

National Aeronautics and
Space Administration

Headquarters
Washington, DC 20546-0001



Reply to Attn of: **W**

OCT 25 1996

TO: 0100/Director, LeRC

FROM: W/Assistant Inspector General for Auditing

SUBJECT: Final Report
High Speed Research Prime Contractor Performance
Assignment No. A-LE-96-001
Report No. IG-97-002

The NASA Office of Inspector General (OIG) has completed an audit of the High Speed Research Prime Contractor Performance. Overall, prime contractor controls and procedures relative to the award and management of subcontracts were adequate; however, the Lewis Research Center (LeRC) needs to improve (1) pricing and technical analysis of subcontract costs during the initial award phase, and (2) documentation in contract files supporting the contracting officers rationale for providing subcontract consent. For more details, please refer to the Executive Summary and audit report which follow.

We issued a discussion draft report on August 30, 1996. On September 6, 1996, we met with the LeRC Director and other Center representatives to discuss the report. The LeRC Director's office provided a written response to us on October 7, 1996. These comments are shown after each recommendation and in Appendix 1 of the report. The OIG's evaluation of these comments is incorporated in the report.

LeRC management fully concurred with recommendations 1, 3, and 4; and concurred with qualifications to recommendation 2. We request to be included in the concurrence cycle for closure of recommendations 1 and 3. Recommendations 2 and 4 are considered closed upon issuance of this report. If you have any questions or need additional information, please contact either Lee Ball, Program Director, Aeronautics and Science Institutes, at 804-864-8500, or James Nugent, Director, Audit Division-B, or me at 202-358-1232.

Debra A. Guentzel
Debra A. Guentzel

Enclosure

cc:

JM/Ms. M. Peterson

RB/Mr. G. Fuller

LaRC/119/Mr. W. Sawyer

LeRC/0200/Mr. R. Fails

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IG-97-002

AUDIT REPORT

HIGH SPEED RESEARCH PRIME CONTRACTOR PERFORMANCE

LEWIS RESEARCH CENTER

October 25, 1996

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National Aeronautics and
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CONTRACTING OFFICER	CO
CONTRACTING OFFICER'S TECHNICAL REPRESENTATIVE	COTR
DEFENSE CONTRACT AUDIT AGENCY	DCAA
FEDERAL ACQUISITION REGULATION	FAR
GENERAL ELECTRIC AIRCRAFT ENGINES	GEAE
LEWIS RESEARCH CENTER	LERC
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	NASA
NASA HANDBOOK	NHB
OFFICE OF INSPECTOR GENERAL	OIG
PRATT & WHITNEY	P&W
PRICE ANALYST	PA
SMALL AND DISADVANTAGED BUSINESS	SDB

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HIGH SPEED RESEARCH PRIME CONTRACTOR PERFORMANCE

LEWIS RESEARCH CENTER, OHIO

EXECUTIVE SUMMARY

INTRODUCTION

In December 1991, the Lewis Research Center (LeRC) awarded contract NAS3-26385 to develop enabling propulsion materials for a high speed civil transport. The recipient of this \$177,686,777 cost-sharing contract (including options) was a prime contractor team of General Electric Company, General Electric Aircraft Engines, and United Technologies Corporation, Pratt & Whitney Division. Our review focused on subcontract management due to the significant number of subcontractors and their related costs. The prime contractor team has awarded both cost and fixed-price subcontracts.

OBJECTIVES

Our overall survey objective was to determine if both LeRC and contractor team controls and procedures for awarding and managing subcontracts were adequate. Specific objectives were to determine if: (1) subcontract awards were adequately competed; (2) the contractor team monitored and reported subcontractor costs adequately; (3) contractor oversight of subcontractors was adequate to ensure critical milestones and contract deliverables were met; (4) LeRC's oversight of subcontractor activity was adequate; and (5) the contractor team was meeting Small and Disadvantaged Business requirements.

RESULTS OF AUDIT

Our survey showed prime contractor controls and procedures relative to the award and management of subcontracts were satisfactory. With respect to LeRC's controls and procedures over subcontracting, we found three areas needing improvements. LeRC needs to:

- ensure a fair and reasonable contract price is obtained by performing an adequate pricing analysis of proposed subcontracts (Page 11);
- adequately document their evaluation of proposed subcontract awards prior to granting subcontract consent (Page 19); and,

- establish variance reporting thresholds promptly in order to improve both technical and cost oversight (Page 25).

In addition, we plan to issue a management letter addressing LeRC's monitoring of subcontractor competition.

RECOMMENDATIONS

We recommend:

1. The Chief, LeRC Procurement Division, remind contracting officers of their requirement to comply with the responsibilities identified in Federal Acquisition Regulation Section 15.806, "Subcontract pricing considerations."
2. The Chief, LeRC Procurement Division, require the analyses of subcontract costs by the prime contractor be performed and examined in accordance with Federal Acquisition Regulation Subsection 15.806-1 before applying decrement factors.
3. The Chief, LeRC Procurement Division, require the technical analyses of cost proposals be completed in accordance with policies, procedures, and responsibilities contained in LeRC Handbook 5115.2, "Technical Analysis of Cost Proposals."
4. The Chief, LeRC Procurement Division, require documentation supporting the evaluation process when granting subcontract consent for all procurements exceeding \$500,000. The documentation should state the rationale for the contracting officer's acceptance of the contractor's (1) justification for not competing the award (if applicable); (2) cost or price analyses and award amount; and (3) proposed efforts and statement of work.

