NNL06AA03B, NNL06AA05B, NNL06AA08B

SELECTION STATEMENT

FOR FLIGHT CRITICAL SYSTEMS RESEARCH (FCSR) PROCUREMENT

On November 3, 2005, I met with the NASA Source Evaluation Team (SET) appointed to evaluate proposals for the FCSR procurement. The SET presentation included the procurement history, the evaluation procedures, results of the initial evaluation of the proposals received, and the final evaluation results.

BACKGROUND

The FCSR procurement will result in multiple awards of contracts that will provide for research and development for Flight Critical Systems Research (FCSR) that addresses avionics systems technology gaps that are exposed by the operational challenges of the future national airspace system, trans-atmospheric flight, and extra-terrestrial planetary flight. Such operations are characterized by increasing complexity/integration; distributed control; onboard diagnostics and prognostics; un-crewed vehicle operations and autonomy; blurring of system boundaries; ubiquitous automation/computing; and increasing verification, validation, and certification challenges. Technical areas of interest are Flight Dynamics, Guidance, and Control; Crew Systems and Aviation Operations; Reliable and Robust Avionics Systems; and Flight Critical Systems Analysis and Integration.

The contracts will be Indefinite Delivery, Indefinite Quantity (IDIQ), Cost Plus Fixed Fee (CPFF) contracts. The period of performance will be 60 months (i.e., 5 years) from the effective date of the contracts.

The FCSR Draft Request for Proposal (RFP) was released on November 19, 2004, and the final RFP was released on January 3, 2005 via the Internet. Offers were received on February 6, 2005, from the following six offerors:

- ARINC Engineering Services, LLC
- The Boeing Company, Phantom Works
- Honeywell Laboratories
- Lockheed Martin Corporation
- Rannoch Corporation
- RTI International

EVALUATION CRITERIA & PROCEDURE

Prior to the issuance of the RFP, the Source Selection Authority (SSA) appointed a SET to conduct an evaluation of proposals received in response to the RFP. The RFP stated, "Proposals received in response to this solicitation will be evaluated by a NASA Source Evaluation Team in accordance with NASA FAR Supplement (NFS) 1815.3. Mission Suitability will be scored. Cost and Past Performance will not be scored." The SET evaluated proposals based on Section M of the RFP, including a numerical and adjectival scoring system for Mission Suitability Subfactors.

The RFP set forth the following three evaluation factors, which were approved by the SSA:

- Factor 1 – Mission Suitability
- Factor 2 – Cost/Price Analysis
- Factor 3 – Past Performance

The Mission Suitability factor included five subfactors, the most important of which was Understanding the Requirements. The Understanding the Requirements subfactor included technical evaluation criteria relative to four technical research areas and to a sample task plan. The weights used in the scoring of the Mission Suitability subfactors are presented below:

	Subfactors	Weights
1.	Understanding the Requirements	450
2.	Facilities/Equipment	200
3.	Management and Operations	150
4.	Safety and Health	100
5.	Small Disadvantaged Business (SDB) Participation Program	100
	Total	1,000

The numerical weights assigned to the above subfactors are indicative of the relative importance of those evaluation areas. The RFP states that "Overall, in the selection of Contractor(s) for contract award, Mission Suitability, Cost, and Past Performance will be of essentially equal importance. All evaluation factors other than Cost, when combined, are significantly more important than Cost."

Upon receipt of proposals, the SET reviewed the technical proposals and the Contract Specialist reviewed the business proposals. None were found to be patently unacceptable. Subsequently, each member of the SET performed a detailed, individual review of each offeror's Mission Suitability proposal (in alphabetical order), without having seen or evaluated the offeror's business proposal or its proposed price. Individual findings, stated in the form of individual strengths or weaknesses, were all recorded. Consultant findings were also recorded. The SET consultants were comprised of experts in the fields of law, pricing, procurement, small business, safety, physical security, and IT security. Technical experts in the fields of vehicle health management, system integration and analysis, aircraft modeling, simulation, avionics, crew systems, and human factors were also utilized.

