

IG-02-002

**AUDIT
REPORT**

**RESTRUCTURING OF THE INTERNATIONAL
SPACE STATION CONTRACT**

November 8, 2001



National Aeronautics and
Space Administration

OFFICE OF INSPECTOR GENERAL

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Acronyms

DCAA	Defense Contract Audit Agency
FAR	Federal Acquisition Regulation
FY	Fiscal Year
GAO	General Accounting Office
ISS	International Space Station
RFEA	Request for Equitable Adjustment

W

November 8, 2001

TO: A/Administrator

FROM: W/Inspector General

SUBJECT: INFORMATION: Audit of Restructuring of the International Space
Station Contract
Report Number IG-02-002

The NASA Office of Inspector General has completed an audit of the Restructuring of the International Space Station (ISS) Contract. We found that NASA did not sufficiently justify the restructuring of the ISS contract. Specifically, Johnson Space Center (Johnson) settled The Boeing Company's (Boeing's) requests for equitable adjustments¹ (RFEA's) and other potential claims without performing a sufficient analysis to show that Boeing's proposed costs were fair and reasonable. Also, Johnson did not adequately support the justification it prepared for waiving the Federal Acquisition Regulation (FAR) requirement for the contractor to submit certified cost or pricing data.² As a result, NASA has little assurance that Boeing did not overstate the value of RFEA's and potential claims totaling \$404 million. In addition, the NASA Office of Procurement did not exercise adequate oversight of the restructuring, even though this was one of the most significant noncompetitive awards in fiscal year (FY) 2000. As a result, the Office of Procurement did not know that Johnson had not performed cost or price analyses of the RFEA's.

Also, Johnson inappropriately modified the fee structure of the ISS contract by eliminating the Agency's option to recoup provisional fees paid to Boeing if the contractor's technical and cost performance is ultimately unsatisfactory. As a result, NASA could pay Boeing as much as \$69.4 million in fees³ even if the Agency's final evaluation of the contractor's on-orbit performance is unsatisfactory.

¹A request for equitable adjustment occurs when the Government's conduct results in a change to the contract as alleged by the contractor, causing an increase or decrease in the contractor's cost of, or the time required for, performance of any part of the work under the contract.

²FAR 15.401 defines cost or pricing data as all facts that, as of the date of price agreement, prudent buyers and sellers would reasonably expect to affect price negotiations significantly. Cost or pricing data are factual, not judgmental, and are verifiable.

³The fee pool was \$69.4 million as of October 19, 2001, but the pool will increase as NASA definitizes work on the contract.

Background

In December 1999, Johnson and Boeing restructured the ISS contract. The purpose of this restructuring was to definitize a global settlement on 38 RFEA issues and other potential claims valued at more than \$404 million, change the contract type, and address other contract actions. Johnson claimed these changes would facilitate and provide an incentive for efficient, high quality performance for the remaining work under the contract.

This restructuring also created two new award fee pools and a base fee pool relative to on-ground contract changes definitized or authorized after October 1, 1999. The fee pools relate to technical performance, cost performance, and base fee. Unlike the on-ground award fee pool for the original contract, the new pools are not subject to repayment provisions.⁴

Recommendations

We recommended that Johnson perform an adequate price analysis and properly support justifications for waivers on future modifications of the ISS contract and that the Office of Procurement perform adequate oversight of major procurement actions for the ISS contract. These actions would ensure that NASA has a sound basis for negotiating as much as \$330 million of future claims by Boeing and that NASA follows procurement regulations for major procurement actions. We also recommended that Johnson ensure that the fee pools for the ISS contract are measurable and consistent with Agency criteria or obtain a waiver for not doing so. This action would ensure that Johnson does not violate procurement regulations by paying Boeing as much as \$69.4 million in fees for cost performance that cannot be measured and for unsatisfactory technical performance on orbit.

Management's Response

Although we provided Johnson with a working copy of the draft report in May, Johnson decided not to discuss it with us. Also, Johnson did not respond to our offer to discuss the draft report after we issued it in August. Johnson last met with us to discuss our findings in March. Nonetheless, we believe we have fairly presented Johnson's positions in this report and have modified the report where appropriate.

Johnson did not concur with the recommendations. Johnson stated it followed applicable regulations and policies during the restructuring activity. Johnson also stated that the

⁴ The original contract fee provisions included a negative performance incentive in the on-orbit performance evaluation whereby a poor on-orbit performance could cause a repayment of any on-ground award fee provisionally earned by Boeing.

revisions to the fee structure did not give up existing rights with regard to on-orbit performance. The only thing the restructuring did was limit the maximum possible fee loss, due to on-orbit performance, to \$202 million.

In contrast to Johnson, the Office of Procurement concurred with the recommendation. While acknowledging that more rigorous adherence to the established Master Buy Plan procedures would have been appropriate in managing changes to the ISS program, the Office of Procurement maintained that sufficient insight into those changes was afforded by the ongoing communications between the Center ISS procurement personnel and procurement analysts responsible for the ISS Program within the Office of Procurement. Therefore, the Office of Procurement was confident that Johnson performed sufficient analyses, albeit not traditional cost or price analyses, of the RFEA's and related fee adjustment to assure an equitable settlement between Boeing and NASA.

OIG Evaluation of Management's Response

Johnson's comments are not responsive to either the findings or the recommendations. While the restructuring may have facilitated the Program's ability to focus on the challenging work ahead, Johnson could not provide analytical support for its statement that the global settlement avoided significant costs associated with individual proposal settlements. Consequently, there is no assurance NASA received a fair and reasonable price for the RFEA's or saved costs on the global settlement.

Johnson wanted a fee structure that would positively motivate future cost performance and offer an opportunity for the contractor to earn a fair return for high quality, cost-efficient performance for future work on this challenging contract. Unfortunately, the new fee structure eliminated all negative incentive after the restructuring by not requiring provisional fees to be repaid to NASA for hardware failures on orbit. Such an arrangement does not protect the Government's interests. Also, Johnson claims that the new structure allows for Boeing to potentially lose more fee for poor performance. However, that outcome is improbable because unlike the incentive fee evaluations, which were objective and directly affected by overruns, the award fee evaluations are subjective.

Because Johnson has not changed its position since we discussed the findings with management in March, we believe that requesting additional comments will not be productive. Therefore, we will forward the recommendations to the NASA Audit Followup Official for final resolution.

[original signed by]

Roberta L. Gross

Enclosure

Final Report on Audit of Restructuring of the International Space Station Contract

**RESTRUCTURING OF THE INTERNATIONAL
SPACE STATION CONTRACT**

W

November 8, 2001

TO: H/Associate Administrator for Procurement
M/Associate Administrator for Space Flight
AA/Acting Director, Lyndon B. Johnson Space Center

FROM: W/Assistant Inspector General for Audits

SUBJECT: Final Report on Audit of Restructuring of the International Space
Station Contract
Assignment Number A-00-055-00
Report Number IG-02-002

The subject final report is provided for your use and comment. Please refer to the Executive Summary for the overall audit results. Our evaluation of your response has been incorporated into the body of the report. In response to management's comments, we revised draft recommendation 2, deleted draft recommendation 3, and renumbered draft recommendation 4 as recommendation 3. In addition to revising the recommendations, we modified appropriate sections of the report as necessary to be consistent with the recommendations. We request management comments by January 7, 2002, on the revised recommendation. Please notify us when actions have been completed on the recommendation, including the extent of testing performed to ensure corrective actions are effective. The final report distribution is in Appendix I.

With respect to management's nonconcurrency with recommendations 1 and 3, we are forwarding the recommendations to the NASA Audit Followup Official for final resolution. Recommendations 1 and 3 are unresolved and will remain open for reporting purposes until final resolution.

If you have questions concerning the report, please contact Mr. Dennis E. Coldren, Program Director, Space Flight Audits, at (281) 483-4773, or Mrs. Loretta Garza, Auditor-in-Charge, at (281) 483-0483.

[original signed by]

Alan J. Lamoreaux
Enclosure

cc:

AI/Associate Deputy Administrator

AB/Associate Deputy Administrator for Institutions

B/Acting Chief Financial Officer

B/Comptroller

BF/Director, Financial Management Division

G/General Counsel

JM/Director, Management Assessment Division

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NASA Office of Inspector General

IG-02-002
A-00-055-00

November 8, 2001

Restructuring of the International Space Station Contract

Executive Summary

Background. In January 1995, Johnson signed a \$5.638 billion contract with Boeing for the ISS.⁵ The original contract was a cost-plus-award fee/incentive fee/fixed fee contract that included design, development, manufacture, integration, test, verification, and delivery to NASA of the U.S. On-Orbit Segment,⁶ including ground support equipment and support for ground and orbital operations. (Appendix B contains overall contract details.)

During 1999, Boeing estimated the ISS contract overrun at \$986 million.⁷ Because of the large overrun, Boeing could not feasibly earn more than the minimum 2 percent incentive fee for the remainder of the contract (December 31, 2003). (Appendix C contains details on the fee structure of the contract.) However, Johnson wanted to keep the contractor motivated to produce quality work for the ISS Program. Also, the contract statement of work required revisions to reflect a shift in Program focus from development to operations. In addition, there were other changes,⁸ ongoing negotiations, and likely target cost increases. Therefore, in December 1999, Johnson and Boeing restructured the ISS contract to reflect that the parties reached a global settlement of Boeing's RFEA's, settled the remaining overrun amount, reorganized the statement of work, and changed the contract type to cost-plus-award fee/fixed fee.

Objectives. The overall objective was to evaluate NASA's December 1999 restructuring of the ISS contract. Specifically, we determined whether the global settlement of the contractor's RFEA's was appropriately justified and executed and whether the fee structure was appropriate. Appendix A contains a detailed description of our objectives, scope, and methodology.

⁵NAS15-10000 is the contract number for the ISS prime contract with Boeing. The contract's value was \$9.1 billion at the time of the restructuring modification, which was signed on December 21, 1999. As of October 19, 2001, the contract value was more than \$9.7 billion.

⁶The U.S. On-Orbit Segment of the ISS includes U.S. elements that have been deployed and that will be deployed.

⁷As of March 2001, Boeing was still reporting an overrun of \$986 million.

⁸The other changes included, for example, modified facilities requirements, failure of Node 1 struts to meet pressure test requirements, and retention of critical skills for sustaining engineering.

Results of Audit. NASA did not sufficiently justify the restructuring of the ISS contract. Specifically, regarding the global settlement of the RFEA's, Johnson did not perform a sufficient analysis to show that Boeing's proposed costs were fair and reasonable and did not adequately support the justification Johnson prepared for waiving the FAR requirement for the contractor to submit certified cost or pricing data⁹ (Finding A). Furthermore, the Office of Procurement did not exercise adequate oversight of the restructuring, even though this was one of the most significant noncompetitive awards in FY 2000 (Finding B). As a result, NASA has little assurance that the contractor did not overstate the value of potential claims totaling \$404 million.

Also, Johnson inappropriately modified the fee structure of the ISS contract by eliminating the Agency's option to recoup provisional fees paid to Boeing if the contractor's technical and cost performance is ultimately unsatisfactory. As a result, NASA could pay Boeing as much as \$69.4 million in fees¹⁰ even if the Agency's final evaluation of the contractor's on-orbit performance is unsatisfactory (Finding C).

Other Matters of Interest. During our review of the contract fee structure, we found errors in the on-orbit award fee calculations for Milestone Flight 2R.¹¹ The ISS Contracting Officer acknowledged that ISS Program Office personnel performed the calculations incorrectly and took appropriate action to correct the error by issuing a contract modification. These errors could have resulted in an under-refund by Boeing of about \$1.4 million to NASA. The correction of the errors will preclude a future overpayment of about \$1.4 million to Boeing (see Appendix D).

Recommendations. Johnson should perform an adequate price analysis, properly support justifications for waivers on future modifications of the ISS contract, and ensure that the fee pools for the ISS contract are measurable and consistent with Agency criteria. The Office of Procurement should perform adequate oversight of major procurement actions for the ISS contract.

Management's Response. Johnson nonconcurred with the recommendations to perform a price or cost analysis with proper justifications on future ISS contract modifications and to ensure that fee pools are measurable and consistent with Agency criteria. The Office of Procurement concurred with the draft recommendation to establish procedures to ensure adequate oversight but stated that its insight and Johnson's analysis were sufficient. Management also provided general comments on our findings. The complete text of management's response is in Appendix G.

