REDACTED VERSION

September 30, 1996

FAA Docket No. 96-ODR-0001

(GSBCA 13834-EAA)

WILCOX ELECTRIC, TNC.,

and

ROCKWELL INTERNATIONAL.,

and

LOCKHEED MARTIN FEDERAL SYSTEMS,

v.

FEDERAL AVIATION ADMINISTRATION,

and

HUGHES AIRCRAFT COMPANY.

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Before Board Judge DeGraff, acting as Special Master to Office of Dispute Resolution for Acquisition, Federal Aviation Administration.

Introduction

Wilcox Electric, Inc. (Wilcox) filed this protest on May 28, 1996, challenging the decision of the Federal Aviation Administration (FAA) to award a contract to Hughes Aircraft Company (Hughes). Rockwell International (Rockwell) and Lockheed Martin Federal Systems (Lockheed) participated in the protest on behalf of Wilcox. Hughes participated on behalf of the FAA.

Pursuant to the terms of an interagency agreement, on August 16, 1996, the FAA asked the General Services Board of Contract Appeals to make available a Board judge to act as a Special Master in this protest. Under the Special Master's authorization, the parties conducted limited discovery and, except for Lockheed, submitted statements of position on September 16, 1996. The documents relied upon by the parties in their statements of position constitute the record in this matter, and the parties submitted those documents on September 17, 1996, in thirteen volumes.

Wilcox contends that the FAA violated its Acquisition Management System by failing to engage in communications with Hughes before award, by failing to make a proper public announcement of the decision to conduct a single-source procurement, and by failing to perform a proper market analysis before awarding a single-source contract to Hughes. Wilcox also contends that the FAA's decision to award a single-source contract to Hughes lacks a rational basis. I recommend that the Administrator deny the protest. As explained below, the FAA did not violate its Acquisition Management System. Furthermore, the FAA explained the facts that it took into account when it decided to award a single-source contract to Hughes, and then established a rational connection between those facts and the decision to award to Hughes. The FAA's decision was not arbitrary, capricious, or an abuse of discretion.

Findings of Fact

GPS and WAAS

The Navstar Global Positioning System (GPS) is a satellite based radio navigation, positioning, and time information system operated by the Department of Defense (DoD). GPS consists of three major segments: space, control, and user. 4476, 4587, 6102.

The GPS space segment contains twenty-four operational satellites. The satellites are deployed in six orbital planes, with each plane containing a total of four satellites. Each satellite completes an orbit in approximately twelve hours. The satellites are positioned so that a minimum of four are always visible to a

user anywhere on earth. Individual satellites act as reference points from which a user can determine a position by triangulation of crossing lines of position from each satellite. Examples of users include civilian and military aircraft and maritime craft. 4587, 6102.

The control segment of GPS consists of a master station and five monitor stations placed uniformly around the world. The master stations and monitor stations work together to control the constellation and detect and correct anomalies in the system. 4587-88, 6102.

The user segment consists of GPS receivers and associated equipment. The GPS receivers, using data transmitted by the satellites, derive position, navigation, and time information, and display the appropriate data to the individual GPS users. 4588, 6103.

GPS provides two levels of service: Standard Positioning Service (SPS) and Precise Positioning Service (PPS). SPS is the standard level of positioning and timing accuracy available to any user on a continuous, worldwide basis. The accuracy of this service is adjustable by DoD, and is based upon national security interests. Current United States policy specifies a horizontal accuracy of 100 meters and vertical accuracy of 156 meters. PPS is the most accurate positioning and timing information continuously available from GPS. However, this level of service is restricted to authorized United States and allied military, federal government, and civilian users who can satisfy specific requirements. 4588, 6103.

GPS alone does not satisfy all requirements for civil aviation. For use in civil aviation, GPS will have to be augmented to improve its integrity, to provide sufficient accuracy for precision approaches, and to provide the availability needed for using GPS as the sole means of navigation. The FAA expects to. provide this augmentation with the Wide Area Augmentation System (WAAS). The WAAS is to consist of equipment and software that will augment SPS so that the GPS can be used for civil aviation. The mission of WAAS is to provide a primary satellite-based navigation capability for all phases of flight in the National Airspace System, from en route navigation to precision approaches. To meet these requirements, the WAAS is to improve the GPS by providing a signal.in-space to all certified aircraft using the WAAS for any phase of flight. The WAAS is to augment the GPS by enhancing the GPS signal in the technical areas of signal integrity, accuracy, and availability. 4405, 6103.

The WAAS design is divided into three segments: the Wide-area Reference segment; the Wide-area Master segment, and the Geostationary (GEO) Communications segment. Initially, the WAAS is to consist of twenty-four Wide-area Reference Stations (WRSs), two Wide-area Master Stations (WMSs), and three Geostationary Communications Segments (GCSs). 4415, 6103. These segments will work together as follows.

The GPS satellites' data are to be received and processed at widely dispersed sites, the WRSs. These data are to be forwarded to data processing sites, the WMSs, that process the data to determine the integrity, differential corrections, and residual errors for each monitored satellite. This information is to be sent to GEO Uplink Stations (GUSs) and uplinked to GEO satellites. The GEO satellites are to downlink these data to the users. Each of the system components is to be connected via the Terrestrial Communications System (TCS). 6103.

Each WRS is to perform the functions of data collection, reasonability checking, data processing, data recording, and data transferring. Each WRS is to consist of three Wide-area Reference Station Equipments (WREs) collecting independent sets of data, including GPS satellite observables, GEO satellite observables, and local tropospheric observables. Each WRS is to transmit the data to each WMS in the system. Independence of data sets, which is necessary to support the verification function performed by the WMS, is to be ensured by gathering the observable parameters through independent sets of hardware. The data are to be collected at a rate consistent with their expected level of variation; e.g., slowly changing weather conditions allow weather data to be collected less frequently than data from the GPS satellites. Prior to transmitting data to the WMSs, each WRE is to verify the reasonability of its collected data. Failed data are to be marked as having failed the reasonability test and are to be forwarded to the WMSs. To increase the availability of the data at each WMS, each WRS is to transmit data to each WMS through two independent backbone nodes of the TCS. 6103-04.

Each WMS is to perform the functions of correction processing, satellite orbit determination, integrity determination, verification, validation, and WAAS message generation. Once per second, the WMS is to collect the data received from all WRSs and process the data to support these functions. This processing is to be performed on all available WRS data and result in the transmission of a formatted 250-bit WAAS message once per second. These WAAS messages are to be sent to all GUSs. 6104.

Each GCS is to perform the functions of broadcast and ranging. The GCS is to receive the formatted WAAS messages once each second from each WMS in the system. The message is to be modulated and uplinked to the GEO satellite. The GEO satellite transponder is to shift the frequency of the signal and broadcast it to users. 6104.

FAA's Commitment to GPS and WAAS

One purpose of the FAA is to ensure safe and efficient air navigation and air traffic control. GPS and WAAS are very important to the FAA, for several reasons.

GPS and WAAS are to provide precise information concerning the location of aircraft and obstacles, which should result in benefits to safe and efficient air transportation. Air traffic management surveillance should be improved. The availability of more precise positioning information should result in more air space being available for safe navigation, which should result in reduced flight times, more efficient flight paths, and reduced delays, all of which should reduce the use of fuel. The use of GPS and WAAS should result in improved airport surface navigation on runways, taxiways, and ramp areas, which enhances airport safety. Search and rescue operations should be made easier. The use of GPS and WAAS should enable airplanes to land at airports that currently have limited navigation guidance, which will relieve pressure on large airports and should make more airports available for use in both emergency and non-emergency situations. Eliminating reliance upon ground-based navigation aids, which are not available in all areas of the world, should increase aircraft safety and make more safe airspace available. GPS and WAAS should permit aircraft to take off and land safely in a wider range of weather conditions than at present. The use of GPS and WAAS should simplify the navigational equipment used by pilots. 4352-53, 4386-87, 4405-06, 4474, 6097-98, 13601-02.

