AUDIT SUMMARY REPORT

SPACE SHUTTLE RESTRUCTURING

JULY 17, 1997

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July 17, 1997

TO: M/Associate Administrator for Space Flight

FROM: W/Acting Assistant Inspector General for Auditing

SUBJECT: Audit Summary Report
Space Shuttle Restructuring
Assignment No. A-HA-96-001
Final Report No. IG-97-029

The NASA Office of Inspector General (OIG) provided audit advisory services (assignment A-HA-96-001) during NASA's ongoing acquisition activities to consolidate the shuttle contracts into the Space Flight Operations Contract (SFOC). The audit advisory services provided the opportunity to perform reviews of NASA's activities and our opinions as to their reasonableness and completeness. Our opinions were provided in the form of management letters. The purpose of the review was to ensure the award of a consolidated shuttle contract that was timely, satisfied the stated goals of the SFOC, and was in the Government's best interest.

This report summarizes the OIG opinions expressed in the management letters issued, and NASA's responses and actions taken.

If you have any questions, please contact Janice Goodnight, Program Director, HEDS, at (281) 483-4773; Daniel J. Samoviski, Acting Director, Audit Division-A; or me at (202) 358-1232.

Robert J. Wesolowski

Enclosure

cc: ME/L. Cywanowicz
    JM/D. Green
    JSC-BD/P. Ritterhouse
      MAT. Holloway
      MA/J. Boykin
      MM/R. Gish
    KSC-W/L. Diamond
      HM/J. Jennings
      HM-CIC/J. Nary
SPACE SHUTTLE RESTRUCTURING

INTRODUCTION AND BACKGROUND

GOVERNMENT PERFORMANCE AND RESULTS ACT

NASA was faced with budget constraints to control program costs through program management control and operate as a more efficient and effective organization. These requirements continued with the Government Performance and Results Act of 1993 requiring Federal agencies to implement long-term strategic planning activities to effectively measure program outcomes and to systematically hold managers accountable for achieving program results. The initial submission to the Office of Management and Budget (OMB) and Congress is September 30, 1997, with updates at least every three years. Annual Performance Plans to OMB will be required that establish performance goals, measurable objectives, and associated resource requirements required to achieve the agency's long-term goals beginning September 1997 for fiscal year (FY) 1999. Annual Performance Reports that will measure goal achievement and/or identify reasons for failure in goal achievement will be required to be submitted to the President and Congress by March 31, 2000.

Subsequently, the following events took place that were paramount in the restructuring of the Shuttle Program:

OMB CUTS

In July 1993, NASA was directed to cut their budget by OMB attaching a 10 percent reduction to the FY 1995 budget submittal for domestic discretionary spending.

KRAFT REPORT

In 1994 the NASA Administrator established an independent review team to look at ways the Shuttle Program could cut costs. On February 1, 1995, the Space Shuttle Management Independent Review Team Report was issued. (The report, also known as the Kraft Report, recommended that NASA relinquish most of the responsibility for operating the shuttle to a single prime contractor.)

On May 8, 1995, NASA briefed the Shuttle Functional Workforce Review identifying workforce functions which could be consolidated.

ZERO BASE REVIEW

On May 30, 1995, NASA briefed its Zero Base Review. The review was NASA's response to the President's request to all agencies in the Federal Government to identify savings in their 5-year FY 1996 budget request to accommodate his proposed middle-class tax cut. NASA's share was identified as $5 billion in savings taken as 3 percent, 5 percent, 7 percent, and 9 percent of the Agency's FY 1996 budget level from the proposed budgets for the years FY 1997-FY 2000.
In NASA's efforts to follow through with the mandated budget changes, the following recommendations of the various review teams for restructuring the Shuttle Program were implemented:

**SINGLE PRIME ANNOUNCED**

On August 21, 1995, NASA briefed industry in Houston inviting companies to compete for a single prime contract and submit initial proposals by September 11, 1995, even though Lockheed-Martin Space Operations (LMSO) and Rockwell International Corporation (RIC) had announced plans to form a joint venture company called United Space Alliance (USA) on August 2, 1995. Officials of both companies had hoped the announcement would prompt NASA to abandon plans for a formal competition.

On October 27, 1995, the NASA Acquisition Strategy Meeting was held in Headquarters to identify the contracting strategy for the consolidation of shuttle operations contracts.

**USA FORMED**

On November 2, 1995, the LMSO/RIC Agreement was completed and USA was officially formed.