No SET member reviewed the findings of other members or consultants until the SET met in caucus. In caucus and with all SET voting members present, the SET evaluated each individual finding, including the findings of consultants, to determine whether to carry the finding forward as a consensus finding. For any strength or weakness that was carried forward, the SET determined by consensus whether it met the applicable definition of "significant." Once consensus Mission Suitability strengths and weaknesses were assigned for all offers, the SET reviewed its findings to ensure that the established criteria for strengths and weaknesses, significant or otherwise, had been consistently applied. Consensus adjective ratings and scores were then assigned for each offeror for each Mission Suitability subfactor of each proposal in accordance with Section M of the RFP. Thereafter, the SET analyzed the proposed costs, and ultimately, a probable cost was developed. This analysis included a detailed review of each proposal in accordance with the RFP and overall requirements. In accordance with the RFP, the Mission Suitability scores were adjusted in one case (i.e., Boeing) because of cost realism assessments. Finally, and in accordance with Section M of the RFP, the SET evaluated and assigned adjective ratings to each proposal for Past Performance based on the offeror's written narrative, customer questionnaires, and NF 1680 Past Performance Database information. This completed the initial evaluation by the SET. The evaluation procedures contained in Section M of the RFP were followed throughout the evaluation process. The SET presented the results of the Initial evaluation to the Contracting Officer in a written report and an oral presentation

held on August 5, 2005. The following chart illustrates the top-level summary of the details that were provided, discussed and included within the SET's written report.

Initial Evaluation Results

Offeror	Mission Suitability Rating	Probable Cost	Past Performance Rating
ARINC	Very Good	$ 16.9M	Excellent
Boeing	*Very Good	$ 28.0M	Excellent
Honeywell	Very Good	$ 28.4M	Excellent
Lockheed Martin	Very Good	$ 28.1M	Excellent
Rannoch	Good	$ 20.4M	Excellent
RTI	Good	$ 19.5M	Very Good
Maximum Value		$ 35M	

* Includes cost realism adjustment.

The Contracting Officer carefully reviewed the facts presented in the report and discussed the findings with the SET. Based on the initial findings, it was determined that all six offerors had a reasonable chance of being selected for award based on the merits of their technical proposal, past performance ratings, and probable cost to complete the work. Therefore, the competitive range for this procurement included all six offerors. In making this decision, the Contracting Officer considered that Mission Suitability, Price/Cost, and Past Performance were of essentially equal importance and that when combined, Past Performance and Mission Suitability were significantly more important that cost.

As a result of the Competitive Range Determination, discussions were conducted, via written letters, with all six offerors on September 15, 2005. The discussion letters included a response due date of September 26, 2005. An extension was subsequently granted to October 3, 2005 via Amendment 7 to the RFP. Responses were received from five of the offerors by the established deadline. Lockheed Martin's response was received "Late" and was, therefore, not considered. The SET assessed and documented the impact of the discussion responses on the previously developed findings for all offerors, except for Lockheed Martin. The SET presented the results of the final evaluation to the Contracting Officer in a written report on October 20, 2005. Subsequently, the SET presented the results of the final evaluation to me in a detailed oral presentation with written documentation held on November 3, 2005. The final top-level summary of the evaluation results are illustrated by the following chart.

Final Evaluation Results

Offeror	Mission Suitability Rating	Probable Cost	Past Performance Rating
ARINC	Very Good	$ 16.9M	Excellent
Boeing	* Very Good	$ 28.0M	Excellent
Honeywell	Very Good	$ 28.4M	Excellent
Lockheed Martin	Very Good	$ 28.1M	Excellent
Rannoch	Very Good	$ 19.9M	Excellent
RTI	Good	$ 19.5M	Very Good
Maximum Value		$ 35M	

* Includes cost realism adjustment.

The following is a summary of the most significant evaluation findings for those offerors in the Competitive Range.

FACTOR 1 - MISSION SUITABILITY

Set forth in order of overall score (highest to lowest) is a summary of the final Mission Suitability findings for each of the offerors. Significant Mission Suitability strengths are described since these significant strengths reflect the key discriminators within the evaluation findings; however, I gave careful consideration to all of the strengths and weaknesses included within the SET findings. There were no significant weaknesses found for any of the offerors.