The use of GPS and WAAS should result in savings to aviation users. For example, eliminating ground-based navigation aids should result in a major cost savings. Also, the FAA plans to begin decertifying other means of precision and non-precision approach navigation a few years after WAAS is implemented. The FAA estimates that WAAS benefits will total $4.88 billion during the first nine years that WAAS is operational. 4352, 4472, 4473, 13483-84, 13602-04.

GPS is important internationally, and the United States has committed to other countries to develop and use GPS. The United Nations International Civil Aviation Organization (ICAO) determined that satellite-based communication and navigation systems are the key to worldwide civil aviation improvements. The FAA Administrator, on behalf of the United States, offered to the ICAO to make GPS available to all users of civil aviation, world-wide, for at least ten years with no direct user charges. The ICAO accepted this offer. 4320-26, 4366-68, 4560-63.

GPS is important to the President. In March 1995, the President told the ICAO that the United States remains committed to providing GPS to the international civil aviation community. 4564. On several other occasions, the President affirmed his support for developing and implementing GPS and WAAS, and gave the FAA significant responsibilities for the efforts of the United States in this area. 4648-51.

WAAS is important to Congress. In 1994, the Senate Committee on Appropriations determined that the deployment schedule for WAAS should be accelerated so that aviation system users will quickly gain the significant benefits of GPS technology. 5853-54.

In December 1993, the Secretary of Transportation and the Administrator of the FAA agreed that the early utilization of GPS for civil aviation was a strategic objective of the Department of Transportation (DoT). In March 1994, the Secretary again stated that the implementation of GPS was an important activity in DoT's strategic plan. Also in March 1994, the Administrator informed the Secretary that the FAA was moving to implement WAAS as rapidly as possible, and he stressed the need for "rapid delivery of GPS services to an aviation community that is clamoring for its early implementation." 4517-19, 5901-02.

The FAA's satellite program office developed the idea of the WAAS and by April 1994, the FAA completed its internal planning of the WAAS project. 4517-18. As part of its planning, the FAA conducted a market survey. This survey was accomplished by "reviewing the many volumes of available GPS literature" and "direct interface with industry and academia experts." The market survey concluded that industry sources were capable of developing GPS augmentation for use by civil aviation. Hardware items for use in GPS augmentation were already being developed, and only software development would be required. 4454.

WAAS Acquisition and Award to Wilcox

In April 1994, the FAA anticipated issuing a request for proposals (RFP) using a streamlined acquisition process, and awarding a contract for WAAS in January 1995. The FAA wanted to implement an initial WAAS (IWAAS) capability in 1997, and follow that four or five years later with the final, end-state WAAS (EWAAS). 4406, 4414, 4449. The FAA intended to accelerate the implementation of WAAS in order to realize its benefits as soon as possible. 4472.

On June 8, 1994, FAA issued the RFP for WAAS. The cover letter issued with the RFP stated that the FAA was "embarking on an aggressive schedule to acquire and implement the WAAS," and informed potential offerors that the IWAAS was scheduled for delivery in mid-1997. The RFP required proposals to be valid for one year from the date they were submitted. Technical proposals were due September 22, 1994, and plans, cost proposals, and business management proposals were due October 6, 1994. 640, 68485.

The RFP explained that the contractor would be paid on a cost plus award fee basis for the majority of the contract line items, and on a cost plus fixed fee basis for two contract line items. 645, 695.

The RFP also explained the evaluation factors that the FAA would take into consideration in awarding a contract. The FAA intended to evaluate technical, cost/price, and business management proposals, with the technical proposal being the most important. The FAA stated that it would award a numerical score to each technical proposal, and that the score would reflect the capability of the offeror to accomplish the objectives of the RFP. Part of the technical score

depended upon a software capability evaluation, which looked to see whether an offeror understood proper software engineering practices and had the ability to perform the contract's software engineering tasks competently. The FAA identified six technical factors, listed in descending order of importance, that it intended to evaluate: 1) understanding of the National Airspace System, 2) software capability, 3) system engineering, 4) hardware, 5) technical/program management, and 6) past performance. The FAA stated that it did not have to include within the competitive range proposals that either reflected an inherent lack of technical competence or indicated a failure to comprehend the complexity and risks of the contract requirements. 1402-07.

Five proposals were received on September 22, 1994, and evaluated by the FAA. Wilcox submitted a proposal, with Hughes and TRW Avionics and Surveillance Group (TRW) as its subcontractors. A total of 1350 points was available to be awarded for the technical factors.

[* * *] After reviewing the proposals, the FAA determined that only the Wilcox proposal should be included within the competitive range. The Wilcox/Hughes/TRW team scored higher than any competitor in five of the six technical factors, and achieved a technical score significantly higher than its nearest competitor. The team received excellent scores for its software capabilities due to the selection of Hughes as the primary software developer. Wilcox's competitors were **[* * * *]** technically and provided **[* * * *]** acceptable technical capability to build the WAAS as required by the RFP. **[* * * *]** 2396, 4665-70, 5646, 6105. The FAA completed the software capability evaluation and rated Wilcox as a high risk, while Hughes passed with "solid marks" and was rated as a low risk. 2398-99, 2404-2417, 6106.

The WAAS contract was awarded to Wilcox on August 3, 1995, at a cost of approximately one-quarter of a billion dollars. 001. On August 31, 1995, the FAA anticipated that IWAAS capability would be delivered in 1998. 4567.

The FAA's target of IWAAS capability by 1998 is not imposed by any statute. Rather, it is the FAA's goal. 13283. There is nothing "magic" about the end of 1998, but the FAA views the 1998 goal as extremely important. 13667-68. The WAAS project manager would not find it acceptable to have delivery of IWAAS in 1999. 13644.

After Award to Wilcox

The record establishes that Wilcox encountered problems almost from the beginning of its performance. Although the parties disagree as to the cause of these problems, they were numerous and significant. 2366-75, 2437-90, 4677-80, 6084-118.

The WAAS software acquisition team leader, who is the FAA employee responsible for the software development portion of the Wilcox WAAS contract, was in contact with Hughes at least every other day during Wilcox's performance of its contract. The problems with software development that he identified were, in his view, attributable to Wilcox and not to Hughes. Even though Wilcox proposed Hughes as the software developer for the contract, Wilcox would not give Hughes the authority to take action to correct the problems that arose. 13303-12, 13331. The software acquisition team leader attributed to Hughes the success of the software development plans, processes, and procedures in place for the Wilcox WAAS contract. 13337. The software acquisition team leader considered Hughes to have a sound understanding of the architecture, the safety requirements, and the requirements for certifying software. The FAA identified one very serious problem with the software portion of Wilcox's WAAS contract and, while Wilcox was debating whether a problem existed, a Hughes employee suggested a solution to the problem. 6034, 13327-30.

In late January 1996, the FAA met with Wilcox to discuss performance problems. Senior FAA managers at the meeting asked the WAAS project team what plans were available or were being considered if Wilcox's performance problems continued. 6611. As a result of this inquiry, the WAAS project manager convened a meeting on February 23-25, 1996, referred to as the alternative plan work session, of representatives from FAA's contract office, legal office, and the four WAAS team leaders for systems engineering, software engineering, fielding, and resource management. 6612. The purpose of the work session was to evaluate the options available to the FAA if problems persisted with Wilcox's performance. Those attending the work session agreed to define and evaluate thoroughly each option available. 6612.

