JS-96-005

AUDIT REPORT

RAPID ACTION

WORKLOAD SCHEDULING AND CONTROL

JOHNSON SPACE CENTER

September 26, 1996

National Aeronautics and Space Administration

OFFICE OF INSPECTOR GENERAL

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National Aeronautics and
Space Administration

Headquarters
Washington, DC 20546-0001

Reply to Attn of: W

September 26, 1996

TO: Johnson Space Center
ATTN: AA/Director

FROM: W/Assistant Inspector General for Auditing

SUBJECT: Final Rapid Action Report
Workload Scheduling and Control
Assignment No. A-JS-95-007
Report No. JS-96-005

The NASA Office of Inspector General has completed an audit survey of workload scheduling and control (A-JS-95-007). The overall objective was to evaluate the effectiveness of Johnson Space Center space flight contractors' planning, scheduling, and controlling of numerous interrelated tasks. The specific objectives were to: (1) determine whether the controls effectively enable the contractors to obtain and use labor, materials, and facilities; and (2) determine whether the contract goals and schedules were met efficiently and economically.

Our audit survey was limited to the review of two contracts: (1) NAS9-18300, Loral Aerospace Corporation; and (2) NAS9-95682, AlliedSignal Technical Services Corporation. In general, the contractors' workload scheduling and control are adequate, and we did not find significant weaknesses in their system.

However, the review results revealed that NASA could reduce the total budget of contract NAS9-95682, AlliedSignal Technical Services Corporation at White Sands Test Facility (WSTF). NASA could save approximately $13 million over the remaining years of the contract. Also, we found that the "cost or pricing data" submitted by AlliedSignal was not prepared in accordance with the Federal Acquisition Regulations. The specific conditions, their causes, and recommended actions are discussed in our enclosed draft rapid action report.

We issued a draft rapid action report on June 11, 1996, and received a written response on July 22, 1996. The Center concurred with both recommendations. The institutional core population for NASA WSTF was arbitrarily established in the 1970s, and a more realistic budget should be developed to achieve NASA's overall cost reduction. NASA WSTF is planning to convert the contract to a performance-based arrangement. By converting to a performance-based contract, a more realistic estimate will be developed and the contractor will be allowed to propose their best estimated labor hours

to meet the contract requirement. More incentives will be incorporated to reward the contractor's efficient and economical performance under the performance-based contract. We consider the Center's actions are responsive to the recommendations. Therefore, both recommendations are considered closed with the issuance of this final report. The Center's response is summarized after each recommendation and is included in its entirety as Appendix A of this final rapid action report.

The NASA Office of Inspector General staff members associated with this audit express their appreciation to the NASA and contractor personnel for their courtesy, assistance, and cooperation. If you have any questions or need additional information, please call Janice Goodnight at extension 34773; or Robert Wesolowski, Director, Audit Division-A, or me at (202) 358-1232.

Debra A. Guentzel

Enclosure

cc:
HQs-JMC/P. Chait
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WORKLOAD SCHEDULING AND CONTROL

JOHNSON SPACE CENTER
HOUSTON, TX

INTRODUCTION

The NASA Office of Inspector General has completed a survey of Workload Scheduling and Control. We selected the following two contracts from Johnson Space Center's (JSC) active contract listing (as of March 1995): (1) NAS9-95682, AlliedSignal Technical Services Corporation (ATSC); and (2) NAS9-18300, Loral Aerospace Corporation. Our audit was limited to the review of the Loral and ATSC contracts.

Loral implemented a Performance Measurement System (PMS) to address the basic concepts and general requirements of JSC Mission Operations Directorate Performance Measurement Handbook, JSC-36180. Performance Measurement is based on the concept of the cost and schedule performance measurement using a time-phased, resource budget baseline under disciplined control.

The PMS for the Loral Integrated Planning Systems project, Contract Management, and Telecommunication and Switch System for JSC Mission Control Center has been reviewed by NASA's compliance review team. It is the pilot system certified and validated by NASA. The contractor made a great effort to design and implement the system, and is striving to manage and maintain the system effectively and efficiently through training and close monitoring. In addition, Loral is willing to share the expertise and experience in PMS with NASA management and other contractors.

NASA entered into the Mission System Contract with Ford Aerospace Corporation in December 1989 and the operation was acquired by Loral Aerospace Corporation in 1992. It was a 6-year contract from December 1989 through December 1995 with a 1-year option for providing systems engineering and integration for command and control systems, planning systems, and flight preparation systems which will be utilized in support of the National Space Transportation System and Space Station Freedom program.

On December 10, 1993, JSC entered into a $163 million contract with ATSC to provide test, evaluation, and maintenance services at White Sands Test Facility (WSTF). It covered 5 years of performance: (1) Basic Period - February 1, 1994 to January 31, 1997; and (2) Option Period - February 1, 1997, to January 31, 1999. However, the contract performance did not begin until May 1, 1994, due to an unsuccessful bid protest.