1. ARINC Engineering Services, LLC: ARINC received a final rating of "Very Good" for this Factor with the highest score of all offerors. ARINC's final evaluation results included 2 significant strengths, numerous strengths, no significant weaknesses, and no weaknesses. Under Subfactor 1 (Understanding the Requirement), ARINC had 2 significant strengths, which included their thorough understanding of the technical challenges of advanced crew systems and aviation operations for improved aviation safety and security and their comprehensive understanding of and approach to research and development that NASA could leverage to improve the presentation of relevant traffic and weather information to both ground controllers and aircrews. According to the SET, the depth and breadth of ARINC's understanding of this area is expected to significantly assist NASA's Aviation Safety and Security Program and enhance the safety of operations in the National Airspace System (NAS). In addition, ARINC demonstrates an excellent understanding of reliable and robust avionics given their design of a distributed hierarchical integrated vehicle health management architecture. It is anticipated that this architecture would provide real-time fault detection, serve as a basis for recovery systems, and would also benefit aircraft maintenance with prognostic data. This demonstrates a comprehensive understanding of and approach to vehicle health management research and development that NASA could rely upon to greatly improve aviation safety.

2. Honeywell Laboratories: Honeywell received a final rating of "Very Good" for this Factor with the next to the highest score of all offerors. Honeywell's final evaluation results included 1 significant strength, numerous strengths, no significant weaknesses, and no weaknesses. Honeywell had 1 significant strength under Subfactor 1 (Understanding the Requirement) based on their demonstrated understanding of and approaches relative to integrated modular avionics. In particular they described research and development of several of their in-house and fielded products for real-time operating systems, avionic systems, and robust data buses. The comprehensiveness of their approach and understanding supports the addition of new safety functions without adding new hardware, and this supports research and development of systems that will mediate the pilot's interaction with the airplane. This allows for rapid modifications and updates to avionics, which is of substantial value to NASA's Aviation Safety and Security Program.

3. Lockheed Martin Corporation: Lockheed Martin received a final rating of "Very Good" for this Factor with the third highest score of all offerors. Because Lockheed Martin's submission to the discussion letter was "late", the SET did not evaluate their response. As a result, the initial and final consensus findings remain unchanged. Lockheed Martin's final evaluation results included 3 significant strengths, numerous strengths, no significant weaknesses, and 5 weaknesses.

Lockheed Martin received 2 significant strengths under Subfactor 1 (Understanding the Requirement). Under Subfactor 1, Lockheed Martin's significant strengths included their understanding of and approach to vehicle health management which is based on prognostics and health management technologies that Lockheed has already developed and integrated into the Joint Strike Fighter (JSF). The depth and breadth of this capability is directly applicable to prognostics, health monitoring, and situational awareness and access to it should greatly expedite research in these areas. Further, Lockheed Martin demonstrated a thorough understanding of and approach to systems analysis and

integration through a detailed explanation of verification and validation of software and hardware for flight critical systems. This is expected to allow rapid prototyping of safety critical embedded systems by moving flight control functions into model-based software environments. This proven approach helps integrate disparate technologies into certifiable flight vehicle systems. Under Subfactor 3 (Management and Operations), Lockheed Martin received a significant strength for their approach for prevention, early detection, and correction of cost, technical, and schedule problems by detailing a formal cockpit review team process. Such a process is expected to reduce technical risk and also acts to reduce cost and schedule risk.

Lockheed Martin had 5 weaknesses. One, which I considered to be insignificant from a technical perspective, under Subfactor 1 because Lockheed Martin's Technical Plan within the Sample Task for system validation includes pilot evaluation in the Langley 757 simulator without discussing the means/cost for such validation; two under Subfactor 3 (Management and Operations) because Lockheed Martin's proposal did not adequately address their approach for safeguarding and protecting sensitive information and IT security and their small business subcontracting plan did not fully comply with FAR 52.219-9 or propose/identify subcontracting goals as a percentage of the proposed contract price; one under Subfactor 4 (Safety and Health) because Lockheed Martin's approach did not adequately address NASA Procedural Requirements (NPR) 7100.1 (Protection of Human Research Subjects) nor did it meet the requirements of the RFP for the Safety and Health Plan; and one under Subfactor 5 (SDB Participation) because Lockheed Martin's proposal did not meet the requirements of the RFP for SDB participation.