**SOLE SOURCE NAMED**

On November 10, 1995, NASA completed the Sole Source Justification to contract with USA on the Space Flight Operations Contract (SFOC) based upon, among other considerations, the fact that the parent companies of USA already were providing the majority of the workforce in the Shuttle Program.

**NASA OIG SERVICES**

On October 27, 1995, the NASA Office of Inspector General (OIG) announced that an audit advisory services review would be performed and independent assessments provided on the Agency's Space Shuttle restructuring efforts. This was done in an effort to be proactive during the negotiation of the terms and conditions of the SFOC.
OBJECTIVES, SCOPE, AND METHODOLOGY

OBJECTIVES

The overall objective was to monitor and review NASA's ongoing acquisition activities to ensure the award of a consolidated Shuttle contract that was timely, satisfied the stated goals of the SFOC, and was in the Government's best interest.

SCOPE AND METHODOLOGY

The review fieldwork was performed during the period October 1995 to October 1996 at Johnson Space Center (JSC), Marshall Space Flight Center (MSFC), and Kennedy Space Center (KSC). The audit methodology included interviews of Space Shuttle Program personnel, reviews of draft protocols, and meeting observations.

AUDIT STANDARDS

The audit was performed in accordance with generally accepted government auditing standards. During the performance of advisory services and review, management letters were issued based on limited fieldwork to bring significant programmatic and procurement issues to management's attention in a timely manner.
Our review resulted in several actions to help ensure that NASA's award of the SFOC was timely, satisfied the stated goals of the consolidated contract, and was in the Government's best interest. These actions included, but were not limited to, issuance of 10 management letters:

- M-HA-96-001, Acquisition of Architectural and Engineer Services by SFOC Contractor, dated March 22, 1996.


- M-HA-96-003, Reporting of Federal Acquisition Regulations (FAR) Deviations, issued March 22, 1996.

- M-HA-96-004, Novation of Contracts to USA, issued April 15, 1996.


- M-IG-97-001, Fee Forfeiture Upon Loss or Catastrophic Damage to Shuttle Resources, issued October 8, 1996.

- M-IG-97-007, Consideration for Frequent Billing and Expedited Payment, March 6, 1997.

- M-IG-97-005, Unrealized Award Fee Reduction to Space Operations Contract (SOC), NAS9-18000, issued December 20, 1996.

The management letters were not based on work done in accordance with generally accepted government auditing standards; however, they provided a quick means to convey to NASA's Negotiation Team: (1) our position regarding observations made during the acquisition and negotiation process, and (2) suggest actions based on those observations. The management letters also provided the Agency's
position on our observations and suggested actions as well as any planned actions. The report does not contain any recommendations and, therefore, requires no action on the part of the Agency. We believe, however, it is important to summarize our observations and suggested actions.

Some of the more significant issues are discussed briefly below. All 10 management letters are summarized in more detail in Appendix 1.

1. The Request for Proposal (RFP) did not include a clause citing the requirements for acquisition of architectural and engineering (A&E) services in carrying out Federal construction and related programs. Previously, we had found that A&E services had been improperly acquired based on price competition rather than qualifications. We recommended that language be added to provide that the SFOC contractor use procedures generally consistent with the FAR regarding those services. NASA Management concurred and agreed to add Clause H.32, Selection of Firms for A&E Services, to the RFP.

2. The RFP was silent on the fee to be paid on facilities projects. We recommended that language be added to restrict or prohibit fee on facility projects. If the contract did not specifically restrict or prohibit fee on facility projects, it could cost NASA millions of dollars in additional fee. NASA management concurred with our opinion and added language to define the fee approach for facilities projects.

3. There was not a requirement in the RFP for NASA and USA to negotiate an advance agreement on Provisional Billing Rates and Reimbursement Ceiling Rates. Without an agreement, the contractor could request equitable adjustments be made for the incurrence of costs above the ceiling(s) adding costs to the contract. We recommended that NASA should negotiate an advance agreement on Provisional Billing Rates and Reimbursement Ceiling Rates. NASA management first determined that contractual ceilings were not needed. However, Boeing announced the pending buy of a parent of the contractor, and NASA did not know what the impact would be on the contract once it was in place. NASA management concurred and negotiated a ceiling on site overhead and general and administrative rates.

**OTHER OIG SERVICES**

Other audit advisory services performed by the NASA OIG included discussions with NASA management on such topics as: (1) the requirement of certified cost and pricing data of the offeror's proposal, (2) support of the new contract under the Services Contract Act, (3)
contract administration functions to be divided, and (4) performance metrics to evaluate the contractor. Audit reports may be issued based on the fieldwork performed.