⁹FAR 15.401 defines cost or pricing data as all facts that, as of the date of price agreement, prudent buyers and sellers would reasonably expect to affect price negotiations significantly. Cost or pricing data are factual, not judgmental, and are verifiable.

¹⁰The fee pool was \$69.4 million as of October 19, 2001, but the pool will increase as NASA definitizes work on the contract.

¹¹ISS Milestone Flight 2R, October 31, 2000, was the flight that carried the first long-term habitation crew to the ISS. The launch vehicle was a Russian Soyuz rocket.

Evaluation of Management's Response

We consider Johnson's comments not responsive and maintain our position on the related recommendations. Because we believe that requesting additional management comments will not be productive,¹² we will forward the recommendations to the NASA Audit Followup Official for final resolution. Based on the Office of Procurement's comments, we revised the recommendation regarding adequate oversight to focus on performing adequate oversight rather than on establishing additional procedures. Therefore, we request full management comments on the revised recommendation. Our additional comments in response to management's position on the findings are in Appendix H.

¹²Although we provided Johnson with a working copy of the draft report in May 2001, Johnson decided not to discuss it with us. Also, Johnson did not respond to our offer to discuss the draft report after we issued it in August 2001. Johnson last met with us to discuss our findings in March 2001.

Introduction

As an integral part of the overall contract restructuring, Johnson settled all known contractor RFEA issues as of October 1, 1999, except for specific exclusions identified in contract clause H.67, “Requests for Equitable Adjustments.”¹³ As the basis for this settlement, Johnson cited the avoidance of significant proposal costs and the cost of technical and business resources that would have been incurred by Boeing and NASA if each RFEA was submitted and settled separately. As a result, the Agency made no attempt to establish a negotiation position for or reach cost and fee agreement on individual issues. The FAR and NASA FAR Supplement require certified cost or pricing data from the contractor unless, in exceptional circumstances, the Center Director signs a waiver. Johnson issued a waiver for the submission of that data.¹⁴

Another integral part of the overall contract restructuring was a new fee arrangement. In March 1999, Boeing announced that the estimated variance at completion was \$986 million. This variance meant that Boeing could earn only the minimum incentive fee of 2 percent.¹⁵ Additionally, because of the cost incentive fee arrangement and the \$986 million estimated cost overrun, the earnings potential of any new work¹⁶ would have been penalized by past poor performance. Therefore, NASA concluded that there was no longer either a positive or negative incentive to control costs on existing work and that it was important to improve Boeing’s cost performance. The prior award fee provisions did not emphasize cost management because the incentive fee provisions focused exclusively on cost. Therefore, NASA converted the previous incentive fee provisions to a fixed fee at the 2-percent minimum and established award fee pools for cost and technical management on new work added to the contract. NASA’s objective was to improve cost management by enabling Boeing to earn a reasonable return on the new work and not be further penalized by previous poor cost performance. Another significant contract change in the restructuring involved eliminating NASA’s ability to recoup award fee based on on-orbit performance. The restructured contract now enables Boeing to earn up to 11 percent technical and cost award fees on new work added to the contract.

¹³The contract clause identified the excluded potential RFEA’s as: Starboard Truss Segment 6 Refurbishment; multiple element integrated test impact; Solid State Devices, Inc. claim; software support to international partners; and fault detection, isolation, and recovery/reconfiguration worksheets for ISS milestone flights 5A and 6A. The potential RFEA’s had a value of about \$68 million.

¹⁴The Johnson Center Director signed the waiver for the submission of current cost and pricing data in accordance with FAR 15.403-1(c)(iii)(4), which requires the head of a contracting activity to sign such waivers. NASA FAR Supplement 1802.101 identified the Center Director as the head of the contracting activity at field installations.

¹⁵The contract had a cost incentive fee range from 2 percent to 15 percent. The \$986 million variance effectively precluded Boeing from earning more than the minimum 2 percent.

¹⁶New work is defined as on-ground contract changes definitized or authorized after October 1, 1999.

Findings and Recommendations

Finding A. Adequacy of Support for Global Settlement

Johnson settled 38 RFEA's and Boeing's other potential claims valued at more than \$404 million¹⁷ without performing a sufficient analysis to show that Boeing's proposed costs were fair and reasonable. Johnson also waived a FAR requirement for the contractor to submit certified cost or pricing data without adequate support for the waiver and did not request that Boeing submit information other than current cost or pricing data needed to negotiate the global settlement. These conditions occurred for two reasons. First, Johnson believed that the global settlement was in NASA's best interest because it avoided significant costs and resources needed to negotiate and settle the claims separately. Second, the NASA Headquarters Office of Procurement had not performed sufficient oversight on the global settlement to ensure that Johnson performed a cost or price analysis¹⁸ (see Finding B). As a result, NASA has little assurance that the contractor did not overstate the value of its 38 RFEA's and other potential claims. In addition, NASA's settlement of all the claims does not give the contractor an incentive to control costs not yet incurred as of the time of the restructuring.

Procurement Requirements

The Truth in Negotiations Act. The Truth in Negotiations Act (the Act) was enacted in 1962 because the Congress perceived that the Government's negotiation position is weakened by the failure of contractors to disclose current, accurate, and complete cost and pricing data, particularly in noncompetitive procurements. The Act was intended to correct the perceived imbalance in negotiating positions. The Act was also designed to prevent contractors from reaping excessive profits on contracts with the Government by providing Government negotiators with accurate and current information on contract proposals. Provisions of the FAR implement the Act and require contractors to submit a certified statement of current, accurate, and complete cost data on contract proposals valued at more than \$500,000, without the benefit of competition.¹⁹ The goal of the Act is the promotion of fair dealing in negotiating contracts in circumstances in which the Government must rely primarily upon the contractor for cost and pricing data.

¹⁷The 38 RFEA's were valued at \$328 million, and the other claims were valued at \$76 million for a total global settlement of \$404 million. NASA was not able to determine how much of the \$404 million was cost already incurred by Boeing and how much was cost yet to be incurred.

¹⁸FAR 15.404-1(b)(1) defines a price analysis as the process of examining and evaluating a proposed price without evaluating its separate cost elements and proposed profit.

¹⁹In exceptional cases, the requirement for contractor submission of certified cost data can be waived if the head of the contracting activity can determine the price to be fair and reasonable without the submission of cost or pricing data.

Requirements for a Cost or Price Analysis. FAR 15.4, "Contract Pricing," requires the contracting officer to:

- Purchase supplies and services from responsible sources at fair and reasonable prices.
- Perform a cost or price analysis to develop a negotiation position that facilitates agreement by the contracting officer and the offeror on a fair and reasonable price.
- Document all audit and field pricing information²⁰ in the contract file.

FAR 15.403-4(a)(1), "Requiring Cost or Pricing Data," allows the contracting officer to request a waiver if the contracting officer has sufficient information available to determine price reasonableness. The head of the contracting activity can waive the requirement for submission of cost or pricing data in exceptional cases if the price can be determined to be fair and reasonable without the submission. The waiver and supporting rationale must be written.

A waiver of current cost and pricing data does not relieve contracting officers of the requirement to perform an analysis of a contractor's cost proposal. When a waiver is obtained, FAR 15.404-1 requires the contracting officer to, at a minimum, perform a price analysis. The FAR states that the Government may use various price analysis techniques and procedures to ensure a fair and reasonable price. The contracting officer may also use a cost analysis to evaluate information other than cost or pricing data to determine cost reasonableness. However, FAR 31.201-3(a), "Determining Reasonableness," indicates that the Government should not presume that costs incurred by a contractor are reasonable. (Appendix E contains details on the FAR requirements.)

Support for Waiver of Cost or Pricing Data

Waiver of Cost or Pricing Data. On December 22, 1999, Johnson submitted its determination and findings for the authority to waive submission of certified cost or pricing data²¹ pursuant to the authority of the FAR and NASA FAR Supplement. The waiver cites the following reasons as justification for not requiring certified cost or pricing data:

- Johnson has sufficient information available from Boeing's Performance Measurement System Reports²² and Government assessments of Boeing's

²⁰Audit and field pricing information includes technical, audit, and special reports associated with the cost elements of a proposal.

²¹The Act requires contractors to submit certified cost data to establish a common basis for negotiations.

²²Performance Measurement System Reports provide management the primary data for determining current cost and schedule performance and the forecast of the estimated cost at completion.

estimate at completion to determine that the total cost adjustment is fair and reasonable.

- Boeing's Earned Value Management System²³ was approved in November 1998.
- A fee of less than 1 percent of the total cost adjustment was negotiated and can be independently determined to be reasonable based on Government estimates of valid RFEA issues; therefore, the settlement poses little risk to the Government.
- The global settlement allows Boeing and the Government to avoid significant costs for Boeing to prepare cost proposals and for the use of significant Boeing and Government business and technical resources in reviewing, fact-finding, and negotiating RFEA's submitted individually.

When a contracting officer decides to not require the submission of certified cost or pricing data, the contracting officer must obtain a waiver. Furthermore, contracting officers should obtain waivers before negotiations of the costs begin, not after the contract has been modified and signed. Johnson did not issue the waiver until after completing the negotiations²⁴ and signing the modification.²⁵

Information other than Current Cost and Pricing Data. Although the waiver cites reasons for not requiring the contractor to submit certified cost or pricing data, the waiver does not relieve the contractor from submitting data necessary for the purposes of a Government analysis of cost/price reasonableness for negotiating a change. FAR 15.403-3(a), "Requiring information other than current cost and pricing data," states that even though a waiver has been obtained, the contractor is required to submit other information that the contracting officer would need to evaluate the reasonableness of the price. If a price analysis alone cannot permit the negotiation of a fair and reasonable price, then the contracting officer should perform a cost analysis.

Boeing's Performance Measurement System Report and Earned Value Management System. Johnson's support for its waiver does not meet FAR 15.403-1(c) criteria for issuing such waivers. Johnson's primary basis for determining that the RFEA's were fair and reasonable was the presumed sufficiency and reliability of Boeing's monthly Performance Measurement System Reports and Boeing's approved Earned Value Management System. The ISS Program Office monitors those systems as

²³An Earned Value Management System tracks and identifies contract results by work breakdown structure and identifies program elements (variances) that have either exceeded or failed to meet contractually identified thresholds of performance jointly agreed to by the customer and program management. In our Report No. IG-99-04, "Earned Value Management at NASA," September 30, 1999, we recommended that NASA issue earned value management policy as program and project directives and establish procedures for reporting comprehensive earned value management information to upper management.

²⁴According to the price negotiation memorandum, negotiations began on September 21, 1999, and concluded on October 8, 1999.

²⁵Boeing and NASA signed the modification on December 21, 1999. The Johnson Center Director signed the waiver for submission of cost or pricing data on December 22, 1999.

part of its general contract administration functions but did not perform specific reviews on the proposed RFEA costs. The Defense Contract Management Agency approves the Earned Value Management System, which generates a monthly Performance Measurement System Report for NASA, based on whether Boeing's Earned Value Management System is consistent with its Government-approved systems descriptions. This approval does not ensure that any cost information related to individual RFEA's is sufficient to support negotiations. Although Boeing has a Government-approved Earned Value Management System, it does not accumulate cost information on specific RFEA's. Although Johnson's post-negotiation memorandum showed a fee of less than 1 percent of the total cost adjustment,²⁶ the Agency had no assurance that the minimal fee offset a potentially higher cost avoidance that could be obtained from negotiations based on an adequate cost analysis²⁷ of the \$404 million in RFEA costs. Furthermore, Johnson did not obtain information in lieu of certified cost or pricing data for purposes of determining cost reasonableness. Therefore, Johnson did not have a sufficient basis for assessing Boeing's costs for the RFEA's and only presumed that costs were fair and reasonable.

Reliance on Boeing's Estimates. Boeing identified the 38 RFEA's and submitted proposals on 10 of the RFEA's from late March through early August 1999. The 10 proposals were valued at more than \$168 million, more than 50 percent of the value of the 38 RFEA's. Johnson relied on Boeing's estimate of costs and did not perform a price analysis on the submitted proposals, even though the proposals were received at least 2 months before the completion of negotiations. Also, Johnson did not ask the Defense Contract Audit Agency (DCAA) to determine acceptability of incurred costs and estimates of cost to be incurred²⁸ as represented by Boeing for the RFEA's. Instead, Johnson stated it was satisfied with Boeing's cost estimates because the ISS Business Management Office performed quarterly estimate-at-completion reviews. Further, Johnson did not attempt to quantify the potential cost of proposal preparations and resources that would have been spent on reviewing, fact-finding, and negotiating individually submitted RFEA's. Boeing assured the ISS Program Office that all the RFEA's were included in Boeing's estimate at completion for the contract.