4. <u>Rannoch Corporation</u>: Rannoch received a final rating of "Very Good" for this Factor with the fourth highest score of all offerors. Rannoch's final evaluation results included 1 significant strength, numerous strengths, no significant weaknesses, and 1 weakness. Rannoch had 1 significant strength under Subfactor 1 (Understanding the Requirement), which includes their understanding of and approach to guidance and control theory and to enhancing the ability of the flight crew to respond correctly when critical system or component failures occur. Their detailed discussion of specific techniques for failure accommodation and description for application of state-of-the-art control techniques, demonstrates the offeror's considerable technical depth. In addition, these techniques are anticipated to lead to systems that keep aircraft manageable and flying in a safe operating region under a broad range of failure conditions. In addition, Rannoch had 1 weakness because their proposal did not meet the requirements of the RFP for the Safety and Health Plan.

5. <u>The Boeing Company, Phantom Works</u>: Boeing received a final rating of "Very Good" for this Factor with the next to the lowest score of all offerors. Boeing's final evaluation results included 4 significant strengths, numerous strengths, no significant weaknesses, and no weaknesses. Boeing had 3 significant strengths under Subfactor 1 (Understanding the Requirement) and 1 significant strength under Subfactor 2 (Facilities and Equipment). After all scoring was complete, Boeing's Mission Suitability score was reduced for a lack of cost realism in accordance with Section M.4.C of the RFP. But for this mathematical adjustment to its numerical score Boeing had the highest rated proposal in the Mission Suitability factor.

Under Subfactor 1, Boeing's significant strengths include their approach to human-centered design and high-density air traffic operations by comprehensively defining end-user requirements in the design of air traffic management systems. It is expected that this capability will increase operational density by solving sequencing, merging, and aircraft separation problems. This comprehensive understanding of and approach to air traffic management is also expected to greatly assist with research and development that will increase aircraft escape options in the event of unplanned scenarios, which is a current focus of existing Langley projects in support of NASA's Aviation Safety and Security Program. Further, Boeing demonstrates a thorough understanding of and approach to quantitative analysis to ensure functionality, reliability, and safety through their development and evaluation of fault tolerant architectures. This knowledgeable approach is anticipated to expedite

development of system validation tools. In addition, Boeing demonstrates a comprehensive understanding of and approach to systems analysis and integration by discussing the investigation, development, and integration of existing and future sensing/processing technologies and by discussing proven, documented systems analysis and integration processes. This overall approach should ensure low-risk solutions, rapid/low-cost development of avionic systems and should assess the viability and performance of the integrated system. The compatibility of the proposed system with NASA Langley's flight test facilities is important and is expected to lead to successful flight experiments.

Under Subfactor 2, Boeing's significant strength includes a 757 flight-test vehicle and software programs for simulator systems. This capability and its compatibility with existing NASA LaRC resources is expected to improve technical interaction and expedite technology transfer.

6. RTI International: RTI received a final rating of "Good" for this Factor with the lowest score of all offerors. RTI had no significant strengths or significant weaknesses. RTI's final evaluation results included 5 strengths under Subfactor 1 (Understanding the Requirement) and 1 strength under Subfactor 2 (Facilities and Equipment). The Subfactor 1 strengths demonstrated strong fundamental research capabilities in the areas of control law design, high-density air traffic operation study capabilities, fault tolerance, systems engineering in support of novel flight critical systems analysis, and verification and validation of systems concepts. In addition, RTI had 3 weaknesses. One under Subfactor 3 (Management and Operations) because RTI's proposal did not meet the requirements of the RFP for their proposed Small Business Subcontracting Plan; one under Subfactor 4 (Safety and Health) because RTI's proposal did not meet the requirements of the RFP for the Safety and Health Plan; and one under Subfactor 5 (SDB Participation) because RTI's proposal did not meet the requirements of the RFP for SDB participation.