INTRODUCTION

In December 1991, Lewis Research Center (LeRC) awarded contract NAS3-26385 to a prime contractor "team" of General Electric Aircraft Engines (GEAE) and Pratt & Whitney (P&W). The cost-sharing contract award of \$177,686,777 (including options) called for the prime contractor team to develop enabling propulsion materials for a high speed civil transport. The goals of the enabling propulsion materials project are to rapidly demonstrate the technology of critical advanced materials primarily related to the combustor and nozzle engine components of a yet-to-be-developed high speed engine. The present contract value is \$216,189,042, and project completion is expected by 2001. Subcontractor costs accounted for about \$57 million or 32 percent of the initial award. Due to significant subcontractor costs, we focused our survey activity on subcontract management. The prime contractor team used both cost and fixed-price subcontracts.

Although prime contractors are generally responsible for subcontracting, the contracting officer (CO) has overall responsibility on behalf of the Government for contract pricing and performance, including subcontracting. The Federal Acquisition Regulation (FAR) requires subcontracts to be evaluated by the CO as part of the proposal evaluation process. After the initial award, the FAR requires the CO granting subcontract consent to review proposed subcontract award documentation promptly, to use pricing or technical specialists as necessary, and to notify the contractor of his/her consent in writing. Terms of this contract require the CO to provide written notification of consent to the prime contractor within 7 workdays of receipt of the proposed subcontract award. In the absence of written approval, consent is implied after the 7-day period has elapsed.

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OBJECTIVES, SCOPE, AND METHODOLOGY

OBJECTIVES

We revised the objectives shown in the fiscal year 1996 OIG audit plan so as to focus on subcontract management. Our overall survey objective was to determine if both LeRC and contractor team controls and procedures for awarding and managing subcontracts were adequate. Specific objectives were to determine if: (1) subcontract awards were adequately competed; (2) the contractor team monitored and reported subcontractor costs adequately; (3) contractor oversight of subcontractors was adequate to ensure critical milestones and contract deliverables were met; (4) LeRC's oversight of subcontractor activity was adequate; and (5) the contractor team was meeting Small and Disadvantaged Business (SDB) requirements.

SCOPE AND METHODOLOGY

We reviewed the basic contract file on NAS3-26385 dated December 16, 1991. We also reviewed contract modifications issued through August 8, 1996. Our survey methodology (in sequential order by objective) included the following areas. We:

1. Obtained competition data from prime contractors; reviewed competition aspects of a limited number of proposed P&W subcontracts selected randomly; judgmentally selected and examined 20 GEAE subcontract awards; reviewed justifications for non-competitive awards; and discussed competition practices with both the former and present LeRC CO's, as well as P&W and GEAE procurement management officials.
2. Interviewed GEAE and LeRC financial representatives; analyzed NASA Form 533 reports; and reviewed GEAE systems used to compile, monitor, and report subcontract data.
3. Reviewed milestone statistics, assessed GEAE's methodology for monitoring performance status, and interviewed LeRC program managers and technical managers.
4. Evaluated LeRC's consent practices and assessed LeRC's pricing analyses of subcontracts during the pre-award phase.
5. Interviewed LeRC and GEAE SDB representatives, reviewed P&W and GEAE SDB reports, and reviewed GEAE SDB support.

**MANAGEMENT
CONTROLS
REVIEWED**

The primary management control procedures reviewed involved FAR requirements relating to competition, subcontract consent, and initial pricing of negotiated awards. We also reviewed GEAE and NASA procurement policy relating to competition practices. We discussed policy issues related to competition, consent, and pricing practices with management officials of the NASA Headquarters, Office of Procurement. The following significant controls were tested for compliance to the extent considered necessary to accomplish survey objectives. We reviewed:

- Sections of FAR Subpart 15.8, "Price Negotiation," with particular emphasis on Section 15.806, "Subcontract pricing considerations," which describes CO and prime contractor responsibilities for pre-award subcontract price analyses;
- LeRC Procurement Division Policy No. 440-1B, "Price and Cost Analysis for Negotiated Procurements," which establishes policies and procedures covering the analysis of costs and prices for all negotiated procurements;
- LeRC Handbook 5115.2, "Technical Analysis of Cost Proposals," dated November 1986, which establishes requirements and procedures for performing technical analyses of cost proposals;
- FAR Part 44, "Subcontracting Policies and Procedures," with specific emphasis on Subpart 44.2, which describes CO responsibilities for subcontract consent;
- The Comptroller General's "Standards for Internal Controls in the Federal Government," with emphasis on the documentation standard which requires that all transactions and significant events of an agency be clearly documented;
- LeRC Procurement Division Policy and Procedure No. 680-1B entitled "Consent to Subcontract," which summarizes and clarifies FAR/NASA FAR Supplement requirements for subcontract consent; and
- NASA Handbook (NHB) 9501.2B, "Procedures for Contractor Reporting of Correlated Cost and Performance Data." The NHB contains instructions and requirements relating to NASA Form 533 reports, subcontract reporting, and contractor

performance measurements. NASA Form 533 reports are monthly financial management and performance reports prepared by the contractors which are used by LeRC management to monitor contractor activity. The reports include actual costs, cost projections, schedule, and technical information.

The survey identified weaknesses associated with the significant controls shown above, which are discussed in detail in the Observations and Recommendations section of the report.

***INDICATIONS OF
FRAUD, WASTE,
ABUSE OR ILLEGAL
ACTS***

Nothing came to our attention during our survey to indicate instances of fraud, waste, abuse, or illegal acts.

AUDIT FIELD WORK

Our field work was conducted from November 1995 through June 1996. We conducted field work primarily at LeRC. Field work was also performed at GEAE, Cincinnati, Ohio. Work was not performed at P&W due to time and budget constraints. The survey was performed in accordance with generally accepted government auditing standards.

