REPORT TO THE CONGRESS

Overstatement Of Contract Target Costs For F-1 Rocket Engines For Saturn V Launch Vehicle

B-167838

National Aeronautics and
Space Administration

BY THE COMPTROLLER GENERAL OF THE UNITED STATES

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON D.C. 20548

B-167838

To the President of the Senate and the
Speaker of the House of Representatives

This is our report on overstatement of contract target costs for the F-1 rocket engines for the Saturn V launch vehicle, National Aeronautics and Space Administration.

Our review was made pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53), the Accounting and Auditing Act of 1950 (31 U.S.C. 67), and the authority of the Comptroller General to examine contractors' records, as set forth in contract clauses prescribed by the United States Code (10 U.S.C. 2313(b)).

Copies of this report are being sent to the Director, Office of Management and Budget, and to the Acting Administrator, National Aeronautics and Space Administration.

Elmer B. Staats

Comptroller General
of the United States

Contents

COMPTROLLER GENERAL'S REPORT TO THE CONGRESS

OVERSTATEMENT OF CONTRACT TARGET COSTS FOR F-1 ROCKET ENGINES FOR SATURN V LAUNCH VEHICLE National Aeronautics and Space Administration B-167838

D I G E S T

WHY THE REVIEW WAS MADE

Preliminary review by the General Accounting Office (GAO) at the Marshall Space Flight Center indicated large cost underruns for two cost-plus-incentive-fee contracts between the National Aeronautics and Space Administration (NASA) and North American Rockwell Corporation's Rocketdyne Division at Canoga Park, California The contracts are for F-1 rocket engines for the Saturn V launch vehicle. Underruns of the target cost--a cost forecast included in a contract for control purposes--result, in an incentive type of contract, in a larger fee for the contractor.

If a target cost in a contract is not based on accurate, complete, and current data, an underrun might be due to initial overestimates of cost, rather than to efficiency of the contractor. In such cases, the additional fee paid the contractor is in the nature of a windfall rather than an earned fee. (See p. 3.)

GAO examined the two contracts to determine whether that portion of the target cost related to materials was based on the latest cost and pricing data available to the contractor at the time it certified the contract prices. GAO reviewed 71 percent of the material costs ($31.6 million) included in the target cost of one contract and 76 percent of the material costs ($15.2 million) included in the target cost of the other.

This is the second report on overpricing of materials for major components of the Saturn V launch vehicle. The first, issued October 26, 1970 (B-161366), dealt with the first stage of the Saturn V.

FINDINGS AND CONCLUSIONS

The target costs included amounts for certain materials and indirect costs which were overstated by some $5 million because they were not based on the most accurate, complete, and current cost data available to the contractor when it submitted the pricing certificates. As a result, the total fees Rocketdyne could earn under the contracts were increased by about $1.5 million. (See p. 7.)

The overstated costs concern two major areas:

--Material rejection costs for reworking or replacing defective or lost parts for the F-1 rocket engines were overstated by about $4.3 million. (See p. 8.)'

--Other material costs--related to quantities, unit prices, engineering change proposals, obsolescence, and escalation--were overstated by about $700,000. (See p. 10.)

RECOMMENDATIONS OR SUGGESTIONS

NASA's Administrator should require

--a postaward evaluation of significant material costs not reviewed by GAO to determine whether they were based on accurate, complete, and current data (see p. 17) and

--fee adjustments for the overstated material costs reported herein and for any further overstated costs that may be found in the postaward evaluation (see p. 17).

AGENCY ACTIONS AND UNRESOLVED ISSUES

The contractor generally disagreed with GAO. (See p. 13.) However, NASA requested the Defense Contract Audit Agency to conduct a detailed study to determine what the material rejection factors identified in GAO's report would have been if the most current data available to the contractor had been used. In addition, NASA stated that contract adjustments would be sought on the basis of those findings and other overstatements found by GAO. (See p. 18.)

MATTERS FOR CONSIDERATION BY THE CONGRESS

This report is being submitted to the Congress in view of its continued interest in the reasonableness of prices negotiated by NASA for carrying out the space program.