The contractor is required to furnish services in six primary functional work areas: Administration, Propulsion, Laboratory, Engineering, Environmental, Quality Assurance, and Health and Safety.

OBJECTIVES, SCOPE, AND METHODOLOGY

OBJECTIVES

The objective was to evaluate the effectiveness of JSC space flight contractors' planning, scheduling, and controlling numerous interrelated tasks. Specifically, we were to determine:

- whether the controls effectively enabled the contractors to obtain and use labor, materials, and facilities; and
- whether the contract goals and schedules were met efficiently and economically.

SCOPE AND METHODOLOGY

We selected the following two contracts from the JSC contract listing as of March 1995 for our review: (1) NAS9-18300, Loral Aerospace Corporation; and (2) NAS9-95682, ATSC. We performed the following steps:

- Interviewed the Contracting Officer (CO) and reviewed the contract files for contract background and the requirements;
- Interviewed the contractor representatives to understand the organizational structure, and the internal controls for obtaining labor, materials, and facilities effectively;
- Obtained and reviewed the contractors' control system documents;
- Evaluated the adequacy of the contract reporting requirements and determined any significant variances between planned and actual costs;
- Determined the extent in which NASA management maintains surveillance over the progress of the contract work;
- Reviewed the number of contract changes and analyzed the justifications given for the changes;
- Reviewed the contract schedules required by the contract and compared schedules with the completed work;
- Determined whether any significant cost overrun conditions existed and the reason for the overrun; and
- Determined whether contract costs were increased as a result of the "stretch-out" of work.

MANAGEMENT CONTROLS REVIEWED

Our audit work was limited to determining if there is a system in place for the workload scheduling and control on contracts NAS9-18300 and NAS9-95682. We did not perform a detailed review of Loral's PMS because we relied upon JSC's evaluation/compliance review of the contractor's system. Accordingly, we expressed no opinion on Loral's system of internal controls. We performed the following internal control review steps:

- Reviewed the latest self-assessment for the Procurement Office to identify issues that may affect the scope and objectives of the audit;
- Reviewed JSC's functional review reports to determine whether any significant weaknesses were identified and corrective actions were taken for the areas under review; and
- Interviewed personnel from the Procurement Management Office to understand organizational structure, policies and procedures, self-assessment, and internal review procedures.

AUDIT FIELD WORK

Survey field work was performed during the period of May 1995 through September 1995 at Loral Aerospace Corporation, JSC, and ATSC at WSTF in New Mexico. The audit was performed in accordance with generally accepted government auditing standards.

OBSERVATIONS AND RECOMMENDATIONS

OVERALL EVALUATION

Our survey review disclosed that, in general, both Loral and ATSC have the controls in place for obtaining and using labor, materials, and facilities. Also, the contract goals and schedules are generally met based on the limited review of selected tasks for each of the contracts. However, we noted that management actions are needed to ensure that: (1) a more realistic budget for contract NAS9-95682 at WSTF is developed; and (2) "Cost or Pricing Data" is submitted in accordance with the Federal Acquisition Regulations (FAR).

MORE REALISTIC BUDGET IS NEEDED

NASA did not reduce its spending on contract NAS9-95682 at WSTF although the contractor produced productivity and cost savings. Also, the contractor's good cost performance was not rewarded and incentive provisions should have been considered in the contract. The NASA Procurement Office is implementing initiatives to improve cost control and develop realistic contract budgets. NASA managed the contract based on the budget and was reluctant to decrease the budgeted manpower. NASA could save $13 million over the remaining contract life by reducing contract spending by the amount of the productivity and cost savings.

BUDGET CONSTRAINT

According to the NASA Headquarters Procurement Office's September 1995 procurement initiative on cost control:

> "With decreasing budgets and increasing pressures for all agencies of the federal government to reduce their spending, controlling costs continues to be a major issue at NASA.... NASA must increase the emphasis on cost control with its contractors and within the agency. This must be done through developing realistic budgets before a program begins; identifying the factors that impact contract costs and that are sensitive to cost control/reduction efforts; implementing activities that focus contractor and agency personnel on cost control/reduction; and tracking the progress to cost reduction plans."

In addition, the Agency's reliance on cost type, task order contracts has led to unnecessarily vague statements of work, inadequate cost control, and the lack of quantifiable performance standards.

CREATING NEW INCENTIVES

The cost control initiative also stated that the key elements to controlling cost are:

- increasing use of completion and performance-based contracts;
- creating new incentives for contractors to reduce elements of contract costs (staffing levels, direct labor costs, benefits, overhead, etc.);
- eliminating excess contractor facilities;
- streamlining our source selection process;
- reducing the number of unpriced change orders; and
- improving negotiations of subcontracts and insight into their costs.

