

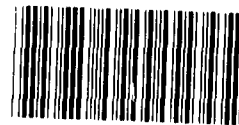
GAO

Briefing Report to the Honorable  
William Proxmire, U.S. Senate

April 1987

# MATERIAL MANAGEMENT

## Repair of Defective Government-Furnished Material



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

National Security and  
International Affairs Division

B-226610

April 9, 1987

The Honorable William Proxmire  
United States Senate

Dear Senator Proxmire:

You asked us to determine the extent to which government receives defective rather than serviceable material from suppliers and incurs additional expense to repair it. Government-furnished material (GFM) received from suppliers is provided to prime contractors for incorporation into major weapon systems such as aircraft, missiles, and ships. The government incurs additional expense if it pays the prime contractor to repair defective GFM or repairs it at government facilities rather than returning it to suppliers for repair or replacement.

We examined the repair of defective GFM, including parts, components, and subsystems, incorporated in three aircraft types to determine

- how often defective GFM was repaired at additional government expense,
- the reasons for the repairs, and
- the cost to the government.

The three aircraft we examined are manufactured by two prime contractors under contracts managed by the Naval Air Systems Command (NAVAIR).

Our examination of 1,366 contractor requests for Navy approval to repair defective GFM showed that 61 percent of these requests involved material that was ultimately repaired by the prime contractor, 9 percent involved material repaired at government facilities, and most of the remaining 30 percent involved material returned to the original suppliers for repair. We found that the government's cost to repair defective GFM at the two prime contractors' plants was about one half of 1 percent of the total cost of GFM used.

According to the contractors, the repairs were generally made to avoid costly interruptions of aircraft production lines, which would have occurred if they had to wait for replacement parts. Our analysis of one contractor's GFM repair records showed that avoidance of production line stoppages was cited in almost every case where this contractor requested Navy approval to repair defective GFM.

Navy officials said that the cost of the repair of defective GFM by prime contractors or by the government was negligible compared to cost increases that would have resulted from production schedule slippages if GFM had not been available for incorporation into aircraft at the proper point in the assembly process.

Further, Navy officials said that it was difficult to get suppliers to pay for the repair or replacement of defective GFM because government plant representatives had inspected and accepted the items before the suppliers shipped them. Navy officials we spoke with believed that inadequate government inspection at suppliers' plants is the major reason that defective GFM is shipped to prime contractors' plants. (Appendix I provides more detail on the results of our review.)

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We performed our work at NAVAIR Headquarters, Arlington, Virginia; Lockheed-California Company, Palmdale, California; Naval Plant Representative Office (NAVPRO), Burbank, California; and Grumman Aerospace Corporation and NAVPRO, Bethpage, New York. As you requested, we selected Lockheed's P-3C patrol aircraft program for examination. We also examined Grumman's F-14A fighter and EA-6B electronics aircraft programs because of large GFM expenditures on each.

We interviewed NAVAIR, NAVPRO, and contractor officials to obtain background information and their views on defective GFM repair and the Navy's quality assurance program. We also reviewed directives, instructions, contract provisions, correspondence, repair requests for defective GFM, and related documentation. Our review was performed in accordance with generally accepted government auditing standards.

We discussed the information in this report with responsible Navy officials and incorporated their comments where appropriate. As requested, we did not obtain official comments from the Department of the Navy.

B-226610

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this briefing report until 30 days from its issue date. At that time, we will send copies to interested parties and make copies available to others upon request.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "John Landicho".

John Landicho  
Senior Associate Director

### REPAIR OF DEFECTIVE GOVERNMENT-FURNISHED MATERIAL

We found that the two contractors included in this examination had repaired defective GFM at additional government expense instead of returning it to suppliers for repair or replacement. The cost to repair defective GFM at the prime contractors' plants was about one half of 1 percent of the total cost of GFM on the contracts examined. According to contractor records, the repairs were generally made to avoid costly shutdowns of the aircraft production lines, which would have been necessary to obtain replacement parts. Navy officials said that they generally have difficulty in requiring suppliers to repair defective materials at their expense because most items had been inspected and accepted by government inspectors. Thus, they believe that inadequate government inspection is the primary reason for defective GFM being shipped to contractors.