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OBSERVATIONS AND RECOMMENDATIONS

OVERALL EVALUATION

The survey showed competition obtained by the prime contractor team was low in our opinion. However, both LeRC and contractor team management consider competition levels adequate. We reviewed NASA Form 533 reports submitted by the contractor teams and consider them adequate. Our observations of GEAE controls and systems used to monitor and report subcontract obligations, expenditures, invoices, and financial data indicated the controls were satisfactory, and data we tested was adequately supported. Contract milestones were being met at an acceptable level; and we found GEAE's methodology for monitoring subcontractor progress to be adequate. We also consider GEAE SDB activity satisfactory.

Based on our examination of limited amounts of financial and SDB report information provided to LeRC by P&W, as well as discussions with LeRC management and the Administrative CO, nothing came to our attention to cause us to question P&W's subcontract management activities.

Based on our evaluation of LeRC controls and procedures over subcontracting, we found three areas needing improvements. We also identified a fourth area involving LeRC's monitoring of subcontractor competition for which we will issue a management letter. Relative to the three areas needing improvements, LeRC should:

- ensure a fair and reasonable contract price is obtained by performing an adequate pricing analysis of proposed subcontracts;
- adequately document their evaluation of proposed subcontract awards prior to granting subcontract consent; and,
- establish variance reporting thresholds promptly in order to improve both technical and cost oversight.

Detailed discussions of these three issues follows.

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***INADEQUATE PRICING
ANALYSES***

The pricing analysis of proposed subcontract costs was inadequate to ensure a fair and reasonable price was negotiated on contract NAS3-26385. First, only \$9.5 million of the \$66.2 million of subcontract costs initially proposed were examined by the Defense Contract Audit Agency (DCAA). Second, LeRC's technical review of the proposal was not complete. FAR Subsection 15.806-1 requires the CO to analyze proposed subcontract costs in order to determine the price reasonableness of the prime contract. The former CO acknowledged procedures for pricing the contract were streamlined due to time and staffing constraints. As a result, LeRC's negotiation position was weakened, which increased the risk of an overstated contract price.

FAR Requirements

FAR Subsection 15.806-1, "Subcontract pricing considerations," requires:

- The CO to determine the price reasonableness of the prime contract. In order to make this determination, an analysis must be made of all relevant facts and data including subcontractor cost or pricing data required to be submitted, field pricing support, and results of the prime contractors' analyses of subcontractor proposals;
- Subcontractors to submit cost or pricing data to the prime contractor unless an exemption is claimed; and
- Prime contractors to conduct price or cost analyses as appropriate for all subcontracts and to submit their analyses as part of their own cost or pricing data submission.

Subcontractor data is normally analyzed in an examination of pricing proposals performed by DCAA auditors. The audit results are provided to the price analyst (PA), who provides advice to the CO concerning the general areas of proposal evaluation and analysis, and cost and pricing data. The PA also provides pricing reports to CO's for negotiated procurements in excess of \$500,000. Pricing reports normally include the results of DCAA audits and technical analyses. Per LeRC Handbook 5115.2, "Technical Analysis of Cost Proposals," the technical analysis is the responsibility of the technical division that initiates the procurement request, which in this case was LeRC's Materials Division. The technical analysis supports contract negotiations and should consist of an evaluation memorandum and

detailed work sheets explaining why proposed costs were accepted or taken exception to. The CO is responsible for ensuring the completeness and adequacy of both pricing and technical evaluations.

***Overview Of Key Events
Preceding Negotiations***

Contract pricing began with each prime contractor submitting cost proposals in May 1991. The proposals consisted of basic program costs, with options for combustor and nozzle work. Proposed costs, including cost sharing amounts (the contractors bore 5 percent of total costs under the initial award provisions) were \$194.2 million of which \$66.2 million were subcontract costs (see Exhibit 1). LeRC's initial pricing reports outlining negotiation strategy (based on the May 1991 proposed costs) were issued in September 1991.

In August 1991, NASA Headquarters reduced funding slightly for this contract effort, causing LeRC to request revised proposal data which was eventually received from both contractors about October 10, 1991. The revised proposed costs were \$186.8 million of which \$56.9 million were subcontract costs (see Exhibit 1). Updated pricing reports reflecting revised data were prepared prior to commencement of negotiations with P&W on October 22, 1991. GEAE negotiations directly followed.

***Most Proposed
Subcontract Costs Not
Audited***

DCAA audit reports detailing results of both prime contractors proposed costs were received in June 1991. Based on our review of these reports, we found that DCAA examined none of GEAE's proposed subcontract costs and less than half of those proposed by P&W. Specifically:

- In the GEAE audit report, DCAA auditors did not question any of the proposed subcontract costs of \$31 million. The report contained no explanatory note as to what the basis for the proposed costs was, what support was provided/reviewed, and why DCAA considered the costs acceptable. Discussion with the DCAA auditor who performed the review revealed he did not examine the proposed subcontract costs since he was instructed by LeRC's PA to provide only decrement factors¹ for subcontracts.
- DCAA reviewed \$16.6 million of P&W proposed subcontract costs attributable to the basic portion of the contract. Only \$9.5 million, however, was audited because \$7.1 million of the proposed costs were unsupported. The DCAA report

stated the required analyses of unsupported costs should be submitted to the CO prior to completion of prime contract negotiations.

- DCAA auditors did not evaluate or report on the allowability of an additional \$18.6 million of proposed subcontract option costs. Neither LeRC's PA nor DCAA could advise us as to why all costs were not examined because supporting documents/evidence could not be located.

