BY THE U.S. GENERAL ACCOUNTING OFFICE

Report To The Chairman, Subcommittee On Investigations, Committee On Armed Services House Of Representatives

Contracting Officers' Explanations For Price Increases On 125 Spare Parts

Contracting officers' explanations for price increases on the spare parts included the effects of time, inflation, and changes in quantity procured. There were, however, unaccounted for price increases when GAO (1) removed the effect of inflation and (2) considered the effect of changes in quantities purchased. Because the 125 spare parts were not drawn from a scientific sample, there is no reason to expect that the findings are representative of all spare parts procured by military activities. In some of these cases, spare part price analysis and procurement could have been improved by detecting overpricing, emphasizing price analysis and reducing unnecessary subcontractor qualification costs. Recent legislation, changes to regulations, and actions by the Secretary of Defense should improve the price analysis and procurement of spare parts.

GAO/NSIAD-85-119
JULY 29, 1985

UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

NATIONAL SECURITY AND
INTERNATIONAL AFFAIRS DIVISION

B-216136

The Honorable Bill Nichols
Chairman, Subcommittee on
Investigations
Committee on Armed Services
House of Representatives

Dear Mr. Chairman:

This report summarizes the results of our review of price increases on 125 spare parts. Price increases were due to many factors. In some cases contracting officers did not have enough information to fully explain price increases.

We made this review in response to your May 9, 1983 request. We obtained agency comments from the Department of Defense and two of the contractors accounting for a significant number of the parts.

As arranged with your office, we are sending copies of this report to the Secretary of Defense. Copies will also be available to other interested parties who request them.

Sincerely yours,

Frank C Conahan

Frank C. Conahan
Director

GENERAL ACCOUNTING OFFICE
REPORT TO THE CHAIRMAN,
SUBCOMMITTEE ON INVESTIGATIONS
COMMITTEE ON ARMED SERVICES
HOUSE OF REPRESENTATIVES

CONTRACTING OFFICERS' EXPLANATIONS FOR PRICE INCREASES ON 125 SPARE PARTS

D I G E S T

The Department of Defense (DOD) has approximately 4 million spare parts in its system. The Air Force, Army, and Navy manage 1.8 million of these, while the Defense Logistics Agency manages 2.2 million common parts. The DOD budget for spare parts in fiscal year 1984 was approximately $22 billion.

Contracting officers are required to analyze prices to ensure that the price the government pays is fair and reasonable. On low value spare parts this is usually performed by comparing the offered price to other offers or previous prices paid and without requesting or reviewing the individual cost elements, such as materials, labor, overhead, and profit. (See ch. I and app. I.)

The Chairman, Subcommittee on Investigations, House Committee on Armed Services, asked GAO to obtain explanations from government contracting officers for price increases on 125 spare parts. This list of 125 spare parts was provided to GAO by the Subcommittee Chairman. GAO was also asked to review some cost and pricing data for the two contractors (Rockwell International Corporation and Litton Systems, Inc.), which accounted for the largest number of contracts. Because the 125 spare parts were not drawn from a scientific sample, there is no reason to expect that the findings are representative of all spare parts procured by military activities.

The parts were purchased by procurement activities in the Air Force, Navy, Army, and Defense Logistics Agency and were sold to the government by 47 contractors. The parts, such as circuit card assemblies and electrical connectors, are primarily used in the repair of guidance and control systems in aircraft and missiles. Unit prices ranged from a low of

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$2.65 to a high of $5,247 and covered procurements as early as 1965 and as recently as July 1982.

EXTENT OF PRICE INCREASES

The following chart shows the percentage price change for the 125 spare parts GAO reviewed. (See ch. 2.)

Percent price change		No. of	
At least	But less than	parts	Percent
1,000	2,910	13	10.4
500	1,000	14	11.2
400	500	5	4.0
300	400	10	8.0
200	300	12	9.6
100	200	26	20.8
0	100	21	16.8
-100	0	1	0.8
Insufficient data		23	18.4
Total		125	100.0

EXPLANATIONS FOR PRICE INCREASES

Each sample part had a unique and complex procurement history. Numerous variables may have affected the price. Contracting officers and buyers cited many reasons for the price increases including (1) inflation, (2) differences in the quantity purchased, (3) events that occurred during the elapsed time between procurements, and (4) the markups of small businesses on spare parts purchased in small business set-aside programs. While it is impracticable to quantify the precise effect of each of the reasons for the price increases cited by the contracting officers and buyers, the following sections show the 125 parts stratified within various frequencies for inflation, quantity, and time. (See ch. 2.)

Inflation

Most parts showed a lower price increase after the effects of inflation were removed. For example, one part had a price increase of 155 percent over 10 years. After removing the effects of inflation, the deflated price

increase was only 16 percent. The following chart shows the parts stratified by the price increases after inflation was removed. The deflated price increase for 25 parts could not be computed because the old prices predated 1972, the first year inflation statistics were compiled for DOD durable goods, including spare parts. (See ch. 2.)

Percent change		No. of	
At least	But less than	parts	Percent
1,000	1,826	3	2.4
500	1,000	5	4.0
400	500	2	1.6
300	400	2	1.6
200	300	3	2.4
100	200	20	16.0
0	100	41	32.8
-100	0	1	0.8
Deflator not available		25	20.0
Insufficient data		23	18.4
Total		125	100.0

Change in quantity

Quantity affects price because fixed manufacturing costs and setup charges are distributed over the number of units produced; generally, the larger the number of units, the lower the unit cost. The magnitude of the change in quantity was significant for many of the parts. For example, on one part, the quantity decreased from 70 to 1. The following chart shows the change in quantity for the 125 parts. (See ch. 2.)

Change in quantity purchased	No. of parts	Percent
Decrease	66	52.8
Increase	34	27.2
No change	2	1.6
Insufficient data	23	18.4
Total	125	100.0

Time

In the elapsed time between procurements, events can occur such as changes in the production process and inflation. For many of the parts, the time period between the old and the new procurements was long. For example, the time between the old and new procurements for one part was 15.6 years. The following chart shows the time between the procurements for the parts.

Number of years between procurements		No. of	
At least	But less than	parts	Percent
10	16	25	20.0
5	10	30	24.0
2	5	23	18.4
1	2	15	12.0
0	1	9	7.2
Insufficient data		23	18.4
Total		125	100.0

For weapon systems entering the inventory, "provisioning" spare parts are bought, then "replenishment" spare parts are purchased for long-term support requirements. Provisioning and replenishment prices may differ because the contractor may use different pricing methodologies. The old price was based on an initial provisioning contract on at least 16 parts. (See ch. 2.)

Parts categorized by time, inflation, and quantity

Contracting officers cited inflation and decreasing quantities as causes for price increases. While these factors most likely contributed to price increases, GAO found some exceptions. For 25 parts there was an increase in the deflated price with an increase or no change in the quantity purchased. For 10 of these 25 parts, less than 2 years elapsed between the old and new procurements. (See ch. 2.)

Small business markups

Contracting officers and buyers cited small business markups as causing price increases. Government contracting officers and buyers are required to both (1) place a fair proportion of

government procurements with small businesses and (2) pay a fair and reasonable price for a spare part. Contracting officers and buyers sometimes have to choose between (1) placing a fair proportion of procurements with small businesses but sometimes paying a high price to a small business distributor that itself does not manufacture the new item or (2) dissolving the small business set aside and negotiating with a large business that might be a sole-source manufacturer. For example, on one sample part, the Defense Logistics Agency did not accept a small business distributor's offer of $185 each for 11 units, dissolved the set aside, and negotiated a unit price of $117.11 with the sole-source large business manufacturer. (See ch. 2.)

Review of contractors' cost and pricing data

Rockwell International Corporation was the contractor for 46 of the 125 parts. Its prices increased for many reasons. In one case, Rockwell was required to purchase a minimum quantity of material from a subcontractor. This quantity exceeded the amount the government needed. Because there was no certainty of future government orders, Rockwell charged the total minimum quantity to the government contract. The transfer of spares production from one Rockwell facility to another resulted in price increases. Minuteman program spares and systems were produced at the company's West Virginia plant, a high production, low labor cost manufacturing facility. However, when the Minuteman program was completed in 1979, Rockwell terminated plant operations and transferred the Minuteman spares production to California. Consequently, the labor efficiencies from concurrent spares and systems production were lost. (See ch. 2.)

GAO found $19,554 in overpricing on Rockwell Minuteman parts which was 2 percent of the $935,990 in material costs reviewed. One of the causes was not using the most current subcontractor prices in establishing prices to be used in government contracts. Rockwell voluntarily refunded the overpricing and revised its contracts and pricing procedures in October 1983 to correct the overpricing conditions. (See ch. 2.)

Litton Systems, Inc., was the contractor for 10 of the parts. Its prices increased because of increases in the costs of labor and material and changes to their accounting system in order to become compliant with Cost Accounting Standards. (See ch. 2.)

Problems with price analysis and procurement of spare parts

Government contracting officers and their assisting buyers face many problems in attempting to analyze prices and price increases. GAO found that explanations by procurement personnel of price increases were based on limited information. Some government buyers were reluctant to spend time on price analysis because of managements' emphasis on processing large numbers of contracts. GAO also found isolated problems not related to price analysis with the procurement of a few parts at Air Force and Navy sites. (See ch. 3.)

Competition

There were 21 awards where competition determined the price and 98 noncompetitive awards. Six awards could not be classified. (See ch. 3.)

RECENT ACTIONS BY THE CONGRESS AND THE SECRETARY OF DEFENSE

The procurements GAO reviewed were made before certain corrective actions were taken by the Congress and the Secretary of Defense. The price analysis of spare parts should improve if these current corrective actions are properly implemented.

GAO believes title VII (the Competition in Contracting Act of 1984) of the Deficit Reduction Act (Public Law 98-369), signed into law July 18, 1984, will be beneficial, because after March 31, 1985, contracting officers generally are required to request certified cost and pricing data on contracts over $100,000. Formerly, the threshold was $500,000.

As of January 25, 1984, procurement regulations require a contracting officer not to award a contract for a spare part when the price has

increased by 25 percent or more within the most recent 12-month period unless the contracting officer certifies that the price is fair and reasonable or national security interests require the purchase regardless of the price increase.

On October 19, 1984, title XII (the Defense Procurement Reform Act of 1984) of the Department of Defense Authorization Act, 1985, was signed into law. It requires the Secretary of Defense to make every effort to reform procurement practices related to spare parts.

On July 25, 1983, the Secretary of Defense initiated action to correct problems with price analysis and procurement of spare parts. Examples include: (1) incentives to increase competition and reward employees who pursue cost savings, (2) performance evaluation factors are to be revised to emphasize pricing and competition, (3) action is to be taken to obtain legal and voluntary refunds where there is overcharging, and (4) efforts should be made to expose and to take corrective action against those contractors and employees who are either negligent in performing their duties or are engaging in excessive pricing practices. (See ch. IV.)

While GAO's review identified problems, the matters discussed predate all of the corrective actions taken by the Congress and DOD, therefore, GAO is not making any recommendations. However, the information could be useful to DOD in its ongoing efforts to improve the procurement of spare parts.

AGENCY COMMENTS

GAO provided a draft of this report to DOD, Rockwell International Corporation, and Litton Systems, Inc., for review and comment. DOD concluded that it is thorough and factual and concurs with its contents. (See app. V.) Rockwell stated it is a fair and accurate representation of the information obtained at its facility and of the actions Rockwell has taken to prevent future occurrences of the problems discussed. (See app. VI.) Litton provided clarifications which GAO has incorporated in the report. (See app. VII and ch. 5.)