CHAPTER 1

INTRODUCTION

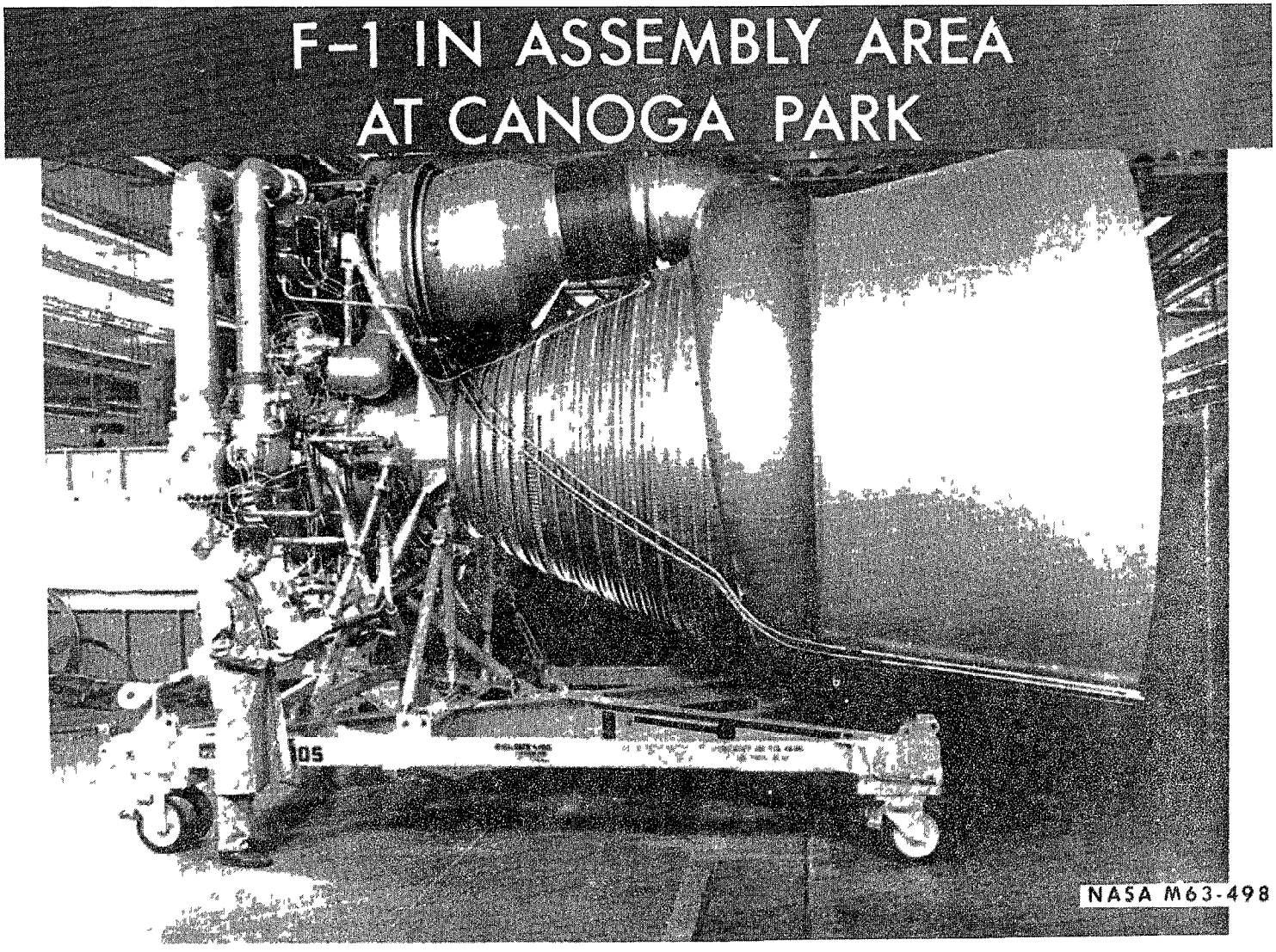
The General Accounting Office has reviewed the target costs negotiated for F-1 rocket engines procured by the National Aeronautics and Space Administration's George C. Marshall Space Flight Center at Huntsville, Alabama, under cost-plus-incentive-fee contracts NAS8-5604 and NAS8-18734 with North American Rockwell Corporation's Rocketdyne Division at Canoga Park, California. The F-1 engines are for the Saturn V launch vehicle used in the manned space flight program. The scope of our review is described in chapter 5.

A cost-plus-incentive-fee contract is a cost-reimbursement-type contract that specifies a target cost and a target fee and typically provides for increasing or decreasing the fee. The increase or decrease depends upon the degree to which the contractor meets or exceeds a combination of predetermined cost, schedule, and performance targets.

The target cost and fee are negotiated between NASA and the contractor on the basis of their best estimates of the reasonable cost of performing the contract work. When negotiated target costs are not established on the basis of accurate, complete, and current data, cost underruns may result from the overestimates of costs rather than from the efficiency of the contractor. In such cases, the additional fee (incentive fee) paid to the contractor above the target fee is in the nature of a windfall rather than an earned fee.

In September 1962, the Congress enacted the Truth in Negotiations Act (Public Law 87-653) for the purpose of providing the Government with safeguards against inflated cost estimates by contractors in negotiated procurements where competition is lacking. The act provides that, before the award of certain negotiated contracts where the price is expected to exceed $100,000, a prime contractor or subcontractor be required to submit cost or pricing data in support of its price proposal and to certify that, to the best of its knowledge and belief, the data submitted is

F-1 IN ASSEMBLY AREA AT CANOGA PARK



PHOTOGRAPH FURNISHED BY THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

accurate, complete, and current. The act also requires that these contracts contain a provision for the adjustment of the contract price to exclude any significant price increases which the head of the agency determines to have been caused by the furnishing of cost or pricing data which was inaccurate, incomplete, or noncurrent.

NASA has provided for the implementation of Public Law 87-653 in its procurement regulation. Part 3.807-2 of the regulation provides that, when a contractor is required to submit cost or pricing data in support of its proposal, NASA is required to make a cost analysis of such data to ensure the reasonableness of the proposal and to establish a sound basis for negotiations.

CONTRACT NAS8-5604

Under this cost-plus-fixed-fee contract, which was awarded as a letter contract in June 1962 and definitized in April 1964, Rocketdyne was, among other things, to build 76 F-1 rocket engines. A supplemental agreement was negotiated in May 1966 which converted the contract from a cost-plus-fixed-fee contract to a cost-plus-fixed-fee and cost-plus-incentive-fee contract. The target cost for the cost-plus-incentive-fee part of the contract, which included production of the rocket engines, was $205 million, and the target fee was about $13.8 million. The cost and pricing data supporting Rocketdyne's final proposal of $205 million included some data which had not been verified by NASA. The contracting officer advised us that he had accepted the proposal on the basis that the data could be verified, if necessary, after the negotiations were completed.

Our review was limited to examining about 71 percent of the material costs of about $31.6 million included in the target cost.

The incentive provisions relating to the delivery of engines provide that the fee payable to the contractor be the target fee increased or decreased by 20 percent of the amounts by which allowable costs are either less or more than the negotiated target cost. The contract provides,

however, that the increase or decrease in fee not exceed specified limitations.

Rocketdyne certified that its pricing data supporting the target cost was accurate, complete, and current as of January 26, 1966.