Even though an updated proposal was received from the prime contractors, no additional audit review was requested or provided. In lieu of the DCAA analysis, the PA's final pricing report recommended LeRC's negotiation position for subcontract costs be developed by applying a decrement factor to proposed amounts. The PA's report did not mention DCAA had not audited most of the proposed subcontract costs. Nor did the report indicate \$7.1 million of unsupported costs had not been resolved.

The PA told us that he used decrement factors after learning that DCAA was not conducting the audits at GEAE. Because of the large number of subcontracts and tight time constraints, he considered decrement factors the only practical approach for pricing the award. The PA considered decrement factors reasonable because (1) the contracts were cost-sharing, (2) both contractors had approved purchasing and estimating systems, and (3) DCAA supported their use.

The OIG believes the use of a decrement factor in lieu of performing the required analysis of subcontract costs is an inappropriate pricing decision. Discussion with the Director of the NASA Headquarters Office of Procurement Analysis Division disclosed there is no NASA-wide pricing policy. The Director stated decrements are an appropriate pricing technique but are not a replacement for the FAR-required analysis of proposed subcontract costs. He indicated a decrement factor is appropriate for use in certain circumstances and is dependent on the amount of historical data available for a specific vendor. LeRC pricing policy makes no mention of decrement factors. NASA's position relative to the use of decrements is consistent with Chapter 9, Section 404.6 of the DCAA Contract Audit Manual entitled "Subcontract Decrement," which indicates decrements should not be used in lieu of the prime contractor analyses required by FAR.

Technical Review Not Complete

In addition to audit related concerns, we found LeRC technical evaluators prepared evaluation forms and questioned proposed subcontractor costs/efforts in numerous instances which were never resolved. For example, the evaluators stated:

- "The information provided for [the subcontractor] is of little use in determining what will be performed for \$2.2 million."
- "The dollars listed for subcontractors in the detailed cost breakdown sheets (\$2,279,021) does not match the amount corresponding to the subcontractors listed (\$1,418,437)."
- "There is not enough information provided to evaluate [the subcontractor]."

Furthermore, our review of LeRC's technical analyses showed:

- adequate support to describe the scope of the evaluation was lacking;
- adequate documentation with a trail to allow reconstruction of the evaluation was lacking; and
- the CO, rather than the Contracting Officer's Technical Representative (COTR), prepared the technical report.

Upon completion of the technical analyses, evaluation forms were given to LeRC's PA in August 1991, who considered them inadequate to prepare his September pricing report. Instead of obtaining a comprehensive technical analysis from the COTR, the CO constructed a "Summary Technical Evaluation," which was forwarded to the Project Manager and PA on August 30, 1991.

We consider the CO's technical summary inadequate. The summary did not address the resolution of concerns raised in the evaluation forms. The summary should have been prepared by the COTR and included a detailed evaluation of the quantitative and qualitative requirements for hours, material, subcontract costs and other items. Although the CO's summary shows a few proposed subcontractors and their associated costs were questioned in their entirety, a properly documented analysis of all costs is absent. The CO also prepared a

second summary technical evaluation based upon updated proposal data, but no additional subcontract costs were questioned.

***Time, Staffing, and
Funding Constraints
Caused Inadequacies***

The CO indicated time, staffing, and the reduction in available contract funding shortly before negotiations began affected his ability to examine data more closely. He believed, however, the final subcontract costs were properly evaluated in a general sense. The CO indicated he relied on information in the pricing reports and was largely unaware of the unaudited costs. While he could not recall the specific events which led to his preparing the technical summaries, he told us he compiled the August technical summary using proposed costs in most instances, rather than information taken from the technical evaluation forms. Relative to revised proposal data, the CO indicated his technical representative was in daily contact with GEAE and P&W representatives. The CO informed us that NASA, GEAE, and P&W worked closely together as Integrated Product Development teams in assuring the updated data met revised NASA funding requirements.

***Risk Of Overstated
Contract Price
Increased***

As a result of the CO relying on inappropriate pricing and technical analyses, the Center's ability to secure a reasonable contract price was diminished, and the risk of an overstated contract price was increased. If the contract price was overstated, excess funds were committed to this contract which would have adversely impacted funding for other LeRC/NASA aeronautical programs. Also, overstated prices would result in inflated project plans/budgets which would skew performance measurement results. We believe a clear definition and restatement of responsibilities is needed to avoid future problems.

RECOMMENDATION 1

The Chief, LeRC Procurement Division, remind contracting officers of their requirement to comply with the responsibilities identified in FAR Section 15.806, "Subcontract pricing considerations."

Management's Response

Concur. Contracting Officers will be reminded of the requirement to comply with the responsibilities identified in FAR 15.806, "Subcontract Price Considerations."

***Evaluation of
Management's Response***

This action is responsive to our recommendation. However, in addition to responding to the specific recommendation, LeRC management provided background information concerning what they consider unique factors on contract NAS3-26385 (see Appendix 1).

Management states that revised program funding levels resulted in about a 10 percent cost reduction. The OIG disagrees with this aspect of management's response. As shown in Exhibit 1 of the report, total proposed costs in May 1991 of \$194.2 million were revised to \$186.8 million as of October 1991, resulting in a reduction of only \$7.8 million or 3.8 percent.

RECOMMENDATION 2

The Chief, LeRC Procurement Division, require the analyses of subcontract costs by the prime contractor be performed and examined in accordance with FAR Subsection 15.806-1 before applying decrement factors.

