

**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 6.302-1**

**NASA's Aircraft Management Information System (NAMIS)**

**1. This document is a justification for other than full and open competition prepared by the NASA, 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 for the acquisition of services associated with the modification and implementation of NAMIS and related supporting functions and services. A primary objective of this effort is to modify the NAMIS software architecture and to enable it to become a Federal Government-wide system that can be hosted centrally or locally by a customer agency and immediately implement hosting for at least one non-NASA federal agency during the performance period. The effort also provides for support and life cycle upgrades to the existing NAMIS and other Flight Crew Operations Directorate (FCOD) Systems. This is a follow-on contract for a unique and highly specialized system and the incumbent is the only source with the requisite skills, experience, and qualifications.

In March 2011, the NASA Headquarters Logistics Manager notified FCOD that NAMIS had been selected to provide fleet management services for all of the NASA-managed motor vehicles in the Agency. This will require modifying the current NAMIS source code and building additional capabilities into the NAMIS system.

The current contract NNJ11JC26T is being performed by Science Applications International Corporation (SAIC) and the period of performance is from June 9, 2011, through October 8, 2012. The contract was awarded for 16 months, in order for NASA to determine the suitability of the National Institutes of Health (NIH) Information Technology Acquisition and Assessment Center (NITAAC) CIO-SP2i Government-Wide Acquisition Contract (GWAC) for NASA's requirements. The value of the current contract is \$9,516,669. The service being performed on this contract is information technology support for the systems that support a wide array of flight operations across NASA.

**3. Description of the supplies or services required, include an estimated value:** The primary objective of the contract is for continued life-cycle support for NAMIS and the other software modules supporting FCOD. The services include modifications to the source code of the NAMIS modules to adapt the software for multi-Agency support with central NASA hosting. It also includes modification of the NAMIS source code to adapt the system to track and manage NASA's automotive fleet. The modifications include modernizing the source code and other changes to improve compatibility with the 64-bit environment, accommodating personal identification verification authentication, implementing the system for other federal agencies for the full project life-cycle including requirements analysis, gap analysis, modification, testing, user training, go-live, help desk, and sustaining support.

The system must be modified and maintained under quality standards that meet or exceed the Capability and Maturity Model Integrated (CMMI) Level 3. The services also cover continued sustaining operations for associated and related systems within FCOD, such as prototype development, requirements analysis, and disaster recovery and business continuity systems, processes, and procedures.

The estimated value for the effort is \$46 million for a 5-year period of performance consisting of a 3-year base and two 1-year options.

**4. Statutory authority permitting other than full and open competition:** The statutory authority for proceeding with this acquisition under other than full and open competition is 10 U.S.C. 2304(c)(1), as contemplated by the provisions of Federal Acquisition Regulations (FAR) 6.302-1(a)(2)(iii), which states that full and open competition need not be provided when the services required by the Agency may be deemed to be available from one original source in the case of a follow-on contract, for the continued provision of highly specialized services. The provision also states that this exception is applicable when it is likely that award to any other source would result in unacceptable delays in fulfilling the Agency's requirements.

**5. A demonstration that the proposed contractor's unique qualifications or the nature of the acquisition requires use of the authority cited:** This is a follow-on contract for the continued development and production of a complex, Agency-wide aircraft management system. NAMIS is in use at all NASA centers that operate aircraft. It was a component of the Integrated Enterprise Management Program (IEMP) and is NASA's response to a federal law that requires federal agencies to implement automated tracking systems for aircraft. The NAMIS implementation as part of IEMP was used as the response by the previous NASA Administrator to a Senate Committee as the solution for tracking and managing passenger-carrying aircraft. After implementation, NAMIS became a key element in NASA's ability to satisfy the Federal Aviation Administration (FAA) Safety Management System (SMS) requirements. Failure to satisfy the SMS requirements could adversely affect the authority of our aircraft to operate in international airspace.

NASA operates nearly 100 aircraft, and the Aircraft Operations Division (AOD) operates 27 of them. All but a handful of these aircraft are maintained and operated under the Agency's airworthiness authority as Public Aircraft, rather than under the authority of the FAA regulations as civilian or commercial aircraft. NASA in effect operates in the stead of the FAA for airworthiness and safety for its public aircraft, as do most of the other governmental agencies that operate aircraft. NAMIS provides the airworthiness status of the enrolled NASA aircraft.