CONTRACT NAS8-18734

In November 1966, NASA awarded a second cost-plus-incentive-fee contract to Rocketdyne for 30 F-1 engines and support services. The target cost was about $133.4 million and the target fee was about $7.8 million. NASA subsequently reduced its engine requirements to 22, but no price adjustment had been negotiated to modify the contract as of October 30, 1970. Our review was limited to examining about 76 percent of the material costs of about $15.2 million included in the target cost for the 30 engines originally required under the contract.

The incentive provisions relating to the delivery of engines provide that the fee payable to the contractor be the target fee increased or decreased by 25 and 20 percent, respectively, of the amounts by which allowable costs are either less or more than the negotiated target cost. The contract provides, however, that the increase or decrease not exceed specified limitations.

Rocketdyne certified that its pricing data supporting the target cost was accurate, complete, and current as of July 21, 1966.

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The principal NASA officials responsible for the activities discussed in this report are listed in appendix III.

CHAPTER 2

TARGET COSTS NOT BASED ON LATEST AVAILABLE COST AND PRICING DATA

The target costs established by the contracts were overstated by about $5 million on the basis of cost and pricing data available to Rocketdyne prior to the effective dates of its certifications that the pricing data was accurate, complete, and current. As a result, the fees which Rocketdyne could earn under the contracts were increased by about $1.5 million, as shown below.

	Contract NAS8-5604	Contract NAS8-18734	Total
	(000 omitted)		
Net overstatement of target cost (note a)	$3,800	$1,200	$5,000
Resulting increase in fee:			
Target fee	$ 300	$ 100	$ 400
Incentive fee	800	300	1,100
Total	$1,100	$ 400	$1,500

[a]We found understatements of costs, including indirect costs, under contracts NAS8-5604 and NAS8-18734 of about $429,000 and $36,000, respectively. In accordance with the Cutler-Hammer case decided October 17, 1969, in the U.S. Court of Claims, the understatements were offset against overstatements.

Of the overstatements of about $5 million, about $4.3 million related to material rejection costs and about $700,000 related to material quantities, unit prices, engineering change proposals, obsolescence, and escalation costs. The overstatements are discussed in the following subsections. Rocketdyne's and NASA's comments on our findings are included on pages 23 and 34, respectively.

MATERIAL REJECTION COSTS

The estimated material rejection costs and the related indirect costs under contracts NAS8-5604 and NAS8-18734 were overstated by about $3.4 million and $900,000, respectively, because they were not based on the most accurate, complete, and current cost data available to Rocketdyne prior to the dates of its pricing certifications. The material rejection costs were to provide for reworking or replacing defective or lost parts for the F-1 engines.

Contract NAS8-5604

During the negotiation of the target cost for the contract conversion, Rocketdyne proposed material rejection costs computed on the basis of 26 percent of the estimated material costs for the 59 engines (numbered 18 through 76) to be produced subsequent to the contract conversion. Rocketdyne based the 26 percent on its estimate of the material rejection costs incurred in producing engines 1 through 14, although more current data was available on engines 15 through 26, which had been produced and delivered to NASA about 2 months prior to the date of the pricing certification. The negotiated target cost included material rejection costs of about $6.6 million, including indirect costs, on the basis of a material rejection rate of about 20 percent.

On the basis of data in a Rocketdyne study on material rejection costs, we calculated the material rejection costs that were incurred in producing engines 18 through 26, the first nine of the 59 engines to be produced under the conversion modification. The material rejection costs for these engines were the most current data available prior to the date of the pricing certification. As shown below, the material rejection costs decreased for each successive production group of engines.

Engines		Production material costs	Material rejection costs	Material rejection rate
Number	Total			
18-20	3	$1,341,200	$300,600	22%
21-23	3	1,275,000	143,400	11
24-26	3	1,297,300	120,000	9

We estimated that the weighted average material rejection rate for the 59 engines would be about 10 percent. In computing this weighted average, we used the actual material rejection costs for engines 18 through 26 and an estimate of the material rejection costs for the other 50 engines based on 9 percent--the material rejection rate for engines 24 through 26.

We estimated also that, on the basis of applying a rejection rate of about 10 percent to the material costs included in the target costs, the material rejection costs would be about $3.2 million including indirect costs. In our opinion, the inclusion in the target cost of material rejection costs of about $6.6 million resulted in an overstatement of the target cost by about $3.4 million.

Contract NAS8-18734

The historical cost data which Rocketdyne used to estimate the material rejection costs was not the most current available data. Rocketdyne's cost estimate was based on the material rejection costs which had been incurred in producing engines 15 through 26 under the preceding contract (NAS8-5604), although engines 27 through 38 also had been produced and delivered under that contract prior to the date of the pricing certification for contract NAS8-18734.

Rocketdyne proposed material rejection costs computed on the basis of 18 percent of the estimated material costs for the 30 engines to be produced under the contract. A rejection rate of 15 percent was subsequently negotiated which resulted in including in the target cost material rejection costs of about $2.4 million including indirect costs.

We did not make an analysis of material rejection costs for engines 27 through 38, which had been delivered to the Government at least 1 month prior to the date of the pricing certification under this contract. However, it appears likely that the material rejection rate would be no greater for these engines than for engines 24 through 26 and might possibly be less since the rate had been declining.

The 18-percent rejection rate computed by Rocketdyne was the average rate for engines 15 through 26. As shown in the table on page 8, the material rejection rate was declining. In our opinion, the use of an average rate which did not give appropriate recognition to the declining rate was improper. We estimated that, on the basis of applying a rejection rate of about 9 percent to the negotiated material costs, the material rejection costs would be about $1.5 million including indirect costs. In our opinion, the inclusion in the target cost of material rejection costs of about $2.4 million resulted in an overstatement of the target cost by about $900,000.