Management's Response

Concur (with qualification). An analysis of the subcontract costs will usually be required before applying decrement factors. However, in specific cases such as this one, analysis can prove beneficial. We believe that this must remain a decision made in light of the specific circumstances of each case. In order to preclude the inappropriate use of decrement factors, the Procurement Officer will require that written approval be granted where such factors are applied before an analysis is performed.

**Evaluation of
Management's Responses**

Management's actions are generally responsive to the recommendation. However, as we stated in the report, the FAR requires an analysis of subcontract costs. Neither the FAR or LeRC pricing policy contain guidance supporting the use of decrements *in lieu of* the required analysis of subcontract costs. Also, decrement factors are not applicable to all contract awards, particularly those pertaining to research and development activity because of the uniqueness of research efforts. They are more appropriate for fixed price or repetitive type procurements. Lastly, as we stated at the exit conference, LeRC's attempt to reduce the initial contract award by applying decrements to proposed subcontract costs was successfully refuted in negotiations by one of the prime contractors.

RECOMMENDATION 3

The Chief, LeRC Procurement Division, require the technical analyses of cost proposals be completed in accordance with policies, procedures, and responsibilities contained in LeRC Handbook 5115.2, "Technical Analysis of Cost Proposals."

Management's Response

Concur. The Chief of the LeRC Procurement Division will require that technical analysis of cost proposals be performed in accordance

with LeRC Handbook 5115.2, "Technical Analysis of Cost Proposals."

***Evaluation of
Management's Response***

Management's action is responsive to the recommendation.

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***CONSENT
EVALUATION PROCESS
NOT DOCUMENTED***

Little documentation existed in the contract files to support the CO's evaluation process prior to granting consent to subcontract. Both FAR and LeRC Procurement Division policy impose certain considerations and requirements upon a CO when evaluating proposed subcontracts. The Comptroller General's "Standards for Internal Controls in the Federal Government" and the FAR require all transactions or significant events to be clearly documented. Despite these considerations and requirements, LeRC policy does not mandate the CO to document his/her evaluation, nor does the current CO consider formally recording his evaluation necessary. Because documentation is lacking, we consider LeRC internal controls with respect to consent inadequate; and we lack reasonable assurance evaluations have been thorough and complete for millions of dollars in subcontract awards.

Consent to subcontract is required under FAR Part 44 when subcontract work is complex, the dollar value substantial, or the Government's interest is not adequately protected by competition. FAR defines consent to subcontract as the CO's written consent for the prime contractor to enter into a particular subcontract. As permitted by FAR, the CO waived some consent requirements since both GEAE and P&W have approved purchasing systems. However, certain conditions still remain requiring CO consent such as the issuance of cost type subcontracts for experimental, research, or developmental work.

FAR requires the CO granting consent to review proposed subcontract award documentation promptly, to use pricing or technical specialists as necessary, and to notify the contractor of his consent in writing. Terms of contract NAS3-26385 require the CO to provide written notification of consent to the prime contractor within 7 workdays of receipt of the proposed subcontract award. In the absence of written approval, consent is implied after the 7-day period has elapsed.

***Numerous FAR
Requirements Exist***

FAR Subsection 44.202-2, "Contracting officer's evaluation," states, "The CO responsible for consent shall review the request and supporting data and consider the following" The FAR lists 13 items for CO consideration, examples of which include, but are not limited to:

- Was adequate competition obtained or its absence properly justified?

- Has the contractor performed adequate cost or price analysis or price comparisons and obtained accurate, complete, and current cost or pricing data, including any required certificates?

In addition, LeRC issued Procurement Division Policy and Procedure No. 680-1B, "Consent to Subcontract," in September 1992. The purpose of the policy was to add some specific guidance in those areas of the FAR which were not clear or required judgment, and to reaffirm subcontracts are an important element of contract administration and require appropriate attention and consideration. The policy contains 5 attachments, 1 of which is a "Consent to Subcontracts Checklist," which lists about 25 items the CO could take into consideration prior to granting subcontract consent. A copy of the checklist is shown as Exhibit 2. However, according to the Chairperson for LeRC's Policy and Procedure Board whose signature is affixed to the policy, the checklist was attached for guidance purposes only and does not have to be completed for each award.

***Documentation
Required By
Government
Internal Control
Standards And FAR***

Nonetheless, sufficient documentation of transactions or significant events is required by the Comptroller General's "Standards for Internal Controls in the Federal Government," as well as the FAR. The internal control standards, which were issued in 1983, are to be followed by executive agencies in establishing and maintaining systems of controls as required by the Federal Managers' Financial Integrity Act of 1982. The documentation standard, which is one of six specific internal control standards, requires written evidence of all pertinent aspects of transactions and other significant events of an agency. It requires the documentation be purposeful and useful to managers in controlling their operations, and to auditors or others involved in analyzing operations.

Furthermore, FAR Subpart 4.8, "Contract Files," states,

... documentation in the contract files shall be sufficient to constitute a complete history of the transaction for the purpose of providing a complete background as a basis for informed decisions at all steps in the acquisition process; supporting actions taken; and providing information for reviews and investigations.

We consider consent to millions of dollars in subcontract awards significant, and believe sufficient documentation should exist to

support the CO's decision to grant consent.