Contents

ABBREVIATIONS

DLA	Defense Logistics Agency
DOD	Department of Defense
GAO	General Accounting Office
GFM	government-furnished material

CHAPTER 1

INTRODUCTION

Weapon systems, such as aircraft, missiles, tanks, ships, and electronic systems, are made up of thousands of parts. To keep these weapon systems operational, spare parts are purchased to repair or replace worn-out parts. Included in the list of spare parts are such items as nuts and bolts as well as some complex parts such as wing assemblies.

Approximately 4 million spare parts are in the Department of Defense (DOD) system. The Air Force, Army, and Navy manage 1.8 million of these parts, while the Defense Logistics Agency (DLA) manages 2.2 million. The DOD budget for spare parts in fiscal year 1984 was approximately $22 billion.

Spare parts are bought within the framework of the government procurement system. A brief overview of the government procurement process follows; see appendix I for a more detailed explanation of the process.

GOVERNMENT PROCUREMENT POLICIES AND REGULATIONS

The government's procurement of goods and services, including spare parts, is a complex process. It is characterized by numerous policies and regulations designed to achieve a number of objectives, including ensuring that the government pays a fair and reasonable price for its purchases, promotes full and open competition, and places a fair proportion of the government's procurements with small businesses. Various officials and activities are responsible for implementing these policies and regulations.

The government contracting officer

The government's contracting officer functions as an agent of the United States and is vested with the authority to enter into and administer contracts. The contracting officer is responsible for establishing and administering a pricing arrangement that results in the government paying a fair and reasonable price which is defined as being fair to both parties considering such factors as the quality and timeliness of contract performance.

Price analysis

"Price" is what the government pays the seller (for example, a contractor) for goods or services. Government procurement regulations require that each negotiated contract be priced separately and independently without considering the financial outcome of other contracts. The contracting officer's conclusion on the fairness and reasonableness of a price must be based on either price analysis or a combination of price and cost

analysis. Price analysis is the examination of a proposed price without evaluation of the separate cost elements and profit proposed by the prospective supplier whose price is being evaluated. Cost analysis is the examination of the contractor's estimated cost of contract performance (materials, labor, overhead, profit, etc.).

Regulations state that price analysis may be accomplished in various ways, including comparing the price in a current offer with other current offers and with past contract prices. The contracting officer is not required to obtain an explicit explanation for a price increase from the contractor. However, there is a requirement that both past and present prices be fair and reasonable, and we believe the contracting officer should obtain a credible explanation of a price increase.

Where price competition is inadequate and where price analysis by itself does not assure the reasonableness of prices, a cost analysis is used to establish the reasonableness of contract prices. In order to perform the cost or price analysis, the procurement regulations require a contractor to submit cost and pricing data in support of the contractor's pricing proposal. Costs are analyzed to determine if the total cost estimate approximates the dollars it should cost to perform the contract if the company operates with reasonable economy and efficiency. However, the regulations establish dollar thresholds on the anticipated contract amount for which cost and pricing data is required. (See app. I.)

Procurement activities

The services and DLA have procurement or buying activities to purchase goods and services. For example, the Air Force has five Air Logistics Centers; the Navy has the Ships Part Control Center (SPCC) and the Aviation Supply Office; and DLA has five major purchasing centers grouped by commodities.

Within these procurement activities, special systems have been established to procure items depending on value. For example, DLA has automated procurement systems, such as the phase I automated system for procurements under $1,000, where contractors, as potential sellers, are solicited on a rotating basis through a computerized system.

Spare parts procurement regulations

There are specific DOD regulations for the procurement of spare parts which complement the general procurement regulatory authority. In 1969 DOD issued the joint service regulation High Dollar Spare Parts Breakout Program. This joint regulation was superseded on June 1, 1983, by the Defense Acquisition Regulation Supplement No. 6, DOD Replenishment Spare Parts Breakout

Program. The objective of the DOD Replenishment Spare Parts Breakout Program is to reduce costs by "breakout" of parts for purchase from other than prime weapon system contractors while maintaining the integrity of the systems and equipment in which the parts are used. The supplement was issued for the guidance of DOD personnel engaged in acquisition of centrally managed replenishment parts for military systems. It prescribes uniform policy, procedures, and report formats for the DOD Replenishment Spare Parts Breakout Program.

New statutory authority effective April 1, 1985, permits DOD to obtain cost and pricing data for a contract of any amount. The regulations implementing this statutory authority appear in the Federal Acquisition Regulation, Part 15.804-2. In addition, effective January 25, 1984, DOD procurement regulations prohibit contracting officers from awarding a contract for a part where the price increased 25 percent or more within the most recent 12-month period. An exception is provided where a national security interest is involved or the price is determined to be fair and reasonable.

RECENT AUDITS ON SPARE PARTS SHOW PROBLEMS

Recently, various audit activities have issued reports on spare parts.[1] For example, in the Air Force Management Analysis Group report on spare parts issued in the fall of 1983, many problems were cited. These included (1) underfunding of spares requirements resulting in purchases of small quantities at high unit costs, (2) a lack of competition due to inadequate government engineering data, (3) a lack of competition due to the government not having legal rights to use engineering data in competitive procurements, and (4) deficient front end planning where little management emphasis is placed on the Air Force's ability to compete spare parts throughout the system life cycle.

In the DOD Inspector General's report, Defense Wide Audit of Procurement of Spare Parts, June 1, 1984, problems were found with overpricing. Of the $291 million in spare parts sampled, 6

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[1]U.S. General Accounting Office report Air Force Breakout Efforts Are Ineffective, June 1, 1983, report number GAO/PLRD-83-82.

Office of the Inspector General, Department of Defense, Management of Technical Data and Its Use in Competitive Procurement, April 11, 1983, report number 83-098.

Office of the Inspector General, Department of Defense, Defense Wide Audit of Procurement of Spare Parts, June 1, 1984.

Air Force Management Analysis Group report Spare Parts Acquisition, October 1983, report number A134840.

percent was unreasonably priced. The audit results showed that while procuring activities paid unreasonable prices frequently, the effect in dollars tended to be small because the majority of the unreasonable prices occurred on low dollar value parts and small quantity procurements. The rate of unreasonable pricing decreased as the value of the procurements increased. The practices that led to the unreasonable prices included not purchasing from other sources available that offered lower prices, paying higher prices to fill urgent requirements, purchasing uneconomical quantities, and inadequate price analysis.

OBJECTIVES, SCOPE, AND METHODOLOGY

This report responds to a request from the Chairman, Subcommittee on Investigations, House Committee on Armed Services, that we examine price increases on 125 spare parts used in the repair of missiles, aircraft, helicopters, and submarines. The value of the contracts awarded for the 125 spare parts was about $2.5 million.

At the Chairman's request, our initial efforts were directed toward providing the Subcommittee staff with detailed procurement histories of the spare parts. The procurement histories included information on the dates, quantities, prices, extent of competition, and contractors. The Chairman then requested that we summarize in a report

- --explanations for spare part price increases from government contracting officers and their staffs,
- --our analysis of some cost and pricing data on parts sold by selected contractors accounting for a significant number of the 125 spare parts,
- --explanations on how government contracting officers and their staffs (1) perform spare part price analysis and (2) procure spare parts in general, and
- --information on actions by the Congress and DOD to improve the price analysis and procurement of spare parts.

Because the 125 spare parts GAO was asked to examine were not drawn from a scientific sample, there is no reason to expect that the findings are representative of all spare parts procured by military activities.

We were unable to obtain explanations for price increases on 23 parts because of incomplete or inaccurate procurement history data.

Where sufficient information was available, we identified the part from the national stock number, reviewed the procurement history file, and interviewed procurement personnel at the following locations.

Service or agency	Procurement activity	No. of parts
Air Force	Ogden Air Logistics Center, Utah	39
	Sacramento Air Logistics Center, Calif.	23
	Oklahoma City Air Logistics Center, Okla.	22
	Warner Robins Air Logistics Center, Ga.	1[a]
		85
Defense Logistics Agency	Defense Construction Supply Center (DCSC) Columbus, Ohio	3
	Defense Electronics Supply Center (DESC) Dayton, Ohio	13
	Defense Industrial Supply Center (DISC) Philadelphia, Pa.	11
	Defense General Supply Center, (DGSC) Richmond, Va.	6
		33
Navy	Ships Parts Control Center, Philadelphia, Pa.	3
	Aviation Supply Center, Philadelphia, Pa.	2
		5
Army	Procurement Directorate, Fort Monmouth, N.J.	1
Not applicable	Sample part 28 deleted from the list of 125 parts by the Air Force before the list was given to the Subcommittee	1
Total		125

[a]Because sample part 33 was the only part procured by Warner Robins Air Logistics Center, we did not visit this location.

The effects of inflation on the prices of the parts were removed by using the Department of Commerce's Implicit Price Deflator for DOD Durable Goods.[2]

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[2]We computed the deflated price by adjusting the purchase price using the appropriate index number from the Department of Commerce's National Defense Purchases Implicit Price Deflators for DOD Durable Goods with a base year of 1972 equal to 100. This includes aircraft, missiles, ships, electronic equipment, and vehicles, but excludes nondurable goods (petroleum), services, (pay and compensation), and construction. For example, an item that cost $225.90 in 1982 was adjusted for inflation using the 1982 index of 225.9 yielding a deflated price of $100 in 1972 dollars.

In order to obtain explanations for price increases from the two contractors accounting for the largest share of the parts, we visited Rockwell's Autonetics Strategic Systems Division, Anaheim, California (46 parts), and Litton Systems, Inc., Guidance and Control Systems Division, Woodland Hills, California (10 spare parts).

The types of parts and the systems they are used in varied. (See app. III.) The date of the oldest price was 1965 and the date of the most recent price was July 1982.

We could not quantify the effects of time, inflation, and changes in quantity on the price increases. However, we did stratify the parts by various frequencies within these factors.

Our review was performed in accordance with generally accepted government auditing standards, and was made from May 1983 through February 1984.

CHAPTER 2

CONTRACTING OFFICERS' AND CONTRACTORS' EXPLANATIONS FOR PRICE INCREASES

Contracting officers and their assisting buyers responsible for the procurement of the 125 parts cited many reasons for the price increases, including (1) the effects of inflation on the costs of materials and labor used in the production of a spare part, (2) differences in the quantity of the parts purchased, (3) elapsed time between procurements, and (4) the markups of small businesses on spare parts purchased from large businesses and sold to the government in small business set-aside programs.

In our review of some contractor cost data we found several of these and other reasons for price increases, including contractors (1) being required to purchase material in minimum ordering quantities which exceeded the amount needed to manufacture the number of spare parts ordered by the government and (2) transferring spare part production from a low cost to a high cost facility when the Minuteman system production program was completed in 1979.

MAGNITUDE OF THE PRICE INCREASES FOR THE 125 PARTS

The increase in the prices varied for the 125 parts. Eighty of the 125 spare parts we reviewed had a price increase of at least 100 percent. Thirteen of these 80 had a price increase of at least 1,000 percent but less than 2,910 percent. Twenty-one had an increase of less than 100 percent. The following chart shows the parts stratified by the percentage price increase.

Percent price change		No. of	
At least	But less than	parts	Percent
1,000	2,910	13	10.4
500	1,000	14	11.2
400	500	5	4.0
300	400	10	8.0
200	300	12	9.6
100	200	26	20.8
0	100	21	16.8
-100	0	1	0.8
Insufficient data		23	18.4
Total		125	100.0

INFLATION

Contracting officers and buyers cited inflation as affecting the prices of the parts. In the elapsed time between procurements of spare parts, the costs of materials, labor, and overhead may increase significantly due to the effects of inflation. Data compiled by the Department of Commerce indicate the effects of

inflation on prices paid by DOD for durable goods such as aircraft, missiles, ships, electronic equipment, vehicles, and spare parts. As shown in the following chart, Department of Commerce data indicates that a DOD durable good purchased for $100 in 1972 would have cost $225.90 in 1982 due to the effects of inflation.