FACTOR 2 - PRICE/COST

A cost analyst who was an SET consultant evaluated the cost proposals for cost realism and price reasonableness to establish probable cost and to ensure compliance with the requirements of the RFP. As summarized in the Pricing Report, probable costs were derived from the offerors' proposals, information received from DCAA, and the cost analysis performed by the Price Analyst using technical input from the SET. The following chart summarizes the results of the cost realism evaluation:

FACTOR 2: COST / PRICE

Company	Probable Cost
ARINC	$16.9M
Boeing	$28.0M
Honeywell	$28.4M
Lockheed Martin	$28.1M
Rannoch	$19.9M
RTI	$19.5M

ARINC Engineering Services, LLC - In order to arrive at a probable cost, three adjustments were made. The first adjustment related to ARINC's average labor rates for the proposed Principal and Senior Engineer, which the SET felt was low. ARINC used a weighting scheme, but they did not completely explain it in response to discussions. The second adjustment related to ARINC's approach to including subcontractor fee within their proposed fee versus within subcontractor costs. After reclassifying the subcontractor fee as an Other Direct Cost and applying the appropriate indirect rates, an upward adjustment was necessary. The third adjustment related to ARINC not applying a

fee reduction for FCCM in accordance with NFS 1815.404-471-5. Even with the three adjustments, ARINC had the lowest probable cost ($16.9M). Based on the analysis of the offeror's proposal and the adjustments addressed above, the derived probable cost was determined to be realistic for the offeror's proposed approach to achieving the technical objectives.

The Boeing Company, Phantom Works - In order to arrive at a probable cost, two downward adjustments were made. The first adjustment related to Boeing's incorrect triplication of government provided material and travel cost estimates. RFP Section C.1.f.(4) and (5) included estimated costs for Material (i.e., $2,750,000) and Travel (i.e., $450,000) that offerors were to use for the 5-year period. Boeing included these amounts for material and travel in their cost estimate and in the estimates of both of their Interdivisional units (i.e., Boeing St. Louis and Boeing Huntington Beach). The second adjustment related to Boeing not applying a fee reduction for FCCM in accordance with NFS 1815.404-471-5. With the two adjustments, Boeing has the third highest probable cost ($28.0M). Based on the analysis of the offeror's proposal, there is some uncertainty that the derived probable cost is realistic given the offeror's proposed approach to achieving the technical objectives.

Honeywell Laboratories - In order to arrive at a final probable cost, three adjustments were made. The first adjustment related to Honeywell's indirect rates. The second adjustment related to Honeywell using lower material and travel cost estimates than were stated in the RFP for proposal purposes. The third adjustment related to Honeywell not applying a fee reduction for FCCM in accordance with NFS 1815.404-471-5. With the three adjustments, Honeywell had the highest probable cost ($28.4M). Based on the analysis of the offeror's proposal and the adjustments addressed above, the derived probable cost was determined to be realistic for the offeror's proposed approach to achieving the technical objectives.

Lockheed Martin Corporation - In order to arrive at a probable cost, one adjustment was made. This adjustment related to Lockheed Martin not applying a fee reduction for FCCM in accordance with NFS 1815.404-471-5. With this adjustment, Lockheed Martin had the second highest probable cost ($28.1M). Based on the analysis of the offeror's proposal and the adjustments addressed above, the derived probable cost was determined to be realistic for the offeror's proposed approach to achieving the technical objectives.

Rannoch Corporation - In order to arrive at a probable cost, no adjustments were made. Based on the analysis of the offeror's proposal, there is some uncertainty that the derived probable cost is realistic given the offeror's proposed approach to achieving the technical objectives.

RTI International's - In order to arrive at a probable cost, no adjustments were made. Based on the analysis of the offeror's proposal, the derived probable cost was determined to be realistic for the offeror's proposed approach to achieving the technical objectives.