**SUMMARY**

NASA's Space Shuttle Program consolidated much of the ground processing and in-flight operations of the Shuttle under a simplified, performance-based contract signed with a single company, USA. The 6-year, $7 billion base contract includes two 2-year extension options that could bring the total estimated contract value to about $12 billion over 10 years. While maintaining safety as the top priority and keeping the current annual flight rate intact, the new contract is expected to reduce the cost of flying the Space Shuttle. The contract assigns greater responsibility to the contractor, reducing the government's role in overseeing day-to-day, routine Shuttle operations. The NASA OIG contributed in an advisory role to help ensure the award of a contract that was in the Government's best interest, and will perform additional audits as appropriate of the Shuttle Program to help ensure its success.
SUMMARY OF OIG MANAGEMENT LETTERS
ISSUED BY FINAL DATE

1. ACQUISITION OF
ARCHITECTURAL
AND ENGINEERING
SERVICES BY
SFOC
CONTRACTOR

During our review of the draft Request for Proposal (RFP), we found
that it did not include a clause referring to the Brooks Architect-
Engineers (A&E) Act (P.L. 92-582). This Act contains the
requirements for the acquisition of A&E services in carrying out
Federal construction and related programs and was implemented by
FAR Subpart 36.6, A&E Services.

In 1991, we found that the KSC Shuttle Processing Contractor was
improperly acquiring A&E services based on price competition rather
than qualifications. Since the SFOC contractor will have partial
responsibility for the maintenance of approximately 240 KSC facilities,
we wanted to ensure that the necessary clause was added to the RFP
which will require the SFOC contractor use procedures generally
consistent with FAR Subpart 36.6.

Based upon our Management Letter Number M-HA-96-001, issued
March 22, 1996, NASA management concurred with our opinion and
agreed to add Clause H.32, Selection of Firms for A&E Services, to
the RFP.

2. FEES PAID ON
FACILITIES
PROJECTS

The SFOC RFP prohibited fee to be paid on facilities acquisitions but
was silent with respect to fee on facilities projects (e.g., modifications
and rehabilitation of existing facilities). This implied that the fee for
such would be the same as for space flight operations work or about
8-10 percent. Facilities projects are of relatively low risk and
complexity and, as a result, usually have relatively low or no award
fee.

We stated in Management Letter Number M-HA-96-002, issued
May 30, 1996, that if the SFOC did not specifically restrict or prohibit
fee on facility projects, it could cost NASA millions of dollars in
additional fee. NASA management concurred with our opinion and
added language to the RFP Fee Plan to define the fee approach for
facilities projects.

3. REPORTING OF
FAR DEVIATION

NASA had not furnished FAR deviations to the FAR Secretariat as
required. FAR 1.403, Individual Deviations, requires that "a copy of
the approved deviation shall be furnished to the FAR Secretariat
through a central agency control point." This was an issue of
noncompliance with the FAR. When the issue was raised to the
Associate Administrator for Procurement, the response was that it
was NASA's opinion that the FAR Secretariat may not be using the
information included in this requirement and perhaps the requirement should be deleted from the FAR.

We opined in Management Letter Number M-HA-96-003, issued March 22, 1996, that unless a waiver was obtained, the OIG must assume that the administrative councils responsible for maintenance of the FAR, the Defense Acquisition Regulatory Council and the Civilian Agency Acquisition Council, use this information. We suggested NASA should either forward copies of FAR deviations to the FAR Secretariat as required by the FAR or obtain relief from the requirement. NASA management responded that informal discussions with other agencies revealed the practical utility of the FAR requirement to report deviations is questionable, and that compliance with the policy is not consistent. NASA Procurement planned to prepare and submit a FAR Case recommending changes to FAR 1.403 so that copies of approved individual deviations need only be furnished to the FAR Secretariat when the approving agency determines an issue of general applicability is raised by the deviation.

During our participation as auditor-advisor to the SFOC Source Evaluation Board, we became aware in February 1996 that NASA planned to novate the SOC at JSC (a Rockwell contract) and the Shuttle Processing Contract (SPC) at KSC (a Lockheed-Martin contract) to USA. USA is a new aerospace contractor which was formed as the result of a joint venture between RIC and LMSO. These two companies had been performing work on two of the biggest contracts in the Space Shuttle Program and combined their efforts in hopes of impeding competition of the SFOC. Ultimately, USA was chosen as the Shuttle single prime contractor for the SFOC.

