

# Board of Contract Appeals

General Services Administration  
Washington, D.C. 20405

June 14, 2001

GSBCA 15575-FAA  
(ODRA No. 01-ODRA-00180)

RAYTHEON COMPANY,

Protester,

v.

FEDERAL AVIATION ADMINISTRATION,

Respondent,

and

LOCKHEED MARTIN CORPORATION,

Intervenor.

William H. Butterfield, Brian Cohen, and Lawrence M. Prosen of Bell, Boyd & Lloyd, Washington, DC, counsel for Protester.

Gregory C. Carter and Richard J. McCarthy, Federal Aviation Administration, Washington, DC, counsel for Respondent.

Thomas L. McGovern III, S. Gregg Kunzi, and Michael F. Mason of Hogan & Hartson LLP, Washington, DC, counsel for Intervenor.

**DANIELS**, Board Judge (Chairman), acting as Special Master.

Raytheon Company (Raytheon) protests that the Federal Aviation Administration's (FAA's) announcement of an intention to award a single source contract to Lockheed Martin Corporation (LMC) lacks a rational basis. According to Raytheon, this contract may not be awarded on a single source basis because competition exists for the fulfillment of the agency's requirements. The protester also maintains that by allowing companies to object to the award only if they meet all the qualifications listed in the announcement, the agency has restricted competition without sound justification.

The protest was filed with the FAA's Office of Dispute Resolution for Acquisition (ODRA), which docketed the matter as No. 01-ODRA-00180. After efforts to resolve the dispute through alternative dispute resolution techniques failed, the Director of the ODRA referred the case to the General Services Board of Contract Appeals (GSBCA), for assignment to a Board judge acting as special master. The undersigned judge has been assigned the case.

The record consists of an FAA product team report, extensive comments by Raytheon and LMC, and a reply by the FAA product team to the comments by the two companies, plus numerous exhibits (documents, affidavits, and transcripts of deposition testimony) submitted by each of the parties in conjunction with their analyses.

I conclude, based on this record, that the protest should be granted. The FAA does not have a rational basis for making a single source award to LMC. At least in part because the agency has not taken all the steps described in its Acquisition Management System (AMS) as necessary for effective lifecycle acquisition management, the FAA lacks sufficiently detailed knowledge of what it needs, what LMC might deliver, or what risks are associated with any particular approach to the problem at hand, as to be able to proceed at this time with the announced single source award.

### Findings of Fact

#### The Internet Announcement and the Protest

1. On February 6, 2001, the FAA released an Internet announcement regarding the En Route Automation Modernization (ERAM) Program. The announcement began:

The FAA intends to award a single source contract to Lockheed Martin Corporation (LMC) and its team of subcontractors for system development and integration services for the replacement of functionality embedded in the current en route Air Traffic Control (ATC) automation environment with an open, supportable and technologically modernized en route automation environment.

Exhibit 1<sup>1</sup> at 1. The announcement declared:

The ultimate objective of the ERAM program is to incrementally deploy functionality that upon completion results in a single cohesive en route automation system with a primary and full-backup capabilities that provides Flight Data [P]rocessing (FDP) and Surveillance Data Processing (SDP) while supporting Decision Support Systems, Controller Pilot Data Link Communications (CPDLC) and other appropriate en route automation functions.

Id. at 2. The contract to accomplish this objective would last for at least ten years. Id.

2. A portion of the announcement was entitled "Basis for Single Source Justification." In this part, the FAA stated that it "plans to award a single source contract to LMC during [Federal fiscal year 2002]." Exhibit 1 at 3. The agency said that LMC has "unique expertise" in the en route automation environment, and that Computer Sciences Corporation (CSC), which "[p]er a teaming arrangement . . . has agreed to serve as a major subcontractor to LMC for the ERAM program," has "many years of demonstrated performance" in dealing with the software for the Host Computer System (HCS) for the en route domain. Id. at 2-3. The FAA said that "[t]he decision to award a single source ERAM System Integration contract to . . . LMC and its team of subcontractors was based on" the agency's conclusion that technical, cost, and schedule risk would be reduced and mitigated due to the experience and unique knowledge of current systems and software possessed by LMC and CSC. Id. at 3.

3. The announcement also contained a portion entitled "Statement of Capabilities." Here, the FAA said:

If any entity believes it can meet *all* of the FAA's requirements for the ERAM program, it should submit a statement of capabilities demonstrating its ability to meet *all* of the requirements contained herein. . . . Incomplete or unsupported responses by an entity to one or more technical areas or failure of the entity to identify demonstrated knowledge/experience/capabilities to one or more technical areas may result in the entity being deemed unqualified for further consideration as the prime ERAM system integration contractor.

---

<sup>1</sup> Exhibits 1-35 are contained in the agency report submitted by the FAA to the special master on March 4, 2001. Exhibits 36-49 were submitted by Raytheon on May 18, 2001, in conjunction with that company's comments on the agency report. Other exhibits are specifically noted as to source.