National Defense Purchases
Implicit Price Deflators for even years 1972-1982
Seasonally Adjusted Index Numbers 1972=100

Year	Index
1972	100.0
1974	104.6
1976	124.2
1978	148.2
1980	183.5
1982	225.9

We removed the average effects of inflation on the 125 parts, using the Department of Commerce's Implicit Price Deflator for DOD Durable Goods, to determine the deflated price increases. For example, sample part 1 had an increase in the price of 64 percent over a 4-year period, but the deflated price increase was only 12 percent. Sample part 36 had a price increase of 155 percent over a 10-year period, but the deflated price increase was only 16 percent. However, sample part 49 had a 218 percent price increase over a 3-year period and after inflation was removed the price increased 128 percent with almost no change in the quantity purchased. The following chart shows the parts stratified by the price increases after inflation was removed.

Parts Stratified by the Change
In Deflated Prices

Percent change		No. of	
At least	But less than	parts	Percent
1,000	1,826	3	2.4
500	1,000	5	4.0
400	500	2	1.6
300	400	2	1.6
200	300	3	2.4
100	200	20	16.0
0	100	41	32.8
-100	0	1	0.8
Deflator not available [a]		25	20.0
Insufficient data		23	18.4
Total		125	100.0

[a] Department of Commerce data on inflation for DOD durable goods does not exist for periods prior to 1972.

CHANGE IN QUANTITY

A change in the quantity of spare parts purchased by the government was cited by contracting officers and buyers as affecting the price. A change in quantity is important because manufacturing costs, such as labor setup time where they are applicable, are distributed over the number of units produced. The smaller the number of units produced, the smaller the base for allocating costs and unit costs generally will increase.

It is difficult to quantify the effects on a price resulting from a change in the quantity purchased. If the same number of units are ordered, government buyers can more easily compare old and new prices. However, comparing old and new prices becomes much more difficult when quantities vary significantly with each procurement.

The magnitude of the change in quantity was significant for many of the parts. For example, on sample part 19, the quantity decreased from 70 to 1; on sample part 55, from 28 to 3; and on sample part 117, from 250 to 11. However, 34 parts with price increases had an increase in the quantity. The following chart shows the change in quantity for the 125 parts.

Parts Stratified by Change in Quantity

Change in quantity purchased	No. of parts	Percent
Decrease	66	52.8
Increase	34	27.2
No change	2	1.6
Insufficient data	23	18.4
Total	125	100.0

TIME

The time elapsed between procurements was cited by contracting officers and buyers as affecting the price of the spare parts. In the elapsed time between procurements of a part, events such as changes in inflation or changes in the production process can affect price. The assembly line for a system may be shut down after production of the major weapon system is complete, for example the Minuteman assembly line was shut down in 1979. On orders for parts after such changes, a contractor may have to incur costs normally associated with a startup of a system, such as qualifying a subcontractor to produce a part.

For many of the parts, the time period between the old and the new procurements was long. For 25 parts, at least 10 years elapsed between the old and new prices. For example, the time between the old and new procurements for sample part 90 was 15.6 years. The part was out of production during this time. The following chart shows the time between the procurements for the parts where we were able to determine the actual awards used as sources of the old and new prices.

Number of Years Between Procurements of the 125 Parts

No. of years At least	But less than	No. of parts	Percent
10	16	25	20.0
5	10	30	24.0
2	5	23	18.4
1	2	15	12.0
0	1	9	7.2
Insufficient data		23	18.4
Total		125	100.0

For weapon systems entering inventory, provisioning spare parts are bought in quantities sufficient to support the weapon system for 1 or 2 years. Then replenishment spare parts are procured to provide the continuing long-term support requirements. Replenishment spares may be purchased years after the provisioning spares. Replenishment prices may differ from provisioning prices because the contractor may use a different estimating methodology for provisioning spares than for replenishment spares.

The procurement history files indicated that the old price was based on an initial provisioning contract (parts purchased along with the end items) on at least 16 parts. For example, on sample part 2 the old 1972 unit price of $10 was a provisioning price and the new 1982 unit price of $301 was a replenishment price.

PARTS CATEGORIZED BY TIME, INFLATION, AND QUANTITY

The previous charts showed the parts stratified by each individual factor. The following chart shows the parts categorized using all three factors.

The chart shows that

--for those 26 parts purchased with at least 10 years between procurements, one part had a deflated price increase with a quantity decrease and we could not categorize the remaining 25 because the old procurement predated 1972, the earliest date for available deflator statistics.

--for those 76 parts with less than 10 years between procurements, (1) 51 had a deflated price increase with a quantity decrease and (2) 1 had a deflated price decrease and 25 had a deflated price increase with an increase or no change in quantity. Ten of these 25 had less than 2 years elapsed between procurements and the deflated price increased an average of 93 percent.

--for 23 parts, there was insufficient data to make an analysis.

Parts Stratified By Years Between Procurements, Change In Deflated Price, and Change in Quantity

No. of years between procurements		Parts				
		Deflated price increased		Deflated price decreased		
At least	But less than	Quantity increased or no change	Quantity decreased	Quantity increased or no change	Deflator not available	Total
10	16		1		25	26
5	10	10	19			29
2	5	5	18			23
1	2	7	9			16
0	1	3	4	1		8
Total		25	51	1	25	102
Insufficient data						23
Total						125

SMALL BUSINESS MARKUPS ON PARTS PURCHASED FROM LARGE BUSINESSES

Contracting officers and buyers stated that prices increased on a number of spare parts due to the markups of small businesses. This occurred on parts purchased from a large business and then sold to the government through small business set-aside programs. In some cases, prior procurements at lower prices were obtained by direct purchases from the large business.

The Small Business Act, as amended (15 U.S.C. 631 et seq.), states it is the policy of the Congress that a fair proportion of government procurements be placed with small businesses. Each contract for the procurement of goods and services which has an anticipated value of $10,000 or less and which is subject to small business purchase procedures may be reserved exclusively for small business concerns that are allowed to furnish the government any domestically manufactured product. If the contracting officer or buyer determines that the small business price is not fair and reasonable or competition among small businesses is not obtainable, the set-aside may be dissolved and all other contractors can be solicited. In some situations where the agency procures a part using a small business set-aside, the government

contracting officers and buyers may have to choose between paying a higher price to a small business distributor that does not manufacture the part itself, or dissolving the set-aside and then negotiating another presumably lower price with the sole source large business manufacturer. The following are examples of small business markups on spare parts purchased from large businesses.

Sample part 38 is a gasket used in gyroscopic systems on multiple aircraft. DLA's Defense Industrial Supply Center purchased 798 units at $0.95 each from an original equipment manufacturer in 1981. A year later, the Center awarded a contract to a small business for 1,159 units at $2.97 each. DLA did a postaward review and found the original equipment manufacturer had charged the small business a commercial price of $2.33 each. The price was only $0.95 for the same quantity on the original equipment manufacturer's government price list. DLA canceled the procurement because of the high price of the small business and purchased a larger quantity of 2,500 for $0.68 each from the original equipment manufacturer.

Sample part 60 is an electrical receptacle connector used in the A7D aircraft. The part had been purchased from a vendor at $26.31 each for 15 units in 1972 and 10 units in 1973, and $33.89 each for 20 units in 1975. In 1982, in response to a solicitation, a small business submitted an offer of $185 each for 11 units. The buyer did not accept the small business's offer and solicited the sole-source manufacturer, a large business which made an offer of $117.11 each and was awarded the contract.

Sample part 54 is an electrical connector plug used in the A7D aircraft. The procurement activity is the Defense Electronics Supply Center. In 1972, 10 units had been purchased for $50.40 each. In a 1982 procurement, the only qualified manufacturer, a large business that has manufactured the connector since 1972 was not solicited because this award was reserved for small businesses. Three small businesses, listed as suppliers of the manufacturer's parts, were solicited. Two submitted offers, one at $351 per unit and the other at $361.40 per unit. The Defense Electronics Supply Center buyer was aware that the offers were much higher than previous prices, but was told by the item manager to buy it because it was needed. The contract was awarded to the low bidder at $351 each for 14 units. However, when contacted by DLA, the large business manufacturer stated that its unit price would have been $191 each for 14 units.

There were three other parts (parts 57, 58, and 61) manufactured by the same large business but sold to the government after being reserved for and competed exclusively among small business distributors. Because of the excessive markups by two of these distributors, the manufacturer removed them from its authorized dealer list.

CAUSES OF PRICE INCREASES ON PARTS SOLD BY CONTRACTORS ACCOUNTING FOR A SIGNIFICANT NUMBER OF THE PARTS

We analyzed and discussed with contractors price increases on several parts sold by two contractors, Rockwell International Corporation and Litton Systems, Inc.

Causes of price increases on Rockwell parts

Rockwell International Corporation was the contractor on 46 of the 125 parts. We did a review of some cost and pricing data on 10 of the 46 parts to determine some of the causes of the price increases. Our limited review of the data showed that the Rockwell prices changed considerably over a relatively short period of time because of many reasons.

One factor that contributed to increased prices is called a "minimum buy practice." In order to manufacture a spare part, Rockwell had to purchase certain material. However, the lowest quantity that a seller was willing to sell to Rockwell greatly exceeded the actual amount needed by Rockwell to manufacture the number of spare parts in the government contract. For example, on sample part 12, a circuit card assembly, the Air Force awarded Rockwell a contract for 15 units in March 1981. Each circuit card assembly has one specific type of diode. Rockwell purchased a minimum order of 303 diodes from a subcontractor at a cost of $2,500, and allocated the entire cost to the government contract for 15 circuit card assemblies because of uncertainty over future government orders.

Another factor causing Rockwell spare part price changes was the one-time cost included in a specific contract when Rockwell qualified or requalified a subcontractor to make a component part of the spare part. Because Rockwell was not guaranteed any future orders, Rockwell charged the qualification cost to the first government contract requiring a subcontractor be qualified or requalified. This pricing methodology was subsequently changed in July 1982 to provide for the allocation of qualification costs to all Minuteman spares material costs. Qualification costs are now included in the engineering pool and recovered on future orders through the spares pricing agreement.

The transfer of spares production from one Rockwell facility to another resulted in price increases. Rockwell officials stated that it is Rockwell's policy to schedule manufacturing efforts at the lowest cost facilities consistent with the overall government contract workload. For example, Minuteman program spares and systems were produced at the company's West Virginia plant, a high production, low labor cost manufacturing facility. However, when the Minuteman program was completed in 1979, Rockwell terminated plant operations and transferred the Minuteman spares production

to California. Consequently, the labor efficiencies from concurrent spares and systems production were lost. For example, on one part, the fabrication hours were 16.6 hours per unit at the West Virginia plant and 41.9 hours per unit at the California plant.

Rockwell spare part prices also changed because Rockwell (1) purchased materials from new or existing vendors at substantially higher prices than experienced on earlier spares orders, (2) incurred new subcontractor tooling and set-up costs, (3) changed the base of fabrication labor hours and test labor hours because of variations in quantities, and (4) changed its material and labor conversion factors used in its formula pricing based on projections from historical experience.

Causes of price increases on Litton parts

Litton Systems, Inc., was the contractor on 10 of the 125 parts. We did a review of some cost and pricing data on 5 of the 10 Litton parts to determine the reasons for price growth.