Documentation supporting subcontract consent has been minimal since contract inception. At the time our field work ended, support for consent in the files consisted solely of the CO's signature and a statement from LeRC technical personnel indicating the proposed subcontract "Statement of Work" had been reviewed and was adequate. During the first 2 years of the contract, there was often no evidence of a review occurring at all. Without added documentation, we cannot determine if the CO made the necessary considerations before granting consent. For example, we observed instances where the prime contractors provided justifications for not obtaining competition and prepared pricing analyses for proposed subcontracts; yet, we cannot determine if the CO reviewed the documentation submitted and considered the lack of competition justified or the proposed pricing reasonable. We also noted instances where "Certificates of Current Cost or Pricing Data," which are required by the FAR and needed to protect the Government's interests, were missing. Despite the absence of documented evaluations, consent had been granted.

***Opinions Differ As
To Documentation
Needed***

We questioned the three key LeRC personnel involved in the evaluation process since contract inception as to the considerations previously made and the lack of documentation in the files. We found differences among the individuals as to what had actually been evaluated, how it was documented, and how the individuals believed it should be documented. The former CO acknowledged his evaluations were often insufficient due to multiple responsibilities, and, in retrospect, expressed the need for completing a checklist although he had not done so. Conversely, the current CO told us his evaluation complies with FAR requirements and claims documentation other than his signature indicating consent is not needed. He contended completing a checklist would simply create unnecessary paperwork. The COTR, who generally signed off on proposed subcontracts by indicating he has reviewed only the statement of work, indicated he also evaluated pricing data for reasonableness and compliance with budgetary guidelines. The COTR stated he has no objection to more thoroughly documenting his evaluation if considered necessary.

The varying opinions and practices displayed demonstrate a need to require either the use of a checklist or alternative documentation for control purposes. Although LeRC issued a policy with the control

objective of ensuring appropriate attention and considerations be made before granting subcontract consent, the CO was not using the needed internal control technique (a documented review/checklist) which ensures management the desired control objective is met.

***Management's Opinion
Regarding Consent
Documentation***

We discussed consent documentation requirements with both the Chief of LeRC's Procurement Division and the Deputy Director of the NASA Headquarters Office of Procurement, Contract Management Division. Headquarters advised us NASA does not have an agency-wide policy for documenting consent and that practices vary across centers. However, Headquarters believes there are no systemic problems in the consent area. LeRC's Chief does not believe the use of a checklist should be mandated and that present practices are acceptable. Nonetheless, existing documentation does not provide reasonable assurance the processes mandated within the FAR, LeRC policy, and the Comptroller General's Internal Control Standards are being followed. LeRC's consent to millions of dollars of subcontract awards is significant, and we believe the Center/Agency is increasing its risk to wasteful practices by not requiring the consent evaluation process be formally documented.

Options available to management include requiring completion of a checklist similar to the example shown in Exhibit 2 of this report. As an alternative, we believe documentation of key aspects of subcontracts should be provided for all procurements exceeding the current cost or pricing data threshold of \$500,000. Such documentation could include a memorandum indicating the CO's evaluation and approval of critical, subjective aspects of proposed awards. These critical areas include the contractor's justification for not obtaining competition (if applicable); the reasonableness of the contractor's pricing analyses and award amount; and a technical analyses of proposed hours/efforts and the statement of work. Documenting the evaluation and acceptance of the prime's competition efforts, coupled with adequate pricing and technical analyses, meets the intent of the FAR requirement for the CO to obtain pricing and technical assistance as necessary.

RECOMMENDATION 4

The Chief, LeRC Procurement Division, require documentation supporting the CO's evaluation process when granting subcontract consent for all procurements exceeding \$500,000. The documentation should state the rationale for the CO's acceptance of the contractor's (1) justification for not competing the award (if

applicable); (2) cost or price analyses and award amount; and (3) proposed efforts and statement of work.

Management's Response

Concur. Documentation supporting the decision to consent to subcontracts in excess of \$500,000 will be required. Our rationale for consenting to these subcontracts will be based on the sole source justifications and cost or pricing analyses provided by the contractors.

***Evaluation of
Management's Response***

This action is considered responsive to our recommendation.

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***VARIANCE
THRESHOLDS SHOULD
BE PROMPTLY
ESTABLISHED***

A contract modification reflecting revised variance thresholds that management wanted strengthened had not been enacted in a timely manner. The contract establishes variance thresholds which, if exceeded, identify significant deviations from planned performance levels and require contractors to submit variance analysis reports. Although discussions concerning revised thresholds began in July 1995, issuance of a modification had been delayed because LeRC management and the contractor team had not agreed upon revised thresholds. Due to this delay of about 1 year, management continued to receive information we consider limiting, thus restricting cost and technical oversight.

Variance thresholds are established contractually to enable LeRC and the contractor team to identify significant deviations from planned performance levels. NHB 9501.2B, "Procedures for Contractor Reporting of Correlated Cost and Performance Data," identifies two variances for measuring contract performance which are referred to as schedule and cost variances. The NHB describes these variances as follows:

- Schedule variance is computed by comparing the value of the completed effort (budgeted cost of work performed) with the baseline plan (budgeted cost of work scheduled). The result indicates if the accomplished effort was more or less than planned.
- Cost variance is computed by comparing the value of the completed effort (budgeted cost of work performed) with the actual cost of work performed. The result of this comparison indicates if the accomplished effort costs more or less than planned.

***Variance Criteria
Established By Contract***

The NHB also provides for Centers to specify in the contract the criteria for determining when variances will require explanations by the contractor. Current contract language requires each prime contractor to (1) submit a Monthly Contractor Financial Management Performance Analysis Report (also known as the 533P), and (2) prepare a variance analysis explanation/report if the cost or schedule variance for specific categories exceeds \$500,000 and is plus or minus (+/-) 20 percent from planned levels. When both the dollar and percentage thresholds are exceeded, the contractor must prepare a variance analysis explanation/report identifying the underlying cause(s) for the variance and proposed corrective actions.