PRODUCTIVITY AND COST SAVINGS

Although the contractor produced productivity and cost savings, NASA did not reduce its spending on contract NAS9-95682 at WSTF. Despite the $2.2 million productivity savings realized and reported to NASA management in Contract Year (CY) 1 from May 1994 through April 1995, NASA spent all the funds obligated for the contract. ATSC stated that since NASA contracts represent about 67 percent of their business base, they are intimately aware of the need to "work smarter" in support of NASA's shrinking budget. The contractor proposed to achieve the cost savings and productivity gains by using the same process that resulted in productivity and cost savings on the Space Transportation Systems Operations Contract.

NASA accepted the contractor's proposal and negotiated the following savings: (Dollars in thousands)

	CY 1	CY 2	CY 3	CY 4	CY 5	TOTAL
Productivity Savings	$ 946	$1,376	$1,850	$1,918	$1,970	$ 8,060
Cost Savings	$1,463	$1,456	$1,463	$1,502	$1,532	$ 7,416
Total	$2,409	$2,832	$3,313	$3,420	$3,502	$15,476

NASA budgeted more funds for the contract than the negotiated contract value. Although NASA negotiated a total contract value of $163 million, an additional $15 million was budgeted for the entire contract. The additional $15 million represented ATSC's proposed cost savings for the entire contract. However, since ATSC's estimates of savings were based on the experience on another contract, NASA was not certain whether the contractor could achieve the proposed productivity and cost savings.

After the contractor completed CY 1, it reported an actual cost savings of approximately $2.2 million. NASA directed the contractor to spend the entire savings on additional contract tasks. When we asked WSTF management officials to identify those additional tasks, they responded that as long as the task orders were within the contract's scope and funds were available, the contractor performed the directed tasks. Therefore, a separate list of the additional contract tasks had not been written. Since the statement of work was broad and the contractor was not required to track these tasks separately, we were unable to obtain a listing of the additional tasks performed. The tasks may be in the scope of the contract; however, these tasks may not be necessary.

Actual Savings Reported as of April 30, 1995 (CY 1):

Productivity Savings *	$ 882,452
Cost Savings **	$1,280,277
Total	$2,162,729

*Productivity savings are defined as those improvements made which result in savings of hours or equivalent personnel. Examples are the elimination of redundant activities, consolidation of similar activities, cycle time reduction, and other process improvements that provide efficiencies and results in less labor hours required to perform the same amount of work.

**Cost savings are defined as those savings realized through reductions in labor rates, cost to purchase materials, and reduction in burden rates, such as absenteeism control.

REDUCTION OF SPENDING

Even when savings were realized and reported by the contractor, NASA spent the savings on additional contract tasks because it was an award fee, level-of-effort (LOE) type contract. This condition occurred because: (1) NASA managed the contract based on the budget, not the actual need for its current program; (2) NASA was reluctant to decrease contractor manpower despite the contractor's productivity savings because there was a risk of budget decrease if all available funds were not spent.

POTENTIAL COST SAVINGS OF $13 MILLION

NASA could reduce the total budget and have a cost savings of $13 million (the proposed savings of $15.5 million less the $2.5 million CY 1 proposed savings) for the remaining years of the contract.

RECOMMENDATION 1

WSTF Office Manager should: (1) develop more realistic budgets for the remaining life of the contract and reduce the contract value accordingly; and (2) create incentives for the contractor's efficient and economical performance.

MANAGEMENT'S RESPONSE

We concur with the recommendation that budgets should be as realistic as possible. All work done at NASA WSTF is in support of a programmatic requirement in response to a customer's request. NASA WSTF did not decrease the budgeted manpower because the workload required to maintain the minimum acceptable level of technical performance justified the original manpower. This decision was based on a recognition of the manpower level required, not because of a reluctance to reduce manpower. The institutional core population for NASA WSTF was arbitrarily established in the 1970's and has not increased appreciably since. We are operating at less than the minimum core required now, and any further reduction would cause considerable operational damage. To save $13 million over the remaining life of the contract, as stated in the audit findings, would require a reduction to the baseline manpower of approximately 260 full time equivalents (FTEs), or approximately 65 FTEs per year, which would severely damage our ability to remain a preeminent test facility. While AlliedSignal did report $2.2 million productivity savings in Contract Year 1 (CY 1), NASA WSTF was required to retain funding levels as they were so that our mission could be accomplished. The tasks performed with these funds were basic to the site mission, were established at the beginning of the contract, and the budgeted (baseline) totals were not exceeded. It is our intent to do the same thing each contract year; i.e., reinvest any realized savings to keep the facility operating safely and responsively to customer

requirements. Additional tasks were not created simply because funds were available, and we take exception to the statement that "these tasks may not be necessary." We reinvested the savings because we had valid, legitimate tasks to be accomplished, and we determined that the reinvestment of these savings was proper so that the safety and viability of the workforce could be maintained.