OTHER OVERSTATEMENTS OF COST

Our review also revealed that the target costs were overstated by about $700,000 (overstatements of about $1.2 million less understatements of about $500,000) under contracts NAS8-5604 and NAS8-18734 because the material costs were not based on the most current cost and pricing data. Examples illustrating some of these cost overstatements follow.

Nozzle extension overstated by about $301,000

The target cost negotiated for contract NAS8-5604 included 59 nozzle-extension units at an average unit cost of about $49,300. The unit cost was based on supplier prices represented by purchase orders issued between February and July 1965. We found, however, that, subsequent to July 1965 and prior to the date of Rocketdyne's pricing certification of January 1966, it had more current information which disclosed an average unit cost of about $46,100 for the nozzle extension. As a result, the target cost was overstated by about $301,000 including indirect costs.

Engineering change proposals and kits overstated by about $156,400

The target cost negotiated for contract NAS8-5604 included engineering change proposals for the addition and deletion of certain parts. The unit costs for these parts were generally based on prices from suppliers under either

purchase orders issued or quotations received through June 1965. We compared the negotiated quantities and unit costs with information available to Rocketdyne through the date of its pricing certification.

Our comparisons showed that, for one change proposal, the unit costs were overstated on three parts and the quantities were overstated on five parts. As a result, the target cost was overstated by about $116,700 including indirect costs. Under contract NAS8-18734, we found a similar situation which had resulted in an overstatement of the target cost by about $39,700 including indirect costs.

Obsolescence overstated by about $117,200

The target cost negotiated for contract NAS8-5604 included the cost of parts which had already been procured but which had become obsolete. Our review showed that certain of these parts had been included twice in the target cost--once in the cost of work completed and once in the cost of work to be completed. This error resulted in an overstatement of the target cost by about $117,200 including indirect costs.

Roll-forged rings overstated by about $94,700

The target cost negotiated for contract NAS8-18734 included 30 roll-forged rings at a unit cost of about $2,700. Twenty-four parts can be made from each ring; therefore, Rocketdyne's proposal provided for production of 720 parts. Since each engine requires only six parts, or a total of 180 parts for the 30 engines, the target cost was overstated by about $94,700 including indirect cost.

Escalation costs overstated by about $36,700

Rocketdyne's proposal for contract NAS8-18734 included a provision for estimated increases in the costs of parts. These increases were supposed to have been computed by applying a negotiated escalation factor to the cost of parts for which purchase orders had not been issued at the time of

negotiations. We found, however, that the escalation factor was applied to the cost of six parts for which purchase orders had been issued at the time of negotiations. As a result, the target cost was overstated by about $36,700 including indirect costs.

CHAPTER 3

CONTRACTOR COMMENTS AND OUR EVALUATION

Rocketdyne commented on our draft report in a letter dated December 30, 1969. (See app I.) Rocketdyne generally disagreed with our findings, particularly those concerning the material rejection costs. Our evaluation of Rocketdyne's comments follows.

In commenting on our findings on material rejection costs under contract NAS8-5604, Rocketdyne stated that:

> "*** elements of cost were not negotiated, consequently, there was no agreement on the material rejection factor, and the computations of GAO on this factor are artificial. *** Trends were discussed, detailed data were presented, and the parties simply disagreed as a matter of judgment as to the outcome of future events. It is reasonable to assume that the total cost agreed to by the Government took this difference of opinion into account."

Our review showed that, although the elements of cost had not been negotiated, Rocketdyne had prepared and provided NASA with a document of Rocketdyne's interpretation, by line item, of the results of the negotiations. Because the negotiated total target cost agreed with the amount included in the Rocketdyne document and because the document was provided to NASA, we used this document to identify the material rejection costs included in the target cost.

Our review of the negotiation records and discussions with the NASA contracting officer indicated that rejection trends had not been discussed Further, the material rejection costs proposed had not been based on the most accurate, complete, and current data because Rocketdyne's proposal did not include data on material rejections for an additional 12 engines completed prior to the date of its pricing certification. Thus we believe that it is not reasonable to assume that the total cost agreed to by NASA took into account any differences of opinion regarding rejection costs because

Rocketdyne did not identify the amount of rejection costs that were included in the total target costs. We believe also that, if Rocketdyne had advised NASA of the downward trend in its material rejection costs and had updated its proposal to include the most current and available cost data, a rate of about 10 percent rather than about 20 percent might have been negotiated.

In commenting on our finding on material rejection costs under contract NAS8-18734, Rocketdyne stated that:

> "The GAO report is really questioning a decision made by the negotiators as to how this cost and pricing data should be used and interpreted rather than the accuracy, currency and completeness of the cost and pricing data on which the decision was based. The Contractor provided a detailed study of material rejections which had been experienced as substantiation for the proposed factor This is the study which the GAO apparently believes should have provided data for negotiation of the same factor on contract NAS8-5604. Based on the study, the Contractor proposed an 18% material rejection factor, whereas 15% was ultimately agreed upon. The study depicted trends, the utilization of which is a matter of judgment, and trends were thoroughly discussed with the Government both prior to, and during negotiations."

The study referred to by Rocketdyne came about only after the insistence of NASA that Rocketdyne correct errors and inadequacies in its recorded rejection costs. Our review revealed that material rejection cost trends were not identified in the study. In addition, our discussions with NASA officials and our review of the negotiation records indicated that Rocketdyne had not revealed to NASA the downward trend in its rejection costs. Our review also showed that Rocketdyne had not updated its proposal to include data on material rejections for an additional 12 engines that had been completed prior to the date of its pricing certification and thereby had not included the most current and available cost data. Although our review did not cover the additional 12 engines, we believe that the downward trend in rejection

costs experienced on the prior group of engines may have continued for the 12 engines.

