data Handling System compatible with the existing JPSS instrument suite, would preclude the completion of the spacecraft in time to meet the required launch date. With regard to the Northrop Grumman response, the Program determined that the resolution of ongoing and well known developmental issues with the larger and more complex C-1 based spacecraft bus, coupled with an overly aggressive proposed schedule with insufficient margins, would preclude delivery of a C-1 bus in time to support the April 2014 launch. Both Orbital and Northrop Grumman were advised of the Agency determination by contracting officer letter dated August 6, 2010.

**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:**

There are no barriers to competition as this program was originally a competitive procurement and future NOAA follow-on satellites will be procured competitively.

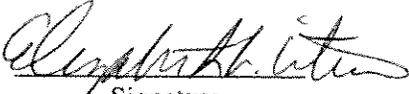
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<sup>7</sup> The BATC spacecraft being developed for the NPP mission was procured using a competitively awarded task order under the predecessor RSDO contract.

JOFOC Signature Page for Joint Polar Satellite System Acquisition

TECHNICAL DIRECTORATE:

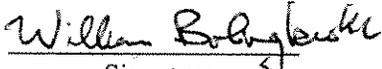
I certify that the facts presented in this justification are accurate and complete.

  
Signature

8/9/10  
Date

CONTRACTING OFFICER:

I certify that this justification is accurate and Complete to the best of my knowledge and belief.

  
Signature

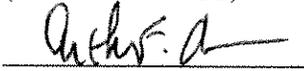
August 9, 2010  
Date

PROCUREMENT OFFICER:  
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Date

GSFC COMPETITION  
ADVOCATE:  
(CONCURRENCE)

  
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GSFC CENTER DIRECTOR  
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NASA COMPETITION  
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ASSOCIATE ADMINISTRATOR  
FOR PROCUREMENT:  
(APPROVAL)

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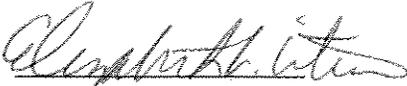
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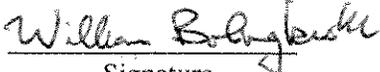
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