The FAA employees at the February 23-25 work session looked at approximately twenty alternatives, and decided that only ten had any substantive merit. 13526. The ten alternatives were:

1. Continue with Wilcox, under certain conditions.

2. Keep the Wilcox/Hughes/TRW team, but have a team member other than Wilcox assume the lead for the contract.

3. Terminate Wilcox's performance and restructure the work with Hughes and TRW.

4. Terminate the performance of the entire Wilcox/Hughes/TRW team.

5. Award a single-source contract to the offeror who scored second-highest in response to the WAAS RFP.

6. Conduct a full and open competition for a new WAAS contract.

7. Perform the WAAS contract with FAA employees.

8. Modify or upgrade the existing National Satellite Test Bed.

9. Have the FAA assume management of the contract with Hughes and TRW as contractors.

10. Have the FAA assume management of the contract with Hughes as a contractor.

The FAA employees at the work session discussed the advantages and disadvantages of each of the ten alternatives, spending approximately three to four hours addressing each option. They assessed the cost risk, schedule risk, and technical risk of the alternatives. 5493-529, 6612-18, 13524, 13552.

The work session attendees discussed which of the alternatives were most likely to be in the FAA's best interest. 6612. They decided that the ninth alternative was their first choice, and the third alternative was their second choice. 5496, 5502, 6618. The third alternative was described as a "mini-competition" between Hughes and TRW. 5514. The idea of a mini-competition was rejected by the FAA. A mini-competition would have been needed in order to determine who would be the lead contractor and who would play the subordinate role. Even if a mini-competition could have been completed in two or three months, that would have meant that no work would be done for those months and would have probably resulted in the loss of contractor personnel. 13604-08.

For the sixth alternative, open competition, the work session attendees concluded that cost, schedule, and technical risks would all be high. 5499. The attendees felt that the FAA would not be able to meet a 1998 delivery date if it conducted an open competition, because of the time required to develop and issue a solicitation, evaluate proposals, and conduct all of the needed reviews. 13547. The WAAS program manager estimated that, even using streamlined procedures, it would take approximately twelve months to conduct an open competition. The program manager based this estimate upon his knowledge of the procurement process and the length of time it took, using streamlined procedures, to conduct the competition for the WAAS contract that was awarded to Wilcox. 13558-59, 13609-12, 13640. The former WAAS program manager, who was promoted to GPS product team leader, agrees that an open competition would take approximately twelve months, based upon his knowledge of the accelerated schedule used in conducting the competition for the WAAS contract that was awarded to Wilcox. 6108, 13182-84.

The work session attendees were also concerned that, if they held an open competition and it took twelve months to award a new contract, the WAAS program might not continue to be funded, which would prevent the FAA from achieving the policy goals of the President, the Secretary, the Administrator, and

Congress. They were concerned that, without funding, other countries would overtake the United States in developing the use of GPS. 6616-17, 13549-51.

The work session attendees rejected the tenth alternative, having the FAA assume management of the contract with Hughes as a contractor, because they believed there was a risk associated with the efforts that Hughes would have to make to replan the work and that the FAA would have to make to acquire the staff needed to perform the work. 6618, 13535-39. They evaluated the cost risk of this alternative as high, the schedule risk as medium/high, and the technical risk as low/medium. 5503.

The software acquisition team leader participated in the February 1996 work session. In his view, it was in the FAA's best interest to continue with Hughes because the FAA had eight months of experience with Hughes and because Hughes was a "level 3 software house," meaning that Hughes had achieved an SEI rating of Level 3. (An SEI rating is a measure of the maturity of a vendor's software development capability, based upon Carnegie-Mellon Software Engineering Institute standards. Level 3 is a high rating.) 13314-15. This eight months of experience gave Hughes an advantage over other companies which might try to meet the FAA's cost and schedule requirements. 13317. The integrated product team leader for navigation and landing believed that Hughes' experience gave it an eight-month advantage, at a minimum, over continuing with the Wilcox contract. 13494.

In February, the software acquisition team leader did not consider the software development capabilities of any potential competitors. 13315. It is very expensive and time-consuming to perform the evaluation needed to determine the SEI rating of a company, and so the FAA made this evaluation only for offerors who were included within the competitive range. 13278. The FAA included only Wilcox within the competitive range, and so the FAA did not determine whether any company other than Hughes had achieved an SEI Level 3 rating. 13315-18. Because Hughes was a subcontractor, the FAA never performed a direct evaluation of Hughes' work on the Wilcox WAAS contract. 13205.

The software acquisition team leader knew that Hughes had successfully performed an Air Force contract, Peace Shield, which he considered to have common elements with WAAS, but which he also considered to be more difficult technically than WAAS and to require more complex multi-state integration than does WAAS. The Hughes employees who performed the Peace Shield contract were working on the WAAS contract. 13332-34. The GPS product team leader also understood, based upon all the literature the team read, that the Peace Shield contract was of similar complexity to the WAAS contract. 13257. The contracting officer contacted the Air Force to ask about Hughes' performance of the Peace Shield contract. The Air Force Deputy Program Manager for Peace Shield told the WAAS contracting officer that Hughes completed the contract six months ahead of schedule and $20 million under budget, and received an

outstanding rating for its performance. 6093. The integrated product team leader looked at the hardware and software, and talked to Hughes' employees in order to understand how the Peace Shield project was performed. He concluded that Hughes "had been eminently successful in a more complex project than WAAS." 13509, 13514. The FAA's Associate Administrator for Research and Acquisition was familiar with Hughes' performance of the Peace Shield contract, which he considered similar in complexity to the WAAS contract. 13676-77. Wilcox's president agrees that it was rational for the FAA to look at Hughes' performance on Peace Shield as a factor in deciding to award Hughes the WAAS contract, although he believes that Hughes' performance of other contracts would have been more relevant to performance of the WARS contract. 6464-66.

The software acquisition team leader knew that Hughes had encountered problems with an air traffic control system in the United Kingdom, but the problems were with the performance of a subcontractor and not with Hughes. 13333-34. The FAA's Associate Administrator for Research and Acquisition took into account Hughes' performance of a contract for the Canadian air traffic control program. 13677.

One of those attending the February 23-25 work session was the WAAS systems engineering team leader, who chaired the team that evaluated the offerors' technical proposals. As part of his consideration of the alternative courses of action available to the FAA, he reviewed the technical capabilities of the offerors. 13393. Based upon Rockwell's proposal, he projected that it was very unlikely that Rockwell could complete the WAAS work in the time that Wilcox's contract required completion of the work. The systems engineering team leader knew that **[* * * *]** 13414-18.

After the work session, the WAAS project manager asked two FAA support contractors to conduct a literature search or survey in order to determine whether any new GPS augmentation capabilities were available in the market. Both companies reported that they could find no new capabilities and were not aware of any such capabilities. 6619.

One of the support contractors serves as the chief scientist for the FAA's satellite program office. The contractor has an undergraduate degree in physics and a master's degree in electrical engineering. He has authored more than sixty papers relating to GPS, WAAS, and aviation technology-related issues. He maintains currency in technical areas and innovations which may have a bearing upon WAAS. He assisted the FAA in examining alternative acquisition strategies in early 1996. He agreed with the FAA's conclusion that the offerors that submitted proposals in response to the WAAS RFP presented high technical, schedule, and cost risks, and he was not aware of any significant advancements made by those offerors. 6025-32.

Rockwell asserts that, after it submitted its proposal in response to the WAAS RFP, it improved its technical capabilities which are relevant to the WAAS program. 20001-04. The software acquisition team leader was not aware of any improvements in Rockwell's software development capabilities after it submitted its proposal in response to the WAAS RFP. In the course of this protest, he considered whether Rockwell's descriptions of some of its software development activities show that Rockwell has improved its capability. He concluded that Rockwell's descriptions of its activities do not establish that Rockwell has definitely improved its software development capability. For example, Rockwell stated, "We are developing software for [a product]." Rockwell also stated that two types of software "are being developed." 13360-63. The software acquisition team leader asked, "They are developing or they've developed?" and went on to explain that many companies encounter problems in the course of trying to accomplish what Rockwell was trying to accomplish. 13363-64. Many of Rockwell's descriptions of its software development activities did not contain enough information to permit the software acquisition team leader to decide whether Rockwell has improved its software development capability. 13362-67.