Johnson explained that the costs and resources needed to negotiate and settle the claims separately would have outweighed the benefit. Johnson further explained that the amount was reasonable because Boeing's estimate to complete the contract included the \$404 million and was less than Johnson's estimate to complete. However, such a high-

²⁶Johnson negotiated a fee of \$3.5 million (less than 1 percent) of Boeing's estimated \$404 million in RFEA's.

²⁷While costs incurred in excess of target cost (overruns) are reimbursable on this cost reimbursable contract, poor cost performance is a factor in award fee determinations. Also, Boeing is responsible for controlling costs not yet incurred.

²⁸DCAA provides contract audit services to Government agencies and determines whether costs are reasonable, allocable, and allowable. If requested, DCAA can provide advice and recommendations on costs represented by Boeing before the award, negotiation, or settlement of the RFEA's.

level cost comparison cannot determine whether the costs of underlying elements are fair and reasonable, especially when Boeing has historically understated costs on the ISS contract (see Appendix F for details on prior reports).

Anticipated Claims by Boeing

The global settlement did not settle all pending Boeing claims. Boeing had not yet submitted several additional RFEA issues to Johnson. Boeing's May 2001 Performance Measurement System Report estimated the value of RFEA's since the restructuring modification at \$200 to \$330 million. Boeing added \$200 million to the statement of work until the RFEA's are negotiated. Boeing also assessed cost related to various RFEA's that have been incurred but are not yet included in the statement of work. As of May 2001, Boeing identified the RFEA's as follows, but has not provided NASA any additional information:

- multiple element integrated testing related impacts to design, development, test, and evaluation;
- design, development, test, and evaluation impacts related to Revision E²⁹ of ISS assembly plans;
- cumulative effect of changes; and
- other items associated with contract provision H-67, "Request for Equitable Adjustment Exclusions."³⁰

NASA will need to negotiate a significant value of claims in the future. Therefore, the Agency should ensure that it can properly determine whether the costs are reasonable, the contractor has an incentive to control costs, and the Agency has an appropriate approach to settling future claims.

Closer Scrutiny of Boeing's Costs Is Warranted

ISS Program officials have stated that the risk of the Agency's circumventing the cost or price analysis for the restructuring modification is minimal because the ISS contract is cost-reimbursable, and the negotiated fee that was applied to the RFEA's is very low. This rationale does not recognize the significant risk of presuming that the contractor has not overstated the \$404 million in RFEA costs and relies on theoretical safeguards of contractor systems certifications in lieu of required cost or price analyses. The reviews of Boeing's Earned Value Management System performed by the Defense Contract Management Agency were not in-depth reviews of cost accumulation or estimating techniques for specific RFEA's and did not include a review of the system itself, which

²⁹Revision E was the ISS assembly sequence approved in June 1999. The current assembly sequence is Revision F, effective August 2000.

³⁰Footnote 13 lists the other items.

can be manipulated by the contractor. Since the inception of the ISS contract, Boeing has continually understated its cost overruns, resulting in overpayments by NASA (see Appendix F).³¹ Boeing's trend of poor cost reporting warrants closer rather than less NASA scrutiny of Boeing's costs. NASA's expectation that the estimate at completion will be higher than Boeing's estimate does not mean that Boeing's estimate of the RFEA's is realistic. Because NASA will likely need to negotiate future claims of as much as \$330 million, the Agency should ensure that contracting officers perform a thorough proposal analysis even if the Agency waives submission of certified cost and pricing data.

Recommendation, Management's Response, and Evaluation of Response

- 1. The Acting Director, Lyndon B. Johnson Space Center, should, for future modifications of the ISS contract, direct the contracting officer to perform an adequate price or cost analysis as necessary to obtain fair and reasonable prices and to properly support justifications for a waiver to obtain certified cost and pricing data, as required by the FAR.**

Management's Response. Nonconcur. The recommendation simply reaffirms applicable regulations and policies that NASA followed during the restructuring activity. Because there has not been a nonconformance with applicable requirements, direction to follow existing requirements is not necessary. The complete text of management's response is in Appendix G.

Evaluation of Response. Management's comments are not responsive to the recommendation. We maintain our position that Johnson did not perform the price or cost analysis required by the FAR and did not properly support a waiver for the requirement to obtain certified cost or pricing data. Because we believe that requesting additional management comments would not be productive, we will forward the recommendation to the NASA Audit Followup Official for final resolution. Our additional comments in response to management's position on the finding are in Appendix H.

³¹An understated cost overrun can potentially result in increased fee earned by a contractor. An overstated RFEA can result in a higher contract value that could mask an overrun.

Finding B. Oversight by NASA Office of Procurement

The NASA Office of Procurement did not exercise adequate oversight of the global settlement of the ISS contract. The Office of Procurement delegated the Master Buy Plan actions to the Johnson Procurement Office. However, the Office of Procurement did not ensure that Johnson took the requested actions. This occurred because the Office of Procurement (1) had only informal, oral contacts with Johnson that did not identify details of the planned procurement approach and (2) did not follow up in writing on the requested actions. As a result, the Office of Procurement did not know that Johnson had not performed cost or price analyses of the RFEA's, which were a major part of one of the most significant noncompetitive awards in FY 2000.³²

Requirements for Master Buy Plan

NASA FAR Supplement 1807.71, "Master Buy Plan," requires Agency installations to provide information on planned acquisitions, including supplemental agreements, to the NASA Headquarters Office of Procurement on a Master Buy Plan submission. Master Buy Plan submissions and revisions enable management to focus attention on a representative selection of high-dollar-value or high-interest acquisitions.³³ The Office of Procurement can delegate the acquisition to any NASA installation.

NASA FAR Supplement 1807.7102-3(b), "Selection and Notification Procedures," requires that when an acquisition is changed (for example, increase or decrease in dollar amount, change in requirement, canceled, superseded, deferred, or is no longer subject to the Master Buy Plan procedures), the installation must immediately notify the NASA Headquarters Office of Procurement and explain the reasons. The Office of Procurement must notify the installation's procurement office in writing of any further action that may be required, such as Headquarters' approval of the procurement.

Submission of Master Buy Plan

In accordance with the NASA FAR Supplement 1807.71, "Master Buy Plan," Johnson submitted an April 1998 request to the Office of Procurement for review and approval. This request represented amendments to the ISS contract that would result in a changed contract value of more than \$50 million. In a July 1998 letter of delegation, the Office of Procurement delegated the Master Buy Plan actions for the amendments to the Johnson Procurement Office. The letter of delegation stated that the Office of Procurement was particularly concerned about the possibility that the impacts of the overruns on the contract would not be properly integrated with contract adjustments of costs identified in

³² The global restructuring modification accounted for about 17 percent of the total \$3.2 billion of procurements during FY 2000 for noncompetitive contracts awarded by NASA before FY 2000.

³³ The Master Buy Plan applies to acquisitions that (1) are expected to equal or that exceed \$50 million or (2) are of such a nature that in the judgment of the installation or Headquarters, the acquisition warrants Headquarters' consideration.

the RFEA's.³⁴ For this reason, the Office of Procurement directed Johnson to keep the Office of Procurement informed of the strategy used to integrate cost overruns with other potential changes in contract cost targets because the overruns would also be definitized in the modification. The letter of delegation also required Johnson to submit an information copy of the pre-negotiation memorandum to the Office of Procurement before reopening discussions with Boeing for definitization of an overrun. However, neither Johnson nor the Office of Procurement could show us that they had a strategy in place to integrate the RFEA costs with previous overrun costs to ensure that they had not been definitized twice. Additionally, Johnson did not prepare a pre-negotiation memorandum to provide to the Office of Procurement.³⁵

Delegation of Master Buy Plan

Johnson kept the Office of Procurement orally apprised of the increasing value of the contract modification and other changes by the negotiation team, including the decision to restructure the contract's fee structure. The Office of Procurement agreed to allow Johnson to continue with the actions associated with the evolving procurement. However, the Office of Procurement did not follow up in writing with the Johnson Procurement Office, as required by NASA FAR Supplement 1807.7102-3(b), to acknowledge the changes associated with this procurement action. The Office of Procurement acknowledged that its documentation was limited but believed that its frequent conversations with the ISS Program Office regarding the planned procurement approach were sufficient. However, the actions were not sufficiently thorough for the Office of Procurement to recognize that Johnson had not performed cost or price analyses of the RFEA's.

Recommendation, Management's Response, and Evaluation of Response

- 2. The Associate Administrator for Procurement should instruct the Headquarters procurement staff to perform adequate oversight on Master Buy Plan delegations for ISS procurement actions, emphasizing the requirement for thorough documentation and a price or cost analysis.**

³⁴One of the 38 RFEA's included the remaining \$53 million of the \$203 million in overrun costs that we reported in Report No. IG-00-007, "Performance Management of the International Space Station Contract," February 16, 2000. Johnson planned to definitize the overrun as part of the global settlement. Definitize means to settle and sign a contractual action that would include a modification to an existing contract.

³⁵After discussions and definitization of the modification, Johnson submitted a price negotiation memorandum to the Office of Procurement. The price negotiation memorandum explained the details of the global settlement.

Management's Response. Concur. While acknowledging that more rigorous adherence to the established Master Buy Plan procedures would have been appropriate in managing changes to the ISS program, we maintain that sufficient insight into those changes was afforded by the ongoing communications among the Center ISS procurement personnel and procurement analysts responsible for the ISS Program within the Office of Procurement. Those communications gave us confidence that Johnson was performing sufficient analysis, albeit not a traditional cost or price analysis usually associated with pre-award contract negotiation, of the cumulative value of the RFEA's and related fee adjustment to assure an equitable settlement could be achieved among the parties (see Appendix G).

Evaluation of Response. Management's comments are contradictory regarding adequacy of oversight. We maintain that if the Office of Procurement had followed Master Buy Plan procedures, it would have known that the ISS Program Office did not plan to perform a price or cost analysis and may have directed Johnson to perform the analysis or obtain a waiver. However, in response to management's comments, we revised the recommendation (the original draft recommendation is recommendation 2 in Appendix G) to focus on performing adequate oversight rather than on establishing additional procedures. Therefore, we request that management provide comments on the revised recommendation.

Finding C. Modification of ISS Contract Fee Structure

Johnson inappropriately modified the fee structure of the ISS contract by eliminating the Agency's option to recoup provisional fees paid to Boeing if the contractor's technical and cost performance is ultimately unsatisfactory. First, Johnson eliminated the incentive fee pool that was based on objective performance evaluation criteria and replaced it with a cost performance award fee pool that, contrary to Agency policy, does not measure actual cost performance. Then, Johnson created a technical performance award fee pool and a base fee pool that, contrary to Agency policy, are not subject to penalty for unsatisfactory on-orbit hardware performance. Johnson created the new fee pools as part of the global settlement to allow Boeing to earn fees that it would not have to repay for subsequent unsatisfactory on-orbit hardware performance and to provide an incentive for the contractor to control costs. However, Johnson cannot measure the work upon which the cost performance award fee should be based because the ISS contract does not require Boeing to measure the cost of new work. As a result, Johnson could pay Boeing as much as \$69.4 million in fee even if Johnson's final evaluation of Boeing's on-orbit hardware performance is unsatisfactory.

NASA Guidance on Award Fee Contracts

NASA has issued guidance regarding award fee contracts in the NASA FAR Supplement and in the NASA Award Fee Contracting Guide, December 2, 1997 (revised). The NASA FAR Supplement states that:

- Performance-based contracts shall include both positive and negative performance incentives, and any exceptions shall be approved in writing by the Center Director. This requirement is also in the NASA Award Fee Contracting Guide.
- All award fee evaluations, with the exception of the last evaluation, will be interim, and no award fee or base fee will be paid if the final award fee evaluation is poor/unsatisfactory.
- When a base fee is authorized in a cost-plus-award fee contract, it shall be paid only if the final award fee evaluation is satisfactory or better.
- The measurement of the contractor's performance against the negotiated estimated cost of the contract should be the predominant consideration of the cost control evaluation. This requirement is also in the NASA Award Fee Contracting Guide.