One of NASA's goals in consolidating 12 of 85 contracts in the Shuttle Program was to cut costs through competition. However, the competition aspect was eliminated with the noncompetitive selection of Shuttle single prime contractor. Therefore, we issued Management Letter Number M-HA-96-004 on April 15, 1996, stating that if NASA novated the contracts, it may lose leverage in the contract negotiations on cost, content, and management. NASA management, however, stated that the Associate Administrator for Procurement and the JSC Center Director were satisfied that the steps taken to novate the contract were consistent with statements made by the NASA Administrator. NASA management stated, "The novation will provide USA a period of growth and development while continuing to perform under the process and procedures of the existing SOC and SPC contracts. It will effectively eliminate the 'step function' and reduce the risk if the Contractor would have to prove (or disprove) itself on October 1, 1996."
5. **Public Law 85-804 Does Not Clearly Provide Authority for Indemnification of USA**

We noted that Section L.12 of the RFP issued January 26, 1996, stated that the offerors may request indemnification under FAR 52.250-1, Indemnification Under P.L. 85-804. We issued Management Letter Number M-HA-96-006 on July 23, 1996, stating our concern that P.L. 85-804 did not clearly provide authority for indemnification applicable to the offeror's business entity structure since this FAR section prescribes policies and procedures for entering into, amending, or modifying contracts to facilitate the national defense under the extraordinary emergency authority granted by this public law. USA was established for the sole purpose of engaging in space related activities, in particular, performing the NASA Shuttle prime contract, and we questioned the relationship between the national defense and the USA joint venture.

NASA management, however, provided the document signed by the NASA Administrator on March 18, 1996, granting approval for indemnification of USA under P.L. 85-804 citing the Defense Production Act of 1950. The Act states the term national defense means "programs for...space and directly related activity" (50 U.S.C. App. 2152(d)). Additionally, the policy statement provides that:

> ...the vitality of the industrial and technology base of the United States is a foundation of national security that provides the industrial and technological capabilities employed to meet national defense requirements, in peacetime and in time of national emergency...(50 U.S.C. App. 2062(a)).

6. **Definitization Process Definition and Action Plan**

NASA determined that the RFP should be amended to incorporate the concepts of "partnership" and activity based costing to accelerate the negotiation and proposal preparation and submission to finalize the contract by October 1, 1996. This new contracting approach was to promote synergism between NASA and contractor experts, promote a "buy-in" from each individual participating in the process, enhance the development of a "team" way of doing business, and provide an avenue to minimize proposal costs. The schedule called for:

- **March 8, 1996 to April 19, 1996**
  Partnering team activity based costing, including concurrent factfinding & negotiations

- **April 20, 1996 to April 30, 1996**
  Team estimate consolidation including subcontractor cost response
- May 1, 1996 to May 10, 1996
  SFOC Cost Baseline Reviews

- May 30, 1996
  USA submission of final proposal and proposal audit complete

In Management Letter Number M-HA-96-007, issued August 29, 1996, we expressed concern that this accelerated contracting method would not identify the cost reductions and efficiencies from consolidating existing contracts which were two of the reasons NASA wanted the SFOC. Additionally, NASA had already experienced delays in their schedule, such as the novating of the SOC and SPC to USA. The novations did not take place by March 1, 1996, because USA was not willing to accept the budget NASA presented to the company as the starting point for the contract negotiation. However, according to the President's FY 1997 NASA budget, the consolidation of Shuttle contracts into one SFOC contract in 1997 would result in significant reductions in the cost of operating the Space Shuttle through FY 2000 and beyond, with no impact on safety, performance, or flight schedule. Additionally, NASA asked that USA accept a challenge of $150 million less than the budget for the 6-year base period. Therefore, NASA should ensure the efficiencies from consolidating the contracts were identified and negotiated into the single prime contract because additional contract costs could be incurred if NASA had to exercise options to extend the period of performance under the Shuttle contracts that existed before work was novated to USA due to SFOC not being negotiated within the Government budgetary limits.

NASA management responded that the activity based costing process was identified as an approach to take the risk out of negotiating a contract within the limited time constraints and, because NASA was partnering with the contractor to identify and resolve questions of work content and budget allowances, the process was expected to not only save time but also result in a successful negotiation.