On a level-of-effort (LOE) contract, there are basically two ways to reduce costs; either by reducing the manpower negotiated in the baseline or by reducing the amount of negotiated materials actually procured. Indirect costs can also be reduced but they are secondary, their reduction comes only as a result of the primary action or actions taken concerning labors and materials. None of the documented savings involved a substantial reduction of materials and few of them were predicated on lowering manpower levels. No tasks were proposed to be deleted from the contract as result of these cost savings. In actuality, the contract ended the first year at a staffing level slightly under the negotiated baseline due to difficulties in filling certain technical positions.

We also agree that incentives should exist to reward the contractor's efficient and economical performance, and NASA WSTF did adequately reward the contractor for its cost performance. An award fee contract is an excellent reward/incentive instrument if the fee arrangement is properly structured. The AlliedSignal contract allots 30 percent of the available fee dollars to cost performance and in the last two years, AlliedSignal has been rated Poor (labor rate problems), Very Good, Excellent, and Excellent.

EVALUATION OF MANAGEMENT'S RESPONSE

JSC's comments are responsive to the report recommendation. It was stated that NASA WSTF did not decrease the budgeted manpower because the workload required to maintain the minimum acceptable level of technical performance justified the original manpower. However, the contractor proposed and has achieved approximately $2.2 million of the productivity/cost savings in the first contract year. Those savings were the results of the contractor "working smarter" in support of NASA's shrinking budget by performing the required tasks with less manpower. Had the contractor not realized those savings, NASA would not have the funds for any additional tasks.

NASA WSTF is planning to convert this contract from LOE to a performance-based arrangement. NASA WSTF has indicated that the institutional core population was arbitrarily established in the 1970s and, based on that fact, we believe it is time for NASA to develop a

more realistic budget. One of the benefits is to reduce overall project cost. In performance-based conversion contracting, a well defined statement of work must be developed, and a realistic budget is needed to achieve NASA's planned overall contract reduction. We will monitor the progress of converting the contract to a performance-based arrangement.

NEGATIVE "COST OR PRICING DATA"

During the survey, we found that: (1) NASA was unable to evaluate separate cost elements appropriately because the cost or pricing data submitted by ATSC was not in accordance with FAR; (2) the data did not enable NASA to perform appropriate evaluation of separate cost elements and negotiate fair and reasonable prices; and (3) NASA Form 533, Contractor Cost Reporting, could not be used to evaluate contractor cost performance because the contract value included cost and productivity savings which is a contingent negative cost. (See Exhibit I.) Productivity and cost savings are not "cost or pricing" data as defined under FAR. The data should be factual, not judgmental and, therefore, verifiable in accordance with the FAR. NASA specified the number of labor hours for all proposals under the LOE contracting method. Without accurate contractor cost data, NASA cannot effectively manage the contract.

PERFORMANCE BASED CONTRACT

NASA's Request for Proposal (RFP) specified the number of labor hours for all proposals because it was an LOE contract. For LOE contracts, NASA issues task orders directing the contractor to perform a specific job and negotiates the hours by task. NASA estimated the total labor hours for the contract based on the total budget allowed. In the LOE contract, NASA would set a minimum and maximum hours that the contractor would provide the service. For that reason, it has been NASA's practice to request all the contractors' proposal using the same set of hours specified in the RFP.

NASA would not accept any proposal with different estimated labor hours even if the contractor estimated that it was capable of doing the work with less hours. As a result, ATSC proposed cost and productivity savings resulting for the five contract years under other direct cost (ODC), and the proposal had a negative cost in the ODC. Inappropriate and inaccurate cost or pricing data could be avoided if NASA allowed the contractor to submit its best estimates in each of the cost elements.

NASA is shifting its contracting culture from traditional LOE contracting to performance-based contracting. The Agency plans to accomplish this goal by 1997. NASA FAR Supplement 1810.002-71, "Performance-Based Contracting" states:

> "Use of performance-based specifications, where feasible, is the preferred method for establishing contract requirements. Requiring activities shall, to the maximum extent practicable, use performance-based specifications, purchase descriptions and statements of work to give contractors freedom to innovate and economize, and to hold contractors accountable for the end results."

NASA cannot properly manage a contract if the contractor does not present valid data in each cost element. The RFP should include the following elements to allow the contractor to submit adequate, accurate, and complete data for establishing a solid baseline for measuring the performance: (1) statement of work/specification; (2) contract type; (3) surveillance plan; and (4) incentive structure. Contractors are required to submit a proposal which complies with public law and policy, and includes validated and verifiable data.