Analysis of ISS Program Office Modification to the Contract Fee Structure

Johnson modified the contract fee structure by creating a technical performance award fee pool (FY 2000 Forward Technical Performance Award Fee), a base fee pool, and a

cost performance award fee pool (FY 2000 Forward Cost Performance Award Fee). A discussion of how the three award fee pools do not meet Agency policy follows:

Technical Performance Award Fee Pool and Base Fee Pool

Original Contract Provision. At contract inception, January 1995, the contract included a positive performance incentive in the on-ground performance evaluation. Boeing could earn \$205 million in award fee (about 5 percent of target cost). The contract also included a negative performance incentive in the on-orbit performance evaluations, which could cause a downward adjustment to any on-ground award fee provisionally earned by Boeing. During the original negotiations, Boeing opposed this riskier form of award fee performance evaluation. However, the ISS Program Office, with the support of the NASA Office of Procurement, succeeded in negotiating the negative incentive aspect into the contract fee structure.

Contract Restructuring Modification. As part of the December 1999 restructuring, Johnson departed from the original contract fee philosophy and accepted Boeing's request to have new work excluded from the repayment provision of the on-orbit performance evaluations. Johnson did this by creating a technical performance award fee pool of \$35.8 million³⁶ and a base fee pool of \$8.9 million for new work added to the contract after September 1999. For both fee pools, Boeing can earn but not subsequently lose on-ground award fee for unsatisfactory performance on-orbit.

No Negative Incentive. The new technical award fee and base fee pools contain a positive performance incentive in that Boeing can earn up to \$44.7 million. Any part of the \$44.7 million that is initially unearned can later be earned through an upward adjustment resulting from a successful final on-ground performance evaluation. However, none of the \$44.7 million that is initially earned is subject to either a downward adjustment based on the final on-ground performance evaluation or repayment based on the on-orbit performance evaluation, even if those evaluations show that performance is unsatisfactory. Therefore, the contract contains no negative performance incentive, which is required by the NASA FAR Supplement and the Award Fee Contracting Guide for award-fee contracts with primary deliverables of hardware and with a total estimated cost and fee greater than \$25 million.³⁷

³⁶The evaluation factors for technical performance are program management (30 percent); technical performance, including schedule, quality, and safety (55 percent); and small disadvantaged business performance (15 percent).

³⁷NASA FAR Supplement 1816.402-270, "NASA Technical Performance Incentives," requires that performance-based contracts with primary deliverables of hardware costing more than \$25 million include both positive and negative performance incentives. This requirement is also in NASA's Award Fee Contracting Guide, December 2, 1997 (revised). NASA FAR Supplement 1816.402-270 also requires the Center Director to approve any exceptions to this requirement in writing. (Appendix E contains details on the NASA FAR Supplement requirement.) In addition, NASA FAR Supplement 1852.216-77, "Award Fee for End Items Contracts," requires that all award fee evaluations, with the exception of the last evaluation, will be interim evaluations. At the last evaluation, which is final, the contractor's performance for the entire contract will be evaluated to determine total earned award fee. No award fee or base fee will

Base Fee Evaluation. Boeing can earn the \$8.9 million base fee³⁸ if the final on-ground award fee score is 61 (satisfactory) or higher. The NASA FAR Supplement allows the base fee to be paid only if the final award fee evaluation is satisfactory or better. In addition, if the final award fee evaluation is below 61 (poor/unsatisfactory), all provisional base fee payments must be refunded to the Government. By eliminating the repayment requirement, Johnson did not follow the NASA FAR Supplement requirements for base fee³⁹ and could ultimately pay Boeing at least \$8.9 million in base fee for unsatisfactory on-orbit performance of the ISS.

Cost Performance Award Fee Pool

Original Contract Provision. At inception, the ISS contract included an incentive fee provision that allowed Boeing to earn a minimum of \$82 million (about 2 percent of target cost) up to a maximum of \$615 million (about 15 percent of target cost), depending on the actual contract cost. As discussed earlier, Johnson and Boeing recognized that Boeing could earn only the minimum incentive fee for the remaining life of the contract because of the cost overrun.

Contract Restructuring Modification. As part of the restructuring, Johnson wanted to give Boeing an incentive to control cost and, therefore, agreed to Boeing's request to exclude new work from the repayment provision of the on-orbit performance evaluations. Johnson did this by creating an award fee pool of \$24.7 million for cost performance that, like the technical performance award fee pool and base fee pool, was not subject to repayment.

Measurement of Cost Performance. The Performance Evaluation Plan for the award fee pool identifies the evaluation factor as overall cost performance, including:

- the estimate to complete,
- integrated management of cost risk and opportunities,
- forecasting of budgetary requirements, and
- appropriate use of the Earned Value Management System and compliance with Earned Value Management System criteria.

be paid to the contractor if the final award fee evaluation is poor/unsatisfactory. If the final award fee evaluation is poor/unsatisfactory, any base fee paid will be refunded to the Government.

³⁸This dollar amount is based on a percentage for changes authorized but not definitized as of October 1, 1999, when the contract was restructured (see Appendix C).

³⁹NASA FAR Supplement 1816.405-271, "Base Fee," requires that when a base fee is authorized for use in a cost-plus-award fee contract, it shall be paid only if the final award fee evaluation is satisfactory or better. Pending final evaluation, base fee may be paid during the life of the contract at defined intervals on a provisional basis. If the final award fee evaluation is poor/unsatisfactory, all provisional base fee payments shall be refunded to the Government.

None of these factors address Boeing's actual cost performance compared to the negotiated contract estimated cost for new work. Johnson has awarded Boeing scores of 70 (satisfactory), 70, and 72 (good), respectively, for cost performance for the three 6-month periods following the contract restructuring, resulting in earned amounts and payments of \$9.8 million. Also, \$4.0 million that was unearned may be earned and paid based on the final performance evaluation. However, neither Johnson nor Boeing officials know the actual cost performance relative to the estimated cost of the new work for which this award fee was added to the contract, because neither Johnson nor Boeing measures the cost of new work. Therefore, the cost performance award fee pool conflicts with the NASA FAR Supplement requirement to measure the contractor's success in controlling cost.⁴⁰

Appropriateness of Fee Restructuring

The ISS contract originally included an aggressive and motivating award and cost incentive fee structure consistent with the NASA FAR Supplement and the Award Fee Contracting Guide. However, Johnson's establishment of the technical performance award fee pool, cost performance award fee pool, and base fee pool eliminated provisions that are required by Agency guidance and are designed to limit payment of award fee to successful on-orbit performance and measurable cost control by contractors.

Technical Award Fee and Base Fee Pool. The technical award fee pool and the base fee pool, totaling \$44.7 million, eliminated the negative performance incentive. For the final award fee evaluation, Johnson should have provided for the possibility that Boeing could lose fee for poor on-orbit performance rather than guarantee that Boeing will keep all previously earned fees regardless of performance.

Cost Performance Award Fee Pool. The cost performance award fee pool (totaling \$24.7 million) evaluation is not based on the costs associated with the pool but on Boeing's overall cost performance. NASA does not require Boeing to measure costs related to this pool. Consequently, there is no way for NASA to evaluate cost controls and thereby measure Boeing's performance against the negotiated estimated cost.

Recommendation, Management's Response, and Evaluation of Response

- 3. The Acting Director, Lyndon B. Johnson Space Center, should reinstate the repayment provision in the ISS contract for work added after September 1999 that relates to on-orbit performance, and establish fee pools that are consistent**

⁴⁰NASA FAR Supplement 1816.405-274, "Award Fee Evaluation Factors," requires that the predominant consideration of the cost control evaluation be a measurement of the contractor's performance against the negotiated estimated cost of the contract. The Award Fee Contracting Guide also requires that success in controlling costs be measured against the estimated cost of the contract rather than budgetary or operating plan cost (see Appendix E).

with Agency criteria. Alternatively, Johnson should obtain a waiver from the requirements of NASA FAR Supplement 1816.402-270, 1816.405-271, 1816.405-274, and 1852.216-77 regarding the new ISS fee pools, with sufficient supporting documentation.

Management's Response. Nonconcur. The revisions to the fee structure did not give up existing rights with regard to on-orbit performance. The full technical content of the on-orbit vehicle under the contract both before and after the contract restructuring is subject to an on-orbit performance assessment. The only thing that the restructure did was to limit the maximum possible fee loss, due to on-orbit performance, to \$202 million (see Appendix G).

Evaluation of Response. Management's comments are not responsive to the recommendation. We are concerned about the lack of a repayment provision after restructuring rather than whether there is a technical assessment of on-orbit performance. The \$202 million loss limit inappropriately allows Boeing to keep all fees above the limit even if on-orbit performance is unsatisfactory. Johnson has not addressed the fact that Boeing's technical award and base fee (\$44.7 million and increasing) is not subject to either a downward adjustment based on the final on-ground performance valuation or repayment because of an unsatisfactory on-orbit performance evaluation. We maintain our position that, at a minimum, Johnson should obtain a waiver for deviating from the stated requirements of the NASA FAR Supplement. Because we believe that requesting additional comments will not be productive, we will forward the recommendation to the NASA Audit Followup Official for final resolution (see Appendix H).

Appendix A. Objectives, Scope, and Methodology

Objectives

The overall objective was to evaluate NASA's December 1999 restructuring of the International Space Station (ISS) contract. Specifically, we determined whether the global settlement of the contractor's requests for equitable adjustment was appropriately justified and executed and whether the fee structure was appropriate.

Scope and Methodology

To meet our objectives, we reviewed the restructuring contract modification (modification number 836), the associated price negotiation memorandum, the waiver for certified cost and pricing data, and the contract status report. We interviewed personnel in the ISS Procurement Office, the ISS Business Management Office, and the Lyndon B. Johnson Space Center (Johnson) Legal Office. We also interviewed personnel in the NASA Headquarters Office of Procurement, Program Operations Division. We reviewed applicable regulations including the Federal Acquisition Regulation (FAR), NASA FAR Supplement, NASA's Award Fee Contracting Guide, and the Truth in Negotiations Act. We did not assess the reliability of computer-processed data because we did not rely on it to achieve our objectives.

Management Controls Reviewed

We reviewed management controls relative to cost and pricing data for the Request for Equitable Adjustments as described in FAR 15, "Contracting by Negotiation." We also reviewed management controls relative to award fee plans as described in NASA FAR Supplement 1816.4, "Incentive Contracts," and NASA's "Award Fee Contracting Guide." Management controls needed to be strengthened to ensure that Johnson performed adequate price analyses as required by the FAR (see Finding A), that the Office of Procurement provided adequate oversight of major procurement actions as required by the NASA FAR Supplement (see Finding B), and that Johnson established award fee pools as required by the NASA FAR Supplement and the Award Fee Contracting Guide (see Finding C).

Audit Field Work

We performed the audit field work from September 2000 through April 2001 at Johnson. We performed the audit in accordance with generally accepted government auditing standards.

Summary of Prior Audits and Reviews

The NASA Office of Inspector General and the General Accounting Office have issued numerous reports on the ISS Program. Related reports are summarized in Appendix F of this report.

Appendix B. International Space Station Contract

Brief Description of the Statement of Work. The Statement of Work for the International Space Station (ISS) contract describes The Boeing Company's (Boeing's) requirements for the design, development, manufacture, integration, test, verification, and delivery to NASA of the U.S. On-Orbit Segment⁴¹ of the ISS, including ground support equipment, and for support for ground and orbital operations. The Statement of Work also requires that Boeing provide technical support and data for NASA's operation and utilization of the ISS and describes Boeing's requirements to integrate the complete ISS System.

Date Awarded and Price. NASA awarded the ISS contract, NAS15-10000, January 13, 1995, for a total value of \$5.638 billion. As of October 19, 2001, the contract value was \$9.747 billion. However, NASA expects the contract value to increase to \$11.3 billion.

Major Modifications. On December 21, 1999, NASA and Boeing restructured the ISS contract. The purpose of this restructuring was to definitize adjustments to the estimated costs and fees, change the contract type, and address other contract actions. Boeing and the ISS Program Office agreed that the modification provided full equitable adjustments for all issues that were identified or known prior to October 1, 1999, excluding Class I changes⁴² and the specific exclusions identified in Special Provision H.67, "Requests For Equitable Adjustments."

This modification also created two new award fee pools and a base fee pool relative to on-ground contract changes definitized or authorized after October 1, 1999. The pools relate to technical performance, cost performance, and base fee. Unlike the on-ground award fee pool for the original contract, the new pools are not subject to repayment provisions.

Contract Type. The ISS contract initially was a cost-plus-award fee/incentive fee/fixed fee contract. When the contract was restructured, the fee structure was changed to cost-plus-award fee/fixed fee contract.