We believe that, if Rocketdyne had told NASA of the downward trend in its material rejection costs and had updated its proposal to include the most current and available cost data, a rate of 9 percent or less, rather than 15 percent, might have been negotiated

In commenting on our findings regarding the overstatements of the target cost for materials, Rocketdyne stated that its analysis showed a possible overstatement of costs of about $360,000 and $176,000 under contracts NAS8-5604 and NAS8-18734, respectively Rocketdyne did not, however, provide us with detailed information specifically identifying the items of material costs in our draft report to which it agreed or disagreed or its reasons for agreement or disagreement. During our review we discussed with Rocketdyne the results of our findings on each item of material costs. Rocketdyne did not provide us with any information that negated our findings, examples of which are shown on pages 10 and 11 of this report.

In regard to the overstatements of the target cost for an engineering change proposal under contract NAS8-18734, Rocketdyne stated that:

> "During the contract negotiation we mutually agreed with the Contracting Officer to include a group of ECP's and consider the cost to be included in the total cost as negotiated. Both Rocketdyne and the Government were aware at the time that firm cost proposals had not been prepared for any of these ECP's. Settlement was based upon a cursory review of preliminary estimates and on the assumption that debits and credits would be approximately offsetting. The GAO report is questioning a decision made by the negotiator rather than the cost and pricing data on which the decision was based, therefore, the Contractor disagrees with the GAO conclusion."

Our review of the negotiation records and discussions with the contracting officer did not provide any evidence

that there was an agreement that the cost increases and decreases for a group of change proposals would be offsetting and thereby result in no change in the target cost.

The negotiated reduction in the target cost for the engineering change proposals was based on four change proposals. For seven other change proposals, no change had been made in the target cost on the basis that the costs of the parts added and deleted would be about equal. We found, however, that, for one of the seven change proposals, the cost of the parts deleted exceeded the cost of the parts added. As a result, the target cost was overstated by about $39,700 including indirect costs.

CHAPTER 4

CONCLUSIONS AND RECOMMENDATIONS AND NASA COMMENTS

CONCLUSIONS

We believe that the contract target costs for the two contracts were overstated because Rocketdyne did not adjust its proposals to recognize certain cost and pricing data available before the dates of its pricing certifications. As a result, the fees which Rocketdyne could earn under the contracts were increased by about $1.5 million.

Although the contracting officer advised us that he had accepted Rocketdyne's final proposal under contract NAS8-5604 on the basis of certain unverified information furnished by Rocketdyne which, if necessary, could be verified after the negotiations were completed, NASA had not made a postaward audit of either contract at the time that we commenced our field review. Subsequently, however, in June 1968, NASA revised its procurement regulation to require a contracting officer to request a postaward audit of cost or pricing data if he obtains information that data previously furnished by the contractor may not have been accurate, complete, or current, or may not have been adequately verified at the time of negotiation. We believe that this revision, if properly implemented, should enable NASA to more effectively carry out its responsibilities under Public Law 87-653.

RECOMMENDATIONS

In view of the overstatements in the target costs identified during our review and the amounts of material costs not covered by our review, we recommend that the Administrator, NASA, require that postaward evaluations be made of the significant material costs not reviewed by us to determine whether the costs were based on accurate, complete, and current pricing data. We recommend also that the Administrator require that appropriate adjustments be made for the excess fees resulting from the overstated material costs reported

herein and for any further overstated costs that are revealed in the postaward evaluation.

NASA COMMENTS

The Acting Associate Administrator for Organization and Management, in commenting on our draft report in a letter dated December 24, 1969 (see app. II), stated that the Defense Contract Audit Agency had been requested to conduct a detailed study and evaluation to determine, on the basis of the most current data available to Rocketdyne at the time it executed its pricing certifications, what the material rejection factors concerning the hardware identified in our report would have been. He stated also that, on the basis of these findings and considerations of other overstatements in cost and fee as discussed in our report, action would be initiated to obtain appropriate contract adjustments.

Although the Acting Associate Administrator stated that the Defense Contract Audit Agency findings were expected to be available in April 1970, we were advised by the NASA contracting officer on December 11, 1970, that he had not yet received the audit report.

CHAPTER 5

SCOPE OF REVIEW

Our review was directed primarily toward determining whether the negotiated target costs for certain materials and related items had been established on the basis of the latest cost or pricing data available to Rocketdyne prior to the effective date of its pricing certifications.

In our examination, we reviewed Rocketdyne's proposals, NASA's evaluation of the proposals, records of negotiations maintained by Rocketdyne and NASA, cost and pricing data available to Rocketdyne before submission of its pricing certificates, and the applicable laws and regulations which govern NASA procurements. The results of our review were discussed with NASA and Rocketdyne officials.

APPENDIXES

Rocketdyne
North American Rockwell

6633 Canoga Avenue
Canoga Park California 91304

30 December 1969

In reply refer to 69RC15996

United States General Accounting Office
Washington, D.C. 20548

Attention: Mr. Morton E. Henig
Assistant Director

Dear Mr. Henig:

In response to your letter of September 30, 1969, you will find enclosed our response to your draft report on the GAO review of target costs negotiated for F-1 rocket engines under Contracts NAS8-5604 and NAS8-18734.

We appreciate the opportunity afforded us to respond. Should you or your representatives have questions concerning our answer, do not hesitate to contact us.