The COTR, whose duties include monitoring work progress, believed existing variance thresholds were too broad and did not provide the detailed cost and schedule information needed to properly monitor contractor/subcontractor performance. Discussions aimed at revising the thresholds by issuing a contract modification began during a July 1995 meeting which included contractor and LeRC representatives.

***Contractor Team
Proposes Lower
Thresholds***

After discussions began in July, the contractor team responded by submitting its own proposed modification to LeRC management in September 1995. The proposed modification lowered both the dollar and percentage variance thresholds, which would likely result in more variances being identified, thus imposing more stringent reporting requirements on the contractor team. Although LeRC management has informally discussed the proposal with the contractor, they have not officially responded to the team's proposal. LeRC also has not formalized its own proposal; however, the COTR advised us he is considering a plan which would establish various thresholds by task levels. We discussed the COTR's plan with one of the contractor team's financial analysts, who told us the proposed methodology is contrary to normal industry practice, and would require modifications to the contractor's cost system which may not be practical or affordable. Thus, it appears little progress has been made since July 1995 to define new thresholds.

When asked about the delay, the COTR indicated that on at least two occasions solutions were proposed and apparently agreed upon only to have a disagreement arise at a later date. The COTR also mentioned Government furloughs had negatively impacted the communication process. We consider the COTR well intended; however, prompt definitive action and improved coordination efforts with the contractor team are needed to improve contract oversight.

Because thresholds at which variance analysis reports were required remained unchanged, LeRC continued to receive information we consider limiting; and contract oversight relative to cost and technical issues was being unnecessarily hampered. The ability of LeRC and the contractor team to work together has been excellent to date and is critical to this research effort.

In response to our concerns, and prior to distribution of this report, LeRC recently issued a June 1996 contract modification. The modification reduced/revised both the schedule and cost variance

thresholds to plus or minus (+/-) 10 percent and \$200,000 for each member of the contractor team. In our opinion, this action represents a significant improvement with respect to monitoring contract performance and is responsive to recommendations we had planned to make. Accordingly, we do not believe further actions are needed, and we make no recommendation.

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END NOTE

1. A decrement factor is a reduction to a prime contractor's proposed costs (for a particular vendor) based on historical data comparing vendor quotes to actual award amounts. For example, if a subcontractor proposed costs of \$2 million, and the actual award amount is \$1.8 million, the decrement factor is computed as 10 percent ($\$200,000/\2 million). DCAA has developed decrement factors for use in helping to develop recommended costs. The factor can vary according to whether the procurement is competitive or not. The decrement factors used in LeRC's pricing reports are based on DCAA input.

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Proposed Costs – NAS3-26385

<u>MAY 1991 PROPOSED COSTS</u>			
<u>Prime Contractor</u>	<u>Proposed Costs (Includes Cost Share)</u>	<u>Proposed Subcontract Cost (Includes Cost Share)</u>	<u>Cost-Share Portion (5.0%)</u>
P&W	\$ 94.2 million	\$35.2 million	\$ 4.7 million
GEAE	\$100.0 million	\$31.0 million ¹	\$ 5.0 million
Totals	<u>\$194.2 million</u>	<u>\$66.2 million</u>	<u>\$9.7 million</u>

<u>OCTOBER 1991 PROPOSED COSTS</u>			
<u>Prime Contractor</u>	<u>Proposed Costs (Includes Cost Share)</u>	<u>Proposed Subcontract Cost (Includes Cost Share)</u>	<u>Cost-Share Portion (5.0%)</u>
P&W	\$ 91.4 million	\$34.8 million	\$ 4.6 million
GEAE	\$ 95.4 million	\$22.1 million ¹	\$ 4.8 million
Totals	<u>\$186.8 million</u>	<u>\$56.9 million</u>	<u>\$9.4 million</u>

Note

1. Includes R&D subcontract costs only.

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EXHIBIT 2

Consent to Subcontract Checklist From LeRC Procurement Division
Policy No. 680-1B

CONSENT TO SUBCONTRACTS CHECKLIST		REFERENCES: FAR 44 MABA FAR 18-44	DATE
PRIME CONTRACT NUMBER	NAME OF PRIME CONTRACTOR		
NAME OF SUBCONTRACTOR	TYPE OF SUBCONTRACT		
APPROPRIATION / SUBPROGRAM / SYSTEM / STATUS			
a. Approved <input type="checkbox"/> Withhold <input type="checkbox"/> Cognizant Region _____			
b. If not subject to Government review, did prime evaluate?			
CONTRACTOR HAS PROVIDED THE FOLLOWING INFORMATION ON THIS AS:			
a. Description - Type of service/supplies:			
b. NUMBER OF SOURCES SOLICITED _____	NUMBER OF QUOTES RECEIVED _____		
c. Written justification for selection received?			
d. Written justification for sole source required/received?		NA	
(1) Certification was obtained for FIP resources if FIRM applies?			
e. Prime contractor in compliance with FAR 8.104-4 "Subcontractor responsibility"?			
(1) If no, how was subcontractor responsibility determined?			
f. Copy of RFQ/Proposal received?			
g. Appropriate prime contract flow down clauses incorporated? (if no, comment)			
h. Data on primes previously paid for the same or substantially similar items and quantities received?			
i. Do current/prev awards to this supplier under this prime exceed \$100,000?			
j. Current, accurate, and complete cost or pricing data received from subcontractors?			
k. Certificate of current cost or pricing data obtained by the Prime, if required?			
l. Did prime contractor prepare a documented engineering estimate or cost/price analysis? (if no, comment)			
m. Was a Government price/cost analysis prepared?			
(1) If yes, is contractor review and evaluation of the Government analysis documented?			
n. Any deviation from prime contract make-or-buy structure?			
o. If OFE used, has proper consideration been obtained?			
p. Is Office of Federal Contracts Compliance Program (OFCCP) clearance required? (FAR 22.8)			
(1) If yes, DATE REQUESTED _____ DATE RECEIVED _____			
q. Does CAS apply? (48 CFR 801.201-1 (see PIC 92-3))			
(1) Did subcontractor provide a copy of Disclosure Statement to Prime?			
(2) If no, did subcontractor provide the Prime with a CAS Certificate?			
3. RECOMMEND CONSENT FOR PROPOSED SUBCONTRACT			
SIGNATURE OF CONTRACT ADMINISTRATOR/SPECIALIST	CONCUR: SIGNATURE OF ADMINISTRATIVE CONTRACTING OFFICER	DATE CONTRACTOR NOTIFIED OF DISSENT ACTION	