Estimated Completion Date. The ISS contract states that all work required under the contract shall be completed on or before December 31, 2003. As of June 4, 2001, the final on-orbit award fee evaluation period was scheduled for 3 months after milestone

⁴¹The U.S. On-Orbit Segment is an Earth-orbiting facility that houses experiment payloads, distributes resource utilities, and supports permanent human habitation for conducting research and science experiments in a microgravity environment.

⁴²A Class I change is a change resulting in any modification to the prime contract.

Flight UF5.⁴³ The ISS Assembly Sequence, Revision F, August 2000, identifies the launch date for milestone Flight UF5 as February 2005. The ISS Program Office has not updated the ISS contract as to when completion is expected.⁴⁴

Contractor. The prime contractor for the ISS is Boeing. Boeing has four development sites with locations in Huntsville, Alabama; Canoga Park, California; Huntington Beach, California; and Houston, Texas.

Costs Incurred to Date. As of October 30, 2001, NASA has obligated \$9.6 billion and disbursed \$9.5 billion on the ISS contract.

Cost and Schedule Performance. Boeing's Performance Measurement System Report, January 2001, indicates that since contract inception, Boeing has declared \$986 million in cost overruns.⁴⁵

Other Performance Information. Since April 1, 1996, NASA has evaluated 10 on-ground award fee periods. During these periods, Boeing's award fee scores ranged from 60 (poor/unsatisfactory) for the award fee period ended March 31, 1997, to 85 (very good) for the latest evaluated award fee period ended March 31, 2001. A score of 60 or below results in Boeing earning zero award fee dollars for the award fee period.

⁴³Milestone Flight UF5 provides for experiment delivery, resupply, and change out for the ISS. Elements contained on the flight include a multipurpose logistics module, which carries inside experiment equipment racks, and an express pallet, which carries external experiment equipment.

⁴⁴Modification No. 1100, October 26, 2001, contains the latest modifications to the ISS contract award fee plan. The on-orbit award fee milestones have not been updated to correspond to the latest ISS assembly sequence.

⁴⁵NASA estimated that the overrun will be \$1.14 billion.

Appendix C. Fee Structure of the International Space Station Contract

The International Space Station (ISS) contract originally established an award fee plan to motivate The Boeing Company (Boeing) to strive for excellence in managerial, technical, schedule, and subcontracting performance. The original award fee plan called for periodic evaluations of Boeing's on-ground and on-orbit performance. Each on-ground performance evaluation could result in fee dollars earned.⁴⁶ Each interim on-orbit performance evaluation would be applied to a percentage of earned on-ground performance dollars that have not been retained by previous on-orbit evaluations. Any dollars earned during each on-orbit period would become final and would no longer be subject to repayment by Boeing. NASA and Boeing agreed to the award fee elements and award fee percentages. The elements and percentages are listed in Table C-1.

Table C-1. Original ISS Contract Fee Structure
(January 13, 1995)

Fee Element	Percentage of Target Cost
Maximum Award Fee	5%
Minimum Incentive Fee	2%
Target Incentive Fee	5%
Maximum Incentive Fee	15%

On December 21, 1999, NASA and Boeing agreed to a modification that changed the fee structure of the ISS contract. These changes are identified in Table C-2.

Table C-2. Restructured ISS Contract Fee Structure
(December 21, 1999)

Fee Element	Percentage for Changes Authorized but Not Definitized as of October 1, 1999	Percentages for Changes Implemented After October 1, 1999
Technical Award Fee	5%	6%
Cost Award Fee	3%	5%
Base Fee	2%	N/A
Special Incentive Fee	N/A*	Up to 3%

*Not Applicable. The special incentive fee did not exist prior to contract restructuring.

⁴⁶Fee dollars earned are the result of fee dollars available multiplied by a numerical rating based on a maximum score of 100.

Lyndon B. Johnson Space Center (Johnson) changed the fee structure to facilitate and provide Boeing an incentive for efficient, high-quality performance for the remaining work under the ISS contract. For this purpose, Johnson established two new award fee pools and a base fee pool for on-ground changes definitized or authorized after October 1, 1999. The pools relate to technical performance (FY 2000 Forward Technical Performance Award Fee), cost performance (FY 2000 Forward Cost Performance Award Fee), and base fee.

After the restructuring, Johnson would perform on-ground and on-orbit performance evaluations as it did prior to restructuring. However, the major difference pertains to on-ground changes that are definitized or authorized after October 1, 1999. These changes, which affect the FY 2000 Forward Technical Performance Award Fee pool, FY 2000 Forward Cost Performance Award Fee pool, and Base Fee pool, are not subject to on-orbit repayment provisions. This restructuring of the fee pools would ensure that the fees, totaling \$69.4 million, as of October 19, 2001, are excluded from the on-orbit performance evaluation repayment provisions and would not be subject to repayment based on unsatisfactory on-orbit performance. Also, in conjunction with the final on-ground performance evaluation, for the FY 2000 Forward Technical Performance Award Fee pool and Base Fee pool, any unearned award fee will be carried forward and made available to Boeing for a final look back⁴⁷ and upward adjustment. Similarly, the FY 2000 Forward Cost Performance Award Fee pool will be evaluated in the same way. The earned award fee for this fee pool is also subject to a downward adjustment in conjunction with the final on-ground performance evaluation.

⁴⁷Look-back is the carrying forward of any unearned award fee dollars during the stated evaluation periods and having the dollars made available to the contractor for the final award fee evaluation.

Appendix D. Monetary Benefits

As a result of our audit, we determined that NASA could better use \$1,355,440 that relates to the International Space Station (ISS) Program Office’s overstatement of on-orbit award fee retained dollars.⁴⁸ ISS Milestone Flight 2R was the first of seven on-orbit award fee evaluation milestones and comprises 15 percent of the total on-orbit award fee performance evaluation. NASA’s Performance Incentive Determination Official⁴⁹ evaluated Boeing’s ISS on-orbit performance, through Milestone Flight 2R, at 100 percent.

At the time of the first on-orbit performance evaluation, The Boeing Company’s (Boeing’s) earned on-ground award fee was \$118,504,482. We calculated that Boeing was entitled to retain \$17,775,672 as shown in Table D-1.

Table D-1. Correct Calculation of On-Orbit Award Fee Retained Dollars

\$ 118,504,482		On-Ground Award Fee Earned Dollars*
<u> x 15 %</u>		Milestone A Award Fee Percentage
\$ 17,775,672		Subtotal
<u> x 100 %</u>		Performance Incentive Determination Official Evaluation
<u><u>\$ 17,775,672</u></u>		Subtotal

*Earned dollars are the results of each periodic on-ground award fee determination (on-ground award fee dollars available multiplied by an award fee score expressed as a percentage).

However, in compiling the earned on-ground award fee, ISS Program Office personnel overstated the fee pool as \$127,540,745. This overstatement of \$9,036,263 (\$127,540,745 - \$118,504,482) was the result of including the FY 2000 Forward Technical Performance Award Fee earned amount of \$9,031,884 and a \$4,379 clerical error.⁵⁰ This error caused the on-orbit award fee retained dollars to be overstated by \$1,355,440 (\$19,131,112 - \$17,775,672). Details are in Table D-2.

⁴⁸Retained dollars are those that become final after each on-orbit award fee period and that are no longer subject to being recouped by NASA.

⁴⁹The Performance Incentive Determining Official is the ISS Program Lead Center Director at Lyndon B. Johnson Space Center.

⁵⁰The ISS Contracting Officer described the \$4,379 overstatement of the on-ground award fee earned dollars as a clerical error. The ISS Program Office modified the contract to correct this error.

Table D-2. Erroneous Calculation of On-Orbit Award Fee Retained Dollars

\$ 127,540,745	On-Ground Award Fee Earned Dollars
<u> x 15 %</u>	Milestone A Award Fee Percentage
\$ 19,131,112	Subtotal
<u> x 100 %</u>	Performance Incentive Determination Official Evaluation
<u>\$ 19,131,112</u>	On-Orbit Award Fee Retained Dollars

At contract completion, Boeing is required to refund to NASA the excess of on-ground award fee earned dollars over the on-orbit award fee retained dollars. Accordingly, the overstatement could have caused the refund to be \$1,355,440 less than what is actually due. However, the ISS Contracting Officer took appropriate action to correct the error by issuing a contract modification.

Appendix E. Procurement Requirements

This appendix provides Federal Acquisition Regulation (FAR) and NASA FAR Supplement clauses discussed in the report.

FAR 15.402, “Pricing Policy”

Contracting officers must--

- (a) Purchase supplies and services from responsible sources at fair and reasonable prices. In establishing the reasonableness of the offered prices, the contracting officer shall not obtain more information than is necessary. To the extent that cost or pricing data are not required by 15.403-4, the contracting officer shall generally use the following order of preference in determining the type of information required:
 - (1) No additional information from the offeror, if the price is based on adequate price competition, except as provided by 15.403-3(b).
 - (2) Information other than cost or pricing data:
 - (i) Information related to prices (e.g., established catalog or market prices or previous contract prices), relying first on information available within the Government; second, on information obtained from sources other than the offeror; and, if necessary, on information obtained from the offeror. When obtaining information from the offeror is necessary, unless an exception under 15.403-1(b)(1) or (2) applies, such information submitted by the offeror shall include, at a minimum, appropriate information on the prices at which the same or similar items have been sold previously, adequate for evaluating the reasonableness of the price.
 - (ii) Cost information, that does not meet the definition of cost or pricing data at 2.101.
 - (3) Cost or pricing data. The contracting officer should use every means available to ascertain whether a fair and reasonable price can be determined before requesting cost or pricing data. Contracting officers shall not require unnecessarily the submission of cost or pricing data, because it leads to increased proposal preparation costs, generally extends acquisition lead time, and consumes additional contractor and Government resources.

FAR 15.403-1(b), “Prohibition on Obtaining Cost or Pricing Data”

Exceptions to cost or pricing data requirements. The contracting officer shall not require submission of cost or pricing data to support any action (contracts, subcontracts, or modifications) (but may require information other than cost or pricing data to support a determination of price reasonableness....

- (4) When a waiver has been granted (see standards in paragraph (c)(4) of this subsection); . . .

FAR 15.403-1(c)(4), “Waivers”

The head of the contracting activity (HCA) may, without power of delegation, waive the requirement for submission of cost or pricing data in exceptional cases. The authorization for the waiver and the supporting rationale shall be in writing. The HCA may consider waiving the requirement if the price can be determined to be fair and reasonable without submission of cost or pricing data.

FAR 15.403-3(a)(1), “Requiring Information Other Than Cost or Pricing Data”

The contracting officer is responsible for obtaining information that is adequate for evaluating the reasonableness of the price or determining cost realism, but the contracting officer should not obtain more information than is necessary (see 15.402(a)). If the contracting officer cannot obtain adequate information from sources other than the offeror, the contracting officer must require submission of information other than cost or pricing data from the offeror that is adequate to determine a fair and reasonable price.

FAR 15.403-4(a)(1), “Requiring Cost or Pricing Data”

The contracting officer must obtain cost or pricing data only if the contracting officer concludes that none of the exceptions in 15.403-1(b) applies. However, if the contracting officer has sufficient information available to determine price reasonableness, then the contracting officer should consider requesting a waiver under the exception at 15.403-1(b)(4).

FAR 15.404-1, “Proposal Analysis Techniques”

- (a) General. The objective of proposal analysis is to ensure that the final agreed-to price is fair and reasonable.
 - (1) The contracting officer is responsible for evaluating the reasonableness of the offered prices. The analytical techniques and procedures described in this subsection may be used, singly or in combination with others, to ensure that the final price is fair and reasonable. The complexity and circumstances of each acquisition should determine the level of detail of the analysis required.

Appendix E

- (2) Price analysis shall be used when cost or pricing data are not required (see paragraph (b) of this subsection and 15.404-3).
- (3) Cost analysis shall be used to evaluate the reasonableness of individual cost elements when cost or pricing data are required. Price analysis should be used to verify that the overall price offered is fair and reasonable.
- (4) Cost analysis may also be used to evaluate information other than cost or pricing data to determine cost reasonableness or cost realism.

FAR 15.404-1(b), “Price Analysis”

- (1) Price analysis is the process of examining and evaluating a proposed price without evaluating its separate cost elements and proposed profit.
- (2) The Government may use various price analysis techniques and procedures to ensure a fair and reasonable price.

FAR 31.201-3(a), “Determining Reasonableness”

... reasonableness of specific costs must be examined with particular care in connection with firms or their separate divisions that may not be subject to effective competitive restraints. No presumption of reasonableness shall be attached to the incurrence of costs by a contractor.