FAR REQUIREMENTS

Productivity and cost savings are not "cost or pricing" data as defined under FAR. FAR 15.801, Price Negotiation, states:

> "Cost or pricing data means all facts as of date of price agreement that prudent buyers and sellers would reasonably expect to affect price negotiations significantly. Cost or pricing data are factual, not judgmental, and therefore verifiable.... Cost or pricing data are more than historical accounting data; they are all the facts that can be reasonably expected to contribute to the soundness of estimates of future costs and to the validity of determinations of costs already incurred."

FAR 15.804.1, Cost or Pricing Data, states: "Cost or pricing data submitted by an offeror or contractor enable the Government to perform cost or price analysis and ultimately enable the Government and the contractor to negotiate fair and reasonable prices."

LABOR HOURS

Since the contractor proposed the number of labor hours specified by NASA and deducted its estimated productivity and cost savings from ODC, NASA was unable to evaluate separate cost elements

appropriately. The cost or pricing data submitted by ATSC was not prepared in accordance with FAR. By deducting the estimated savings from ODC, the overall contract baseline was reduced by the amount of the savings. As a result, the NASA Form 533, Contractor Cost Reporting, inaccurately reported a cost overrun since the amount of the savings was spent on additional contract tasks.

ATSC'S COST OR PRICING DATA

The cost or pricing data submitted by ATSC was not in accordance with the FAR requirement because NASA's RFP specified the number of labor hours for all proposals. Therefore, NASA was unable to perform an appropriate evaluation of separate cost elements and negotiate a fair and reasonable price. As a result, ATSC proposed savings under ODC to offset the labor hours, travel, and other savings resulting from a more effective and efficient management methodology. (See Exhibit I.) Also, NASA Form 533, Contractor Cost Reporting, could not be used to evaluate contractor cost performance because the contract value included cost and productivity savings.

IMPACT OF INAPPROPRIATE COST OR PRICING DATA

Without valid, accurate contractor data, NASA cannot: (1) plan the entire contractual effort; (2) maintain baseline integrity; (3) determine accomplishment at the level at which the work is performed; (4) measure accomplishment objectively; (5) summarize for higher levels of management; and (6) analyze variances and forecast impact. Also, the Contractor Financial Management Form 533 reports appeared to report a cost overrun because the baseline had a negative ODC.

RECOMMENDATION 2

The CO should ensure that the contracting method: (1) does not prohibit the bidders from proposing the most efficient methodology to perform the work, i.e., less labor hours required to perform the same amount of work; and (2) allows the bidders to submit their cost or pricing data in accordance with FAR.

MANAGEMENT'S RESPONSE

We concur with the recommendation, but strongly disagree with some of the findings on which it is based. The report stated that the cost or pricing data submitted by AlliedSignal was not in accordance with the FAR. AlliedSignal did, in fact, submit all of its cost and pricing data in accordance with the FAR and certified (in accordance with FAR 15.804-4) that it was accurate, complete, and current. NASA WSTF was able to complete an evaluation of their submission during the cost evaluation process and presented those Findings to the Source Selection Official. The data presented in AlliedSignal's cost proposal

was verifiable (JSC Space Transportation System Operational Contract (STSOC) contract metrics) and used by AlliedSignal to support its contention that the same management approach from another contract could also be applied to the AlliedSignal WSTF contract, and result in productivity and cost savings. These facts are thoroughly documented in the source evaluation and selection records.

It is true that the NASA Form 533 cannot properly report savings or cost overruns in its current format, however, this is a function of the limitations in the form's reporting capability, and not an invalidation of the cost data. As discussed with the auditor during the field work, NASA WSTF has developed an alternative method to record and evaluate the cost and productivity cost element, and track the savings which is periodically updated and used in the cost evaluation of AlliedSignal. NASA WSTF accepted the productivity and cost savings only because AlliedSignal was able to make an estimate based on historical accounting data accrued from the STSOC contract. This data was verifiable, and verification was obtained from the Deputy Procurement Officer prior to negotiation. Again, these facts are thoroughly documented in the source evaluation and selection records. The FAR allows such data to be accepted as long as "they are facts that can be reasonably expected to contribute to the soundness of estimates of future costs."

In structuring the Request for Proposal (RFP), NASA WSTF specified the number of labor hours as a pricing methodology and to ensure uniformity across each proposal. To require every proposer to independently develop their staffing plan in an LOE environment would have unfairly given the incumbent a distinct advantage. This method of ensuring uniformity is common through NASA in normalizing cost proposals for LOE contracts.

NASA WSTF did specify an LOE contract and required all proposers to submit their cost data contingent upon a specified estimate of hours. NASA WSTF estimated the number of labor hours based on known requirements, not on its budget. NASA WSTF estimated the number of hours required by using historical actuals augmented with known future work that we were reasonably sure would occur. Budget was a consideration in the process only to the extent in determining whether we could continue doing the same tasks as we had previously done without a corresponding increase to the budget; a sound approach to any source evaluation in an environment where

significant budget reductions are expected to continue through the life of the successor contract.