The FAA's satellite program office maintains close contact with manufacturers, service providers, and operators, and participates in and contributes to councils, seminars, conferences, and symposiums, to stay informed of activities and advances in satellite navigation technology. 4586. The GPS product team leader explained that it is the job of his office to know what is available in the market and in the industry, and to keep in touch with the capabilities of companies. His office engages in a continuing effort to keep in touch with the industry. The GPS product team leader explained that the WAAS contract was structured to take advantage of product improvements and the latest technology, so it is important that his office keep up with classified and unclassified information concerning the satellite navigation industry. 13189-90.

Part of the systems engineering team leader's duties are managing sixty to seventy people who consistently keep aware of satellite navigation technology. He and his team "live and breathe satellite navigation every day," so they were apprised of any new developments in GPS augmentation in the normal course of their business. He has many internationally recognized experts working directly for him, and they attend various conferences and symposiums around the world, and present papers and chair technical meetings. They read the literature related to satellite navigation, and the systems engineering team leader maintains files in his office relating to satellite navigation technology. 13393-95, 13423-26.

In late February or early March 1996, Lockheed invited the GPS product team leader to visit its offices and see what it was doing with its GPS technology. This invitation was not out of the ordinary. Rather, those in the GPS product team leader's office are regularly invited to look at contractors' technologies. 13266-68.

On or about February 26, 1996, the WAAS program office briefed FAA senior management about the results of the February 23-25 work session. At that time, the FAA did nothing more with the ten options identified at the work session because Wilcox was approaching a contract milestone, System Design Review (SDR), in early March 1996. 6618. Because the FAA was not satisfied with Wilcox's performance at the SDR, in mid-March, the FAA sent a cure notice to Wilcox, and the WAAS project team revisited the results of the work session. 13142-44.

From March 18 through April 9, 1996, the FAA reviewed the results of the February 23-25 work session, in order to have a plan if Wilcox's response to the cure notice did not satisfy the FAA's concerns. 6108. During this time, the FAA also reevaluated the capabilities of the original offerors. 13194-96. The GPS product team leader reviewed the capabilities of the offeror that achieved the second-highest technical score during the WAAS contract competition, and agreed with the technical teams' conclusion. 6108-09. The FAA did not ask the offerors, after submitting their proposals, for information concerning their WAAS-related capabilities. 13250.

On April 18, 1996, the WAAS program managers met with the FAA's Associate Administrator for Research and Acquisition. The Associate Administrator did not approve the work session attendees' first choice for proceeding with the WAAS procurement, which was to have the FAA assume management of the contract and to have Hughes and TRW as contractors. 6109, 13568-69. The Associate Administrator wanted a single contractor responsible for the WAAS contract. 13569.

Between April 18 and April 25, 1996, the WAAS technical teams examined whether Hughes was capable of handling the hardware, systems integration, systems engineering, and program management responsibilities for the entire contract. The technical teams concluded that Hughes would be able to perform the hardware functions, especially because the contract relied upon commercial, off-the-shelf hardware. The teams concluded that Hughes would probably be able to perform the systems integration and systems engineering functions, with increased staffing on the part of the FAA for support. Finally, the teams concluded that Hughes' experience with the Peace Shield contract strongly indicated that Hughes could perform the required program management responsibilities. 6109.

The WAAS project team concluded that Hughes had developed a sound understanding of WAAS architecture and safety critical design. The safety critical design of the system was probably the most complicated part of the software, and the FAA knew that the industry did not have a good understanding of this work. The WAAS project required a contractor with an SEI Level 3 rating, which Hughes had. Software development plans, processes, and procedures were already in place and being used for WAAS, and software preliminary design

activity was underway. Hughes had significant experience in major systems development and satellite technology. Hughes also had proven management capability and technical expertise. 5656, 13255. Hughes had a "very tight coupling of engineering, safety, software development, integration, and [test]," and this was important to the FAA because the WAAS contract calls for the contractor to deliver a very complex network of pieces that have to work as one system. 5656, 13257. The team concluded that Hughes could meet the requirements for delivery of WAAS within the cost and schedule desired by the FAA. 13199.

The WAAS project team projected the costs that the FAA would incur if it continued with the Wilcox contract, both according to Wilcox's estimate and according to an estimate the FAA made that was based, in part, upon data that Wilcox supplied to the FAA during contract performance. The team also projected the costs that the FAA would incur if it either contracted with Hughes or if it recompeted the contract. The projection shows that the cost of a contract after a new competition would be nearly one-half of one billion dollars. The FAA estimated that it would cost more to continue with Wilcox than to award a contract to Hughes. The projected cost of performance by Hughes was approximately one quarter of a billion dollars. The FAA expected that, by contracting with Hughes, it would be able to recover some of the costs it had already incurred. For example, the FAA anticipated recovering some software development costs and some program management costs if it contracted with Hughes. 5663-64, 13264, 13628. The FAA's estimate of the cost of contracting with Hughes was not based upon any input from Hughes. Rather, the estimate was based upon data provided by the resource team and the team leaders, and an analysis of the work breakdown structure set out in the contract. 13575-76.

The FAA estimated that there was an eighty percent probability that Hughes could deliver IWAAS in December 1998. 5658, 13258, 13348. The FAA made this estimate without discussing it with Hughes. 13351. The FAA estimated that, if there were absolutely no more problems with Wilcox's schedule slipping, there was an eighty percent probability that Wilcox could deliver IWAAS in October 1998. There was a high risk associated with this estimate, because of the extent of the schedule slippage that Wilcox had already encountered. The FAA had very little confidence that Wilcox would have no further schedule problems. 5658, 13283, 13287-88, 13341, 13496-97. The FAA also estimated that IWAAS could be delivered in November 1999, if the FAA recompeted the contract. 5658. The FAA's schedule estimates were based upon a computer model, the Software Lifecycle Indicators Model, using Wilcox's staffing levels and the estimated lines of software code which would have to be written. 6033, 13345.

On April 19, 1996, approximately eight months after award, the FAA contracting officer drafted a memorandum documenting her decision to terminate Wilcox's performance of the contract for the convenience of the Government. At that time, the FAA estimated, based upon Wilcox's data, that the cost overrun on the

contract would be $100 million and that there would be a ten-month delay to the schedule. 2379, 5451-52, 5664, 6092, 6117, 13263-64.

On April 25, 1996, the WAAS project team briefed the Administrator about the decision to terminate Wilcox's performance and the recommendation to enter into a single-source contract with Hughes. The team told the Administrator that it considered ten alternatives and then selected three for a detailed analysis. The first alternative presented to the Administrator was to terminate Wilcox's performance and assign the contract to Hughes. The second alternative was a "mini-competition" between TRW and Hughes. The third alternative was to have either TRW or Hughes take the lead from Wilcox. The team recommended terminating Wilcox's performance, issuing a letter contract to Hughes, and then definitizing a contract and awarding a single-source contract to Hughes. On April 26, 1996, the Associate Administrator for Research and Acquisition approved a plan for a single-source WAAS acquisition from Hughes. 5652-69, 5741-68, 6110-11.

There is no single document that contains all of the information that the FAA considered when it evaluated all of the alternative courses available to it. The FAA considered that its analysis of alternatives was an ongoing process, and was based upon the collection of a lot of information over a long period of time. 13193-94.

The FAA did not decide that Hughes was the only contractor that could satisfy the technical requirements for the WAAS. 1324142, 13262. The FAA decided, however, that Hughes was the only contractor that would allow the FAA to deliver WAAS within the schedule and the budget that had been allotted to the WAAS program. 13261-62.