Very truly yours,

NORTH AMERICAN ROCKWELL CORPORATION
Rocketdyne Division

C. W. Guy
Executive Vice President

PHM:mw
10843RC

Enc: One copy North American Rockwell Rocketdyne Division
Response to GAO Draft Report on Target Costs Negotiated
for F-1 Rocket Engines

cc: Milo L. Wietstock
U.S. General Accounting Office
Los Angeles, California 90012

30 December 1969

NORTH AMERICAN ROCKWELL
ROCKETDYNE DIVISION
RESPONSE TO GAO DRAFT REPORT
ON TARGET COSTS NEGOTIATED
FOR F-1 ROCKET ENGINES

North American Rockwell has reviewed the GAO draft report which alleges that the target costs were overstated on Contracts NAS8-5604 and NAS8-18734 within the meaning of Public Law 87-653. The Contractor's comments follow:

Contract NAS8-5604

Background

Preparation of the proposal and negotiation of this contract was a complicated and lengthy process. The proposal involved the conversion of an existing cost plus fixed fee contract to cost plus incentive fee. At the time of negotiation work was approximately 50% complete; reductions were being made in production rate; the period of performance was extended by thirteen months; many engineering changes also were being negotiated; and a forecasted increase in estimated cost was under consideration and became part of the negotiation. Although this contract was a production contract, the rocket engine was still being designed and developed under a concurrent R&D contract.

Thirteen months elapsed from the issuance of the RFP in April 1965 to the approval of the negotiated contract modification in May of 1966. Negotiations were not completed until six months after the proposal was submitted. A chronology of events is attached as Exhibit A.

Contract NAS8-5604 (continued)

Background (continued)

Serious attempts to reach agreement on the elements of cost in the proposal were unsuccessful. For this reason, the parties agreed that all offers would be composed of a complete incentive package. Both parties considered that the target cost as finally negotiated would only roughly approximate the estimated cost of performing the contract, but would be interrelated with the target fee and the degree of cost risk to be assumed by Rocketdyne, as represented by the sharing formula, fee floor, penalties for late engine deliveries, hot test risk, etc. This is made very clear by NASA's first offer of November 5, 1965, which offered Rocketdyne three options to choose from, including a wide range of target costs. This first offer, as well as all subsequent offers prior to final settlement, are shown on Exhibit B attached.

NASA's November 5 offer of three options offered target costs ranging from $188.5M to $200.8M, a range of more than $12M, which clearly shows that the NASA negotiators did not consider the target cost to be an estimated cost based on cost and pricing data. Similarly, the range between the November 18 offer and the December 8 offer indicates again no relationship to what the data would have supported.

Material Rejections

More than 80% of the overstatement of cost alleged by the GAO is in the material rejection factor. The GAO claims the material rejection factor was not based upon the most accurate, complete, and current cost or pricing data available to the Contractor, and as a result this factor was overstated approximately [$3 4M, see GAO note 1, p. 31] as reflected in the target cost.

Contract NAS8-5604 (continued)

Material Rejections (continued)

First, as discussed above, it should be noted that elements of cost were not negotiated; consequently, there was no agreement on the material rejection factor, and the computations of GAO on this factor are artificial.

During negotiations, this factor was discussed to the point of exhaustion. DCAA, according to the GAO, developed its own analysis of this factor and stated in its report that the Contractor's proposed factor was unacceptable. Trends were discussed, detailed data were presented, and the parties simply disagreed as a matter of judgment as to the outcome of future events. It is reasonable to assume that the total target cost agreed to by the Government took this difference of opinion into account.

Because of significant differences between the parties on the material rejection factor, the Contractor initiated work on a special study about 1 February 1966, or a week after negotiations were complete. This study was finished about April 1966 in time for use on the follow-on procurement (Contract NAS8-18734). One of the major objectives of the study was to correct material rejection accounts so that this factor could be projected more accurately on future procurements. The substance of the GAO claim appears to be that this study should have been performed earlier in order that the data resulting from this study might be used in negotiating this contract. Obviously, Public Law 87-653 does not impose any such requirement on a contractor.

In summary, the Contractor does not agree that material rejection costs were overstated within the meaning of PL 87-653.

Contract NAS8-5604 (continued)

Bill of Materials

GAO alleges the bill of materials cost was overstated approximately $618,000 because the Contractor did not use information available on inventory records, the latest vendor quotes or purchase orders, or because quantities were overstated.

Preparation of the priced bill of materials was extremely difficult. Approximately 2400 line items were involved, 206 of which were high value (those items over $100). There was a concurrent F-1 R&D contract and spares requirements which used many of the same materials. The cost of very few items remained unchanged for more than a few days. The difficulty of preparing a completely accurate priced bill of materials is reflected in the fact that representatives of the GAO devoted about nineteen months to the evaluation of this contract with the advantage that everything by that time was a matter of record.

The Contractor's preliminary analysis of the bill of materials shows possible overstatement of approximately $360,000 or $258,000 less than determined by GAO. It should be noted that GAO found $429,000 in understatements, which should be offset against overstatements in accordance with Cutler-Hammer, Inc. versus U.S., Ct.Cls.___; docket number 364-67.

Contract NAS8-5604 (continued)

Summary NAS8-5604

A comparison of the GAO alleged overstatements of target cost with the Contractor's analysis is as follows:

	GAO	CONTRACTOR
Material Rejection Factor	[$3,400,000] [See GAO note 1, p 31]	$ -0-
Bill of Materials	618,000	360,000
ECP's & Kits, etc.	234,000	232,000
Sub-Total	[See GAO note 2, p. 31.]	$ 592,000
Understatements	* 429,000	* 429,000
TOTAL	[See GAO note 2, p. 31.]	$ 163,000

* The Cutler-Hammer Case in the Court of Claims allows offset of understatements. The case was decided after GAO wrote their draft report.

$163,000 amounts to less than eight one hundredths of one percent of the target cost of $205M.For the reasons outlined above, a change in the cost data of many times this amount would have had absolutely no influence on the target cost, target fee and other factors agreed to at the time of negotiation.