Exhibit 1 at 3-4. Six technical areas, each with many subsets, were listed. The first was entitled "NAS HCS/HOCSR [National Airspace System Host Computer System/Host and Oceanic Computer System Replacement]." The second was "En Route Infrastructure." Both require extremely detailed knowledge of the computer hardware and software used by the FAA in its current management of the en route domain. Id. at 4.

4. On February 22, 2001, Raytheon responded to the Internet announcement. Raytheon first noted its interest in competing for an award of a contract for the ERAM Program and its work on en route air traffic control systems throughout the world, particularly in Canada and Germany. Protest, Exhibit 2 at 1. The company then said that it was "both surprised and alarmed that the FAA intends to award ERAM to [LMC] on a sole source basis." Id. at 2. Raytheon explained:

As we read the Internet Announcement, the only rationale we can discern for your decision to proceed sole source is the [LMC] and its subcontractor (CSC) are the incumbents on the existing en route system which ERAM is designed to replace. It defies logic to suggest that only the incumbents on the existing, obsolete system are capable of designing a new modern system to replace it, or even adapting the existing system into a modern replacement system. Under that theory, the FAA would almost never have the need to conduct a competitive procurement. Incumbency would equate with lifetime tenure. In virtually every circumstance one can imagine, the existing incumbent can be said to have an "advantage" in a follow-on procurement. But if that advantage equates to "uniqueness," which in turn equates to "single source," then the basic competitive rules and policies underpinning the AMS become meaningless.

Protest, Exhibit 2 at 2.

5. Raytheon then asked "the FAA to revisit and retract its sole source approach to ERAM as set forth in the February 6 Internet Announcement." Protest, Exhibit 2 at 3. Raytheon continued, "There is competition for ERAM and Raytheon intends to provide it. This procurement should proceed under the usual and normal AMS process of a SIR [screening information request], followed by proposal submissions, discussions and best-and-final [offers]." Id.

6. Raytheon complained:

The first two (2) technical areas are particularly problematic to Raytheon, as they would be to any other potential offeror. . . . [These factors] require detailed knowledge of the existing hardware, software, and interfaces that only the incumbents ([LMC] and CSC) could possibly possess. The inclusion of

these factors, as written, makes the sole source approach to ERAM a self-fulfilling prophecy.

Protest, Exhibit 2 at 3.

7. On February 28, Raytheon filed a formal protest with the FAA's Office of Dispute Resolution for Acquisition. The protest maintains that "the sole source determination by the FAA violates the most basic and fundamental principles of its own Acquisition Management System." Protest at 1. Raytheon explained:

The AMS stresses open competition and best value as the foundations for the FAA's entire procurement system. AMS § 3.1.1. Indeed, open competition is one of the "fundamental principles" underlying the entire AMS, as is the rule that "competition [is] the preferred method of contracting." AMS § 3.1.3. The integrity of the FAA's procurement system is wholly undermined if the agency is able to direct major contract awards sole source on the basis of nothing more than baseless and irrational conclusions.

Id. at 3. The protest specifically alleges that the requirement that an offeror exactly meet all six technical evaluation areas is unduly restrictive, especially as to areas one and two. Id. at 4. In this regard, Raytheon charges that the agency has violated various sections of the AMS. Id. at 5. The protest asks that the FAA be directed "to retract its sole source announcement and to conduct the ERAM procurement on a fully competitive basis as required by the rules and policies of the AMS." Id.

### Planning for this Procurement

8. The FAA is responsible for managing the National Airspace System (NAS), which the agency has divided into various "domains" -- Terminal, Tower, En Route, Oceanic, and Traffic Flow Management. Exhibits 21 at 5; 48 at 5. En Route is the most complex of these environments; it has links to every facet of the NAS. Exhibits 45 at 36; 46 at 5. Within this domain, air traffic controllers at twenty Air Route Traffic Control Centers (ARTCCs) in the United States use computer systems to monitor airspace twenty-four hours a day, seven days a week, 365 days a year. Exhibit 21 at 1-2.

9. During the 1990s, the FAA evaluated a major procurement it had conducted which was called Advanced Automation System (AAS). The agency concluded that the "Big Bang" approach used in AAS, involving a replacement of the computer system used for the entire NAS, had not worked. Instead, the FAA believed, a "build a little, test a little" approach -- also called "spiral development" -- would yield better results. Exhibit 21 at 5, 13. According to an FAA engineer:

The spiral model is an incremental approach to the definition, development and implementation while decreasing the risk of each increment. One of the key assumptions is that it is difficult to correctly implement a complex system in single implementation because of the risk of inaccurately capturing the requirements in advance which then leads to the risk that the system will not meet user expectations.

Id. at 13.