FACTOR 3 - PAST PERFORMANCE

In accordance with the RFP, evaluation of each offeror's past performance related to technical, schedule, cost, management, occupational health, safety, security, mission success, and subcontracting goals using the following:

- Evaluation of each offeror's written narrative.
- Evaluation of RFP Attachment I (customer questionnaires) as completed and returned by the offeror's customers.
- Evaluation of NASA Form 1680 from NASA Past Performance database.

The initial and final evaluation results are illustrated by the following chart and narrative.

Offeror	Overall	Performance	Relevance
ARINC	Excellent	Excellent	Highly Relevant
Boeing	Excellent	Excellent	Highly Relevant
Honeywell	Excellent	Excellent	Highly Relevant
Lockheed Martin	Excellent	Excellent	Highly Relevant
Rannoch	Excellent	Excellent	Highly Relevant
RTI	Very Good	Very Good	Highly Relevant

ARINC Engineering Services, LLC received an overall adjective rating of "Excellent". The ARINC team received customer ratings ranging from "Good" to "Excellent", with the majority of performance ratings being "Excellent". ARINC's team submitted information on contracts where the majority of experience indicated overall highly relevant past performance. To determine relevancy, the SET assessed the degree of similarity in size, content, and complexity to the requirements in this solicitation (or to the portion of work to be performed by the significant Subcontractor or teaming partner), as well as how current the past performance was.

The Boeing Company, Phantom Works received an overall adjective rating of "Excellent". The Boeing team received customer ratings ranging from "Good" to "Excellent", with the majority of performance ratings being "Excellent". Boeing's team submitted information on contracts where the majority of experience indicated overall highly relevant past performance. To determine relevancy, the SET assessed the degree of similarity in size, content, and complexity to the requirements in this solicitation (or to the portion of work to be performed by the significant Subcontractor or teaming partner), as well as how current the past performance was.

Honeywell Laboratories received an overall adjective rating of "Excellent". The Honeywell team received customer ratings ranging from "Satisfactory" to "Excellent", with the majority of performance ratings being "Excellent". Honeywell's team submitted information on contracts where the majority of experience indicated overall highly relevant past performance. To determine relevancy, the SET assessed the degree of similarity in size, content, and complexity to the requirements in this solicitation (or to the portion of work to be performed by the significant Subcontractor or teaming partner), as well as how current the past performance was.

Lockheed Martin Corporation received an overall adjective rating of "Excellent". The Lockheed Martin team received customer ratings ranging from "Good" to "Excellent", with the majority of performance ratings being "Excellent". Lockheed Martin's team submitted information on contracts where the majority of experience indicated overall highly relevant past performance. To determine relevancy, the SET assessed the degree of similarity in size, content, and complexity to the requirements in this solicitation (or to the portion of work to be performed by the significant Subcontractor or teaming partner), as well as how current the past performance was.

Rannoch Corporation received an overall adjective rating of "Excellent". The Rannoch team received customer ratings ranging from "Good" to "Excellent", with the majority of performance ratings being "Excellent". Rannoch's team submitted information on contracts where the majority of experience indicated overall highly relevant past performance. To determine relevancy, the SET assessed the degree of similarity in size, content, and complexity to the requirements in this solicitation (or to the portion of work to be performed by the significant Subcontractor or teaming partner), as well as how current the past performance was.

RTI International received an overall adjective rating of "Very Good". The RTI team received customer ratings ranging from "Satisfactory" to "Excellent", with no majority of any performance rating and with several ratings in the "Satisfactory" range. RTI's team submitted information on contracts where the majority of experience indicated overall highly relevant past performance. To determine relevancy, the SET assessed the degree of similarity in size, content, and complexity to the requirements in this solicitation (or to the portion of work to be performed by the significant Subcontractor or teaming partner), as well as how current the past performance was.

BASIS FOR SELECTION

After the SET's presentation, I thoroughly reviewed and assessed the evaluation findings in accordance with the evaluation criteria stated in Section M of the RFP. Since Cost, Past Performance, and Mission Suitability were of equal weight and, together, Past Performance and Mission Suitability were significantly more important than cost, I considered the findings relative to those factors and their relative importance.