AlliedSignal chose to put its cost/productivity savings program within the Other Direct Costs (ODC) elements, and that decision was evaluated and accepted by JSC Senior Procurement Management, the JSC Legal Office, and validated by the award protest proceedings. The decision by AlliedSignal to do so had nothing to do with the direct labor structure required by the RFP. In fact, another offeror proposed a similar savings arrangement which was also acceptable, but not costed in the same manner. Again, these facts are thoroughly documented in the source evaluation and selection records.

NASA WSTF is planning to convert this contract from LOE to a performance-based arrangement, but that has not yet been finalized.

EVALUATION OF MANAGEMENT'S RESPONSE

Planned actions by NASA management are responsive to the recommendation. NASA WSTF is planning to convert this contract from LOE to a performance-based arrangement. Under this new arrangement, NASA will not specify the hours in the RFP. The contractor will estimate total labor hours needed to perform the contract requirement. Therefore, this recommendation is considered closed with the issuance of this final report. However, we will monitor the progress of converting this contract to the performance-based arrangement to ensure the RFP should include the following elements to allow the contractor to submit adequate, accurate, and complete data for establishing a solid baseline for measuring the performance: (1) clear statement of work/specification; (2) contract type; (3) surveillance plan; and (4) incentive structure.

MAJOR CONTRIBUTORS TO THIS AUDIT

Johnson Space Center	Janice L. Goodnight, Program Director, Human Exploration and Development of Space
	Lydia C. Lin, Auditor-in-Charge
	June Glisan, Audit Program Assistant

EXHIBIT I

ATSC PROPRIETARY

ALLIEDSIGNAL TECHNICAL SER
WSTF TEAM CONTRACT
NEGOTIATIONS PRICING
December 6, 1993

DETAILED REPRICING	TOTAL NON-SSF PLUS SSF							
	CY 1	CY 2	CY 3	BASIC CY 1-3	CY 4	CY 5	OPTION CY 4-5	TOTAL CY 1-5
Total Direct Labor Hrs	917,172	889,272	889,272	2,695,716	889,272	889,272	1,778,544	4,474,260
Direct Labor $	14,566,580	14,903,611	15,048,097	44,518,288	15,590,643	16,186,737	31,777,380	76,295,667
Overhead / Subcont Loading	6,376,891	6,207,400	6,649,530	19,233,821	6,905,515	6,920,911	13,826,426	33,060,247
ODCs								
Materials	8,500,000	8,500,000	8,500,000	25,500,000	8,500,000	8,500,000	17,000,000	42,500,000
Travel	184,000	184,000	184,000	552,000	184,000	184,000	368,000	920,000
Cafeteria/Vend Receipts	(200,000)	(200,000)	(200,000)	(600,000)	(200,000)	(200,000)	(400,000)	(1,000,000)
ATSC Lump Sum Payments	0	104,983	111,320	216,303	117,410	123,603	241,013	457,316
Relo, Ins, Misc.	40,987	60,321	61,533	162,841	62,942	64,559	127,501	290,342
ATSC Admin Expense	740,961	740,242	759,268	2,240,470	801,890	837,477	1,639,367	3,879,838
Productivity Savings	(945,863)	(1,376,409)	(1,850,059)	(4,172,331)	(1,918,147)	(1,970,343)	(3,888,490)	(8,060,822)
Cost Savings	(1,463,178)	(1,456,208)	(1,463,184)	(4,382,570)	(1,502,213)	(1,532,347)	(3,034,560)	(7,417,130)
Total Cost Before G&A	27,800,378	27,667,940	27,800,504	83,268,822	28,542,040	29,114,597	57,656,636	140,925,458
G&A Expense	1,166,279	1,068,335	1,064,354	3,298,967	1,100,333	1,207,820	2,308,153	5,607,120
Facility Cap Cost of Money	0	0	0	0	0	0	0	0
Total Estimated Cost	28,966,657	28,736,274	28,864,858	86,567,789	29,642,373	30,322,417	59,964,789	146,532,578
Award Fee	1,500,494	1,489,351	1,496,155	4,486,000	1,541,931	1,580,069	3,122,000	7,608,000
Total Est Cost + Fee	30,467,151	30,225,625	30,361,013	91,053,789	31,184,304	31,902,485	63,086,789	154,140,578
New Mex Gross Receipts Tax	1,770,903	1,756,864	1,764,734	5,292,501	1,812,588	1,854,332	3,666,920	8,959,421
Total Price	32,238,054	31,982,490	32,125,747	96,346,291	32,996,892	33,756,817	66,753,709	163,100,000
Total Estimated Cost / Hr	$33.51	$34.29	$34.44		$35.37	$36.18		
Total Fee Per Hour	$1.64	$1.67	$1.68		$1.73	$1.78		

National Aeronautics and
Space Administration

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APPENDIX

Reply to Attn of: BQ-96-029

JUL 2 2 1996

TO: W-JS/Audit Field Office Manager

FROM: AA/Director

SUBJECT: Management Response to Draft Rapid Action Report,
Workload Scheduling and Control, Assignment A-JS-95-007

We have reviewed the subject draft rapid action report regarding the workload scheduling and control of two JSC contracts. While we concur with the recommendations as worded in the report, we disagree that NASA could reduce the total budget of the AlliedSignal Technical Services Corporation to save $13 Million over the remaining years of the contract. We also do not agree that cost or pricing data submitted by AlliedSignal was not prepared in accordance with the Federal Acquisition Regulations. Our rationale for the disagreement is explained in detail in the enclosure.