10. Consistent with this philosophy, an Automation Strategic Plan adopted by the FAA in 1994 endorsed an evolutionary approach to air traffic control automation. Exhibits 2; 23 at 2. In 1996, a team was established to implement this plan with regard to the architecture for the en route domain. Exhibit 8. The team endorsed an evolutionary approach to modernization. Id. at EX-26. The team explained, "This architecture or infrastructure will be the target of a series of incremental, operationally acceptable, functional evolution or transitions." Id. at I-1.

11. Section 2 of the AMS is entitled "Lifecycle Acquisition Management Policy." This section begins with "Guiding Principles," which it summarizes as follows:

Lifecycle acquisition management policy is built around a logical sequence of activities and decisions that enable the agency to determine and prioritize its needs, make informed investment decisions, manage its resources, and execute acquisition programs efficiently and effectively. It starts with the determination of agency needs and continues through the entire lifecycle of a product or service.

AMS § 2.1.

12. The first activity within section 2 is mission analysis. This analysis "evaluates the capacity of agency assets to satisfy existing and emerging demands for services" and results in mission need statements. AMS § 2.3. Mission need statements are to "assess the criticality and timeframe of the need, and roughly estimate the resources the agency should commit to resolving it." AMS § 2.3.2. A mission need statement "forms the basis for establishing the priority of this need in competition with all other agency needs, and for determining which needs should be approved for investment analysis." Id. In November 1997, the FAA approved a mission need statement (MNS-309) for the en route and oceanic domains. Exhibit 3. The en route portion of this statement was revalidated on February 26, 2001. Exhibit 4. Thus, the November 1997 statement remains in effect for the en route domain. Exhibit 23 at 3.

13. The second activity within the FAA's lifecycle acquisition management policy is investment analysis. "The intent of investment analysis is to define in *functional and*

*performance terms* the capability the agency must have to satisfy mission need, and to determine and baseline the best overall solution(s) for achieving that capability." AMS § 2.4. The AMS makes investment analysis a critical step in acquisition planning:

It is essential to determine accurately during investment analysis the resources and time needed to implement each candidate solution to mission need. These estimates form the basis for the cost and schedule boundaries in the Acquisition Program Baseline for the solution(s) selected for implementation, and establish the resources the agency is committed to funding for each mission need in competition with all others. If these estimates are not accurate, the agency will be unable to plan realistically or achieve the goal of stable funding for approved programs.

Id. "[I]nvestment analysis . . . is conducted before an IPT [integrated product team]-led acquisition program is established." Id.

14. Within investment analysis are two kinds of activities, requirements definition and investment analysis itself. AMS §§ 2.4.1, 2.4.2. Requirements definition is to be performed in two stages, initial and final. AMS § 2.4.1. The sequence is to be as follows: initial requirements definition; investment analysis; final requirements definition. AMS §§ 2.4.1, 2.4.2. The products of investment analysis include a revalidated mission need statement; an investment analysis report; and a final requirements document. AMS § 2.4.3.

15. An initial requirements document was completed for the en route domain in October 1998. Exhibit 5. It says that it "translates the operational and functional needs described in the MNS-309 into functional requirements that will be used to perform an investment analysis of potential alternatives." Id. at 2. "The evolution of the operational environment," it states, "will be based on an incremental implementation of new technologies." Id. at 13. "The system shall allow for new system functionality to be inserted or incrementally implemented without degradation to [air traffic control] services." Id. at 18.

16. The FAA has not made an investment analysis for this acquisition. Product Team Report (May 4, 2001) at 11; Exhibits 45 at 49-50; 46 at 38-39; 48 at 37. Although a very slightly revised version of the initial requirements document was approved in February 2001, Exhibit 6, a final requirements document has not been completed. Exhibits 45 at 49-50; 46 at 38-39. The final requirements document is said to be under development. Exhibits 47 at 68; 48 at 37, 70.

17. In addition, the FAA has not completed an acquisition strategy baseline, acquisition strategy paper, or procurement plan. Product Team Report at 10, 11. The agency has not made a final determination regarding system architecture, and it has not written a statement of work or functional performance specifications. Exhibits 46 at 38-39; 48 at 37, 70; see also Product Team Reply (May 25, 2001) at 7.

18. During 1998, the FAA established a program known as "Eunomia" to conduct a market analysis regarding the agency's en route needs. The team assigned to this task did an extensive job. It held an "industry day" in December 1998 to seek solutions from industry, and followed up the industry day with a market survey and meetings with fifteen interested vendors. Exhibits 9; 10 at 1. The Eunomia program team began without any preconceptions as to what an ultimate outcome would be; it was looking for solutions, not systems. Exhibits 9 at I-2; 44 at 24-25. It attempted to "think out of the box" and not necessarily replicate the current technical architecture, and urged vendors to do likewise. Exhibits 9 at VII-4; 44 at 29.