NASA FAR Supplement 1807.71, “Master Buy Plan”

The Master Buy Plan provides information on planned acquisitions to enable management to focus its attention on a representative selection of high-dollar value and otherwise sensitive acquisitions.

NASA FAR Supplement 1807.7101, “Applicability”

- (a) The Master Buy Plan applies to each negotiated acquisition, including supplemental agreements and acquisitions through or from other Government agencies, where the dollar value, including the aggregate amount of options, follow-on acquisitions, or later phases of multi-phase acquisitions, is expected to equal or exceed \$50,000,000.
- (b) For initial annual Master Buy Plan submission only, each installation shall submit its three largest acquisitions regardless of dollar value and all acquisitions over \$50,000,000.

- (c) The procedure also applies to: (1) Any supplemental agreement that contains either new work, a debit change order, or a credit change order (or any combination/ consolidation thereof), if the absolute value of the actions equals or exceeds \$50,000,000 (e.g., the absolute value of a supplemental agreement adding \$30,000,000 of new work and deleting \$30,000,000 of work is \$60,000,000, and is therefore subject to the Master Buy Plan).

NASA FAR Supplement 1807.7102-3, “Selection and Notification Procedures”

- (a) The Headquarters Office of Procurement (Code HS) shall select acquisition documents from the Master Buy Plan and amendments to Master Buy Plans to receive Headquarters review and approval and shall designate source selection officials.
- (b) When, subsequent to document selection or delegation, an acquisition is changed (for example, increase or decrease in dollar amount, change in requirement), canceled, superseded, deferred, or becomes no longer subject to the Master Buy Plan procedures in accordance with the criteria in 1807.7101, the installation shall immediately notify Code HS, giving the reasons. Code HS shall notify the installation's procurement office in writing of any further action that may be required.
- (c) Acquisition documents not selected for Headquarters review will be subject to after-the-fact reviews by Headquarters during normal procurement management surveys or other special reviews. Acquisition delegations may subsequently be rescinded if a Headquarters review is deemed appropriate.

NASA FAR Supplement 1816.402-270, “NASA Technical Performance Incentives”

- (a) Pursuant to the guidelines in 1816.402, NASA has determined that a performance incentive shall be included in all contracts based on performance-oriented documents (see FAR 11.101(a)), except those awarded under the commercial item procedures of FAR Part 12, where the primary deliverable(s) is (are) hardware with a total value (including options) greater than \$25 million. Any exception to this requirement shall be approved in writing by the Center Director. Performance incentives may be included in hardware contracts valued under \$25 million acquired under procedures other than Part 12 at the discretion of the procurement officer upon consideration of the guidelines in 1816.402. Performance incentives, which are objective and measure hardware performance after delivery and acceptance, are separate from other incentives, such as cost or delivery incentives.

Appendix E

- (b) When a performance incentive is used, it shall be structured to be both positive and negative based on hardware performance after delivery and acceptance, unless the contract type requires complete contractor liability for product performance (e.g., fixed price).

NASA FAR Supplement 1816.405-274(b), “Award Fee Evaluation Factors”

Evaluation factors will be developed by the contracting officer based upon the characteristics of an individual procurement. Normally, technical and schedule considerations will be included in all CPAF [cost plus award fee] contracts as evaluation factors. Cost control shall be included as an evaluation factor in all CPAF contracts. When explicit evaluation factor weightings are used, cost control shall be no less than 25 percent of the total weighted evaluation factors. The predominant consideration of the cost control evaluation should be a measurement of the contractor's performance against the negotiated estimated cost of the contract. This estimated cost may include the value of undefinitized change orders when appropriate.

Appendix F. Prior Audits and Other Reviews

Office of Inspector General Reports

IG-00-007, “Performance Management of the International Space Station Contract,” February 16, 2000. The Boeing Company (Boeing) reported unrealistically low estimates of projected cost overruns and presented the cost data to indicate that no additional cost overrun would occur. Although the Program Office was aware and had evidence of cost overruns and schedule slippages, it did not refute the contractor’s estimate. As a result, Boeing received unearned incentive fees totaling \$16 million that the Agency later recouped. Also, Boeing did not promptly notify NASA about the potential cost increase due to Boeing’s reorganizations. NASA will be charged an estimated \$35 million in reorganization costs for the International Space Station (ISS) Program through contract completion. The contractor submitted its proposals too late to be negotiated prior to the provisional billing rates being adjusted upward and paid by NASA at the higher levels. The proposed increases were submitted with little or no forewarning to NASA. As a result, NASA may be paying higher costs than necessary before the Government completes its review and negotiation of the proposed pricing and billing rates.

IG-99-007, “Space Station Corrective Action Plans,” January 28, 1999. Boeing’s corrective action plans and Johnson’s oversight of the plans needed improvement. The ISS Program had experienced a continued deterioration in cost and schedule performance after a September 1997 adjustment of the contract cost baseline, but variance analyses and corrective action plans had not been effectively utilized to control the negative variances. Additionally, Johnson did not provide effective oversight of Government surveillance of Boeing’s Earned Value Management System, including verifying whether Boeing took corrective actions related to cost variances and schedule variances. As a result, the ISS Program lacked assurance that negative variances have been identified and that corrective actions are being taken to reduce associated risk. Further, Johnson did not ensure that Boeing took corrective actions on conditions noted since at least March 1997 to accurately prepare and submit Variance Analysis Reports. As a result, Variance Analysis Reports may not adequately identify cost and schedule risks.

IG-98-002, “Space Station Performance Measurement Cost Data,” November 13, 1997. Boeing did not report reasonable cost data in its monthly performance reports on the ISS contract because its monthly reports to NASA did not reflect its best estimate at completion. Instead, Boeing reduced the monthly estimates provided by major subcontractors under the prime contract in order to report a smaller cost overrun. As a result, NASA received inaccurate cost data on the ISS contract.

Appendix F

General Accounting Office (GAO) Reports

GAO-01-258, “Major Management Challenges and Program Risk: National Aeronautics and Space Administration,” January 1, 2001. GAO cited contract management and ISS costs as challenges that warrant increased NASA attention. Regarding contract management, GAO stated that it is exceedingly important for NASA to have accurate and reliable information on contract spending and to exercise effective contract oversight. Regarding the ISS, GAO stated NASA will continue to face challenges in controlling the cost and schedule of the program. GAO continued to categorize contract management as high risk due to NASA’s ineffective systems and process for overseeing contractor activities. GAO also stated that NASA has made substantial progress in addressing these challenges, but key steps are still needed toward correcting them.

Appendix G. Management's Response

National Aeronautics and
Space Administration
Lyndon B. Johnson Space Center
2101 NASA Road 1
Houston, Texas 77058-3696



Reply to Attn of: BD5

OCT 15 2001


TO: NASA Headquarters
Attn: W/Assistant Inspector General for Audits

FROM: AA/Acting Director

SUBJECT: Management's Response to OIG's Audit of Restructuring of the
International Space Station Contract, A-00-055-00

We have reviewed the subject draft audit report and thank you for the opportunity to provide comments. This response has been coordinated with the Office of Space Flight and the Office of Procurement. We do not agree with the audit findings as discussed in the attached comments.

If you have any questions regarding this response, please contact Ms. Pat Ritterhouse, JSC Audit Liaison Representative, at 281-483-4220.

for 
Roy S. Estess

Enclosure

cc:
BA/R. K. Gish
BG/W. A. Thomas
HQ/H/T. S. Luedtke
HQ/HK/J. E. Horvath
HQ/JM/J. D. Werner
HQ/M/J. H. Rothenberg
HQ/MX/G. A. Gabourel

Management's Response to OIG's Audit of Restructuring of the
International Space Station Contract, A-00-055-00

General Comments

The Johnson Space Center International Space Station (ISS) Business Office and NASA Headquarters Office of Procurement had numerous discussions with the OIG during the survey and audit phases of assignment A-00-055-00. The resulting report fails to present a balanced view of those discussions, and it does not represent an accurate portrayal of the restructuring activity as a whole. The report takes a very narrow reading of selected portions of the Federal Acquisition Regulation (FAR) and NASA FAR Supplement, and along with misunderstandings of the ISS prime contract restructure, leaves the reader with the false impression that the restructure activity was not carried out in accordance with Federal procurement policy, and may have created additional risk for the ISS program.

The ISS contract restructure activity did comply with Federal and NASA acquisition policy and resulted in a significantly improved contract environment to facilitate successful and efficient performance for the remaining effort under the contract. The restructure was accomplished in a manner that was fair to both the Government and the contractor, and protected the Government's interests.

Specific Comments

We take exception to many of the specific wordings in the audit findings, however, rather than providing a very lengthy, and potentially confusing, line-by-line discussion of exceptions, we will address the key concerns raised in the audit.

Restructure Environment

The ISS prime contract was definitized in January 1995, for a very complex, long-term development program. By 1999, the contract had experienced significant cost growth and there was an accumulation of contractual issues that needed to be resolved before they could grow into problems that could adversely affect performance on the contract. The program environment at that time had become extremely challenging. The ISS program management and technical communities, both Government and contractor, were faced with the challenges of completing United States On-orbit Segment (USOS) hardware and software, while simultaneously preparing to support an unprecedented level of spaceflight activity to assemble the on-orbit vehicle.

The number one priority of the program at that time was to safely and successfully construct the ISS. Successful on-orbit assembly and completion of Design, Development, Test and Evaluation (DDT&E), were also the keys to future program cost control, and success required that the full attention of the ISS program management and technical community be focused on completing the job in front of them. The program needed to have a contract that provided the proper focus and motivation to ensure future success, and also a contract that minimized the administrative overhead burden on limited program resources. The contract restructure accomplished this in a variety of ways, as discussed in more detail below.

Enclosure

See Appendix H,
OIG Comment 1

Restructure Improvements

One contract problem addressed by the restructure was a growing number of Request for Equitable Adjustment (RFEA) issues. At the time that we elected to pursue a global settlement of these issues, the contractor had identified 38 separate issues. These were past cost growth issues on the contract that Boeing believed were not the result of their performance. The RFEA issues did not represent new products or services, but rather, increased effort (and thus cost) to perform existing contract content. It is important to note that the technical challenges and solutions associated with the RFEA issues were worked through the ISS Program's normal panels, boards and other technical oversight mechanisms. The process used to settle the RFEA issues served only to address the necessary adjustments to contract value. After review, it was determined that a global settlement of RFEA issues would avoid not only the significant costs associated with individual proposal settlement for each of the 38 issues, but of equal or greater importance, it avoided the need to distract the technical community with the extensive technical support that would have been required during a very lengthy process to prepare, evaluate and settle individual proposals.

See Appendix H,
OIG Comment 2

See Appendix H,
OIG Comment 3

A second major contract issue addressed in the contract restructure was that there was no longer a viable fee incentive for cost control on the contract. The contract, prior to the restructure, had a Cost Plus Award Fee for technical performance (5 percent maximum) with a share-line fee incentive on cost control. Under this arrangement, the contractor would earn 5 percent fee if the actual cost of performance equaled the target cost negotiated for the contract. For a cost underrun, the contractor would keep 15 cents of every dollar of underrun up to a maximum of 15 percent fee, and for a cost overrun the contractor would lose 15 cents of fee for every dollar of overrun down to a minimum of 2 percent fee. For effort under this fee arrangement, the total maximum fee that the contractor could possibly earn was 20%.

By 1999, the amount of overrun on the contract had grown to the point where the Government's view was that the contractor was effectively frozen at the minimum cost incentive fee of 2 percent for the remainder of the contract. For work behind us, this was simply the contractual outcome of past performance difficulties and the restructure did nothing to alter the loss of incentive fee that occurred. However, for the years of work remaining on the contract, this condition posed significant problems.

For effort yet to be performed, including that already on contract, as well as any new work to be added, NASA would be unable to financially penalize any additional cost overrun, nor could NASA financially reward good future cost performance on new work. In other words, we effectively had a fixed fee for cost control on one of the agency's largest contracts. Essentially fixed at the minimum incentive fee also meant that, even if future work added to the contract had excellent cost and technical performance, Boeing could only hope to earn a total maximum fee of 7%, on complex development and integration work. Such a low maximum earnings potential on new work might have made it difficult for Boeing to continue to dedicate its highest quality engineering and software resources to the program.