Contract NAS8-18734

Background

This contract, a follow-on procurement to contract NAS8-5604, was for 30 F-1 engines and related services. Contractor's proposal was submitted 31 May 1966 and negotiations were complete 21 July 1966.

Contract NAS8-18734 (continued)

Material Rejections

Almost three-fourths of the alleged overstatement of target cost in this contract was attributed to the material rejection factor. The GAO claims this factor was not based on the most accurate, complete, and current data available to the Contractor,and as a result, target costs were overstated approximately $919,000.

The GAO report is really questioning a decision made by the negotiators as to how this cost and pricing data should be used and interpreted rather than the accuracy, currency and completeness of the cost and pricing data on which the decision was based. The Contractor provided a detailed study of material rejections which had been experienced as substantiation for the proposed factor. This is the study which the GAO apparently believes should have provided data for negotiation of the same factor on contract NAS8-5604. Based on the study, the Contractor proposed an 18% material rejection factor, whereas 15% was ultimately agreed upon. The study depicted trends, the utilization of which is a matter of judgment, and trends were thoroughly discussed with the Government both prior to, and during negotiations.

The Contractor does not agree that material rejection costs were overstated within the meaning of PL 87-653.

Bill of Materials

GAO claims bill of materials cost was overstated approximately $248,000 because the latest vendor data was not used, or because quantities were overstated.

Contract NAS8-18734 (continued)

Bill of Materials (continued)

The Contractor's preliminary analysis of the bill of material discloses a possible overstatement of $176,000 or $72,000 less than GAO. It should be noted that GAO found $36,000 in understatements which should be offset in accordance with the Cutler-Hammer, Inc. versus U.S., Ct.Cls.____; docket number 364-67.

Engineering Change Proposals (ECP's)

GAO alleges that the credit due the Government on an ECP was understated approximately $39,000 in that the cost of parts deleted exceeded the cost of parts added.

During the contract negotiation we mutually agreed with the Contracting Officer to include a group of ECP's and consider the cost to be included in the total cost as negotiated. Both Rocketdyne and the Government were aware at the time that firm cost proposals had not been prepared for any of these ECP's. Settlement was based upon a cursory review of preliminary estimates and on the assumption that debits and credits would be approximately offsetting. The GAO report is questioning a decision made by the negotiator rather than the cost and pricing data on which the decision was based; therefore, the Contractor disagrees with the GAO conclusion.

Contract NAS8-18734 (continued)

Summary NAS8-18734

A comparison of overstatements of target cost claimed by GAO with the Contractor's analysis follows:

	GAO	CONTRACTOR
Material Rejection Factor	$ 919,000	$ -0-
Bill of Materials	248,000	176,000
ECP's	39,000	-0-
Escalation	37,000	37,000
Sub-Total	$1,243,000	$ 213,000
Understatements	* 36,000	* 36,000
TOTAL	$1,243,000	$ 177,000

* The Cutler-Hammer Case in the Court of Claims allows offset of understatements. The case was decided after GAO wrote their draft report.

$177,000 amounts to less than one-third of one percent of the target cost of $60.9M.

GAO notes:

1. Amount changed by GAO to agree with amount shown in final report.

2. Refers to information contained in draft report but revised in final report.

EXHIBIT A

CONTRACT NAS8-5604
76-Engine Conversion
Procurement Chronology

4/14/65	RFP issued
7/28/65	Proposal submitted
7/30/65	Cost Substantiation submitted
9/15/65	Updated Cost Substantiation submitted
10/18/65	AF Cost Analysis submitted to MSFC
10/19/65	Negotiations commence in Huntsville
10/20/65	DCAA submits Analysis to MSFC
11/5/65	Negotiations halted
11/16/65	Negotiations resume in Huntsville
11/19/65	Negotiations halted
1/4/66	Negotiations resume in Huntsville
1/6/66	Negotiations halted
1/10/66	Negotiations resume in Canoga Park
1/11/66	Cost Negotiations complete
1/26/66	Negotiations complete (certificate signed)
3/29/66	Contract (Mod.120) signed by North American Rockwell
4/6/66	Contract signed by MSFC
5/16/66	Contract approved by NASA Headquarters

North American Rockwell
Preliminary Response to General Accounting Office
Review of Negotiated Target Costs
Contract NAS8-5604 CPIF Conversion Proposal

FOR DISCUSSION PURPOSES ONLY

CPIF ITEMS ONLY	RD	NASA			RD	NASA	RD TWX	NASA Phone	NASA TWX	RD TWX	NASA	RD	Negotiated
		Opt. 1	Opt 2	Opt 3									
	11/3/65		11/5/65		11/18/65	11/18/65	11/29/65	12/3/65	12/8/65	12/9/65	1/5/66	1/6/66	1/11/66
Target Cost	$210 9M	$188 5M	$193 5M	$200.8M	$208 0M $205.0M	$202 0M	$205 0M	$205 0M	$197 0M	$205 0M	*$203 5M	$205 0M	$205 000
Target Fee	9 75%	10.5%	8.5%	7.5%	9 0%	8 54%	9 0%	8.54%	8 44%	9 0%		8 75%	9 5%
Max. Fee	13 5%	14 0%	12.5%	12.5%	14 2%	15 0%	13 0%	14 67%	14 66%	13 0%		15 0%	14 72%
Min. Fee	4 0%	2 66%	1.77%	1.3%	3.5%	3.5%	3 5%	3 5%	3 62%	3 5%		3 5%	3 5%
Bonus Early Eng. Del $/Day	$ 700	$ 700	$ 700	$ 700	$ 1,500	$ 700	$ 1,100	$ 700	$ 700	$ 1,100		$ 1,000	$ ---
No. of Days	15	15	15	15	15	15	20	20	30	20		20	---
Total $/Eng.	$ 10,500	$ 10,500	$ 10,500	$ 10,500	$ 22,500	$ 10,500	$ 22,000	$ 14,000	$ 21,000	$ 22,000		$ 20,000	$ ---
Late Eng Del. Dollars/Day	$1000-4000	$1000-5000	$1765-5750	$1200-8000	$1000-4000	$1200-5000	$1000-4000	$ 3,600	$ 3,600	$ 3,000		$2000-4000	$ **
No of Days	45-50	45-70	45-70	45-70	45-50	45-70	45-50	105	115	82		45-40	**
Total $/Eng	$245,000	$395,000	$454,925	$614,000	$245,000	$404,000	$245,000	$378,000	$414,000	$246,000			$ **
Max No Sched. Peralty	$ ---	$ ---	$ ---	$ ---	$ ---	$ ---	$280,000	$378,000	$ ---	$280,000	$325,000	$325,000	$325,000
Hot Test Risk	J-2 Hot Test Risk Clause	(No Hot Test Risk Clause)			J-2 Hot Test Risk Clause	No Hot Test Risk Clause	$ 20,000	No Hot Test Risk Clause	No Hot Test Risk Clause	$ 20,000	No Hot Test Risk Clause	$ 50,000	$800,000