The increasing requirements for flight operations, decreasing resources, along with Congressional mandates and good business sense, led NASA to the conclusion that it must acquire an automated system. This system ensures aircraft are airworthy and properly configured for flight. This system also ensures the aircrew meets the training and proficiency standards of the assigned mission that would control all relevant aircraft-related assets. After an extensive market survey in 1998, NASA determined that no commercial solution existed and that NASA would be required to develop its own system. Over the next 6 years, AOD designed and developed a modular system, NAMIS for AOD, which has been extraordinarily successful in enhancing safety, improving mission effectiveness, and reducing costs.

In 2006, after doing another market survey, the Agency determined there were no suitable commercial alternatives and that NAMIS was the best solution for the entire Agency and not just AOD. The full NAMIS software suite was deployed to support all of the NASA Centers that operate aircraft. Installation across the Agency was completed in 2009 on schedule and under budget as part of the IEMP.

The NAMIS software, all of which was developed by the incumbent contractor during previous contracts, was developed to be not only highly modular, but highly customizable so each Center could use NAMIS to implement the business and quality rules appropriate to their aircraft. In order to succeed in such a complex development program, it was necessary for the contractor's technical staff, including software engineers, requirements analysts, integration experts, software Independent Verification and Validation, documentation specialists, and management to gain a detailed understanding of the unique rules and procedures applicable to NASA's public aircraft as well as the applicable FAA procedures for the few NASA aircraft that operate under FAA authority. This education was and remains a continuous process, but required many months of up-front study and learning.

NAMIS is used to perform safety and mission critical functions. The criticality of the system dictated that the software must be developed under rigorous software quality assurance standards. The incumbent was required to possess an independently certified software quality assurance program meeting or exceeding CMMI Level 3 standards. The incumbent has maintained its independent certification and has refined and customized their quality processes over the years to closely align it with AOD and NASA's unique quality requirements and standards.

There are numerous complex software modules to be supported under this contract and the contractor developed all of them during preceding contracts. Many of them are undergoing significant modification that must be completed in the coming contract in order to expand their usage to other federal agencies and to include motor vehicle management. Some examples of the unique skills required include the detailed understanding of NASA and federal airworthiness and quality standards applicable to both public and commercial aircraft. The software must incorporate and enforce these business rules. The incumbent team has had 10 years to learn the rules and how they can be implemented in the application business logic and database design. No other contractor or commercial company has the requisite experience because there is no commercial organization that is required to operate under the same rules and procedures as the federal government. No other Government agency was found to possess the skills required and they are turning to NASA and NAMIS to meet their requirements.

The seven major NAMIS modules consist of more than 950,000 lines of source code written in six different programming languages and the entire complement of applications to be supported under the contract contain over 1.5 million lines of source code. One of the largest modules is the logistics module that became operational in early 2001. This module uses substantial amounts of Visual Basic 6 (VB6) code, the industry standard at the time. VB6 has become outdated and must be upgraded to the current industry coding standards using Visual Basic "dot Net" or C-Sharp. The schedule will be very aggressive in order to accommodate NASA and other federal customers' schedule requirements.

The software upgrade will begin approximately 4 months prior to the end of the current contract but will require a minimum of 14 months of performance under the follow-on contract to complete. This schedule may be extended by new requirements from other federal agencies.

At contract transition, the maintenance module will also be undergoing major modifications to adapt the code for another federal agency to allow centralized oversight, but local control of work in progress and substantial additions for more granular cost tracking will be added. All of these modifications will be beneficial to NASA for stakeholder reporting and internal control.

**6. Description of the efforts made to ensure that offers are solicited from as many potential sources as practicable:** As required by FAR Subpart 5.2, a notice of the Government's intent to sole source the NAMIS effort, was publicized and posted on the NASA Acquisition Information System and in FedBiz Ops on March 20, 2012, with responses due on April 4, 2012. No capability statements were received.

**7. Determination by the Contracting Officer that the anticipated cost to the Government will be fair and reasonable:** After analyzing historical cost data from the current contract, it is determined that the anticipated cost to the Government will be fair and reasonable.