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Management's Response to the Audit Recommendations

National Aeronautics and
Space Administration
Lewis Research Center
Cleveland, OH 44135-3191



OCT 07 1996

Reply to ABR of: 0200

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

FROM: 0100/Director

SUBJECT: Discussion Draft Audit Report
High Speed Research Prime Contractor Performance
Assignment No. A-LE-96-001

We appreciate the opportunity to review and comment on this discussion draft. There are some unique factors regarding the EPM contract which should be considered in any assessment of the adequacy of the procedures for awarding and managing subcontracts.

First, the EPM contract is a cost-sharing contract. The contractor team (GE/PAW) receives no fee or profit from the contract. In fact, the contractor team absorbs 5 percent of all costs incurred under the contract, including all subcontractors costs. We believe that this serves as an incentive for the contractor team to award cost effective subcontracts. The purchasing systems of both contractors were approved by appropriate Government authorities and the internal controls regarding subcontracting were found to be adequate. No specific cases of any excess costs were identified by the auditors. From this we conclude that there is no evidence to support a conclusion that the Government suffered any loss attributable to the process used in negotiating and administering this contract.

The specific purpose of this contract is to develop materials which will be used in commercial aircraft engines produced in the near-term by GE and PAW. We believe this also provides further motivation for the contractor team to conserve the resources made available under the contract. To further encourage the rapid development of these

Management's Response to the Audit Recommendations

materials, the contract includes the clause entitled, "Rights in Data - Limited Exclusive Rights." This approved deviation to the FAR provides the data rights to the GE/PEW team rather than to the Government. Essentially, this encourages the contractor team to negotiate cost-effective subcontracts, just as they would if the subcontracts were for their own internal research and development.

Secondly, the contractor team was instructed to reduce its cost proposal significantly because of reduced funding for the program. These cost reductions (about 10 percent) produced little, if any, scope reductions in the subcontracts. Ideally, a negotiation position is based on detailed technical evaluations and analyses. It was with this objective in mind that the Contracting Officer (CO) asked the technical monitor for each subproject to complete and submit evaluation worksheets. The evaluations were then consolidated and used in establishing our negotiation position.

DCAA was instructed to include decrement factors in the GE subcontracts only after we learned that DCAA would be unable to complete the subcontractor-assist audits in time to meet our need. However, where we used the decrement factors, we also incorporated in our negotiations the specific issues raised in our technical evaluations. Finally, we note that the Government was able to negotiate significant reductions from the proposed costs based on these specific issues and the decrement factors.

Finally, the EPM contract employed a form of project management known as Integrated Technology Development (ITD) Teams. Each team consisted of at least one representative from GE, PEW, and LeRC. Therefore, unlike the customary subcontract, the specifications for the subcontracts had NASA input prior to their solicitation.

Management's Response to the Audit Recommendations

3

With regard to the four recommendations contained in the discussion draft, we respond as follows:

Recommendation 1 - Concur. Contracting Officers will be reminded of the requirement to comply with the responsibilities identified in FAR 15.806, "Subcontract Price Considerations."

Recommendation 2 - Concur (with qualification). An analysis of the subcontract costs will usually be required before applying decrement factors. However, in specific cases such as this one, analysis can prove beneficial.¹ We believe that this must remain a decision made in light of the specific circumstances of each case. In order to preclude the inappropriate use of decrement factors, the Procurement Officer will require that written approval be granted where such factors are applied before an analysis is performed.

Recommendation 3 - Concur. The Chief of the LeRC Procurement Division will require that technical analysis of cost proposals be performed in accordance with LeRC Handbook 5115.2, "Technical Analysis of Cost Proposals."

Recommendation 4 - Concur. Documentation supporting the decision to consent to subcontracts in excess of \$500,000 will be required. Our rationale for consenting to these subcontracts will be based on the sole source justifications and cost or price analyses provided by the contractors.


Donald J. Campbell

cc:
HQ/R/R. E. Whitehead
HQ/RB/G. C. Fuller
LeRC/OIG/L. T. Ball
LeRC/I/W. P. Sawyer
LeRC/OIG/C. A. Sipscock
LeRC/OIG/M. P. Bruns

Note:

1. On October 28, 1996, LeRC management notified the OIG of an inadvertant error in LeRC's response. The corrected sentence reads, "However, in specific cases such as this one, we believe that the use of decrement factors without a prior analysis can prove beneficial."

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APPENDIX 2

**House Committee on Government Reform and Oversight
House Subcommittee on Space and Aeronautics, Committee on Science
House Committee on Science**