Also, by the end of 1999 the design and fabrication of the United States On-Orbit Segment, work that Boeing had maximum control over, was nearing completion and the

predominant work under the contract was beginning to shift to the support of on-orbit assembly and operations -- work that is significantly influenced by factors outside of Boeing's control, such as changes to the assembly sequence and Shuttle flight schedules. The contract restructure created a mechanism to better respond to such outside influences.

The contract restructure successfully addressed all three of these contract problems -- it maintained the integrity of the cost incentive for all previously definitized work while restoring a viable cost control component to the fee determination for all future effort, it globally settled not only the original 38 RFEA issues (with 5 specifically identified exclusions) but it also settled all other potential RFEA issues on the contract that were known at that time. The contract restructure also reorganized the statement of work and created an annual provisioning mechanism for the integration and operations work.

The restructure settlement was fair and reasonable to both the Government and the contractor. It successfully resolved the majority of known contractual issues and facilitated the program's ability to keep its focus on the challenging work ahead. The settlement was also consistent with Federal and NASA procurement policy.

Federal Acquisition Regulation Requirements

The Federal Acquisition Regulation establishes uniform policies and procedures for Federal acquisitions. It covers the full spectrum of typical acquisition situations, primarily in a stand-alone fashion, so that general policies and specific prohibitions are clear. However, the FAR cannot possibly provide (nor is it intended to provide) specific coverage for every possible situation that might arise during the performance of a contract. The FAR does not address what to do when, halfway through a major contract, the incentive fee arrangement exceeds the range of incentive effectiveness. It likewise does not address how to pursue a global settlement of numerous RFEA issues in an effective and efficient manner.

It is our firm position that the contract restructure was carried out in accordance with the applicable provisions of the FAR. Though not mentioned in the draft OIG report, the applicable FAR provisions include Part 1, which provides the guiding principles for the Federal Acquisition System. Part 1 recognizes that the FAR does not address every contracting situation and encourages the use of sound business judgment to manage risks and deliver good value to the customer in a manner that is fair to both the Government and contractor.

FAR 1.102 (d) states that, "The role of each member of the Acquisition Team is to exercise personal initiative and sound business judgment in providing the best value product or service to meet the customer's needs. In exercising initiative, Government members of the Acquisition Team may assume ***if a specific strategy, practice, policy or procedure is in the best interests of the Government and is not addressed in the FAR, nor prohibited by law (statute or case law), Executive order or other regulation, that the strategy, practice, policy or procedure is a permissible exercise of authority*** [emphasis added]." FAR 1.102-1(b) further states, "All participants in the System are responsible for making acquisition decisions that deliver the best value product or service to the customer. ***Best value must be viewed from a broad perspective and is achieved by balancing the many competing interests in***

See Appendix H,
OIG Comment 4

See Appendix H,
OIG Comment 5

See Appendix H,
OIG Comment 6

the System. The result is a system which works better and costs less [emphasis added].”

FAR 1.102-2 (c)(2) further provides that, “To achieve efficient operations, **the System must shift its focus from “risk avoidance” to one of “risk management”** [emphasis added]. The cost to the taxpayer of attempting to eliminate all risk is prohibitive. The Executive Branch will accept and manage the risk associated with empowering local procurement officials to take independent action based on their professional judgment.”

These principles are part of the very foundation of the FAR and are directly applicable to the contract restructure activity.

Contract Considerations for Global Settlement

Global settlements are not specifically addressed in the Federal Acquisition Regulation and there is no single “correct” way to accomplish one that will fit all contracting environments. There are many factors to consider in deciding whether a global settlement is possible and if so, how to accomplish one. The approach that we used worked because it was tailored to the unique contract situation that we had. The draft OIG report did not fully address all of the factors supporting why it was our judgment that we could, with very little risk, globally settle the RFEA costs without receiving and negotiating individual proposals for each of the 38 issues.

The ISS contract is a cost reimbursement type. Under this contract type, negotiations are conducted to establish an estimated cost for the contract. However, the contractor is paid the actual cost incurred in performing the contract rather than the amount negotiated. Within certain restrictions not pertinent to the discussion here, basically, if a contractor incurs either more or less than the estimated cost the contractor is paid the actual incurred cost. There are contract management provisions and processes to ensure that contractors are only reimbursed for allowable costs.

One of the primary purposes for the negotiated estimated cost is to provide a basis for establishing the fee earning potential for the contract, and the basis for performance measurement. The contractor’s actual cost performance against the estimated cost should be a major factor in determining how much of the potential fee the contractor will actually earn.

On the ISS contract, when Boeing is reimbursed the actual cost of performance it would include allowable costs associated with RFEA proposal preparation, negotiation and settlement. Those costs are ultimately added to contract value. Even for cost overruns, the contract is modified to increase the contract value by the amount of the overrun.

The settling of RFEA issues determines how much of already projected growth in the Contract Estimate at Completion was caused by the Government rather than by Contractor performance. If the cost growth were caused by Government action or inaction, Boeing would be entitled to an equitable upward adjustment to cost and fee on the contract, but even if an issue were determined not to be caused by the Government, the contract value would still be increased by the estimated cost of the issue.

See Appendix H,
OIG Comment 7

See Appendix H,
OIG Comment 8

As RFEA issues were being identified by Boeing, they were incorporated into Boeing's Performance Measurement System (PMS). This system was Boeing's official cost and schedule reporting tool. It was the system that was used by both Boeing and the Government to track actual cost and schedule performance, and served as the starting point for periodic independent Government projections of the expected cost to complete the contract. The PMS system was used to establish the cost settlement for the Global settlement of RFEA's, in lieu of receiving and negotiating individual proposals.

Risk Considerations in Global Settlement

Using PMS data did not create a risk of adding too much fee in the Global settlement. The relatively small amount of fee included in the settlement did not use PMS values as a cost basis. The fee was supported by a separate analysis of only the issues that could be reasonably quantified by the Government without proposals and for which we could establish clear entitlement to additional fee without proposals.

Additionally, using PMS data did not create a risk of overpayment of fee through the fee arrangement. In many contracting situations, the Global settlement that we completed would not be possible because many contracts have a direct mathematical relationship between estimated cost and the profit or fee realized by the contractor (i.e., cost incentive fee relationship). There are many situations where it might be too risky to establish contract value without a thorough analysis of cost. Because on our contract, our cost incentive was no longer effective and we removed the share-line cost incentive, we did not have any real risk in that area.

With regard to the risk of using PMS data for the cost settlement, NASA conducted, on a quarterly basis, reviews of Boeing's estimate at completion from the PMS system and made its own Government estimate. The NASA estimates consistently projected a higher cost of completing the contract than Boeing's. The OIG also had indicated in reviews that it had conducted, that they believed that the cost of completing the contract was higher than Boeing was reporting in their Performance Measurement System.

One of the factors that supported our judgment that there was little risk in using values from Boeing's PMS for the Global settlement cost adjustment, was the fact that, as long as no additional fee was attached to those costs, they were a trackable part of a PMS estimate that the Government believed was understated, and ultimately all of the cost will be incorporated into contract value. Even though we had no basis to know or believe that RFEA costs were overstated in the PMS, if the amounts were on the high side, it would simply mean that subsequent adjustments to contract value to cover the eventual total cost of the contract would be lower.

We also considered whether there was a risk that if the subset of contract value attributable to RFEA's was overstated, it might increase the likelihood of additional cost being incurred on the contract. This risk, too, was very low. Boeing management was under significant pressure to reduce the contract overrun, and the PMS cost estimates were the baseline that they were managing and measuring against. All of the contract

cost account managers were highly motivated to come in as low as possible against their baseline.

In addition, RFEA's are unlike contract change orders where the work is new and the technical approaches are sometimes undefined, and proposal fact-finding can potentially help define the technical approach. RFEA's are cost growth issues on existing authorized work that is already being managed technically by standard program management processes. The RFEA costs are already being managed as a subset of managing the baseline work.

In comparison to the low risk associated with the Global settlement that was reached, there was clear risk that was significant in both probability and impact, with proceeding down a path of negotiating the large number of individual proposals. The risk of distraction to the program was significant and high probability. The risk of additional cost to the Government associated with preparation and definitization of proposals was certain. In addition, there was a significant risk that we would have prolonged the needed modification to the fee structure because it would be problematic to end the share-line until most of the RFEA issues had been resolved.

Modification of ISS Contract Fee Structure

Neither the Federal Acquisition Regulation nor the NASA FAR Supplement addresses how to re-incentivize a share-line cost incentive that is no longer effective. So, although it is our position that we fully complied with the intent of those regulations, it is difficult to show a direct correlation between the regulations and the transaction that we undertook.

We needed to balance a number of goals in creating a revised fee structure. We did not want to alter the fee arrangement more than necessary. We did not want to change, in any way, the fee loss that had been experienced for cost performance prior to the restructure. At the same time, for any new work added to contract value, we did want to create a balanced fee incentive for cost control. We wanted a fee structure that would positively motivate future cost performance and offer an opportunity for the contractor to earn a fair return for high quality, cost efficient performance for future work on this challenging contract.

We believe that we achieved those goals. The new fee arrangement offered a maximum potential fee of 11% for most new work (5% cost award fee and 6% technical award fee). This was an increase from the previous "nominal" fee rate of 10%, which as previously discussed, had effectively been reduced to a maximum potential fee of 7% because of the minimum incentive fee problem. The new 11% fee arrangement was also different in that it had no guaranteed minimum fee. Under the previous arrangement the contractor could never lose the 2% minimum incentive fee. The new arrangement was therefore balanced in that the contractor could potentially earn more for excellent performance, but they could also potentially lose more for poor performance.

The share-line incentive that was on the contract prior to the restructure was directly tied to performance against the estimated contract cost. In fact, that was all that it considered, and was a pure mathematical relationship. When we ended the share-line

See Appendix H,
OIG Comment 9

See Appendix H,
OIG Comment 10

See Appendix H,
OIG Comment 11

incentive, the contractor was already experiencing a variance at completion of \$986 million. This cost performance was reflected in the achievement of only the minimum available cost incentive fee (the 2 percent described above). As stated above, this performance was baselined (a line in the sand was drawn) and the contract performance and fee determined. The concept implemented thereafter was one in which NASA could provide a positive and negative fee motivation for cost management.

Finally, the audit notes that the arrangement for dealing with on-orbit fee was modified and suggests that this will impact contractor motivation. With regard to on-orbit fee evaluations, the ISS contract has never had all fee subject to on-orbit evaluation. Fee associated with cost control has never been subject to on-orbit assessment. The new fee arrangement did not give up any existing contractual rights in on-orbit fee evaluations. The products of all work content placed in orbit under the contract, whether added before or after contract restructure are subject to on-orbit evaluation. The only thing changed in the restructure was that we limited the amount of fee subject to loss in on-orbit evaluations to a maximum of \$202 million. It was considered by the ISS program to be a sufficient negative performance incentive, without being overly punitive to the contractor.

Audit Recommendations

Based upon the preceding discussion of the ISS contract restructure, the following comments are provided on the draft audit report's specific recommendations. While we do not concur with most of the audit recommendations, we will strive to improve documentation associated with major contract transactions so that future misunderstandings might be avoided.

Recommendation 1

"The Acting Director, Lyndon B. Johnson Space Center, should, for future modifications of the ISS contract, direct the contracting officer to perform an adequate price or cost analysis as necessary to obtain fair and reasonable prices and to properly support justifications for a waiver, as required by the FAR."

JSC Comments

We do not concur with this recommendation because it merely restates existing regulatory and policy requirements. As we have indicated above, in the restructure activity, applicable regulations and policies were followed. Since there has not been a nonconformance with applicable requirements, Acting Center Director direction to follow existing requirements is not necessary. Therefore, we consider this recommendation closed.

Recommendation 2

"The Associate Administrator for Procurement should establish procedures to ensure adequate oversight on Master Buy Plan delegations for ISS procurement actions."

Revised.

The Office of Procurement (NASA Headquarters, Code H) Comments

We concur with this recommendation. In January 2000, as part of the Office of Procurement's ISO 9000 activities, an Office Work Instruction was developed to improve the consistency of the Master Buy Plan (MBP) process. This has improved the rigor in the current procedures to obtain timely MBP amendments from the centers and formal disposition of those amendments by the centers.

The current MBP procedures are adequate, especially with the automation of the MBP process, which expedites communication between the centers and Headquarters with regard to MBP items. We intend in the disposition of the FY 2002 MBP submissions from the centers to emphasize the importance of updating the status field for all MBP items in the automated MBP system on a real time basis. These updates will increase the utility of the MBP system as a management tool that should enable Headquarters analysts to engage in timely dialogues with their center counterparts regarding ongoing MBP items and to assess the possible need for submission of formal amendments to those items as significant changes in status occur.