Price changes on 5 of the 10 Litton parts reviewed resulted from changes in such cost elements as materials, overhead, and profit. A significant part of the cost growth was due to Litton changing its overhead allocation method after the issuance of Cost Accounting Standard 418, Allocation of Direct and Indirect Costs. Litton formerly had one overhead pool which was allocated to parts incurring manufacturing direct labor but was not allocated to parts purchased from subcontractors or vendors (four of the five parts were purchased parts). After August 1, 1982, as a result of the necessary changes to its accounting system in order to become compliant with Cost Accounting Standard 418, Litton created three overhead pools which was allocated among parts purchased from other contractors and subcontractors. This created significant cost increases for these purchased parts such as sample part 37, which received a 17-percent markup for materials handling overhead where formerly it did not have this markup.

Prime contractor estimates are higher than costs incurred

We found several cases where Rockwell and Litton as prime contractors established a government price using a subcontractor quotation which was higher than costs eventually incurred by the prime contractor, thus increasing the prime contractor's profits. An example follows.

Sample part 9 is a shaft used in a computer in the Minuteman missile and manufactured and sold by Rockwell. On June 4, 1980, the government ordered sample part 9 under a basic ordering agreement from Rockwell. Rockwell solicited a subcontractor to obtain materials needed in the manufacture of the part. The

subcontractor submitted a quote of $505 per unit. On June 26, 1980, the subcontractor told Rockwell that if Rockwell bought the material before July 14, 1980, the unit price would be $476, a savings of $29 per unit. On July 1, 1980, Rockwell awarded a purchase order to the vendor and bought the material at $476 per unit. On July 17, 1980, 16 days after agreeing to pay the subcontractor $476 each for the material, Rockwell requested and was granted an equitable adjustment to the government contract signed on June 4, 1980. The adjusted price included material at the $505 unit price, not the $476 unit price that Rockwell was actually paying the subcontractor.

This situation may be improved because Rockwell revised its contracts and pricing procedures on October 24, 1983, to include using current subcontractor quotations.

Another example concerns sample part 88, an electrical heating element used on a platform cover on the F-4C aircraft. The government solicited Litton for 135 units of sample part 88. Litton obtained a quote from a vendor of $53.31 per unit, which was used to develop Litton's offer of $77.64 to the government. We were told that Litton's buyer was unable to compare the $53.31 vendor quote to earlier Litton purchases of the item, which ranged from $8.50 to $16, because old procurement information had been purged from Litton's files (Litton subsequently changed its system to retain information on the last 10 purchases). In September 1981 the government awarded the contract to Litton at the unit price of $77.64. However, in November 1981, Litton purchased 140 units of sample part 88 at $15.60 each from another vendor.

The Defense Contract Administration Services Plant Representative Office at a contractor's plant provides unified contract administration services to DOD components for all contracts, with some exceptions. A pricing analyst in the Office at Litton told us that, although the government approves Litton's purchasing, cost accounting, and estimating systems and audits all the high dollar purchases made by the government, it does not ensure that Litton's prices are always fair and reasonable. The analyst said a contractor can comply with the rules and still not give the best price available. An example is where Litton submits a proposal with an estimated subcontractor price and subsequently negotiates a lower final price with the subcontractor. The analyst stated that a contracting officer must understand that a contractor will build into its offer sufficient room for increasing profits if it can perform more efficiently or subsequently purchase materials from subcontractors at lower prices than quoted.

The Defense Contract Audit Agency said it is continuously monitoring various material cost functions at Litton. Its auditors have been ordered to use a decrement factor (reduction in the contractor's offer) when Litton proposes prices for materials based on only one quotation from a subcontractor. According to

the Defense Contract Audit Agency, there was no request for certified cost and pricing data on sample part 88 used in the example. As a result, the government has no contractual right to a refund; however, the government can ask for a voluntary refund.

Some overpricing on Rockwell parts

We analyzed some material costs to determine why Rockwell prices increased. We believe that the Rockwell spare part prices generally conform to their established estimating procedures. However, we found pricing errors in earlier spare part contracts in the cost estimates in purchases made by Rockwell from subcontractors, resulting in (1) overpricing of $19,554 on the Minuteman and $1,595 on the F-111 contracts and (2) $2,839 in underpricing on F-111 contracts. However, this is only 2 percent of the $935,990 in costs of material reviewed. Rockwell also did an internal review of other spares orders and identified additional overpricing of $4,497 on Minuteman contracts.

The overpricing resulted from Rockwell (1) using outdated information when updating prices and (2) charging twice for the same material costs. For example, on sample part 12 the Air Force awarded Rockwell a contract for 15 units in March 1981. One of the part components is a diode. Rockwell purchased a minimum order of 303 diodes from a subcontractor at a cost of $2,500, and allocated the entire cost to the government contract for 15 units because future orders were not guaranteed. In May 1981 Rockwell was awarded another contract for 12 units of sample part 12. Rockwell erroneously allocated to the second contract the previously charged off $2,500, plus material conversion costs which came to a total of $7,900.

On November 18, 1983, Rockwell submitted a voluntary refund of $19,554 for GAO identified Minuteman overpricing and $4,497 for Rockwell identified Minuteman overpricing, a total of $24,051.

Rockwell revised its contract pricing procedures on October 24, 1983, to address some of the underlying causes that led to the spares overpricing conditions. These included (1) updating material prices used in government contracts and (2) avoiding duplication of costs in estimates.

CONCLUSIONS

Government contracting officers and buyers cited a number of reasons for the price increases, including a change in quantity, events occurring over the elapsed time between procurements, and inflation. For many of the parts, there was a long time between procurements, there was a decrease in the quantity purchased, and the deflated price increase was far less than the unadjusted increase after removing the effects of inflation. These may be valid reasons for some of the price increases. However, on a

number of parts there was still a significant increase in the price even though the quantity purchased increased, the elapsed time was short, and the effects of inflation were removed.'

Price increases may also be due to small business markups on spare parts. Government contracting officers and buyers are required to both (1) place a fair proportion of government procurements with small businesses and (2) pay a fair and reasonable price for a spare part. However, in procurements classified as small purchase, small business set-asides, contracting officers and buyers may have to choose between (1) placing a fair proportion of procurements with small businesses but sometimes paying small business distributors a higher price or (2) dissolving the small business set-aside and attempting to negotiate a lower price with the sole-source large business manufacturer. In several cases procurement activities did remove small business contractors from bidders lists when a pricing review revealed a case of overpricing.

A limited review of cost and pricing data and interviews with contractor personnel at two large contractors, Rockwell and Litton, showed price increases were due to many factors. Material was bought in minimum quantities but this exceeded the amount needed for a spare parts order. However, the contractor charged it to the government contract because there was no guarantee that there would be future orders for the spare part. Costs of material and labor increased. As a result of the necessary changes to its accounting system to become compliant with Cost Accounting Standard 418, a contractor reallocated overhead from one cost center to some of the sample spare parts.

The Defense Contract Audit Agency and the contracting officers continually review Rockwell and Litton spare parts prices. However, we found some overpricing on Rockwell and Litton spare parts due to such factors as not using the most current subcontractor prices in establishing prices to be used in government contracts. We performed a limited review of $935,990 in material costs at Rockwell and found $19,554 or about 2 percent in overpricing on Minuteman parts. Rockwell refunded this amount and $4,497 in overpricing that Rockwell found.

CHAPTER 3

PROBLEMS WITH THE PRICE ANALYSIS AND PROCUREMENT OF SPARE PARTS

Government contracting officers and buyers face many problems in attempting to analyze prices and price increases.

We found that:

--Explanations of price increases were based on limited information.

--Some government buyers were reluctant to spend time on price analysis because of management's emphasis on processing large numbers of contracts.

We also found isolated problems not related to price analysis with the procurement of a few parts at Air Force and Navy sites.

EXPLANATIONS OF PRICE INCREASES BASED ON LIMITED INFORMATION

Each sample part had a unique and complex procurement history. Many variables, such as time and inflation, could have affected the individual cost elements, such as materials, labor, overhead, and profit. To be able to explain the price increase on a spare part, especially those parts purchased noncompetitively, a contracting officer or buyer would need complete, current, and accurate cost and pricing data for both old and new procurements, as well as an explanation from the contractor as to why the cost elements changed. Without detailed information on the cost elements (for example, material and labor) of a price, a procurement activity's explanation of price increases on a low value award for a spare part is an educated guess, especially when changes in variables such as quantity, inflation, and time exist. However, contracting officers or buyers may not have gathered this type of data because they believed competition set the price and such information was not necessary, or because current and then existing regulations prohibit the contracting officers and buyers from requiring contractors to provide cost or pricing data certified by the contractor to be accurate, current, and complete for awards that were $25,000 or less. For the 125 parts, contracts for 104 parts were $25,000 or less and contracts for 19 parts were more than $25,000. Contracts on the remaining two parts were not reviewed.

On the sample parts, procurement personnel (1) analyzed all cost elements on 8 noncompetitive awards, (2) analyzed some of the cost elements on 26 noncompetitive awards and 1 competed award, (3) did not analyze any cost elements on 20 awards because the

price was determined by competition, and (4) did not analyze any cost elements on 56 noncompetitive awards because of reasons such as the low value of the award. We were unable to categorize the remaining 14 awards because of insufficient data.

EXTENT OF COMPETITION

Contracting officers find it difficult to determine if the price on a noncompetitive (sole-source) procurement is fair and reasonable. On a competitive procurement, the contracting officer or buyer has the benefit of the price being determined by competition among contractors in the marketplace. Government procurement regulations require that competition be obtained to the maximum practicable extent, because it is assumed that competition among independent sellers will result in fair and reasonable prices. On a noncompetitive, low value procurement, the price is determined by negotiation between a sole-source seller and a government contracting officer or buyer, who may have limited or no information about the cost elements making up the contractor's price. Of the 125 awards, 21 were competed, 98 were noncompetitive, and 6 could not be classified for various reasons.

BUYERS NOT MOTIVATED TO SPEND TIME ON PRICE ANALYSIS

We found that some procurement personnel were discouraged from spending time on price analysis because they perceived that management emphasized processing large numbers of awards, not analyzing prices. The following are examples.

Sample part 67 is a terminal board used on the T-38 aircraft. In July 1981 DLA's Defense General Supply Center purchased four parts. The Center solicited small businesses but was unable to get offers and the purchase was eventually made from a large business prime contractor. Before this procurement was finalized and before the price of $65.73 had been entered into the procurement history files, a second purchase request was received. The Center again solicited small businesses. This time an offer of $257.40 each, for two units, was received from a small business and DGSC accepted. The contracting officer stated that even though no price history was available in the computer, the contracting officer was aware that another procurement was in process. The contracting officer might have checked on the earlier price of $65.73, but said the pressure at the Center to make many small purchases each day prevented it. The contracting officer said that investigating to find out about another procurement would slow down processing of low value purchases and this would be reflected in the contracting officer's performance rating.

The price on sample part 36, a packing ring used on the HO-53H helicopter, increased from $3.32 per unit for 230 units to $8.44 per unit for 115 units over a 10-year period, a 154-percent increase. A Defense Industrial Supply Center Assistant Division Chief believed that the $8.44 price paid was not fair and reasonable based on the quantity ordered. The Assistant Division Chief said the buyer could have asked the contractor to provide information supporting the price, but also said that not many buyers would do this on a low value contract like this one because it would slow the procurement process.