We acknowledge the positive findings stated in the report that your review found the contractors' workload scheduling and controls to be adequate, and of Loral Aerospace Corporation's implementation of a pilot program certified and validated by NASA for performance measurements.

With your acceptance of our assessment regarding AlliedSignal and our continuing oversight of the contract, we will consider the audit recommendations to be closed on issuance of the final report. If you have any questions regarding this response, please call Pat Ritterhouse at 713-483-4220.

George W. S. Abbey

Enclosure

cc:
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Management Response to Draft Rapid Action Report
Workload Scheduling and Control, Assignment A-JS-95-007

NASA White Sands Test Facility (WSTF) has, in every way, complied with the fundamental resources management principles underlying the findings cited as the basis for both Office of Inspector General (OIG) recommendations. The total NASA WSTF Institutional budget has been reduced by $2 Million in the past two fiscal years, and is expected to decline another $4 Million by Fiscal 1997. Concurrently, the Shuttle budget has been reduced by about $1 Million, and will not be increased in the foreseeable future. While this has been going on, programmatic test requirements have increased significantly and associated institutional operations and maintenance requirements, materials unit prices, and labor rates have increased as well. In short, the present Test, Evaluation, and Maintenance (TEAM) contract has been faced, since inception, with a rapidly expanding mission, dwindling budgets, and an uncertain outlook. In spite of these pressures we have managed to preserve a safe and viable test environment while meeting all test schedules and requirements. This is how we define efficiency and productivity.

With this in mind, the assumptions that savings can be measured in terms of dollars returned to JSC or by reduced contract values are overly simplistic and incorrect. NASA WSTF has never had more resources than it requires, and the conditions described above have been typical for at least the past decade. Because of this, the concept that any savings realized will be reinvested locally has become an integral part of our operating philosophy.

Further, several NASA management teams have studied the viability of NASA WSTF in excruciating detail in recent years and have repeatedly concluded that this facility is an extremely valuable asset worth supporting. A significant factor in this conclusion has been the demonstration that we can continue the mission with ever-increasing constraints. We therefore believe that both our contracting approach and operating methods have been validated and are correct.

Within this overall framework, the response to each of the two OIG recommendations will now be discussed in more detail.

Auditor's Findings

"Even when savings were realized and reported by the contractor, NASA spent the savings on additional contract tasks because it was an award fee, level-of-effort (LOE) type contract. This condition occurred because: (1) NASA managed the contract based on the budget, not the actual need for its current program; (2) NASA was reluctant to decrease contractor manpower despite the contractor's productivity savings because there was a risk of budget decrease if all available funds were not spent."

Recommendation 1

" WSTF Office Manager should: (1) develop more realistic budgets for the remaining life of the contract and reduce the contract value accordingly; and (2) create incentives for the contractor's efficient and economical performance."

Enclosure

JSC Comments

We concur with the recommendation that budgets should be as realistic as possible. All work done at NASA WSTF is in support of a programmatic requirement in response to a customer's request. NASA WSTF did not decrease the budgeted manpower because the workload required to maintain the minimum acceptable level of technical performance justified the original manpower. This decision was based on a recognition of the manpower level required, not because of a reluctance to reduce manpower. The institutional core population for NASA WSTF was arbitrarily established in the 1970's and has not increased appreciably since. We are operating at less than the minimum core required now, and any further reduction would cause considerable operational damage. To save $13 Million over the remaining life of the contract, as stated in the audit findings, would require a reduction to the baseline manpower of approximately 260 full time equivalents (FTE's), or approximately 65 FTE's per year, which would severely damage our ability to remain a preeminent test facility. While AlliedSignal did report $2.2 Million productivity savings in Contract Year 1 (CY 1), NASA WSTF was required to retain funding levels as they were so that our mission could be accomplished. The tasks performed with these funds were basic to the site mission, were established at the beginning of the contract, and the budgeted (baseline) totals were not exceeded. It is our intent to do the same thing each contract year; i.e., reinvest any realized savings to keep the facility operating safely and responsively to customer requirements. Additional tasks were not created simply because funds were available, and we take exception to the statement that "these tasks may not be necessary." We reinvested the savings because we had valid, legitimate tasks to be accomplished, and we determined that the reinvestment of these savings was proper so that the safety and viability of the workforce could be maintained.