19. The Eunomia market analysis report, issued in July 1999, found that several companies could provide partial or complete commercial solutions -- some of which included commercial, off-the-shelf products -- and that several firms could serve as systems integrators. Exhibit 10 at 1. Although all of the systems noted would require some modification, the report found that "[t]here are myriad potential solutions to meet the needs of en route automation through the year 2013." Id. at 4. Interestingly, none of the firms responding to the survey suggested that the FAA preserve the computer hardware and software of the old system within a replacement system. Exhibit 44 at 40-41. The market analysis report concluded "that there are sufficient capabilities in the marketplace to meet the majority of the Eunomia requirements, and that the number of vendors is likely to result in sufficient competition." Id. at 13.

20. The Eunomia market analysis cautioned:

There will be issues associated with moving to the new technologies, but they are not insurmountable. Care should be taken to assess the implications of changing an interface in an existing system versus developing an antiquated interface in a modern replacement system. The FAA will have to fully understand the benefits and the risks associated with this endeavor.

Exhibit 10 at 2. With these caveats in mind, the Eunomia team drafted a second report, also issued in July 1999, which listed the strengths and weaknesses of various alternative replacement strategies, including system-for-system replacement and a phased functional approach. Exhibit 11. The report concluded that each of the strategies has costs and benefits, and "[t]here is no clear best or worst technical solution." Id. at 82.

21. After the issuance of these reports, the Eunomia team was disbanded. The needs which it had addressed remained, however (with the exception of some relatively minor modifications the FAA made to the en route system), and a new ERAM team was established to address them. Exhibits 45 at 7-8; 47 at 9; 48 at 21, 23. During 2000, members of this team met with representatives of several FAA contractors, including LMC and CSC, to develop a new strategy for upgrading the en route system. The new strategy was built around the concept of "decomposing" the software in the Host Computer System and

redesigning it, then implementing the changes through a series of incremental upgrades. Exhibits 22 at 3; 45 at 27-28, 31-32; 48 at 80, 82-83.

22. The term "incremental decomposition" was used publicly by the FAA for the first time in the Internet announcement which is the subject of this protest. The announcement says:

A development and implementation approach consisting of incremental decomposition and replacement of HCS [Host Computer System]/DARC [Direct Access Radar Channel, the backup system for the HCS] functionality (i.e., temporary or permanent relocation of selected functions from the HCS/DARC to achieve the intended decoupling of applications) is well suited to comply with the site transition restrictions and minimize the impact to ATC operations. . . . This incremental approach will necessitate multiple transitions of deployed ERAM functionality, which are needed to mitigate adverse impact to [air traffic control] operations."

Exhibit 1 at 1-2.

23. Exactly what the FAA means by "incremental decomposition" is not clear from the record in this case. Counsel urges that the parenthetical phrase in the first sentence in the preceding snippet of the Internet announcement constitutes a definition. Product Team Reply at 13. Agency officials gave these explanations during deposition testimony:

- "[I]ncremental decomposition as it relates to this is just that, identifying what pieces of software that we added on that we can now peel off like an onion." Exhibit 45 at 67.
- "Well, to me, it means taking the functions and separating them where it can be separated and kind of like a jigsaw puzzle." Exhibit 46 at 61.
- "[I]ncremental decomposition refers to taking the functionality currently residing in the host and implementing that function, plus additional requirements to meet shortfalls and new needs external, but not all at once, and taking these functions, grouping them logically and deploying or implementing . . . the new functions in those logical chunks." Exhibit 48 at 56-57.

24. As far as is known by the FAA officials who testified in this case, an incremental decomposition approach has never been tried by the agency. Exhibits 45 at 48, 68; 46 at 61-62. The integrated product team lead for en route does not understand how this approach would be accomplished or how many times one would have to go into the system at any or all of its score of ARTCCs to perform the incremental modifications. "There's nothing practical about this," she testified. "This is the most complex thing that the agency will ever

undertake." Exhibit 45 at 67. Her subordinate, the ERAM product team lead, similarly does not know how the "fairly complex technical task" of decomposing old software to get it to run on a new platform in a modern language might be performed. Exhibit 47 at 34. The FAA has not conducted a risk assessment which examines the potential costs and benefits of incremental decomposition. Exhibit 48 at 74.

25. Nor does the FAA know exactly what it is that must be incrementally decomposed under its chosen approach. This is a significant problem, because as the integrated product team lead understands, one must know what the software is in order to decompose it. Exhibit 45 at 58. According to an FAA engineer:

The NAS system has been built in stages over [more than thirty] years[,] adding new functions and capabilities. As a result, today's system consists of [a] set of separate hardware and software components physically interfaced together, but without a common design, infrastructure, or software environment. . . . The operational portion of the HCS software is a FAA[-]unique system. . . . The [air traffic control] application is written in a combination of Basic Assembly Language (BAL) and JOVIAL, an arcane high level language used primarily by the Department of Defense in the 1970's. . . . Over the years the HCS software has been enhanced to provide site specific functions used to meet local requirements. These functions are contained in libraries know[n] as national patches and local patches. Most ARTCC[s] do not use the same set of patches[,] resulting in a unique HCS "build" for each site.