The FAA was concerned about the funding and budget for WAAS. The WAAS contracting officer believed that, if there was a delay in going forward with the WAAS contract, the program might lose its funding. 12998. The GPS product team leader was afraid that funding for WAAS would be jeopardized if WA\AS was not fielded by 1998. He explained that Congress provides funds based upon progress, and that Congress closely scrutinizes the FAA budget and is concerned about delays incurred in completing projects. The GPS product team leader has no assurance that funds would be lost if WAAS is delayed, but he does not want to run that risk. 13284-86. The WAAS program manager thought it was "quite likely" that the project would lose funding if it appeared that the program was in jeopardy of being completed within schedule. He explained that, even though the FAA had received Fiscal Year 1996 funds from Congress, the FAA could reprogram those funds and take funds away from WAAS. 13549-51. The integrated product team leader for navigation and landing stated that he has been told by "the Hill" that the FAA is not going to receive any more money for WAAS, and that the project must be completed within budget. 13505. The FAA's Associate Administrator for Research and Acquisition explained that the FAA is

facing some difficult budget problems, and that the more a program is stretched out over time, the more expensive it becomes. 13664. He stated that, because of schedule slips on other programs, Congress has been looking closely at the FAA and has been "unmoving" in giving the FAA any added funds, and the FAA has "no ability right now to go back to the Congress and ask for more funds." 13669. According to the Associate Administrator, as far as he knew, the only way the FAA could give more money to WAAS would be by taking money from some other FAA project. 13669-70.

The president of Wilcox spoke with one senator and kept a congressman informed about the WAAS contract. These two officials never gave Wilcox's president any reason to believe that funding would be jeopardized if IWAAS was not delivered in 1998. The record does not establish whether the two officials ever discussed WAAS funding with Wilcox's president. 6437-38, 6511-12.

The contracting officer terminated Wilcox's performance for the convenience of the Government on April 26, 1996. 5486.

On April 29, 1996, the FAA published an announcement on the Internet, stating that it intended to award a contract for WAAS to Hughes on a single-source basis. 5770. On this same date, the contracting officer and the integrated product team leader for navigation and landing signed a single source justification explaining why it was in the best interest of the Government to acquire WAAS on a single-source basis from Hughes. The justification makes the following points:

· The FAA intends to deploy IWAAS in 1998, due to user interest and cost benefits to be gained with satellite navigation.

· For eight months, Hughes provided key expertise during the systems design and software requirements phases of the WAAS contract. Hughes developed a WAAS architecture that incorporated safety-critical functions using commercial off-the-shelf and nondevelopment software. Hughes engineering development and safety expertise provided an eight-month cost, schedule, and technical advantage.

· Schedule risk was largely dependent upon software development, integration, and testing. Hughes had a mature software development capability, measured according to SEI standards. Also, Hughes had begun software preliminary design and had plans, processes, and procedures in place and approved by the FAA. These capabilities and WAAS contract activities also provided Hughes with an advantage for reducing schedule and technical risk.

· Hughes had the WA~S technical expertise, engineering skills, software development capability, and integration and test experience needed to design, develop, test, and deliver the WAAS with a minimum amount of risk. 5794.

Also on April 29, 1996, FAA representatives traveled to Hughes' offices in California in order to discuss the terms of **a** contract. 13218. Hughes did not submit a proposal to the FAA. There were negotiations and discussions about the terms and conditions of a contract, although the FAA prescribed the technical requirements and estimated the time for completion of the contract. 13572-75. When the FAA representatives traveled to California, they did not know whether they would be able to enter into a contract with Hughes. 13671.

From April 29 until May 1, 1996, the FAA and Hughes met and negotiated. On May 1, 1996, these parties entered into a six-month letter contract. The letter contract provides that the FAA will provide Hughes with additional information so that Hughes can prepare a proposal. 1410-11. Pursuant to the letter contract, Hughes will continue to work on critical software development while the parties negotiate to definitize a contract. At the time the letter contract was signed, there was no guarantee that the parties would be able to negotiate a contract which would require Hughes to deliver WAAS within the FAA's budget and schedule constraints. 13671-72. Thus far, Hughes has met or completed early the scheduled milestones in its contract, and Hughes is on schedule to meet future milestones. 13026-27. There has been no unsatisfactory performance by Hughes. 13029.

Initially, the Hughes letter contract did not state that Hughes would provide precision approach capability in Phase 1 of its contract. Wilcox was required to provide precision approach capability by 1998. Although the letter contract required Hughes to accomplish all of the technical work needed for precision approach capability in Phase 1, the letter contract did not say that Hughes would actually provide this capability until Phase 2. The parties modified the letter contract to say that Hughes will provide precision approach capability in Phase 1 of its contract. 1565, 2038, 12865, 13235-40, 13638-39.

One of the problems encountered by Wilcox concerned the satellite services provider. In December 1995, the FAA told Wilcox that it was willing to terminate for the FAA's convenience the satellite services provider part of the WAAS contract in order to permit the FAA to negotiate with the provider and to help the project acquire the services it needed. Although Wilcox viewed providing satellite services as one of its major risks, Wilcox declined to accept the FAA's proposal. 6091, 6510, 13102-03, 13251-52. Eventually, on April 23, 1996, the FAA terminated for convenience the portion of the contract that required Wilcox to acquire or lease GEO satellites and ground earth stations. 010, 121, 5093-94, 6092. The Hughes contract provides that the FAA will provide GEOs and radio frequency uplinks as Government-furnished equipment. 2057-58.

The FAA requires its contractors to establish a Performance Measurement Baseline (PMB) so that the FAA can monitor and assess cost and schedule risks. The PMB is based upon the contractor's cost proposal and is essentially a time-phased version of that proposal. The PMB is designed to ensure that work is

properly assigned according to the contract's work breakdown structure, and that the contractor has a plan for completing the contract work within the permitted schedule and within the funding limitations. Wilcox submitted its cost proposal in October 1994. In May 1995, the FAA told Wilcox that it would be required to establish its PMB within forty-five days after contract award. The contract, which was awarded in August 1995, required Wilcox to establish its PMB within forty-five days after award. Thus, Wilcox had to submit its PMB approximately eleven months after it submitted its cost proposal. The FAA was concerned that Wilcox's PMB contained deficiencies and inconsistencies, and provided Wilcox with guidance for preparing an acceptable PMB. The FAA gave conditional approval to Wilcox's PMB on November 21, 1995, 109 days after contract award. The conditional approval provided that the FAA would reexamine Wilcox's supporting cost and schedule planning documentation within the following 120 days. The FAA was not able to conduct its reexamination because, on January 18, 1996, Wilcox proposed a complete re-planning of its cost and schedule baseline. This replanning was never completed. 2366-67, 6113-16.

The FAA first requested a cost proposal from Hughes on May 1, 1996, to be submitted in September 1996. The Hughes letter contract will be definitized within 180 days after May 1, 1996, and the Hughes PMB will be due seventy-five days after the contract is definitized. 1410, 1911, 6118. Thus, Hughes will have to submit its PMB approximately four and one-half months after it submits its cost proposal.

There are differences between the timing of the operations and maintenance (O&M) requirements of the Wilcox contract and the timing of the O&M requirements contained in the Hughes contract, as amended. Some O&M items which Wilcox would have been required to meet by 1998 are deferred until later in the Hughes contract. **[* * * *]**

Paragraph 4.4 of the statements of work contained in both the Wilcox and the Hughes contracts requires the contractors to design and develop software in accord with the same specified safety standard, RTCA/DO-178B. 0116, 2053. RTCA/DO-178B sets out process assurance objectives for software development. If these objectives are met, then the software is certifiable to a particular level, with Level A being the highest. 13324-25. Wilcox says that the FAA required Wilcox to obtain certification of its software before the software was integrated into the IWAAS, and that the FAA is imposing a less stringent requirement upon Hughes. 12861-63. The FAA's software acquisition team leader states that Wilcox and Hughes are required to comply with the same certification procedures. 6073.