**8. Description of the market survey conducted, and the results, or a statement of the reasons a market survey was not conducted:** In March 2011, a request for proposal (RFP) was posted through the NIH NITAAC CIO-SP2i GWAC. NIH identified 21 separate vendors that met the basic qualifications. SAIC was the only contractor that elected to bid on the proposal. The RFP clearly stated that logical follow-on contracts might be issued. The content of the current statement of work is substantially identical to the statement of work posted through the NITAAC advertisement. The primary difference being the duration of the contract and inclusion of express language regarding implementation of the NASA system for other federal agencies. The expiring contract was limited to a maximum of 16 months in order for NASA to determine the suitability of the NITAAC CIO-SP2i GWAC for NASA's requirements.

In July 2011, the Contracting Officer's Technical Representative and other NASA personnel attended the General Services Administration's Aviation Safety Office Fleet workshop and met with many other federal agencies on the subject of aircraft management information systems. We determined that the other federal agencies were unable to locate potential commercial sources that could meet the Agency requirements for such a system. NAMIS was substantially more mature and more capable than any of the commercial or internal development efforts in use or planned across the wide range of federal agency attendees.

During the preceding year, we have collaborated with National Oceanic and Atmospheric Administration and the FAA on the subject of aircraft management systems with the same conclusion that there are no viable commercial solutions available. No other federal agency was discovered to have a commercial vendor capable of supporting or supplanting the NAMIS software suite.

The absence of existing systems of equivalent capabilities leads to the conclusion that there are no commercial sources that possess the experience and unique skills required to support such a system and that further market research would provide no benefit.

**9. Other facts supporting the use of other than full and open competition:** The incumbent has an excellent software quality assurance program in place and it has been tailored to the JSC/AOD environment. The incumbent employees have acquired an average of more than 8 years experience in the unique operating environment and have developed a broad understanding of the unique business practices associated with the maintenance, logistics, engineering, and quality assurance processes associated with Public Aircraft and airworthiness authority. The incumbent developed all of the software and systems in the scope of this contract. To bring a replacement contractor to the equivalent level of proficiency and knowledge as the incumbent would require at least 1 year during which efficiency and productivity would be significantly and adversely impacted. Bringing a new software engineering team to the level required to match the current baseline represents duplicative investment, because NASA has already invested the resources to bring the incumbent to its current high productivity level. Any significant change in the development team will require NASA to duplicate the cost of developing the unique knowledge and skills possessed by the incumbent.

The cost of the effort that would have to be duplicated to bring the contractor to the current productivity level can be estimated in two ways: 1) a bottoms-up estimate where the time required to achieve the experience required for each of the essential skills can be estimated for each specific skill area or 2) a statistical method whereby the availability and productivity rates can be forecast for each year of the contract and compared to the levels of the incumbent. Using either method indicates that the government's cost for duplicating the current capabilities would exceed \$4.4 million dollars.

**10. Sources, if any, that expressed an interest in writing in the acquisition:** This effort was posted on NAIS of the Government's intent to sole source on March 20, 2012, with responses due on April 4, 2012. No capability statements were received.

The current contract was awarded with a 16 month period of performance to allow the government time to strategize on how the follow-on effort would be recompeted for further development. The RFP posted on the NITAAC system identified 20 potential offerors that were presented with the opportunity to respond to the RFP and were rated as qualified for the work. However, they did not express interest on proposing on this effort. The RFP clearly stated that follow-on contracts were contemplated in the future.

**11. The 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:** It is anticipated that full modification of the source code will require a minimum of 3 years to complete; however, once the changes covered by the pending contract are completed, significant potential for inclusion of other contractors may arise. The implementation life cycle of a major system like NAMIS involves many functions that do not require the high degree of specialization and quality assurance that modification and maintenance of the source code does.

Once a potential customer is identified, there is a large effort involved in defining the customer requirements; identifying process and capabilities gaps; re-engineering the processes or defining the changes required to close the gaps; identifying, cleansing, and loading the customer aircraft and asset data; training the users; and providing subject matter experts for user assistance. These areas constitute the majority of the costs of implementation, and do not require highly skilled and unique software engineering capabilities, and therefore could be part of a competitive procurement in the future.