Sample part 96 is a segment pitch used on aircraft. The Navy's Ships Parts Control Center purchased it in September 1981 and May 1982 on a sole-source basis from the prime contractor. The buyer on the first contract, for five units at $83.74 each, did not have anything to compare the price to because it was the initial procurement. The buyer estimated that only one hour would have been spent on a procurement of this type. When this contract award was made, the buyer was processing between 200 and 300 contracts and believed that 12 procurements a day had to be issued to obtain a satisfactory rating. Because of the low value of the award, $418.70, the buyer believed that research into this price was not required.

Sample part 38 is a gasket used in the gyroscopic system on several aircraft. Between June 1981 and May 1982, the unit price increased from $0.95 each for 798 units to $2.97 each for 1,159 units. After the Defense Industrial Supply Center did a postaward review, the $2.97 award was canceled because the price was too high and 2,500 units were subsequently purchased for $0.68 each from a prior seller. The contracting officer stated that the $2.97 price was not fair and reasonable. The contracting officer said that the prior seller should have been solicited and that the availability of other sources, prices, and quantities should have been checked. Although this information was in the contract file at that time, the focus was on quantity of procurements processed rather than the quality of the individual's procurement work.

OTHER PROBLEMS WITH THE PROCUREMENT OF SPARE PARTS

We found isolated problems not related to price analysis with the procurement of a few parts at Air Force and Navy sites. Spare parts components, which are themselves parts in Air Force inventory, but not in an "excess" position, might be provided as government-furnished material (GFM) to prime contractors to avoid the expense of qualifying subcontractors to make the part. We found on one of the sample parts, the Air Force paid a prime contractor to qualify a subcontractor to make a component for a spare part when the Air Force had a large supply of the component in inventory. On another sample part, we believe the Navy could have consolidated procurements to obtain the benefits of economical ordering quantities.

Subcontractor qualification expense might have been avoided

Spare part components in Air Force inventory but not categorized as being in an excess inventory position might be provided as GFM to prime contractors manufacturing the larger assemblies. This will avoid the prime contractor incurring unnecessary subcontractor qualification costs which are eventually passed on to the government. We found that a prime contractor incurred $14,107.80 to qualify a subcontractor to make a component for a spare part, a circuit card assembly. This cost was included in the government contract. The Air Force had the component, a diode, in its inventory. Ogden Air Logistics Center procurement personnel stated that the diode could have been supplied as GFM to the prime contractor.

Sample part 12 is a circuit card assembly used in a guidance control system on the Minuteman II. It is procured sole source from a prime contractor because it has been designated a high reliability part which requires control by the existing source to ensure acceptable reliability. The circuit card assembly was initially bought in 1969 under a provisioning contract for $64.54 each, again in 1972 for $68.80 each, and then in 1979 for $677 each. The prime contractor then phased out the Minuteman assembly line. In March 1981, the Air Force ordered 15 more circuit card assemblies at $2,204.95 each.

One of the components in this circuit card assembly is a diode. The prime contractor had to qualify a subcontractor to make the diode. Because the prime contractor did not have a guarantee for any future orders on the circuit card assembly, the $14,107.80 qualification charge was apportioned over the 15 diodes ($940.52 each). The prime contractor purchased a minimum order of 303 diodes from the subcontractor for a total of $2,500. Because future government orders were not guaranteed, the $2,500 plus material conversion costs were also apportioned over the 15 diodes ($562 each). The total cost of each of the 15 diodes was $1,502.52. The total March 1981 government unit price, including the diode, for each sample part 12, the circuit card assembly, was $2,204.95, a 226-percent increase over the 1979 unit price of $677.

At the same time, the Air Force had the same diode stock listed in the Air Force supply system. The Ogden Air Logistics Center has been buying this diode since 1966, paying between $4.60 and $17.00 each. In addition, the prime contractor, in September 1979, had given the Air Force 415 of the diodes without charge when it shut down its Minuteman assembly line. Records indicate that as of March 1980, the Ogden Air Logistics Center had 833 diodes on hand and in September 1983, it had 876 on hand, a 32-year supply based on its annual demand.

According to Ogden procurement personnel, when a spare part assembly, like the circuit card assembly, is needed, the contracting officer notifies the government spare part assembly item manager responsible for reordering the part. The item manager determines when to reorder and if there are spare part components for the assembly in inventory which can be provided to the prime contractor as GFM. The spare part components which are classified as excess in the inventory can be furnished as GFM to the prime contractor, thus avoiding the cost of having the prime contractor qualify a subcontractor to make the spare part components. The item manager provides the contracting officer with a list of these component parts. The contracting officer then provides this list to the prime contractor.

In the case of sample part 12, the circuit card assembly, the diode component was never considered to be in an excess position and had never been furnished as GFM in the past. The retention level for the diode was set at 540. Normally the remaining balance would be put in an excess position. The Air Force Logistics Command had issued instructions that Minuteman parts not be put into an excess position because the diode is used in the Minuteman missile, which will be kept operational at least to the year 2000. However, Ogden procurement officials stated that if the contracting officer had requested the item manager to provide small quantities of the diode as GFM to the contractor for sample part 12, the diode would have been provided to avoid the government paying the prime contractor's subcontractor qualification costs. They said this was not done because procurement regulations do not require a contracting officer to request an item manager to determine if a component part can be made available as GFM if it is not in an excess position.

Opportunity to consolidate purchases

We found that the Navy's SPCC could have consolidated two purchases into one and might have obtained a more favorable price in the purchase of a sample part. Consolidating purchases of spare parts can reduce unit prices because the manufacturer's labor setup time is spread over more units, material may be purchased in larger quantities at a lower unit cost, and administrative time is spread over more units.

Sample part 108 is a counter balance weight purchased by SPCC. On November 23, 1981, a buyer bought 11 units at $28 each. The procurement request was dated 6 months earlier than the award. Even though this information was available, 8 days later a second buyer bought 10 units at $50 each from the same contractor. If one buyer had processed both procurements, the difference between the $28 and $50 prices might have been detected. In addition, the two buys were for 11 units and 10 units for a total of 21 units. Information in the file showed that 23 units could have been purchased for $23.80 each, resulting in further savings.

The item manager stated that in the past, one buyer might not have been responsible for the same part on consecutive procurements at SPCC. Thus two consecutive buys and their respective price differences would not have been picked up. According to SPCC, the problem of different buyers has been changed. Now the same buyer will buy the same part.

CONCLUSIONS

Contracting officers and buyers face many problems in attempting to analyze prices and price increases because of the lack of detailed information on the cost elements that made up the prices for low value awards.

Procurement regulations required that every contract price be reviewed, but regulations prior to January 1984 did not require that increases in prices be identified and justified.

There were few awards among the 125 spare parts where competition determined the price.

Procurement personnel at several procurement activities were reluctant to spend time on price analysis of spare parts because of management's emphasis on the quantity of contracts awarded.

Spare part components, which are themselves parts in Air Force inventory, but not in an "excess" inventory position, might be provided as GFM to prime contractors to avoid the expense of qualifying subcontractors to make the component. The Air Force paid a prime contractor to qualify a subcontractor to make a diode component for a spare part circuit card assembly. The diode was in the Air Force inventory and although not in an excess position, could have been provided to the prime contractor, according to the item manager.

We found the Navy could have consolidated procurements on one part to obtain the benefits of economical ordering quantities.

While our review identified problems, the matters discussed predate all of the corrective actions taken by the Congress and DOD. Therefore, GAO is not making any recommendations (see ch. 4). However, we believe the information could be useful to DOD in its ongoing efforts to improve the procurement of spare parts.

CHAPTER 4

RECENT ACTIONS THAT ADDRESS PROBLEMS IDENTIFIED

Price analysis of spare parts should improve because the Congress and DOD have taken action to correct some of the problems identified. Recently passed legislation requires the Secretary of Defense to make every effort to reform procurement practices related to spare parts. Formerly, there was no DOD procurement regulation to require that a price increase be reviewed to determine the magnitude of the increase. DOD procurement regulations now require such a review and that action be taken by the contracting officer if the increase exceeds a certain amount.

New statutory authority for solicitations issued on or after April 1, 1985, generally requires contracting officers to request certified cost and pricing data on contracts over $100,000. Formerly, the threshold was $500,000. Additionally procurement personnel were discouraged from spending time on cost and price analysis. The Secretary of Defense has since directed that (1) incentives should be offered to increase competitive bidding, (2) employees who pursue cost savings should be rewarded, and (3) managers' performance evaluation factors should be revised to include an emphasis on spare parts pricing, breakout, and competition. The following is a detailed description of these recent actions that address the problems we noted in the pricing of spare parts.

NEW REGULATIONS

Previous DOD procurement regulations did not require that current prices be compared with past prices; it was optional. Because of the concern over price growth, procurement regulations now require that old and new prices be compared to determine the percentage increase. Effective January 25, 1984, DOD procurement regulations prohibit contracting officers from awarding a contract for a centrally managed spare or replacement part when the price has increased 25 percent or more within the most recent 12-month period. A purchase is permitted even though the price increases 25 percent or more if the contracting officer certifies in writing to the head of the contracting activity before the purchase is made that (1) the price has been evaluated and is considered to be fair and reasonable or (2) national security interests require the part to be purchased despite the price increase. Under the new regulation, the contracting officer is still responsible for obtaining a fair and reasonable price where the price increase is less than 25 percent within the most recent 12-month period.

PUBLIC LAW 98-369 REDUCES THE THRESHOLD FOR CERTIFIED COST AND PRICING DATA

On July 18, 1984, title VII (the Competition in Contracting Act of 1984) of the Deficit Reduction Act (Public Law 98-369) was

signed into law. Its provisions apply to all solicitations issued after March 31, 1985. It (1) reduced the threshold for required certified cost and pricing data from $500,000 to $100,000 and (2) states that even if the procurement does not exceed $100,000, cost or pricing data may be required by the agency if the agency determines that such data are necessary for the evaluation of the reasonableness of the price. According to the House and Senate conference report on the Act, this latter provision was added because "Obtaining such data for small dollar contracts has proven to be a problem in purchasing spare parts, where excessive overcharges have become legendary." The Federal Acquisition Regulation was revised to reflect the statutory change concerning the threshold reduction from $500,000 to $100,000. The regulation provides, as it did prior to the Act, that contracting officers shall not require certified cost or pricing data on contracts of $25,000 or less. Our office is currently examining whether the revisions to the regulations conform with the congressional intent underlying the Act.

PUBLIC LAW 98-525 REQUIRES THE SECRETARY OF DEFENSE TO MAKE EVERY EFFORT TO REFORM PROCUREMENT PRACTICES RELATED TO SPARE PARTS

On October 19, 1984, title XII (the Defense Procurement Reform Act of 1984) of the Department of Defense Authorization Act, 1985, was signed into law. It states that the Congress finds that recent disclosures of excessive payments by the Department of Defense for replenishment parts have undermined confidence by the public and Congress in the defense procurement system. The Secretary of Defense should make every effort to reform procurement practices relating to replenishment parts. Such efforts should, among other matters, be directed to the elimination of excessive pricing of replenishment spare parts and the recovery of unjustified payments. Specifically, the Secretary should

- --direct that officials in DOD refuse to enter into contracts unless the proposed prices are fair and reasonable;
- --continue and accelerate ongoing efforts to improve DOD contracting procedures in order to encourage effective competition and assure fair and reasonable prices;
- --direct that replenishment parts be acquired in economic order quantities whenever feasible, practicable, and cost effective;
- --direct that standard or commercial parts be used whenever such use is technically acceptable and cost effective; and
- --vigorously continue reexamination of policies relating to acquisition, pricing, and management of replenishment parts and of technical data related to such parts.