Exhibit 21 at 3-4.

26. Because the FAA does not know the contents of the existing software "bowl of spaghetti" (the term used by both the integrated product team lead and the associate administrator for research and acquisitions, Exhibits 45 at 66-67; 46 at 74), the agency in November 2000 contracted with CSC, which is currently maintaining the software, to perform a "functional audit" of it. Raytheon Comments (May 18, 2001), Exhibit C at 3, 7-8 (unnumbered). The audit is to establish a "baseline . . . that provides a reference point for existing capabilities available in the En Route domain." Id. at 7. The contract explains:

One of the greatest risks for the successful implementation of ERAM does not lie with the replacement of well documented capabilities in the NAS but that the program will fail to capture the unique ways in which the field has applied the capabilities of the HCS functions to their specific operations. For example, the use of national and local patches, unique airspace issues, management of external interfaces . . . , ways in which the controllers "manipulate" the HCS to make it do what they want, etc. This functional audit will need to cover these 'undocumented features' of the NAS as well as the documented capabilities.

Id. "The document shall be delivered in a format that can be understood by the external user. In other words, it is . . . a set of descriptions that describe the functions and capabilities, the ways in which external users . . . interact with the capabilities, external . . . interfaces, and the various system states that are key to the behavior of the NAS." Id. at 8. This work is to be complete in January 2002. Id. at 4.

27. As noted in Finding 1, the Internet announcement says that the FAA intends to award a single source contract to LMC and its team of subcontractors, primary of which is CSC. At the time that the announcement was published, there was no teaming agreement between LMC and CSC. Product Team Reply at 10, Attachment B. An agreement was in draft form, but it was not signed until March 15, 2001, more than a month after the issuance of the announcement. Raytheon Comments, Exhibit B. Even the signed agreement does not contain a definite commitment that CSC will be part of the LMC team; it is subject to successful negotiation of mutually acceptable terms and conditions within a specified period of time. Id. at 2, 3. No other LMC subcontractors have ever been identified, and FAA officials admitted that no such team currently exists. Exhibits 45 at 45; 46 at 32; 47 at 50.

28. LMC has not provided to the FAA any technical, cost, or schedule proposal for the ERAM program at issue in this protest. Exhibits 45 at 48-50; 46 at 35-36; 47 at 36-38.

### Discussion

Protests of FAA procurement actions are reviewed to determine whether the actions at issue have a rational basis or are instead arbitrary, capricious, or an abuse of discretion. Wilcox Electric, Inc. v. Federal Aviation Administration, No. 96-ODR-0001 (GSBCA 13834-FAA), at 15 (Sept. 30, 1996), appeal dismissed, 119 F.3d 724 (8th Cir. 1997); see also Northrop Grumman Corp. v. Federal Aviation Administration, No. 00-ODRA-00159 (GSBCA 15383-FAA), at 12-13 (Oct. 6, 2000).<sup>2</sup> When applying this standard of review --

the courts have recognized that contracting officers are entitled to exercise discretion upon a broad range of issues confronting them in the procurement process. Accordingly, the test for reviewing courts is to determine whether the contracting agency provided a coherent and reasonable explanation of its exercise of discretion, and the disappointed bidder bears a heavy burden of showing that the award decision had no rational basis.

---

<sup>2</sup> Citations to pages of ODRA decisions are to pages as they appear on printed copies of Internet-accessible versions of these decisions. The decisions are available at <http://www.faa.gov/agc>.

Impresa Construzioni Geom. Domenico Garufi v. United States, 238 F.3d 1324, 1332-33 (Fed. Cir. 2001) (quotation marks and citations omitted). The agency's actions which are challenged in this protest will be evaluated against this standard.

The parties have devoted a great deal of energy to arguing about whether the FAA's Internet announcement effectively constituted a notice of award (as maintained by Raytheon) or is merely a device for initiating a market survey (as contended by the FAA). There is no justification at all for the agency's position on this issue.

The announcement is definitive in stating that the agency "intends to award a single source contract" to LMC and "[t]he decision to award [the contract] was based on" agency conclusions. Findings 1, 2. The announcement effectively says that the FAA will not even consider retracting its decision unless a company other than LMC demonstrates, for every one of six listed technical areas, certain capabilities -- evidently, capabilities which are sufficient to provide a modernized en route automation system through incremental decomposition of the existing system. Finding 3. Raytheon acknowledges that because two of the technical areas involve extremely detailed knowledge of the computer hardware and software used by the FAA in its current management of the en route domain, it cannot demonstrate sufficient capabilities in those areas. The fact that no other company has expressed an interest in the procurement in its present form supports Raytheon's assertion (concurring in by the FAA's associate administrator for research and acquisitions and integrated product team lead for en route, Exhibits 45 at 37; 46 at 30) that only the incumbent contractor, LMC (with CSC assistance), has sufficient capabilities. Thus, the announcement as a whole can only be construed as a notice of anticipated award.