Wilcox's contract required that its software life-cycle process comply with RTCA/DO-178B Level A. Wilcox's contract provided that embedded or existing software had to be given exhaustive testing to ensure that it performed properly and, if exhaustive testing was not feasible, that the software had to be

redesigned using the methods specified in RTCA/DO-178B. 0116. In its proposal, Wilcox did not treat all of its computer software configuration items as Level A. 4784. The Hughes contract requires that its software life-cycle process comply with RTCA/DO178B at whatever level is assigned to each computer software configuration item. The Hughes contract also requires that embedded or existing software must meet the objectives of RTCA/DO178B at the assigned safety levels. 2053.

In its proposal, Wilcox said that it would use LYNX operating system software, which the FAA considered to be certifiable or very close to certifiable to a high level. After award, Wilcox decided to use AIX operating system software instead of LYNX. 13305-07. AIX contains approximately eight million lines of computer code. 6034. Certifying AIX to a Level A, B, or C could not have been accomplished within WAAS cost and schedule constraints, and the proposed WAAS architecture relied heavily upon Level A software. 4827, 4870. Wilcox proposed to test the AIX operating system at the computer software configuration item level, which is the largest software component level. This might be feasible for a small operating system like LYNX, but not for a large operating system like AIX. 6034, 13325-27.

Discussion and Conclusions of Law

I. Preliminary Matters

Although Wilcox asked that I examine the FAA's single-source award decision using a de novo standard of review, I did not do so. Using such a standard of review would be contrary to the guidance that the FAA's Office of Dispute Resolution provided to the parties before the protest was transferred to the Board, and would also be contrary to the terms of the interagency agreement. The interagency agreement provides that matters assigned to the Board will be reviewed to determine whether the FAA's decision either has a rational basis, or is arbitrary, capricious, or an abuse of discretion.

Wilcox argues that there is a federal common law concerning procurement, and that the FAA must follow "the federal norm" when it makes its procurement decisions. Wilcox Statement at 19, 25-26. Wilcox also argues that the FAA must comply with the Public Advertising Act, 41 U.S.C. § 5 (1994). The FAA disagrees. My task in preparing a recommendation for the Administrator is to apply the FAA's Acquisition Management System (AMS). I have no authority to entertain a challenge to the content of the AMS or to decide whether the contents of the AMS conflict with or are superseded by federal common law or the Public Advertising Act.

Wilcox and the FAA ask that I exclude some documents and some testimony from the record. I denied both requests because the documents in dispute appear to be reliable. In preparing my findings of fact and my recommendation, I

reviewed and considered all of the documents in the record, regardless of whether the parties cited to them in their statements of position.

In making my recommendation, I did not decide whether Wilcox was responsible for the problems that it experienced during performance. The schedule slipped and there were cost overruns, and these facts are relevant to the position that the FAA found itself in when it decided to award a single-source contract to Hughes. The causes of the schedule slip and the cost overruns are not important in this proceeding.

II. The Acquisition Management System

The 1996 Department of Transportation Appropriations Act, Public Law 104-50, directed the FAA to develop an acquisition management system that addresses the unique needs of the agency and that provides for more timely and cost-effective acquisitions. The FAA responded to this directive by developing the Acquisition Management System (AMS), which was adopted by the FAA on April 1, 1996, to govern FAA procurements. AMS 3.1.2.

According to the AMS, the FAA's acquisition policy is to provide for reasonable competition among interested firms when it is consistent with the FAA's needs. The goal of the policy is to acquire the most advantageous solution to meet the FAA's mission needs. The "preferred method" of procurement is to compete requirements among vendors, but contracting with a single source is permitted when it is in the "best interest" of the FAA. AM S 1.4.2; 3.2.2.2. The AMS also provides that single-source contracting is permitted "when necessary to fulfill the FAA's mission." AMS 3.1.3.

The AMS provides, "The FAA may contract with a single source when it is determined to be in the best interest of the FAA and the rational basis is documented. This rational basis should be based on actions such as emergencies, standardization, and only source available, which are necessary and important to support the FAA's mission." AMS 3.2.2.4.

The AMS also provides that the FAA "should" conduct a market analysis to support each single source decision, except for emergencies. "The method and extent of the analysis will be dependent on the requirement." AMS 3.2.2.4. The AMS defines a market survey as "any method used to survey industry to obtain information and comments and to determine competition, capabilities, and estimate costs." AMS at E-8.

Except in emergencies, "[a]fter the decision to contract with a single source has been approved," the FAA "will" make a public announcement on the Internet or through other means if the contract exceeds $50,000. " The purpose of the announcement is to inform industry of the basis of the decision to contract with the selected source." AMS 3.2.1.3.12; 3.2.2.4.

Part of the single source procurement process includes communicating with the contractor in order to reach a mutual understanding of the FAA's requirements, probable contract terms and conditions, and technical approach; receiving and evaluating the contractor's proposal "relevant to technical qualitative and quantitative evaluation;" developing a pre-negotiation position; and negotiating the final terms, conditions, and price. The actions taken by the FAA to communicate with the contractor will vary, and will be adapted to the complexity of the procurement. AMS 3.2.2.4.1; 3.2.2.4.1.2.

III. Wilcox's Arguments

According to Wilcox, the FAA violated the AMS by failing to engage in communications with Hughes before award and by failing to make a proper public announcement of the decision to conduct a single-source procurement. Wilcox also argues that the FAA did not perform a market analysis as required by the AMS before awarding a single-source contract to Hughes. Finally, Wilcox argues that the FAA's decision to award a single-source contract to Hughes lacks a rational basis.

A. Communications

Wilcox says that the FAA and Hughes failed to engage in the meaningful dialogue that the AMS requires in order for the FAA to award a single-source contract. Wilcox points out that the FAA and Hughes discussed nothing about a contract until April 29, 1996. Two days later, on May 1, 1996, the parties agreed to a letter contract. Even then, there was no guarantee that the parties would be able to negotiate a contract requiring Hughes to deliver WAAS within the FAA's budget and schedule constraints. Wilcox says that the FAA's expectation that Hughes will deliver the WAAS satisfactorily is guesswork, and not the result of proper communication between the parties.

The communication between the FAA and Hughes did not fail to fulfill the conditions of the AMS, and the FAA's expectation that Hughes will perform is not the result of mere guesswork. On April 29, 1996, FAA representatives traveled to California and began discussions with Hughes concerning the terms of a contract. When the FAA representatives went to talk to Hughes, they did not know whether they would be able to reach an agreement. The parties negotiated and discussed contract terms and conditions, although the FAA prescribed the technical requirements and estimated the time for completion. The FAA and Hughes were not negotiating as strangers, because the FAA was familiar with Hughes' capabilities and Hughes was familiar with the requirements of the WAAS. The parties agreed to the terms of a six-month letter contract, and the FAA awarded that contract to Hughes on May 1, 1996. Pursuant to the letter contract, Hughes will continue to **work on critical** software development while the parties negotiate to definitize a contract. The letter contract provides that the FAA will supply Hughes with added information so that Hughes can prepare a

proposal. The AMS does not require any minimum amount of negotiation, and is meant to be adapted to varying circumstances. The FAA and Hughes negotiated the terms of the letter contract, and they agreed to continue negotiations so that they can definitize a contract. The FAA did not violate the terms of the AMS concerning communications.