RECENT ACTIONS BY THE SECRETARY OF DEFENSE

The procurements establishing the prices we reviewed were made prior to July 25, 1983, when the Secretary of Defense directed DOD and the services to correct problems in the procurement of spare parts. Among the Secretary's required actions by DOD, the services, and DLA are the following:

To motivate employees

- --incentives should be offered to increase competitive bidding and reward employees who rigorously pursue cost savings and
- --performance evaluation factors are to be revised for acquisition and logistics managers to include spare parts pricing and competition.

To improve the price analysis of spare parts

- --competition advocates are expected to challenge orders that appear excessively priced,
- --resources are to be provided to improve pricing in the acquisition of spare parts,
- --plans for the acquisition of computer hardware and software to assist parts control personnel are to be accelerated,
- --action should be taken to identify disparities in spare parts prices within and among various procuring activities,
- --acquisition personnel are to be instructed to challenge any procurement action for spare parts where estimated or negotiated price appears unrelated to intrinsic value.

To increase competition

- --competition advocates now in place at procurement activities are expected to challenge orders that are not made competitively,
- --resources are to be provided to induce desirable breakout and effective competition.

To ensure that only fair and reasonable prices are paid for spare parts

- --DOD activities must refuse to pay unjustified price increases,
- --action is to be taken to obtain refunds in instances where there has been overcharging. Where there is no legal

right, the government should hold discussions with contractors to obtain voluntary refunds for payments that are clearly exorbitant and unjustified,

--basic contract procedures are to be reformed to preclude overpricing and to give the government legal right to recover excessive payments,

--where alternative sources of supply are available, the government should cease doing business with those contractors who are guilty of unjustified and excessive pricing and who refuse to refund any improper overcharges. If alternative sources are not available, the government should do its best to develop such sources rapidly, and

--every effort must be made to eliminate excessive pricing in the future, to recover unjustified payments made, and where necessary, to expose and take corrective action against those contractors and employees who are either negligent in performing their duties or are engaging in excessive pricing practices.

To improve the pricing and procurement of spare parts when formulating a contract

--existing contracts are to be reviewed to fully address any and all opportunities for improved pricing of spare parts, including breakout and competition, and

--in all future acquisitions, activities should insist upon contract terms and conditions that afford more equitable treatment and provide for greater assurance of fair and reasonable prices.

CONCLUSIONS

The price analysis of spare parts should improve if the current corrective actions taken by the Congress and DOD are properly implemented.

New regulations were established which prohibit contracting officers from awarding a contract when the price has increased by 25 percent or more within a year, unless the contracting officer certifies in writing that the increase is fair and reasonable or in the interest of national security.

We believe title VII (the Competition in Contracting Act of 1984) of the Deficit Reduction Act (Public Law 98-369) will be beneficial. Effective April 1, 1985, the Act generally requires contracting officers to request certified cost and pricing data on contracts over $100,000. Formerly, the threshold was $500,000.

Title XII (the Defense Procurement Reform Act of 1984) of the Department of Defense Authorization Act, 1985, requires the Secretary of Defense to make every effort to reform procurement practices related to spare parts.

The Secretary of Defense has taken action to increase competition and has directed that (1) competition advocates at procurement activities challenge orders that are not made competitively or that appear excessively priced, (2) incentives should be offered to increase competitive bidding and reward employees who rigorously pursue cost savings and (3) performance evaluation factors be revised for acquisition and logistics managers including an emphasis on spare parts pricing and competition.

CHAPTER 5

AGENCY COMMENTS

We provided a draft of this report to DOD, Rockwell, and Litton for review and comment.

DOD COMMENTS

DOD concluded that the report is thorough and factual and concurred with its contents. (See app. V.)

ROCKWELL COMMENTS

Rockwell found the report to a fair and accurate representation of the information we obtained at Rockwell's facility and of the actions Rockwell has taken to prevent future occurrences of the problems discussed in the report.

Rockwell stated that many of the causes of high prices are often beyond its control. Rockwell believes the most significant single factor is the procurement of a repetitive quantity of parts. It believes that if a solution to this problem could be found, cost impacts associated with minimum quantity buys and requalification costs could be minimized or eliminated. Rockwell cited various approaches which might address this problem such as multi-year procurement, lifetime buy-outs, and other methods of consolidating procurements to assure economic lot buys. (See app. VI.)

LITTON COMMENTS

Litton provided several comments. (See app. VII.) Litton requested that we change our wording concerning changes to its accounting system to conform with Cost Accounting Standards. We agreed and made this change.

Litton requested that we add a statement on Litton part number 610710 (sample part 92) concerning prices paid to a vendor. However, our records obtained from Litton differ on this particular transaction, therefore, we cannot verify Litton's statement.

Litton requested that we add a statement that the average profit percentage on the 10 sample parts sold by Litton to the government was 6.7 percent. We only reviewed cost and pricing data for 5 of the parts, not all 10, therefore we cannot verify this statement. During our review, Litton did provide us with a summary of the five parts which showed that for nine transactions involving these five parts, there was an average profit of 6.7 percent.

BACKGROUND ON GOVERNMENT PROCUREMENT

Government procurement is characterized by policies and regulations[1] designed to achieve a number of objectives including (1) promoting full and open competition, (2) ensuring that the government pays a fair and reasonable price for its purchases, and (3) placing a fair proportion of government procurements with small businesses.

COMPETITION

Competition is prominent in procurement law and policies for several reasons.[2] One is the principle that all qualified companies should have the opportunity to do business with the government and have the right to compete on an equal basis with other potential suppliers. A second reason is to find out what is

[1]The basic statutes which govern how the government procures supplies and services are the Armed Services Procurement Act, (ASPA) as amended (codified in ch. 137, title 10, of the United States Code), which primarily applies to DOD, and the Federal Property and Administrative Services Act (FPASA) of 1949, as amended (codified in ch.4, title 41, of the United States Code). The regulations primarily governing DOD procurements were called the Armed Services Procurement Regulation (ASPR) and then the Defense Acquisition Regulations (DAR). The regulations governing civil agency procurements were called the Federal Procurement Regulations (FPR). Effective April 1, 1984, the Federal Acquisition Regulation (FAR) became the regulation used by all federal executive agencies in their acquisition of supplies and services. The FAR system has been developed in accordance with the requirements of the Office of Federal Procurement Policy Act of 1974, as amended. The FAR together with agency supplements, supersedes the current (1) DAR applicable primarily for the DOD, (2) FPR for civil agencies, and (3) National Aeronautics and Space Administration (NASA) Procurement Regulations.

[2]On July 18, 1984, the President signed Public Law 98-369, which included the Competition in Contracting Act of 1984. This act amends the ASPA and FPASA which respectively govern all procurements by DOD, NASA, and the Coast Guard and generally the other civil agencies in the executive branch. Public Law 98-369 mandates that competitive procedures be used whenever possible in awarding federal contracts for property or services. There are only seven exceptions to competitive procedures which permit federal agencies to use noncompetitive procedures in the award of contracts. The new law carefully defines the terms and circumstances where noncompetitive procedures may be used. The general rule is that government contracts should be competitively awarded. The Act also changed the wording from "obtaining competition to the maximum practicable extent" to "promoting full and open competition" except in small purchases not exceeding $25,000 where it is required to "obtain competition to the maximum practicable extent."

available to meet a particular need. A third reason is that competition is an important way to make sure that the resulting contract price is fair and reasonable, that it results from the impartial working of the marketplace.

Implicit in the doctrine favoring competition is the understanding that the seller and buyer each will attempt to exploit the current situation to its own advantage. Which one prevails will depend on the parties' relative bargaining strength and this will depend on the interaction of such factors as the number of buyers and sellers of the product, the costs, the profit, the intensity of demand, and the alternatives available to both buyers and sellers.

In determining if there is adequate price competition, there must be at least two responsible offerors, who can satisfy the government's requirements and independently compete by submitting priced offers responsive to the expressed requirements of the solicitation. Contract award is then made to the offeror who submits the lowest responsive price.

The Congress recognized the importance of competition through enactment of laws requiring formal advertising. The first advertising statutes date back to 1809, when a congressional act established a general requirement for formal advertising for the procurement of supplies and services. In 1842 a law was passed requiring advertising, sealed bids, and public bid openings.

SEALED BIDDING AND NEGOTIATED PROCUREMENTS

Government procurements are accomplished by either of two methods--sealed bidding (formerly known as formal advertisement)[3] or negotiation (other than sealed bid). Sealed bidding consists of four distinct steps: (1) the issuance of an invitation for bids (IFB) which contains specifications describing the actual minimum needs of the government, (2) the contractors' submission of sealed

[3]Title XII of Public Law 98-369, the Competition in Contracting Act of 1984, applies to all solicitations issued after March 31, 1985, and changes the previously used terms of "formal advertising" to "sealed-bid procedures" and "competitive negotiation" to "competitive proposals." "Negotiation" is now called "award[ed] after using procedures other than sealed bid procedures." The head of an agency shall solicit sealed bids if (1) time permits the solicitation, submission, and evaluation of sealed bids, (2) the award will be made on the basis of price and other price-related factors, (3) it is not necessary to conduct discussions with the responding sources about their bids, and (4) there is a reasonable expectation of receiving more than one sealed bid. On the other hand, the head of an agency shall request competitive proposals if the use of sealed bid procedures are not appropriate. The general rule is that government contracts should be competitively awarded. Whether this is accomplished by the use of sealed bidding or competitive proposals is secondary to the use of competitive procedures.

bids, (3) a public opening of the sealed bids at a specified time and place, and (4) the award of a contract to the lowest responsible (able to perform) and responsive bidder (bidder agrees to perform in contract exactly as stated in the IFB) whose bid conforms in all material respects to the requirements of the IFB. Sealed bidding is always characterized by price competition because the lowest priced responsive and responsible bidder is awarded the contract.

Historically, sealed bidding was the preferred method of procurement by the government,[4] however, many exceptions to sealed bidding were provided by statutes which permitted negotiation of contracts in specified instances. Most government contracts are negotiated and many negotiated contracts are awarded competitively. Negotiation does not involve a rigid set of formalized procedural steps and may be defined to include all methods of procurement other than sealed bidding. The process of negotiation frequently entails a series of proposals and counterproposals in contrast to the "one shot" procedure which characterizes sealed bidding.

Contracts, offers, and acceptance

When the government needs goods or services, it must make an agreement with a business, a contractor, which sells these goods or services. This agreement is called a contract. The government usually agrees to pay money and the contractor agrees to provide the goods or services. A contract is an agreement which creates a legal obligation. Its essentials are competent parties, subject matter, legal consideration, mutuality of agreement, and mutuality of obligation.

All contracts are composed of an offer and an acceptance. In federal contract parlance, an offer is a contractor's response to a government solicitation that, if accepted by the government, would bind the contractor offeror to perform the resulting contract. In sealed bidding, when the government solicits a contractor with an IFB, the contractor's response is an offer called a bid. In a negotiated procurement, when the government solicits a contractor with a request for a proposal (RFP), the contractor's response is an offer called a proposal. The subsequent contract award by the government to a contractor constitutes acceptance of the offer.

ROLE OF THE GOVERNMENT CONTRACTING OFFICER

Authority and responsibility to contract for goods and services are vested in the agency head. The agency head may

[4]During times of war, the requirement for competitive proposals and sealed bidding has been suspended. For example, in World War II, the War Powers Act allowed agencies to award contracts without regard to competitive proposals and the War Production Board placed a prohibition on the award of contracts by the use of sealed bidding.

establish contracting activities and delegate to heads of such contracting activities broad authority to manage the agency's contracting functions. Contracts may be entered into and signed on behalf of the government only by a contracting officer who functions as an agent of the United States and is vested with the authority to enter into and administer contracts.