The idea that the announcement is a form of market survey appears to have been invented for the purpose of defending this protest. Neither of the two highest-ranking FAA officials who testified on the matter considered the announcement to be a standard market survey. The associate administrator for research and acquisition stated definitively that the document is not a market survey. "[T]his is a document expressing our opinion on the way to go, which a market survey doesn't do." Exhibit 46 at 24. The integrated product team lead for en route acknowledged that she had never seen a market survey that begins by declaring the identity of the intended awardee and gives a single source justification for that award. Exhibit 45 at 41-42.

There is good reason for the officials' conclusion that the announcement is not a market survey. The AMS contains a definition of the term "market survey," and this announcement does not match that definition. Appendix C of the AMS states:

Market survey is used in two different contexts in AMS. In terms of the procurement and contracting process, it refers to any method used to survey industry to obtain information and comments and to determine competition, capabilities, and estimate costs. In terms of the lifecycle acquisition

management process, market surveys are an integral part of Investment Analysis. After initial requirements are established, market surveys are used as a basis for identifying all potential material and nonmaterial solutions to mission need.

The Internet announcement cannot reasonably be deemed a "method used to survey industry to obtain information and comments and to determine competition, capabilities, and estimate costs." The announcement restricts competition by precluding companies from proposing alternative approaches or demonstrating their system integration skills generally, see Exhibit 45 at 43-44, and it has nothing whatsoever to do with costs. The announcement does not help in "identifying all potential material and nonmaterial solutions to mission needs"; instead, it states a determination that only one kind of solution will be considered.

Nor is the Internet announcement an appropriate part of a "market analysis," as that term is defined by the AMS. AMS § 3.2.1.2.1 states:

For procurements not addressed in a program with an approved Acquisition Strategy Paper [such as this one], the market analysis is to initiate industry involvement, develop and refine the procurement strategy, obtain price information, determine whether commercial items exist, determine the level of competition, identify market practices, or obtain comments on requirements. The magnitude and degree of formality of the market analysis should be proportionate to the contemplated procurement. The market analysis may be as simple as a telephone call or as formal as a market survey advertisement to learn of industry capabilities. All market analyses, formal or informal, should be appropriately documented.

The FAA and Raytheon agree that "ERAM is, by any standard, one of the largest and most important procurements ever undertaken by the FAA." FAA Product Team Report at 9; Protest at 1. The AMS requires a market analysis commensurate in magnitude and degree of formality to the great importance of this procurement. Yet the Internet announcement does not in any way "initiate industry involvement, develop and refine the procurement strategy, obtain price information, determine whether commercial items exist, determine the level of competition, identify market practices, or obtain comments on requirements." Nor would the responses to the announcement conceivably provide information which could assist in reaching any of these objectives.

The only true market survey performed by the FAA with regard to updating the automated system for the en route environment, as far as the record shows, is the extensive effort made by the Eunomia product team in 1998 and 1999. That survey, about which more will be said later, led to a market analysis report which found that there is ample competition to fill en route needs. See Findings 18-20.

Concluding that the Internet announcement cannot reasonably be deemed a market survey does not resolve the protest, however. The critical issue in this case is whether a single source award is soundly based in that no vendor should be considered for award unless it can demonstrate sufficient capability as to every one of the six technical areas listed in the announcement. (No one has questioned, it is important to note, whether a vendor's capabilities in these areas are relevant to its ability to satisfy the FAA's needs or whether an agency determination to evaluate the extent of those capabilities, as part of its assessment of proposals for a modernized automated en route system, would be reasonable.)

In this regard, the AMS contains statements as to acquisition policy generally and single source selection specifically. Among these statements are the ones contained in AMS §§ 3.2.2.2 and 3.2.2.4. AMS § 3.2.2.2, Policy (Sept. 2000), says:

The FAA's policy is to procure products and services from sources that offer the best value to satisfy the FAA's mission need. It is also the FAA's policy to provide reasonable access to competition for firms interested in obtaining contracts. In selecting sources, the preferred method of procurement is to compete requirements among two or more sources. . . . When purchasing products, services or construction, via single source valued in excess of \$10,000, file documentation must include the supporting rationale for contracting with a single source.

AMS § 3.2.2.4, Single Source Selection, says:

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 may be based on actions such as emergencies, standardization, the only source available to satisfy the requirement within the time required, which are necessary and important to support the FAA's mission.