B. Public Announcement

Wilcox asserts that the FAA's Internet announcement, which was issued after the FAA decided to make a single-source award to Hughes, did not meet the requirements of the AMS for publicly announcing the decision to conduct a single-source procurement. According to Wilcox, the purpose of the AMS's announcement requirement is to permit vendors to present the F~A with information concerning their capabilities and to note their interest in the procurement. Wilcox asserts that the announcement must be issued in time for vendors to respond to the FAA. The FAA's announcement in this case was improper, says Wilcox, because it simply told vendors that the FAA had made a decision and it did not encourage any response.

The FAA did not violate the terms of the AMS when it issued its Internet announcement. The AMS plainly states that the FAA will issue an announcement in order to inform industry of the basis for deciding to contract with the selected source, and this announcement will be made after the decision to contract with a single source has been approved. The AMS specifically permits announcements via the Internet. The purpose of the announcement is not to serve as a sort of mini-solicitation, inviting vendors to respond. The FAA did not violate the terms of the AMS concerning public announcements.

C. Market Analysis

1. Lack of Analysis

Wilcox argues that the FAA did not satisfy the requirements of the AMS because it did not conduct a bona fide market analysis before it awarded the single-source contract to Hughes. Wilcox asserts that the market analysis should be an "interactive information-gathering process" with potential contractors. Wilcox Statement at 27. Wilcox asserts that the FAA's market analysis was "cobbled together" between April 18 and April 25, 1996. Wilcox Statement at 31. The FAA, says Wilcox, simply relied upon literature about GPS and its knowledge of the industry, and reviewed the proposals of those offerors who responded to the WAAS RFP. Wilcox states that, if the FAA had conducted a proper market analysis, it would have discovered that there are a number of firms which "have become increasingly active in the GPS augmentation field." Wilcox Statement at 29.

The AMS does not contain a hard and fast requirement for a market analysis. The AMS states only that the FAA "should" conduct a market analysis, and not that it "will" or "must" conduct an analysis. In addition, the AMS says that a market analysis is "any method" of obtaining information and comments to determine competition, capabilities, and cost. The AMS does not contain any rigid requirements for conducting an analysis, if one is conducted at all.

Whether the AMS requires a market analysis is irrelevant in this protest, because the FAA contends that it conducted such an analysis and that its analysis was not flawed, as Wilcox argues. The FAA contends that its market analysis was not the product of a few days work and was, instead, the product of several years of work.

The FAA considers its market analysis to have begun when it conducted the competition for the WAAS contract. In planning that competition, the FAA conducted a market survey, which was based upon a review of literature and interacting with industry and academia experts. Five vendors submitted technical proposals in late September 1994. **[* * * *]** Wilcox's technical score was **[* * * *]** higher than Rockwell's score, and **[* * * *]** than Lockheed's score. The initial competition certainly provided the FAA with information concerning the state of the competition, vendor capabilities, and cost in late 1994.

The FAA’s market analysis continued when it convened its work session in February 1996. At that time, the WAAS systems engineering team leader, who chaired the technical evaluation team, reviewed the proposals that were received in response to the WAAS RFP. He determined that it was very unlikely that the vendors who submitted proposals would be able to complete the WAAS work within the FAA's schedule.

After the work session, two FAA support contractors conducted a literature survey in order to determine whether any new capabilities were available in the market. Neither knew of any such capabilities. One of these support contractors is an expert in the GPS field who keeps abreast of technical areas and innovations which may have a bearing upon WAAS. He agreed with the FAA's conclusion that the offerors that responded to the WAAS RFP presented high technical, schedule, and cost risks in early 1996. In addition, he was not aware of any significant advances made by those offerors. The support contractors' information was part of the FAA's market analysis.

The market analysis continued, says the FAA, in March and April 1996, when the WAAS technical teams reviewed the proposals submitted in response to the WAAS RFP. They concluded that the offerors continued to present high technical, schedule, and cost risks. Wilcox points out that the offerors' technical proposals were submitted in late September 1994, and so the information that the FAA reviewed in 1996 was dated. Although this is true, the offerors'

proposals were valid until late September 1995, so the proposals were not as out of date as Wilcox contends.

In addition to all of the above activities, the FAA explains that its employees are constantly gauging the state of competition, capabilities, and cost in the satellite navigation industry. The FAA structured the WAAS contract to take advantage of product improvements and the latest technology, so the FAA knew that it was important to keep up with information concerning the satellite navigation industry. The WAAS systems engineering team leader manages between sixty and seventy people who keep aware of available technology. The FAA employees who are responsible for the WAAS program maintain close contact with manufacturers, service providers, and others involved in satellite navigation technology.

The FAA's staff contains internationally recognized experts in this field. FAA employees attend seminars and symposiums around the world, presenting papers and chairing technical meetings. They read the literature related to satellite navigation technology and maintain files related to this subject. They visit vendors, such as Lockheed, to look at their technologies. The FAA employees work with satellite navigation every day, and they learn of new developments concerning augmentation in the normal course of their business.

Wilcox characterizes the FAA employees as "naive, if not arrogant" for believing that, in the normal course of business, they would learn of new technologies and advances by vendors. Wilcox StatemStatement at 28. It is not so difficult to imagine that FAA employees, who are responsible for a one-quarter billion dollar satellite navigation project designed to provide for the safe flight of civilian aircraft, would be aware of currently available satellite navigation technology. The facts contained in the record support the FAA's contentions concerning the activities and knowledge of its employees.

Wilcox states that a number of vendors have become increasingly active in the GPS augmentation field, and that a proper market analysis would have brought to light the capabilities of these vendors. Rockwell contends that it improved its technical capabilities after it submitted its proposal in response to the WAAS RFP. After considering Rockwell's examples of how it has improved its capability, the WAAS software acquisition team leader explained that there is a difference between being in the process of developing software and actually having developed software. The team leader was not persuaded that Rockwell has shown a definite improvement in its capability, and his conclusion is a logical one.

In summary, to the extent that a market analysis was required, which is not certain, the FAA's analysis was comparable to the one. it conducted before it issued the WAAS RFP. The FAA relied upon its knowledge of the marketplace, gained from literature and from its interaction with people in the satellite

navigation industry. It reviewed the proposals it received as a result of the open competition for the WAAS. It consulted with two support contractors, one of whom is an expert in the field of satellite navigation. The FAA did not hastily pull together its thoughts concerning competition, capabilities, and costs. The FAA's actions in conducting the market analysis did not violate the AMS.

2. Contract Differences

Wilcox also argues that the market analysis was flawed because the FAA considered offerors' abilities to perform the work required by the WAAS RFP, and not their abilities to perform the work required by the Hughes contract . Wilcox asserts that the Hughes contract relaxes many of the "onerous" requirements imposed by the Wilcox WAAS contract, and points to the changes in requirements for precision approach capability, satellite communications, delivery of a PMB, O&M, and software certification. Wilcox Statement at 29. According to Wilcox, the FAA's market analysis was deficient because it did not evaluate the capabilities of offerors to perform the lesser requirements of the Hughes contract.

Looking at the five differences relied upon by Wilcox, first, precision approach capability is required of both contractors. Second, the Hughes contract contains no requirement for satellite services. The FAA offered to delete the satellite requirements from the Wilcox contract as early as December 1995. Although Wilcox rejected that offer, the FAA deleted those requirements from the contract shortly before it terminated Wilcox's performance. Third, the FAA is giving Hughes less, not more, time to prepare and submit its PMB than the FAA gave Wilcox to accomplish the same task, if the time for submission is measured from the time a cost proposal is submitted. Because the PMB is based upon the cost proposal, it is appropriate to compare the length of time the two contractors have to submit their PMBs after their cost proposals are submitted. Fourth, although there are some differences in the timing of the O&M requirements contained in the two contracts, there is nothing in the record to suggest that these differences had any effect upon the FAA's view of the capabilities of any contractor. Last, I do not find any significant differences between the RTCA/DO-178B certification requirements contained in the two contracts. Hughes has no more right than did Wilcox to use software that does not comply with the requirements of RTCA/DO178B. Wilcox's complaint about RTCA/DO-178B stems less from the contents of the two contracts, and more from its decision to use a large piece of operating system software that could not meet even Level C requirements, and its decision to test that software at the computer software configuration item level.