In procurements involving spare parts, the contracting officer may be located at a contracting activity such as Air Force, Navy, Army, and Defense Logistics Agency inventory control points and logistics centers. The contracting officer converts a purchase request from a government organization, such as a repair facility, into a solicitation (i.e., a request for a proposal or an invitation for bids) which will be issued to potential sellers also called contractors. A contractor is any individual or other legal entity that submits offers for or is awarded, or reasonably may be expected to submit offers for or be awarded, a government contract or subcontract under a government contract. A prime contractor is the contractor who has the primary contract for a system with the government. A subcontractor means any supplier, distributor, vendor, or firm that furnishes supplies or services to or for a prime contractor or another subcontractor.

In sealed bidding, upon receipt of the government's IFB, the potential seller prepares a bid, the offer to sell, and submits it to the contracting officer. All bids received are opened at a prearranged time and the award is made to the lowest responsive and responsible bidder.

In a negotiated procurement, upon receipt of the government's RFP, the potential seller prepares a proposal, the offer to sell, and submits it to the government contracting officer.

The contracting officer is responsible for the pricing arrangement. The objective of the government procurement process is to acquire the necessary supplies and services of the desired quality, in a timely manner, and at a fair and reasonable price. The objective of contract pricing is to establish and administer a pricing arrangement that results in payment of a fair and reasonable price which is defined as being fair to both parties considering the quality and timeliness of contract performance.

Buyers assist the contracting officer by performing many of the tasks, including price or cost analysis and negotiation of the contract, but only the contracting officer can sign contracts. In some procurements the contracting officer, or a buyer working for him, can frequently perform a price analysis unassisted by specialists. In more complex situations, especially when the value of the procurement is large, the contracting officer analyzes the contractor's proposal with technical assistance from an audit agency, such as the Defense Contract Audit Agency. At large prime contractors, there may be special contract administration functions performed, for example, by the Defense Contract Administration Service (DCAS) and contractor cost review functions by the Air Force Plant Representative Office (AFPRO).

The contracting officer resolves with the contractor any questions about the facts that support the contractor's proposal. When this is completed, the contracting officer negotiates with the contractor. This is the bargaining session in which agreement is reached on a price and pricing arrangement and other terms of the contract. The final step includes putting the agreement to writing, submitting the contract for required reviews, getting necessary approvals, and signing the contract. The contractor starts work and the contract is subject to administration by a government contract administrative organization.

Once the item is purchased and received, an item manager is responsible for the inventory management of the item, including computing requirements, preparing purchase requests provided to the contracting officer, and authorizing issuance of the part. However, the item manager does not make the actual procurement, that is done by the contracting officer and the staff of buyers.

PRICE ANALYSIS

Price is the monetary amount the government pays a contractor for a product or service. Contract pricing covers a series of actions in reaching written agreement on the pricing arrangement and then administering the contract.

The contracting officer must decide on the fairness and reasonableness of the price to pay for a product or a service. The conclusion that a price is fair and reasonable must be based on some form of analysis, either price analysis or a combination of price and cost analysis. How much detail the contracting officer gets into will depend chiefly on dollar value, although expediency may dictate the depth of the analysis. Regulations require that each contract shall be priced separately and independently and that some form of price or cost analysis is required in connection with every negotiated procurement action.

A price analysis is the process of examining and evaluating a prospective price without evaluation of the separate cost elements and profit proposed by the prospective supplier whose price is being evaluated. Regulations state that price analysis may be accomplished in various ways, including (1) comparing offers submitted and (2) comparing prior offers and contract award prices with current offers for the same or similar items. A price analysis does not include evaluating the individual elements of the contractor's detailed estimate of the cost of contract performance, that is cost analysis. There is no requirement that the contracting officer obtain an explicit explanation of price increases from the contractor when a price analysis is performed. However, there is a requirement that both past and present prices be fair and reasonable.

In certain situations described below, costs are analyzed to determine if the total cost estimate approximates the dollars it should cost to perform the contract if the company operates with

reasonable economy and efficiency. Contract cost analysis is the element-by-element examination of the contractor's estimated cost of contract performance. It involves analysis of design features, manufacturing processes, organization and staffing, materials and estimating assumptions, and all are cost factors that make up the total cost of procurement. Cost analysis includes verification of cost or pricing data, evaluation of specific elements of cost, and projection of these data. The extent of cost analysis should be that necessary to assure reasonableness of the pricing result, taking into consideration the amount and complexity of the proposed contract. Price analysis shall be used in all other instances to determine the reasonableness of the proposed contract price. Normally, a sound conclusion as to value cannot be made on the basis of cost analysis alone. Depending on the information available, a price arrived at by cost analysis should be corroborated through price analysis techniques.

TRUTH IN NEGOTIATIONS ACT

In the 1950s, the Congress found specific cases in which contractors received unwarranted profits because the cost and pricing data used were inaccurate, incomplete, or out of date. This led to the enactment of Public Law 87-653, the Truth in Negotiations Act in 1962. The act requires the contracting officer to require the contractor to (1) submit cost or pricing data and (2) certify that the data submitted are complete, accurate, and current at the time agreement is reached on price. The law provides for a downward adjustment in the contract price if it is later found that the cost and pricing data relied on by the government were not complete, accurate, and current.

These requirements apply to all, with limited exceptions, negotiated contracts and modifications expected to exceed a certain dollar amount. Prior to April 1, 1985, regulations stated that (1) cost or pricing data was required as part of a proposal leading to, and certification was required prior to the award of, any negotiated contract expected to exceed $500,000, (2) there should be few instances where certified cost or pricing data would be justified in awards over $25,000 and equal to or less than $500,000, and (3) certified cost or pricing data would not be requested prior to the award of any contract with an anticipated value of $25,000 or less.

Cost or pricing data are not to be requested when it is anticipated from the outset that there will be adequate price competition. Also, cost or pricing data are not required when proposed prices are (1) based on established catalog or market prices of commercial items sold in substantial quantities to the general public or (2) set by law or regulation.

A new law, title VII (the Competition in Contracting Act of 1984) of the Deficit Reduction Act (Public Law 98-369) has changed the threshold for required certified cost and pricing

data. Effective April 1, 1985, the threshold is $100,000, down from the old threshold of $500,000. The contracting officer is now permitted to request this data for contracts less than $100,000 but more than $25,000 at his discretion.

PRICE REASONABLENESS OF SMALL PURCHASES

There are procurement regulations for what are known as "small purchases" which cover certain contracts not exceeding $25,000 in value. All small purchases are accomplished by the use of special simplified purchase procedures. Small purchases not exceeding $1,000 may be accomplished without obtaining competitive quotations if the prices are considered to be reasonable. These regulations also state that the administrative cost of verifying the reasonableness of the prices of purchases not in excess of $1,000 may more than offset potential savings in detecting instances of overpricing. Therefore, action to verify the reasonableness of the price need be taken only (1) when the buyer or contracting officer suspects or has information to indicate that the price may not be reasonable or (2) an item has no comparable pricing information readily available.

Procurement regulations also state that for purchases in excess of $1,000, solicitation of quotations from a reasonable number of qualified sources shall be made to assure that the procurement is to the advantage of the government. Occasionally, an item must be obtained only from a supplier who quotes a minimum order price or quantity which results in an unreasonable price. If practicable before placing the order, the requiring activity should be informed of all facts regarding the quotation and requested to confirm or alter its requirement for the item.

SMALL BUSINESS POLICIES

The Small Business Act, as amended, 15 U.S.C. 631, states that it is government policy that a fair proportion of government procurement be placed with small business concerns. The Small Business Administration (SBA), created by that act, assists small business in various ways.

The SBA and the federal procurement regulations provide for total or partial small business set-asides. The procuring agency in determining to set aside a procurement exclusively for small business need have only a reasonable expectation that a sufficient number of bids will be received so that award will be made at a reasonable price.

A special category of small business set-asides, identified as small purchase, small business set-asides, has been established for acquisitions of supplies and services that have an anticipated value of $10,000 or less. A small business nonmanufacturer responding to a small purchase, small business set-aside may furnish any domestically produced or manufactured product.

If the contracting officer does not receive a reasonable quotation from a responsible small business concern, the contracting officer may cancel the small purchase, small business set-aside and compete the purchase on an unrestricted basis.

FORMULA PRICING

Many companies use some type of formula when pricing spare parts. Formula pricing denotes a systematic method of pricing that is used in place of detailed estimates of the costs of individual parts or assemblies. Basically, this approach to pricing is an expedient made necessary by the existence of a volume operation in the preparation of bid proposals, contract changes, spare parts, and other kinds of multiple-item procurements.

The primary objective of formula pricing is to handle the workload in an efficient manner with minimum staffing and at the same time to achieve sound and equitable pricing. It simplifies pricing procedures and reduces company and government administration costs. Fewer personnel are needed to perform pricing functions than if each individual item were negotiated separately.

A pricing formula conforms with the contractor's practices in accounting for and treating costs disclosed to the government at the time of contract negotiations. Before negotiation by the contracting officer, formulas are subject to analysis and review by the audit and pricing personnel. Because accounting and cost treatments differ among companies, there can be no standard format for pricing formulas.

The concept of a pricing formula starts with estimated costs of the material and labor needed to produce an item. The addition of allowances for direct expenses incident to manufacturing the product, plus indirect expenses such as material scrappage, material handling, and manufacturing overhead, determine total cost. A selling price results when profit is added.

Detailing of each and every element of cost, starting with the procurement of material and following the part as it goes through manufacturing, packaging, and shipping may provide a price that will bear a very close relationship to actual costs. However, cost detailing is time-consuming and becomes impractical when hundreds, and sometimes thousands, of items must be priced within a restricted time period. Accordingly, formula pricing has been developed to speed the process.

In its basic form, formula pricing is the application of previously agreed-to factors, such as material handling, factory overhead, administrative expense, and profit, to the labor and material costs estimated for each item. With realistic estimating of basic costs, including any setup and tooling charges, this method is intended to produce sound pricing of a large group of items.

The basic data needed are an estimate of labor hours required to perform each machine or hand operation or assembly and the estimated cost of the material necessary to produce the quantities ordered. The machine time, which represents net operating time, is modified by normal expectations of idle or unproductive time, tool rehabilitation, rework, and replacement. The setup time may be modified to account for the estimated number of production releases that experience indicates are apt to be required to produce the items. This data requirement is greatly simplified if the company uses a standard cost system.

The modifying factors are rate projections tested against both expectations and experience. As an example, if total annual direct labor hours were estimated at 1,000,000 and 10,000 of these hours could be expected to be charged to nonproductive time, the ratio of nonproductive to direct labor hours would be 1 percent. With ratios established for each modifying factor, the labor formula would be developed as follows:

Estimated direct labor hour		100.0
tool rehabilitation	1.5	
setup	10.8	
rework and replacement	2.6	
nonproductive time	1.0	15.9
Labor factor		115.9

Manufacturing overhead, at a cost per hour of direct labor, may be added to the average labor rate to determine a labor-hour rate, as follows:

Average labor rate	$2.50
Manufacturing overhead	4.50
Labor-hour rate	$7.00

Total labor cost would be estimated in the following manner:

Labor cost = hours x factor x rate.

The material factor may be developed in a similar manner by establishing ratios for such cost items as material loss or shrinkage, price fluctuation, functional test, inbound transportation, material procurement, stock handling, and packing.