These portions of the AMS, along with others, taken together, provide that "the AMS favors competition and a decision to award a single source contract must have a documented rational basis and will be subject to close scrutiny." Aviation Research Group/U.S., Inc., No. 99-ODRA-00141, at 7 n.3 (Oct. 28, 1999). The FAA acknowledges that where a protester challenges a specification as unduly restrictive, the agency bears the responsibility of establishing that the specification has a rational basis in that it is reasonably necessary to meet the agency's needs. Product Team Report at 13.

What are the agency's needs? This question must be answered before one can determine whether the specification in question -- the requirement that any vendor trying to persuade the agency to reverse its decision to make a single source award to LMC show extremely detailed knowledge of the current en route computer system -- has a rational basis. Testimony of FAA officials reveals the following: The FAA needs to upgrade its current en

route system so that the system will have greater functionality and the agency can use it to control air traffic better. See Exhibit 46 at 74, 97. The improvements must be implemented in such a way that the FAA is able to operate the system at the same time the changes are being made. Id. at 85 ("We need to have a system that will allow us to change the wheels of a bus when it's moving."); see also Exhibit 23 at 6. And the improvements must build on and make use of the investments the agency has made in the past few years, and is continuing to make, for use with or as parts of the en route system. Exhibit 48 at 73.

The FAA has made clear that it wants to proceed in a way which is variously described as phased, evolutionary, or spiral development -- a "build a little, test a little" approach, rather than a "big bang" approach. Findings 9-10. The FAA also believes that the project can proceed most successfully if the agency hires a systems integrator to perform the work, since the agency itself does not have the capability of integrating a new system. Exhibits 22 at 4-5; 23 at 6; 46 at 81. In addition, the systems integrator must understand the current system well enough that whenever its new system interconnects with the current system, it is able to transition from one system to the other without disrupting service, since disruptions carry with them some risk to human safety. Exhibits 46 at 87-88, 92; 47 at 80, 82-83. These statements are also valid expressions of agency needs. No objection has been taken to any of them in this protest.

Beyond these general statements of need, however, the record shows that the FAA has not specified what it is looking for. The FAA has not made an investment analysis for this acquisition. Finding 16. It has not completed a final requirements document. Id. It has not done an acquisition strategy baseline, an acquisition strategy paper, or a procurement plan. Finding 17. The FAA has not made a final determination regarding system architecture, and it has not written a statement of work or functional performance specifications. Id. Thus, there does not yet exist any detailed exposition of the agency's needs.

And yet, without having defined in detail what it wants, the FAA has determined that it can get to its goal only by using a method called "incremental decomposition" under a contract with LMC. There is no rational basis for this conclusion.

The idea that the agency can achieve "best value" (AMS § 3.1.1) only through "incremental decomposition" has not been justified. It is not even apparent that the FAA fully understands what the term "incremental decomposition" means; the definitions given by agency officials are varied and vague. Finding 23. The approach is new to the agency. Finding 24. The FAA's usual way of contracting for automated systems or components is to ask vendors to propose a distinctly new solution to a defined problem, select one, and have the selected contractor develop the product, test it, and, when the test proves successful, cut it over and replace the existing system or component. Exhibit 44 at 41-42. The FAA realizes that an undertaking of incremental decomposition and modernization of the en route system is "the most complex thing that the agency will ever undertake," but it does not know how the novel approach would work or what risks it might entail. Finding 24. Nor does our record

contain any evidence that this approach has been used with success in comparable situations elsewhere. Whether "incremental decomposition," among all the potential applications of the "build a little, test a little" philosophy, is the only one which might result in a successful system modernization remains unproven.

The only risk analysis the FAA has ever performed for an update to the en route system was done by the Eunomia product team in 1998 and 1999. That team specifically questioned the risk of developing antiquated interfaces within modern replacement systems and cautioned that the agency should not proceed until it had fully understood the benefits and risks of alternative approaches. Finding 20. Preliminary to reaching such an understanding, the team listed strengths and weaknesses of various approaches and concluded that "[t]here is no clear best or worst technical solution." Id. The record contains no evidence -- such as a more detailed, more recent assessment of the subject -- which might suggest that the Eunomia team's conclusions were incorrect.

Importantly, even if incremental decomposition could be demonstrated to be a superior approach as a general proposition, whether it would be the definitively best approach for the en route system is uncertain, since the FAA does not know the identity of the current software which would have to be incrementally decomposed. Finding 26. The agency understands that a lack of knowledge about the software poses great risks for any modernization of the en route system, and it has entered into a contract for a functional audit of that software, with a goal of documenting what exists. Id. The audit is clearly very extensive, since it is expected to take more than a year and not be completed until January 2002. Id. Until the audit is completed, no one will really know the state of the current software, with its myriad differentiations at each of the twenty ARTCCs. No one will be able to say with any degree of confidence how the incremental decomposition approach might be implemented for the en route system, or what the risks of that implementation might be. Based on the record developed for this case, it is not apparent how much information the FAA needs in order to assess sensibly the virtue of using this approach in modernizing this system. What is apparent, however, is that the assessment will be far more soundly based if it takes into consideration the information now being gathered.