In relation to the probable costs, ARINC represented the lowest cost; RTI and Rannoch represented the next lowest costs; and Boeing, Lockheed Martin, and Honeywell represented significantly higher costs. However as discussed below, the additional technical value and expertise provided by Boeing, Honeywell, Lockheed Martin is determined to merit the higher probable cost over the life of the contract. Of the three offerors with the lowest probable cost (ARINC, Rannoch, RTI), ARINC's technical proposal stood out as the most highly rated.

In relation to past performance, I determined that based on the SET's findings, all offerors had essentially equal past performance except for RTI, which had a lower rating. I carefully considered the SET findings and discussion regarding the basis for RTI's lower rating and concluded that it represented somewhat lower quality in terms of performance than the other offerors. This was based on the range of quality ratings that were present in response to the questionnaires that the RTI team had its customer's submit. Therefore, the value of RTI's past performance was lower than that of the other offerors.

I then considered the extensive technical findings and discussion of those findings that the SET presented relative to Mission Suitability. It was obvious to me that each of the offerors submitted a technically acceptable proposal, and each offeror demonstrated valuable research capability within various aspects of the evaluated subfactors. Five offerors had a rating of "Very Good" (i.e., ARINC, Boeing, Honeywell, Lockheed Martin, and Rannoch) and 1 offeror (i.e., RTI) had a rating of "Good". In considering the basis for, and values associated with those ratings, I observed that each of the 5 offerors with ratings of "Very Good" had one or more significant strengths while RTI did not have any. In assessing the value associated with the significant strengths received by the other offerors, I determined that each significant strength represented significant value to NASA. Since 3 of the 6 offerors' (i.e., Boeing, Honeywell, Lockheed Martin) evaluated costs were significantly higher than the other 3 offerors (i.e., ARINC, Rannoch, RTI), I carefully considered the extent to which the value represented by the significant strengths of each of those offerors justify their higher probable costs.

For the 5 offerors with significant strengths (i.e., ARINC, Boeing, Honeywell, Lockheed Martin, and Rannoch), I determined the following:

- Based on their strengths across the spectrum of the evaluation criteria, ARINC and Rannoch both provide fundamental and discipline-specific research and analysis capability at a low cost. In addition to that broad basic research capability, ARINC offers technical excellence in advanced crew systems and aviation operations for improved aviation safety and security that NASA could leverage to improve the presentation of relevant traffic and weather information. Furthermore, ARINC offers reliable and robust avionics research understanding and capability given their

design of a distributed hierarchical integrated vehicle health management architecture. Rannoch offers technical excellence in guidance and control theory which provides for enhancing the ability of the flight crew to respond correctly when critical system or component failures occur.

- In relation to the evaluation criteria, the offerors with the highest probable cost (i.e., Boeing, Honeywell, and Lockheed Martin) all demonstrated capabilities to provide basic research and also to ensure relevance of these fundamental results to operational hardware and systems. For example Boeing received a significant strength based on its comprehensive definition of air traffic management system end-user requirements, and it received another significant strength based on its explanation of development and integration of particular sensing/processing technologies. Honeywell received a significant strength based on its capabilities relative to fielded modular avionics products. Lockheed Martin received a significant strength based on vehicle health management technologies developed and implemented in existing military aircraft, and it received another significant strength based on its verification and validation approach that would support rapid prototyping such that disparate technologies could be integrated into certifiable flight vehicle systems. These and other strengths within these offerors' proposals demonstrate valuable capability that will support systems development from relevant research concepts through simulation and test to flight experiment. Such capability supports not only researching and obtaining an understanding of novel flight critical systems but it also enables NASA to facilitate the development and advancement of technologies from concept to operation.