Using hypothetical factors and rates developed for material (112%) and labor (115.9% X $7), a hypothetical pricing action for an item with base material costs of $20, labor estimated at 15 hours, general and administrative overhead at 4 percent, and profit at 9 percent would be as follows:

Material ($20 x 112%)	$ 22.40
Labor (15 x 115.9% x $7)	121.70
Manufacturing cost	144.10
General and administrative (4%)	5.76
Total cost	149.86
Profit (9%)	13.49
Unit selling price	$163.35

The reasonableness of prices derived through formula pricing depends on the way in which base costs for material and labor are developed and the realism of the mark-up factors. Analysis must confirm the applicability of each loading factor and the factual basis for direct material and labor costs. An error in computing material or labor costs will be compounded in the application of the formula.

Formula pricing distributes costs systematically over all items. Because of this, an item may be assessed a share of certain costs not applicable to it and may seem overpriced. Conversely, an item may not be assessed its full share of some other costs and may seem underpriced.

COST ACCOUNTING STANDARDS

Public Law 91-379 (50 U.S.C. 2168) requires certain national defense contractors and subcontractors to comply with Cost Accounting Standards published by the Cost Accounting Standards Board and to disclose in writing and follow consistently their cost accounting practices.

The Cost Accounting Standards Board was created to promulgate cost accounting standards designed to achieve uniformity and consistency in the cost accounting practices followed by defense contractors.

The head of each relevant federal agency shall cause or require a clause captioned Cost Accounting Standards to be inserted in all negotiated defense contracts in excess of $100,000, with certain exceptions. The contractor, by submission of a disclosure statement, is required to disclose in writing his cost accounting practices and to comply with all Cost Accounting Standards in effect on the date of the award of the contract.

An example of a cost accounting standard is number 418, "Allocation of Direct And Indirect Costs." The purpose of this standard is to (1) provide for consistent determination of direct and indirect costs, (2) provide criteria for the accumulation of indirect costs, including the service center and overhead costs, in indirect cost pools, and (3) provide guidance relating to the selection of allocation measures based on the beneficial or causal

relationship between an indirect cost pool and cost objectives. Consistent application of these criteria and guidance will improve classification of costs as direct and indirect and the allocation of indirect costs.

"Allocate" is to assign a cost to one or more cost objectives. This term includes both direct assignment of cost and the reassignment of a share from an indirect cost pool. "Direct cost" is any cost which is identified specifically with a particular final cost objective. Direct costs are not limited to items which are incorporated in the end product, as material or labor. Costs identified specifically with a contract are direct costs of that contract. All costs identified specifically with other final cost objectives of the contractor are direct costs of those cost objectives. "Indirect costs" are any costs not directly identified with a final cost objective, but identified with two or more final cost objectives or with at least one intermediate cost objective.

Pooled costs shall be allocated to cost objectives in reasonable proportion to the beneficial or causal relationship of the pooled cost to cost objectives.

CONTRACTORS FOR THE 125 PARTS

Contractor	Number of parts
Rockwell International Corporation	46
Litton Systems, Inc.	10
Bendix Corporation	7
Northrop	6
Lear Siegler, Inc	4
Kollsman Instruments Co.	3
Target Electronics Inc.	3
New Hampshire Ball Bearing	2
General Electric	2
General Motors Corporation	2
Singer Co.	2
American Electric	1
Chesapeake Association Enterprise	1
Component Enterprises	1
CTS Helix, Inc.	1
Decar	1
Deullman Electric Co.	1
Deutsch Co.	1
Dittmore Freimuth Corp.	1
Forway Industries	1
G & L Instruments	1
General Dynamics/Convair	1
Gulton Industries, Inc.	1
Hughes Aircraft	1
Instru-Lec Corporation	1
ITT Cannon	1
J & S Electronics, Inc.	1
Jamaica Bearing Co.	1
K Electronics, Inc.	1
Kelvin Industries	1
Key Resources Ltd.	1
Marotta Scientific Controls	1
Millipore	1
Moody	1
Monroe Machine Products, Inc.	1
Multiform Dessicants Inc	1
Ohio Transmission and Pump	1
Raytheon Service Co.	1
Rivers Electronics	1
Schlesingers for Tools	1
Sierracin Thermal Systems	1
Sprague Electronics	1
Thermo Electron Corp.	1
TRI-COM	1
Vari Fasteners, Inc	1
Veeco Instruments	1
Zebra Electronics	1
Part 28 and 33 not reviewed	2
Total	125

SPARE PART CHARACTERISTICS AND SYSTEMS THEY ARE USED ON

The spare parts included circuit card assemblies, gears, ball bearings, machine screws, nuts, washers, pins, o-rings, rubber strip seals, gaskets, clips, spacers, resistors, capacitors, rotary switches, electrical plug connectors, electrical brackets, terminal boards, transformers, semiconductors, magnets, amplifiers, pads for cases, electrical shield plates, hairspring balances, ball carriage guides, alignment shield buttons, wire retaining plates, electrical heating elements, accelerometer covers, oscillators, gyro housings, printed cable assemblies, and filament assemblies.

These are used on missiles, including Minuteman II and III; on aircraft, including the A-10, A-7 and A-7D, FB-111, F-4 and F-4C, C-141 and C-141B, B-52G and B-52H, C5A, T-38, F-16, C-135, and F-105; on helicopters, including the HO-53H; and on submarines.

The unit prices ranged from a low of $2.65 to a high of $5,247.00. The following chart shows the parts stratified by purchase prices.

Stratification of parts by new unit purchase price

Unit prices		Number of parts
At least	But less than	
$1,000	$5,247	18
500	1,000	14
400	500	4
300	400	8
200	300	8
100	200	17
50	100	9
40	50	9
30	40	8
20	30	8
10	20	13
0	10	7
Other, insufficient data		2
Total		125

APPENDIX IV

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WASHINGTON, D.C. 20515
225-4221

JOHN F. LALLY, COUNSEL

NINETY-EIGHTH CONGRESS

U.S. House of Representatives

COMMITTEE ON ARMED SERVICES

ARMED SERVICES INVESTIGATIONS SUBCOMMITTEE

May 9, 1983

Honorable Charles A. Bowsher
Comptroller General of the United States
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Bowsher:

On April 19 this subcommittee began an examination of Air Force aircraft engine spare parts procurement. On April 20 Cong. John Kasich, a member of the subcommittee, introduced a letter from Col. Paul R. Lange and its enclosure, a report on cost increases on 125 items procured by the Aerospace Guidance and Metrology Center (AGMC), Newark Air Force Station, Newark, Ohio. A copy of those documents was furnished to Mr. Sidney Wolin of your staff.

In a May 6 discussion with Mr. Wolin and other representatives of your staff, I requested an examination of the data from AGMC. We agreed upon a preliminary survey which would determine the procurement history of the 125 parts, the identity of the vendors, and interviews of the contracting officers, to determine the explanation, if any, for the cost increases in the parts. Upon receipt of that information, we will be in a position to request any further examination which might be indicated.

I thank you for your assistance in this matter.

Sincerely,

Bill Nichols
Chairman

BN:jlb

APPENDIX V

THE ASSISTANT SECRETARY OF DEFENSE

WASHINGTON, D.C. 20301

MANPOWER,
INSTALLATIONS
AND LOGISTICS

21 JUN 1985

Mr. Frank C. Conahan
Director, National Security and
International Affairs Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Conahan:

This is the Department of Defense (DOD) response to your request for comments on the GAO Draft Report, "Contracting Officers' Explanations for Price Increases On 125 Spare Parts," dated May 21, 1985 (GAO Code 942285/ OSD Case 6762).

Based on a review of the report, DOD concludes that it is thorough and factual and concurs with its contents.

Sincerely,

Jerry L. Calhoun
Principal Deputy Assistant Secretary of Defense
(Manpower, Installations & Logistics)

Autonetics Strategic Systems Division
Defense Electronics Operations
Rockwell International Corporation
3370 Miraloma Avenue
P.O. Box 4192
Anaheim, California 92803-4192

Rockwell International

June 11, 1985

In reply refer to 85DE069361

National Security and International Affairs Division
United States General Accounting Office
Washington, D. C. 20548

Attention: Mr. Frank C. Conahan
Director

Subject: Report on "Contracting Officers; Explanations for Price Increases on 125 Spare Parts"

Reference: Your letter dated May 21, 1985

I have reviewed your draft report entitled "Contracting Officers; Explanations for Price Increases on 125 Spare Parts" (Code 942285). I found it to be a fair and accurate representation of the information that your representative obtained at our facility and the actions taken by Rockwell to prevent future occurrences of some of the problems discussed in your report.

Many causes of high prices of spare parts are often beyond the control of either Rockwell or your agency. Perhaps the most significant single factor deals with the procurement of a repetitive quantity of parts. If a solution to this problem could be found, cost impacts associated with minimum quantity buys and requalification costs could be minimized or eliminated. Approaches to this problem have been highlighted in various Congressional activities and include multi-year procurement, lifetime buy-outs, and other methods of consolidating procurements to assure economic lot buys. If such actions could be implemented, the economic contributions realized would be very significant and prices of spare parts would be dramatically reduced.

We were pleased to support the audit activities associated with your report and will continue to provide same for any future audit activities your agency may conduct.

ROCKWELL INTERNATIONAL CORPORATION
Defense Electronics Operations

T. W. Acker
Controller
Autonetics Strategic Systems Division

TWA:JDM:lrc

Litton Guidance & Control Systems

5500 Canoga Avenue, Woodland Hills, California 91367-6698 (818) 715-4040

31 May 1985

Please Reference:
TEF:5.012

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

Attention: Mr. Frank C. Conahan
Director

Subject: Review of Draft Report Entitled,"Contracting Officers' Explanation for Price Increases on 125 Spare Parts"

Reference: Your 21 May 1985 letter, same subject

Gentlemen:

The Guidance & Control Systems Division of Litton Systems, Inc., acknowledges the receipt of the reference letter, which transmitted the subject document for our review, and provides the following comments and clarifications relative to those areas of the document that pertain to this Division's items.

A number of entries (pages vi, 15 and 17) refer to price increases, "...because of Litton's interpretation of Cost Accounting Standards....". The changes to our accounting system were the result of our previous procedures being determined non-compliant with CAS 418 by the resident DCASPRO, not because of our "interpretation". It took many months and extensive effort, including numerous impact studies, to satisfy the CAS 418 requirements and obtain Government approval. A more accurate statement would be, "... as a result of the necessary changes to their accounting system in order to become compliant with CAS 418; spare parts prices were affected accordingly".

As noted on page 15, our procurement history system was revised to retain the last ten (10) buys of parts, which should preclude the circumstances regarding the pricing of Item #88. In this connection, it is requested that page 15 of the subject report be expanded to state that, in the case of another Litton spare part included in this GAO study (Part Number 610710, Retainer), the part was purchased by Litton at a unit price of $5.28 for a quantity of 1,214 units versus the vendor price of $4.10 each utilized in establishing the price to the Government for the same quantity. Also, we request that a statement be included in the report to the effect that the average profit percentage realized by Litton on the ten (10) parts included in the study was 6.7%.

APPENDIX VII

Litton

United States General Accounting Office
Attention: Mr. Frank C. Conahan
Reference: TEF:5.012
Page 2

Litton appreciates this opportunity to submit our comments relative to the subject report, and we request that GAO favorably consider incorporation of the above-recommended amplifications.

Should additional information be required, please contact Mr. T. E. Foster, Manager, Logistics Contracts, Area Code 818, 715-3612.

Very truly yours,

Guidance & Control Systems Division
LITTON SYSTEMS, INC.

Stanley M. Przybylski

Stanley M Przybylski
Vice President, Contracts

SMP/TEF/bc

GAO NOTE: PAGE NUMBERS HAVE BEEN CHANGED TO CORRESPOND TO PAGES IN THE FINAL REPORT. COMMENTS ARE ADDRESSED IN CHAPTER 5.

(942285)

31814

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