In the RFP, there was not a requirement for NASA and USA to negotiate an advance agreement on Provisional Billing Rates and Reimbursement Ceiling Rates. Without the agreement, USA could submit a proposal identifying the factors involved and request that an equitable adjustment be made to provide for the incurrence of costs above the ceiling(s).

We opined in a draft management letter issued May 16, 1996, that NASA and USA should successfully negotiate an advance agreement on Provisional Billing Rates and Reimbursement Ceiling Rates that
was in the best interest of the Government. NASA management first
determined that contractual ceilings on overhead and General and
Administrative (G&A) rates were not needed since there would be
sufficient tools (e.g., cost audits, incentive fee arrangement, Financial
533 reports, Performance Measurement System reports, monthly
status reports) to evaluate the reasonableness of the indirect costs and
ensure Government interests were adequately protected. In the
meantime, Boeing announced the pending buy of major Rockwell
components (a parent of USA). Without knowing the resulting
impact the buy would have to USA or on SFOC, NASA negotiated a
1.5 percent ceiling on USA's site overhead and G&A rates. In our
Management Letter Number M-IG-97-003, issued October 15, 1996,
NASA management responded that indirect cost rate ceilings would
only be effective in overrun situations since the SFOC is a cost
incentive contract and NASA desired to provide flexibility in
performance.

8. **Fee Forfeiture Upon Loss or Catastrophic Damage to Shuttle Resources**

The RFP provision relating to the forfeiture of fee upon the loss or
catastrophic damage to Shuttle resources limited the fee to be
forfeited to the amount earned at that point in time during the current
2-year lookback period. The Contracting Officer must make a
determination as to cause and can request forfeiture of fee within 30
days. He can also increase the amount to be forfeited for incidental
costs (e.g., additional overtime necessitated by contractor error). Fees
forfeited are further limited by the value of resources lost or damaged.

We opined in Management Letter Number M-IG-97-001, issued
October 8, 1996, that limiting the amount of fee to be forfeited to the
current lookback period may result in a forfeiture of fee too small in
relation to the incidents causing the forfeiture. Further, loss or
catastrophic damage to Shuttle resources may occur early in a
lookback period and NASA would not be able to require the forfeiture
of a significant amount of fee. Therefore, NASA should modify the
fee structure in the RFP to provide for a significant forfeiture of fee
upon loss or catastrophic damage to Shuttle resources, regardless of
when such loss may occur. NASA management concurred and
rewrote the Fee Plan to provide:

- A fee reduction will be assessed in the event of loss of an Orbiter
  and/or individuals associated with Space Flight Operations when
  such loss is caused by the acts or omission of the Contractor in
  performance of effort under this contract.

- For purposes of this article, "loss" means the loss of life which
  occurs because of an Orbiter mission or total loss, at any time, of
  an Orbiter vehicle. "Orbiter Mission" commences with the
percent) credit reduction to the SOC available award fee pool for the period January 1, 1996 through September 30, 1996.

During the SFOC negotiations, we opined that NASA should ensure that any unrealized award fee reductions stipulated by Modification Number 88 to NAS9-18000 were not forfeited but adequately captured during closure of the SOC. Further, NASA should ensure all existing Shuttle contracts are sufficiently researched prior to their transitioning to the SFOC in order that unrealized cost benefits due the Government are identified and properly considered during the upcoming negotiations.

NASA Management agreed that any unrealized fee reductions stipulated by Modification 88 to NAS9-18000 should not be forfeited as shown in our finalized Management Letter Number M-IG-97-005, issued December 20, 1996. To that end, NASA believed it adequately captured the unrealized cost benefits due the Government during SFOC negotiations. Management commented that the decision made by NASA to pursue the SFOC contract provided USA with the opportunity to renegotiate their leasing arrangement with their present landlord. The new lease arrangement provides a savings to the Government of $16.9 million through the basic period of performance for the SFOC contract, and should the contract options be exercised, an overall savings of $33 million. Therefore, NASA believes that the new lease agreement's commensurate savings are sufficient to ensure that the prior agreement was sustained. Further, additional consideration was also received through the negotiation process.

The OIG, however, reviewed the new lease agreement and found that it obligates the contractor to make "Other Periodic Payments" that include Real Property Taxes and Insurance Premiums. Potentially, the magnitude of these costs could significantly offset and/or eliminate any cost benefits the Government might accrue due to the lower "Base Rent" rates, and additionally, some of the Insurance Premium cost could be unallowable. For these reasons, the OIG advised that during future audit planning sessions it will strongly consider a review of USA's leasing arrangement to ensure the Government's interests are adequately protected.
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