- For the 1 other offeror (i.e., RTI), I noticed that the proposal demonstrated fundamental and discipline-specific research and analysis capability at a low probable cost. However, ARINC and Rannoch demonstrated stronger technical approaches in relation to similar level research and better past performance for roughly the same or, in ARINC's case, lower probable cost. In assessing whether RTI's evaluation indicated the type of capabilities demonstrated by the offerors with higher probable costs, I discerned that RTI's strengths demonstrated capability relative to fundamental research. For example, one strength related to the proposed use of software to study approach sequencing, another related to strategies to accommodate model uncertainties, and another related to identification of the challenges related to the aspects of systems engineering. These related to fundamental research capabilities and techniques but lacked the understanding and experience that the higher probable cost offerors demonstrated that would help guide the conduct and value of the research.

Further, considering the value of each offeror's proposal in order of lowest to highest problable cost, I determined that:

- ARINC's technically superior proposal, low probable cost, and excellent past performance justifies ARINC's inclusion within the offerors to whom multiple awards should be made.

- RTI, through their subcontractors, bring experience in aeronautics research and subsystem analysis at a low probable cost. However, the Mission Suitability findings, which did not include any significant strengths, combined with RTI's lower Past Performance rating do not justify RTI's inclusion within the group of offerors to whom multiple awards should be made.

- Rannoch's evaluation reflected capability and experience in aeronautics research and subsystem analysis at a low probable cost. Additionally, their significant strength reflected excellent research understanding and capability relative to aircraft guidance and control theory. This significant strength is also within the most important of the Mission Suitability subfactors. The demonstrated depth of this capability is of significant value because it will provide NASA a means to successfully perform fundamental research that will contribute to our mission of assisting with the development and evolution of aircraft operating systems that enable flight crews to fly safely when systems fail. Rannoch also had excellent past performance. Therefore, Rannoch's evaluation findings, justify inclusion of Rannoch within the offerors to whom multiple awards should be made.

- For Boeing, its four significant strengths reflected value well worth the significant probable cost premium. Three of Boeing's four significant strengths were in the most important subfactors within Mission Suitability and one was within the next most important subfactor. Boeing's significant strengths in the areas of crew systems, avionics, and systems analysis represented their demonstrated capability to successfully guide the development of flight critical systems from basic level research through simulation and test to flight experiment. In each of these areas, Boeing demonstrated both the ability to perform fundamental research as well as higher level research that could contribute directly to the fielding of new flight critical technologies. Based on this understanding, I find that the capabilities represented by Boeing's significant strengths represent extremely valuable capabilities that are worth the significant probable cost premium and justifies Boeing's inclusion within the offerors to whom multiple awards should be made.

- For Lockheed Martin, its three significant strengths reflected value well worth the significant probable cost premium. Two of these significant strengths were within the most important subfactor and one was within a lesser weighted subfactor. Lockheed Martin's significant strengths in the areas of vehicle health management and systems analysis represented their demonstrated capability to successfully perform high level research that would help guide the development of flight critical systems from basic level research through simulation and test to flight experiment. Further, I find that Lockheed Martin's weaknesses do not materially detract from the value associated with their significant strengths combined with their other strengths. Based on the findings, Lockheed Martin's significant strengths represent extremely valuable capabilities that are worth the significant probable cost premium and justifies their inclusion within the offerors to whom multiple awards should be made.

- For Honeywell, its significant strength reflected value well worth the significant probable cost premium and was within the most important Mission Suitability subfactor. This significant strength represents Honeywell's demonstrated capability to successfully perform high level research that would guide the development of flight critical systems from basic level research through simulation and test to flight experiment. In addition, a review of Honeywell's other numerous strengths within the most important Mission Suitability subfactor also reflected value worth a probable cost premium. These values associated with Honeywell's strengths and significant strength justifies their inclusion within the offerors to whom multiple awards should be made.

Based on the facts as noted above, I have concluded that ARINC, Boeing, Honeywell, Lockheed Martin, and Rannoch are selected for award. In making this decision, I have considered equally the areas of Mission Suitability, Price/Cost, and Past Performance and the fact that together, Past Performance and Mission Suitability are significantly more important that Price/Cost.

I am convinced that the SET conducted a thorough, fair, and objective evaluation of all proposals in accordance with the established Evaluation Criteria.

Kimberly G. Stone

Kimberly G. Stone
Source Selection Authority

12/14/05
Date