On a level-of-effort (LOE) contract, there are basically two ways to reduce costs; either by reducing the manpower negotiated in the baseline or by reducing the amount of negotiated materials actually procured. Indirect costs can also be reduced but they are secondary, their reduction comes only as a result of the primary action or actions taken concerning labors and materials. None of the documented savings involved a substantial reduction of materials and few of them were predicated on lowering manpower levels. No tasks were proposed to be deleted from the contract as a result of these cost savings. In actuality, the contract ended the first year at a staffing level slightly under the negotiated baseline due to difficulties in filling certain technical positions.

We also agree that incentives should exist to reward the contractor's efficient and economical performance, and NASA WSTF did adequately reward the contractor for its cost performance. An award fee contract is an excellent reward/incentive instrument if the fee arrangement is properly structured. The AlliedSignal contract allots 30 percent of the available fee dollars to cost performance and in the last two years, AlliedSignal has been rated Poor (labor rate problems), Very Good, Excellent, and Excellent.

Auditor's Findings

"NASA would not accept any proposal with different estimated labor hours even if the contractor estimated that it was capable of doing the work with less hours. As a result, ATSC proposed cost and productivity savings resulting from more effective and efficient management methodology in each of the five contract years under other direct cost (ODC) and the proposal

had a negative cost in the ODC. Inappropriate and inaccurate cost or pricing data could be avoided if NASA allowed the contractor to submit its best estimates in each of the cost elements."

Recommendation

"The CO should ensure that the contracting method: (1) does not prohibit the bidders from proposing the most efficient methodology to perform the work, i.e., less labor hours required to perform the same amount of work; and (2) allows the bidders to submit their cost or pricing data in accordance with FAR."

JSC Comments

We concur with the recommendation, but strongly disagree with some of the findings on which it is based. The report stated that the cost or pricing data submitted by AlliedSignal was not in accordance with the FAR. AlliedSignal did, in fact, submit all of its cost and pricing data in accordance with the FAR and certified (in accordance with FAR 15.804-4) that it was accurate, complete, and current. NASA WSTF was able to complete an evaluation of their submission during the cost evaluation process and presented those Findings to the Source Selection Official. The data presented in AlliedSignal's cost proposal was verifiable (JSC Space Transportation System Operational Contract (STSOC) contract metrics) and used by AlliedSignal to support its contention that the same management approach from another contract could also be applied to the AlliedSignal WSTF contract, and result in productivity and costs savings. These facts are thoroughly documented in the source evaluation and selection records.

It is true that the NASA Form 533 cannot properly report savings or cost overruns in its current format, however, this is a function of the limitations in the form's reporting capability, and not an invalidation of the cost data. As discussed with the auditor during the field work, NASA WSTF has developed an alternative method to record and evaluate the cost and productivity cost element, and track the savings which is periodically updated and used in the cost evaluation of AlliedSignal. NASA WSTF accepted the productivity and cost savings only because AlliedSignal was able to make an estimate based on historical accounting data accrued from the STSOC contract. This data was verifiable, and verification was obtained from the Deputy Procurement Officer prior to negotiation. Again, these facts are thoroughly documented in the source evaluation and selection records. The FAR allows such data to be accepted as long as "they are facts that can be reasonably expected to contribute to the soundness of estimates of future costs."

In structuring the Request for Proposal (RFP), NASA WSTF specified the number of labor hours as a pricing methodology and to ensure uniformity across each proposal. To require every proposer to independently develop their staffing plan in an LOE environment would have unfairly given the incumbent a distinct advantage. This method of ensuring uniformity is common through NASA in normalizing cost proposals for LOE contracts.

NASA WSTF did specify an LOE contract and required all proposers to submit their cost data contingent upon a specified estimate of hours. NASA WSTF estimated the number of labor hours based on known requirements, not on its budget. NASA WSTF estimated the number of hours required by using historical actuals augmented with known future work that we were reasonably sure would occur. Budget was a consideration in the process only to the extent in

determining whether we could continue doing the same tasks as we had previously done without a corresponding increase to the budget; a sound approach to any source evaluation in an environment where significant budget reductions are expected to continue through the life of the successor contract.

AlliedSignal chose to put its cost/productivity savings program within the Other Direct Costs (ODC) element, and that decision was evaluated and accepted by JSC Senior Procurement Management, the JSC Legal Office, and validated by the award protest proceedings. The decision by AlliedSignal to do so had nothing to do with the direct labor structure required by the RFP. In fact, another offeror proposed a similar savings arrangement which was also acceptable, but not costed in the same manner. Again, these facts are thoroughly documented in the source evaluation and selection records.

NASA WSTF is planning to convert this contract from LOE to a performance-based arrangement, but that has not yet been finalized.

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