*$1 5M Non-Fee Bearing
**$5,000 for 1 thru 30 days; $75,000 for 31st day, $3,400 per day for 32 thru 81 days; $250,000 max. per engine.

Exhibit B

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D C 20546

REPLY TO
ATTN OF

DEC 24 1969

Mr. Morton E. Henig
Assistant Director, Civil Division
U. S. General Accounting Office
Washington, D. C. 20548

Dear Mr. Henig:

This letter is in response to your draft report dated August 19, 1969, on target costs negotiated for F-1 rocket engines by the Marshall Space Flight Center. As noted in the draft report, the GAO review of cost-plus-incentive-fee contracts NAS8-5604 and NAS8-18734 awarded by Marshall Space Flight Center to the North American Rockwell-Rocketdyne Division, was primarily concerned with determining the extent to which the contractor complied with the provisions of Public Law 87-653.

Your report concluded that the target costs negotiated for the cost-plus-incentive-fee portion of contract NAS8-5604 and the deliverable hardware portion of contract NAS8-18734 were overstated by about [See GAO note.] in relation to cost or pricing data available to Rocketdyne before execution of its current pricing certificates and that the related fees may exceed by about[See GAO note.]the amounts that would have been payable if the target costs had been based on the most accurate, complete, and current costs or pricing data available to Rocketdyne.

Consistent with your recommendation, we requested the Defense Contract Audit Agency on November 5, 1969, to conduct a detailed study and evaluation to determine what the rejection factors concerning the hardware identified in your report would have been, based on the most current data available to the contractor at the time the pricing certificates were executed. It is estimated that these DCAA findings can be completed in April 1970. Based upon these DCAA findings and considerations of other overstatements in cost and fee included in your report, action will be initiated to obtain appropriate contract adjustments.

GAO note: Refers to information contained in draft report but revised in final report.

We appreciate your bringing this matter to our attention.

Sincerely yours,

Bernard Moritz
Acting Associate Administrator
for Organization and Management

PRINCIPAL OFFICIALS OF THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION RESPONSIBLE FOR THE ACTIVITIES DISCUSSED IN THIS REPORT

	Tenure of office	
	From	To
ADMINISTRATOR:		
George M. Low (acting)	Sept. 1970	Present
Thomas O. Paine	Oct. 1968	Sept. 1970
James E. Webb	Feb. 1961	Oct. 1968
DEPUTY ADMINISTRATOR:		
George M. Low	Dec. 1969	Present
Thomas O. Paine	Mar. 1968	Oct. 1968
Robert C. Seamans, Jr.	Dec. 1965	Jan. 1968
Hugh L. Dryden	Oct. 1958	Dec. 1965
ASSOCIATE ADMINISTRATOR:		
Homer E. Newell	Oct. 1967	Present
Robert C. Seamans, Jr.	Sept. 1960	Sept. 1967
ASSOCIATE ADMINISTRATOR FOR MANNED SPACE FLIGHT:		
Dale D. Myers	Jan. 1970	Present
Charles W. Mathews (acting)	Dec. 1969	Jan. 1970
George E. Mueller	Sept. 1963	Dec. 1969
ASSOCIATE ADMINISTRATOR FOR ORGANIZATION AND MANAGEMENT (note a):		
Richard C. McCurdy	Oct. 1970	Present
Bernard Moritz (acting)	May 1969	Oct. 1970
Harold B. Finger	Mar. 1967	May. 1969

PRINCIPAL OFFICIALS OF THE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

RESPONSIBLE FOR THE ACTIVITIES

DISCUSSED IN THIS REPORT (continued)

	Tenure of office	
	From	To
ASSISTANT ADMINISTRATOR FOR INDUSTRY AFFAIRS AND TECHNOLOGY UTILIZATION (note b):		
Daniel J. Harnett	Oct. 1969	Present
George J. Vecchietti (acting)	May 1969	Sept. 1969
Philip N. Whittaker	Aug. 1968	May 1969
Bernhardt L. Dorman	Jan. 1967	July 1968
William Rieke	June 1965	Dec. 1966
George Friedl, Jr.	June 1964	June 1965
DIRECTOR, MARSHALL SPACE FLIGHT CENTER:		
Eberhard F. M. Rees	Mar. 1970	Present
Wernher von Braun	July 1960	Mar. 1970

[a]Position established in March 1967.

[b]In October 1970 the title of this position changed from Assistant Administrator, Office of Industry Affairs, to Assistant Administrator, Office of Industry Affairs and Technology Utilization.