The conclusion that only LMC could provide best value to the agency in modernizing the system is also based on nothing more than the repeated vision of FAA officials. The Internet announcement speaks of "LMC and its team of subcontractors," Finding 1, but no team of subcontractors exists. Finding 27. The only subcontractor anyone has identified is CSC. Even CSC's participation on an LMC team is not assured, id., and that is a critical problem because CSC is the company with greatest knowledge about the software, and without that knowledge, application of the agency's specified approach to modernization, incremental decomposition, cannot be accomplished. Moreover, the FAA has no idea what LMC might provide by way of en route system updates; LMC has not submitted to the agency any technical, cost, or schedule proposal. Finding 28. Thus, the FAA's conclusion that the contract must be awarded to LMC because only that company can provide reduced

and mitigated technical, cost, and schedule risk, Finding 2, makes no sense. A comparison may be made only when two items are available, and here, the FAA has no items available to compare. Cf. Wilcox Electric at 22 (single source acquisition had rational basis where FAA identified and studied alternatives, and evaluated technical, cost, and schedule risk for each, before deciding to award contract).

There is no doubt that because LMC has for many years operated the FAA's en route automated system, with CSC's assistance in the software area, an LMC/CSC team would have considerable natural advantages over any potential rival in competing for an award of a contract to modernize the system. Among these advantages are the FAA's judgment that LMC has performed well under the existing contract and the fact that the team should have an extremely detailed knowledge of the system's software -- particularly after CSC completes the task of auditing and documenting that software. Neither the AMS nor good sense generally require the FAA to "level the playing field" by denying LMC these natural advantages. But there is no evidence in the record, other than the conclusive but unsupported opinions of FAA officials, that LMC's advantages pose insuperable obstacles to any other firm's attempt to compete for award of the contract in question. Suppose another firm (say, Raytheon) were able to propose a spectacularly good system but had only adequate knowledge of the existing system, and LMC, highly knowledgeable about the old ways of doing things but (hypothetically) unable to think much beyond them, were to propose a rehash of the current model. Each offer would come with its own set of risks, and let us hypothesize that the risks associated with the competitor's proposal would be larger than the risks associated with LMC's. Which proposal would offer the better value? This is a question for which the AMS demands an answer before an award decision may be made -- but which the FAA is now totally unprepared to make with any rational basis. The Eunomia team's aspiration to "think outside the box," Finding 18, appears to have been repudiated by the agency.

Before closing the discussion, I note that the parties have devoted much attention to issues that have some relevance to the case, but are not terribly important. For example, is modernization of the host computer system and associated hardware and software an exemplar of the "big bang" or "build a little, test a little" approach? Agency officials concede that replacements of smaller components of the en route system were considered to be representative of the evolutionary or phased approach, and that the usual method of acquisition -- replacing an old component by cutting over to the new one after tests proved the new one successful -- was used in those replacements. Exhibits 15; 45 at 61-62; 46 at 69-70; 48 at 62-66. The acquisition under consideration in this case is clearly larger than these modifications, but smaller than a replacement of the entire en route system. Whether that would make a replacement a "big bang" or another phase in the modernization of the system as a whole appears to be a mere matter of semantics. Thus, no purpose would be served by reaching a conclusion as to this and similar issues.

### Recommended Decision

I recommend that the protest be granted. The FAA should be precluded from making the intended single source award to LMC at this time.

In its comments on the product team's report, Raytheon "specifically requests that . . . the FAA be further directed to conduct a full, fair and open competition under the ERAM procurement." Raytheon Comments at 44. I do not recommend that this direction be given. Rhetorically, "full and open competition" is an inappropriate phrase; it comes from the Competition in Contracting Act, 41 U.S.C. § 253(a)(1) (1994), and the requirements of that law do not apply to the FAA's acquisition management system. Pub. L. No. 104-50, § 348(b), 109 Stat. 436, 460 (1995). Substantively, the problem with the Internet announcement is not that it is necessarily wrong, but rather, that it is premature. The FAA is currently not in a position to make any decision as to an award of a contract for en route automation modernization. It must first follow the guidelines of the AMS to define its needs for an updated en route system far more precisely. As part of this definitional process, the agency must make an informed judgment as to the merits of implementing an incremental decomposition approach to development of a new en route system. After it has defined more precisely what it wants, the FAA may solicit from LMC information on the basis of which the agency might analyze whether it would achieve best value by allowing competition to fulfill its needs or by awarding a single source contract. In light of the AMS's preference for competition and the Eunomia team's market survey showing that competition is available to meet the agency's needs for a modern, automated en route system, the burden of demonstrating that a single source award is preferable will be considerable. Nevertheless, the result should not be prejudged.

\_\_\_\_\_/s/\_\_\_\_\_  
STEPHEN M. DANIELS  
Board Judge