To the extent that there are differences between the Wilcox contract and the Hughes contract, the record does not establish that those differences were significant enough to affect the market analysis. The FAA's actions in conducting its market analysis did not violate the AMS.

D. Rational Basis for Single-Source Award

1. Use of Single-Source Contracting

Wilcox asserts that the AMS embodies a strong preference for competitive procurements, and that there are strict requirements which must be met in order to award a single-source contract. According to Wilcox, single-source contracts can be awarded only when the FAA "has no realistic option." Wilcox Statement at 37. Wilcox says that, in order to establish that the single-source award was proper, the FAA must show that "the consequences of engaging in a competitive procurement were dire, and left the FAA with no other realistic choice." Wilcox Statement at 38. Even if the consequences were dire, and even if the FAA had no other realistic choice but to award a single-source contract, Wilcox says that the AMS required the FAA to conduct a limited competition, one that accounted for the FAA's schedule and cost concerns, rather than award a single-source contract.

Although the AMS contains a preference for competition, Wilcox overstates that preference. The AMS does not state that singlesource procurements are disfavored or can be used only if there is no other choice. Instead, the AMS recognizes that single-source procurements are appropriate when they are in the best interest of the FAA and when they are necessary to fulfill the mission of the FAA. The FAA is supposed to provide for reasonable competition when it is consistent with the FAA's needs. The AMS did not require the FAA to recompete the WAAS contract, so long as it was in the FAA's best interest to proceed with a single-source award and so long as the rational basis is founded upon "actions . . . which are necessary and important to support the FAA's mission." AMS 3.2.2.4.

2. The FAA's Analysls

Wilcox argues that, because Hughes was not the only vendor that might be technically capable of fulfilling the FAA's needs, the FAA cannot rely upon Hughes' technical superiority as a reason for awarding a single-source contract. In response, the FAA does not contend that only Hughes is technically capable of delivering the WAAS. Rather, the FAA contends, Hughes was the only technically competent vendor in a position to deliver the IWAAS on time and within budget. Wilcox dismisses the FAA's concern about timely delivery by asserting that 1998 is "no more than an arbitrary, self-imposed goal," that does not provide a rational basis for making a single-source award. Wilcox Statement at 41. As for the FAA's concerns about completing IWAAS within budget, Rockwell states that "[i]t is inconceivable" that Congress would eliminate funding for a program as important as WAAS if IWAAS is not delivered in 1998. Rockwell Statement at 26.

The FAA was not required to conduct a competition simply because other vendors, given enough time and money, might have been able to fulfill the FAA's

requirements. The FAA has very good reasons for wanting to implement the WAAS as soon as possible. The WAAS is to provide benefits to safe and efficient air navigation and air traffic control. Other countries are interested in the technology that the FAA is developing and implementing, and the United States has committed to provide GPS navigation to the international civil aviation community. The President and the Congress realize that GPS and WAAS are important and should achieve significant benefits. Substantial cost savings should accrue after EWAAS is fielded, and EWAAS cannot be fielded until after IWAAS is delivered. Although the FAA could postpone delivery of IWAAS indefinitely, the FAA is not required to do so. By setting a goal for delivering IWAAS, the FAA was acting responsibly, and its decision to take this goal into account when it decided to award a single-source contract does not lack a rational basis. Similarly, the FAA's desire to work within its budget in administering a cost plus award fee contract is understandable. The FAA is in a much better position to assess the likelihood of losing funding for WAAS than is either Wilcox or Rockwell. The FAA's decision to take its budgetary concerns into account when it decided to award a singlesource contract does not lack a rational basis.

3. Single-Source Decision

In order to determine whether the FAA's decision to award a single-source contract to Hughes had a rational basis, it is appropriate to consider that the FAA faced the following facts in early 1996.

The WAAS program is very important to the FAA's mission. Only a few offerors submitted proposals in response to the WAAS RFP, and only Wilcox's proposal fell within the competitive range. Wilcox's competitors **[* * * *]** and had technical capability to deliver the WAAS as required by the FAA.

Approximately eight months after the FAA awarded the WAAS contract to Wilcox, the only acceptable offeror, the FAA projected that there would be a ten-month delay to the schedule and a $100 million cost overrun due to problems that Wilcox encountered.

The FAA identified and studied numerous alternatives for proceeding with the WAAS contract. For each alternative, the FAA considered cost risk, schedule risk, and technical risk. The FAA determined that recompeting the WAAS contract, either with a minicompetition or with a full and open competition, would jeopardize the 1998 delivery date for the IWAAS, would require hundreds of millions of additional dollars, would probably result in loss of personnel, and could jeopardize funding for the WAAS program. Wilcox asserts that the FAA could have recompeted the contract within ninety days. Rockwell estimates that a recompetition would have taken four months. The basis for these estimates is not clear. The FAA's belief that a recompetition would have taken significantly more

time is based upon the experience of FAA employees who are responsible for government contracts.

The FAA was aware of the technology available in the market place, and was not aware that any vendor had made any significant advances toward improving its technical capability.

Hughes was qualified to perform the contract's software requirements. The FAA awarded Wilcox excellent scores for its software capability because Wilcox proposed to have Hughes perform the software work. Hughes received good marks during the software capability evaluation, and was rated as a low risk. The FAA was in frequent contact with Hughes while Hughes was performing software work for the WAAS contract. The problems that arose with software development were, in the view of the FAA, not attributable to Hughes. Hughes was responsible for the success of the software development plans, processes, and procedures in place and in use. Hughes had begun software preliminary design. Hughes had a good understanding of the WAAS architecture, safety critical design, and the requirements for certifying software. The FAA knew that the safety critical design of the WAAS was probably the most complicated part of the software and the industry did not have a good grasp of this work. Hughes had contributed to a solution to solve what might have been a serious problem with Wilcox's software. Hughes had achieved an SEI rating of Level 3.

Hughes could perform the contract's hardware requirements, because the contract relied upon commercial, off-the-shelf hardware. With increased support staff from the FAA, the FAA concluded that Hughes could perform the systems integration and systems engineering functions required by the contract. Finally, the FAA was convinced that Hughes could perform the program management responsibilities required of the contractor. FAA employees were aware of problems that Hughes had encountered on two air traffic control contracts, but the FAA knew that Hughes had performed successfully for the Air Force on the Peace Shield contract. Hughes employees who worked on the Peace Shield contract were also working on the WAAS subcontract. The contracting officer contacted the Air Force and discovered that Hughes had completed the Peace Shield contract ahead of schedule and under budget. The FAA believed that Hughes had the management capability to deliver a complex network that would function as an integrated system.

The FAA was convinced that Hughes could perform on time and within budget. The FAA concluded that Hughes' eight months of experience performing the software development work for the WAAS contract gave Hughes an advantage over other companies. Hughes presents a low schedule risk, because schedule risk is largely dependent upon software development. The FAA's cost estimates showed that Hughes could perform for approximately the same cost as the contract awarded to Wilcox, that the FAA could recover some costs by

proceeding with Hughes, and that Hughes was the lowestcost alternative available.

The FAA's decision to award a single-source contract to Hughes has a rational basis. The FAA rationally decided that its best interests demanded that it take action in order to salvage the WAAS contract's schedule and budget, and action by the FAA was necessary and important to support the FAA's mission. The FAA considered all of the relevant factors and made no clear error of judgment in reaching its conclusion.

Recommendation

For the reasons set forth above, I recommend that the Administrator deny the protest.

_____/S/_____

MARTHA H. DeGRAFF

Board Judge