While acknowledging that more rigorous adherence to the established MBP procedures would have been appropriate in managing changes to the ISS program, as noted in the draft report, the Office of Procurement maintains that sufficient insight into those changes was afforded by the ongoing communications, both face-to-face meetings and telecons, among the Center ISS procurement personnel and procurement analysts responsible for the ISS Program in the Office of Procurement. These communications gave the Office of Procurement confidence that JSC was performing sufficient analysis, albeit not traditional cost or price analysis usually associated with pre-award contract negotiation, of the cumulative value of the RFEAs and related fee adjustment to assure an equitable settlement could be achieved among the parties. Based on the above Code H considers this recommendation Closed.

Recommendation 3

"The Acting Director, Lyndon B. Johnson Space Center, should perform a cost-benefit analysis for the implementation of change order accounting for the ISS contract."

JSC Comments

We do not concur with this recommendation. We do know that change order accounting would be expensive to implement on the contract and any benefits, particularly at this stage of the contract, would be very speculative. Reliable cost segregation of change work versus baseline work is often problematic.

In addition, we do not see the relevance of this recommendation to the contract restructure. The purpose of the change order accounting clause is to facilitate definitization of change orders that are issued by the Government. It would not be useful for RFEA issues because there is no change order issued that would initiate the segregation of costs. Also, because the clause only requires cost segregation until completion of definitization of the change order, it would not provide any useful basis

Deleted.

Appendix G

Renumbered as
Recommendation 3

for measuring the actual performance on a change order to the definitized contract value. Based on the above, we consider this recommendation closed.

Recommendation 4

"The Acting Director, Lyndon B. Johnson Space Center, should reinstate the repayment provision in the ISS contract for work added after September 1999 that relates to on-orbit performance, and establish fee pools that are consistent with Agency criteria. Alternately, Johnson should obtain a waiver from the requirements of NASA FAR Supplement 1816.402-270, 1816.405-271, 1816.405-274, and 1852.216-77 regarding the new ISS fee pools, with sufficient supporting documentation."

JSC Comments

We do not concur with this recommendation. As discussed in our comments above, the revisions to the fee structure during the contract restructure gave up no existing rights with regard to on-orbit performance. The full technical content of the on-orbit vehicle under this contract, both before and after the contract restructure is subject to on-orbit performance assessment. The only thing that the restructure did was to limit the maximum possible fee loss, due to on-orbit performance, to no more than \$202 million dollars.

We have reviewed the referenced NASA FAR Supplement citations and have concluded that a waiver is unnecessary. Based on the above, we consider this recommendation closed.

Appendix H. OIG Comments on Management's Response

The Johnson Space Center (Johnson) provided the following comments in its response to our draft report. Our responses to the comments are also presented.

Management Comments. Johnson takes exception to many of the specific wordings in the audit findings. However, rather than providing a lengthy and potentially confusing line-by-line discussion of the exceptions, Johnson addressed the key concerns raised in the audit.

1. OIG Comments. Although we provided Johnson with a working copy of the draft report in May, Johnson decided not to discuss it with us. Also, Johnson did not respond to our offer to discuss the draft report after we issued it in August. Johnson last met with us to discuss our findings in March. Nonetheless, we believe we have fairly presented Johnson's positions in this report and have modified the report where appropriate.

Management Comments. The technical challenges and solutions associated with the request for equitable adjustment (RFEA) issues were worked through the International Space Station (ISS) Program's normal panels, boards, and other technical oversight mechanisms. The process used to settle the RFEA issues served only to address the necessary adjustments to contract value.

2. OIG Comments. Our report does not question the technical validity of the RFEA issues but rather the lack of a price or cost analysis, which the Federal Acquisition Regulation (FAR) requires in addition to a technical analysis. Johnson neither performed an adequate price analysis nor adequately supported the waiver of the FAR requirement to obtain certified cost or pricing data from Boeing. We believe that Johnson has minimized the importance of properly determining RFEA costs.

Management Comments. A global settlement of RFEA issues would avoid not only the significant costs associated with individual proposal settlement for each of the 38 issues, but of equal or greater importance, the global settlement avoided the need to distract the technical community with the extensive technical support that would have been required during a very lengthy process to prepare, evaluate, and settle individual proposals.

3. OIG Comments. Johnson could not provide analytical support for its statement that the global settlement avoided significant costs associated with individual proposal settlements. Without such support and without a price or cost analysis, there is no assurance NASA received a fair and reasonable price for the RFEA's or saved costs on the global settlement.

Appendix H

Management Comments. The restructure settlement was fair and reasonable to both the Government and the contractor. The restructure settlement successfully resolved the majority of known contractual issues and facilitated the Program's ability to keep its focus on the challenging work ahead. The settlement was consistent with the Federal and NASA procurement policy.

4. OIG Comments. While the restructuring may have facilitated the program's ability to focus on the challenging work ahead, Johnson could not provide evidence that the settlement was fair and reasonable to both parties. However, we did determine that the settlement did not comply with procurement regulations and that Johnson did not obtain waivers for its deviations from those regulations.

Management Comments. The FAR cannot provide (and is not intended to provide) specific coverage for every situation that might arise during the performance of a contract. The FAR does not address what to do when, halfway through a major contract, the incentive fee arrangement exceeds the range of incentive effectiveness. The FAR likewise does not address how to pursue a global settlement of numerous RFEA issues in an effective and efficient manner.

5. OIG Comments. We agree that the FAR does not address every situation that could arise, but it does specify how to reach an agreement on a contract modification. The FAR states that the contracting officer must at least perform a price analysis. Johnson did not perform either a price or a cost analysis of the RFEA's and did not adequately support its waiver to obtain certified cost and pricing data. Johnson accepted Boeing's costs at face value based on the information in Boeing's monthly reports. However, Boeing's cost estimates have been inadequate, resulting in about a \$1 billion overrun since contract inception.

Management Comments. Though not mentioned in the draft report, the applicable FAR provisions include Part 1, which provides the guiding principles for the Federal Acquisition System. Part 1 recognizes that the FAR does not address every contracting situation and encourages the use of sound business judgment to manage risks and deliver good value to the customer in a manner that is fair to both the Government and the contractor.

6. OIG Comments. The general provisions in Part 1 of the FAR are not a license to deviate without a waiver from specific provisions of other parts of the FAR, as discussed in this report. Johnson was not able to demonstrate that the global settlement was fair to the Government. We believe that Boeing benefited from the global settlement by obtaining a better fee arrangement and by having its proposed costs accepted at face value. We could not determine whether the Government received a fair deal.

Management Comments. The ISS contract is a cost-reimbursement-type contract. The contractor is paid the actual cost incurred in performing the contract. There are contract management provisions and processes to ensure that contractors are reimbursed only for allowable costs.

7. OIG Comments. Management has a responsibility to perform a price or cost analysis to determine whether costs are fair and reasonable. Johnson implies that Boeing should be paid whatever amount it bills NASA and that the responsibility for determining reasonableness belongs elsewhere, such as to the Defense Contract Audit Agency, which is responsible for performing an audit of incurred costs at the end of the ISS contract.

Management Comments. As Boeing was identifying RFEA issues, it incorporated them into its Performance Measurement System. The system was Boeing's official cost and schedule reporting tool that Boeing and the Government used to track actual cost and schedule performance and that served as the starting point for periodic independent Government projections of the expected cost to complete the contract. The system was used to establish the cost settlement for the global settlement of RFEA's in lieu of receiving and negotiating individual proposals.

8. OIG Comments. As stated in Finding A, the ISS Program Office relied on Boeing's monthly Performance Measurement System Reports to determine whether the RFEA's were fair and reasonable. However, those reports did not contain cost information on individual RFEA's that would be needed to support negotiations because Boeing's Performance Measurement System did not accumulate that information.

Management Comments. RFEA's are unlike contract change orders where the work is new, the technical approaches are sometimes undefined, and proposal fact-finding could help define the technical approach. RFEA's are cost growth issues on existing, authorized work that is already being managed technically by standard program management processes. The RFEA costs are already being managed as a subset of managing the baseline work.

9. OIG Comments. If the RFEA's are just cost growth on existing work already being managed technically, then performing a price or cost analysis on the RFEA's should have been a simple task, should not have hampered negotiations, and would have shown whether NASA was receiving a fair and reasonable price.

Management Comments. Johnson stated that neither the FAR nor the NASA FAR Supplement addresses how "to re-incentivize a share-line cost incentive that is no longer effective."

10. OIG Comments. We agree that neither the FAR nor the NASA FAR Supplement specifically address how to provide a new incentive for the contractor. However, the Government has a responsibility to seek solutions that are properly supported and that ensure it receives a fair deal. Perhaps the Government and the contractor are expected to make a fair deal at the beginning of the contract and live with it.

Management Comments. Johnson wanted a fee structure that would positively motivate future cost performance and offer an opportunity for the contractor to earn a fair return for high quality, cost-efficient performance for future work on this challenging contract.

11. OIG Comments. Unfortunately, the new fee structure eliminated all negative incentive after the restructuring by not requiring provisional fees to be repaid to NASA for hardware failures on orbit. Such an arrangement does not protect the Government's interests. Also, Johnson claims that the new structure allows for Boeing to potentially lose more fee for poor performance. However, that outcome is improbable because unlike the incentive fee evaluations, which were objective and directly affected by overruns, the award fee evaluations are subjective.

Appendix I. Report Distribution

National Aeronautics and Space Administration (NASA) Headquarters

A/Administrator
AI/Associate Deputy Administrator
AA/Chief of Staff
AB/Associate Deputy Administrator for Institutions
B/Acting Chief Financial Officer
B/Comptroller
BF/Director, Financial Management Division
G/General Counsel
H/Associate Administrator for Procurement
HK/Director, Contract Management Division
HS/Director, Program Operations Division
J/Associate Administrator for Management Systems
JM/Director, Management Assessment Division
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NASA Centers

Acting Director, Lyndon B. Johnson Space Center
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Non-NASA Federal Organizations and Individuals

Assistant to the President for Science and Technology Policy
Deputy Associate Director, Energy and Science Division, Office of Management and Budget
Branch Chief, Science and Space Programs Branch, Energy and Science Division, Office of Management and Budget
Managing Director, Acquisition and Sourcing Management Team, General Accounting Office
Senior Professional Staff Member, Senate Subcommittee on Science, Technology, and Space

Appendix I

Chairman and Ranking Minority Member – Congressional Committees and Subcommittees

Senate Committee on Appropriations

Senate Subcommittee on VA, HUD, and Independent Agencies

Senate Committee on Commerce, Science, and Transportation

Senate Subcommittee on Science, Technology, and Space

Senate Committee on Governmental Affairs

House Committee on Appropriations

House Subcommittee on VA, HUD, and Independent Agencies

House Committee on Government Reform and Oversight

House Subcommittee on Government Efficiency, Financial Management, and Intergovernmental Relations

House Subcommittee on National Security, Veterans Affairs, and International Relations

House Subcommittee on Technology and Procurement Policy

House Committee on Science

House Subcommittee on Space and Aeronautics, Committee on Science

Congressional Member

Honorable Pete Sessions, U.S. House of Representatives

NASA Assistant Inspector General for Audits Reader Survey

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Report Title: Restructuring of the International Space Station Contract

Report Number: _____ **Report Date:** _____

Circle the appropriate rating for the following statements.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	N/A
1. The report was clear, readable, and logically organized.	5	4	3	2	1	N/A
2. The report was concise and to the point.	5	4	3	2	1	N/A
3. We effectively communicated the audit objectives, scope, and methodology.	5	4	3	2	1	N/A
4. The report contained sufficient information to support the finding(s) in a balanced and objective manner.	5	4	3	2	1	N/A

Overall, how would you rate the report?

- Excellent Fair
 Very Good Poor
 Good

If you have any additional comments or wish to elaborate on any of the above responses, please write them here. Use additional paper if necessary. _____

How did you use the report? _____

How could we improve our report? _____

How would you identify yourself? (Select one)

- | | |
|---|--|
| <input type="checkbox"/> Congressional Staff | <input type="checkbox"/> Media |
| <input type="checkbox"/> NASA Employee | <input type="checkbox"/> Public Interest |
| <input type="checkbox"/> Private Citizen | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Government: _____ Federal: _____ State: _____ Local: _____ | |

May we contact you about your comments?

Yes: _____ **No:** _____

Name: _____

Telephone: _____

Thank you for your cooperation in completing this survey.

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