### DEFICIENCY REPORTING PROCESS

GFM includes materials, parts, components, and subsystems purchased directly from suppliers by the government and furnished to prime contractors for incorporation into aircraft, ships, or other weapon systems.

Prime contractors may identify defective GFM upon receipt or during bench tests, installation, or flight tests. The Naval Plant Representative Office (NAVPRO), located at each contractor's plant, is accountable to the Naval Air Systems Command and is generally responsible for approving the repair of defective GFM. The Navy requires contractors to report to NAVPRO all defective GFM, describing malfunctions or deficiencies and other information needed to determine who should make the repair.

We examined 1,366 GFM repair requests submitted to NAVPROs by Lockheed and Grumman under their production contracts. We found that repairs of defective GFM had been made by Lockheed or Grumman in 832 cases (61 percent of the total). Table I.1 shows a breakdown of requests for repair.

Table I.1: Number of Items of GFM Repaired During Fiscal Years 1983-85 by Disposition

<u>Disposition</u>	<u>Aircraft</u>			<u>Total</u>	<u>Percent</u>
	<u>Lockheed</u>	<u>Grumman</u>			
	<u>P-3C</u>	<u>F-14A</u>	<u>EA-6B</u>		
Repaired by prime contractor	191	474	167	832	61
Repaired by government	50	47	27	124	9
Repaired by supplier	255	42	44	341	25
Unknown	7	43	14	64	5
Scrapped	<u>5</u>	<u>—</u>	<u>—</u>	<u>5</u>	<u>0<sup>a</sup></u>
Total	508	606	252	1,366	100
	===	===	===	=====	===

<sup>a</sup>Due to rounding.

NAVPRO officials at Lockheed and Grumman said that defective GFM is frequently repaired by prime contractors, rather than returned to suppliers, to keep production lines moving economically and efficiently. They explained that the cost of GFM repair was almost negligible compared to cost increases that would result from production schedule slippages, which would occur if GFM were not available at the time needed. Our analysis of Grumman's 1984 repair records for defective GFM showed that avoidance of production line stoppages was cited in almost every case where Grumman repaired defective GFM.

NAVPRO officials also believed that it would not be economical to maintain backup inventories of expensive GFM to provide for defective GFM contingencies. For example, NAVPRO officials at Grumman cited the case of a \$300 repair required on an F-14A engine to substantiate their view. The cost of an F-14A engine is about \$2.5 million and is furnished to aircraft manufacturers as GFM.

Although much defective GFM is repaired by prime contractors, NAVAIR and NAVPRO officials told us that the prime contractor is required to send certain designated GFM items to government repair facilities if they have been in operational use or in the Navy supply system for several years.

GOVERNMENT COSTS TO REPAIR DEFECTIVE GFM

Lockheed's and Grumman's production contracts contain Repair of Repairables clauses permitting them to repair defective GFM. NAVAIR officials indicated that these clauses are included in most production contracts. NAVAIR officials said that contractors, after obtaining approval to repair defective GFM, negotiate repair costs for a number of such repairs at one time, making it difficult to determine the cost of any specific repair.

Total annual amounts paid to contractors for GFM repairs under the contracts we examined, in relation to the total cost of GFM provided on these contracts, are shown in table I.2.

Table I.2: Amounts Paid to Contractors for GFM Repairs

<u>Air-craft</u>	<u>Fiscal year</u>	<u>Number of aircraft</u>	<u>Cost of GFM repairs</u>	<u>Total GFM costs</u>	<u>Percent of repair cost relative to GFM cost</u>
P-3C	1983	6	\$ 523,573	\$ 97,146,000	0.53
F-14A	1984	12	432,229	135,984,000	0.31
F-14A	1985	24	966,770	271,968,000	0.35
EA-6B	1984	8	356,459	56,464,000	0.63
EA-6B	1985	6	<u>443,000</u>	<u>42,348,000</u>	1.04
Total			\$2,722,031 =====	\$603,910,000 =====	0.45

For these contracts, the cost of GFM repairs amounted to about one half of 1 percent of the total cost of GFM. We could not identify the total cost of GFM repairs by all contractors because the information was not readily available from Navy records, nor could we identify the cost of repairing GFM at government repair facilities because the information was not maintained by NAVAIR.

LIABILITY FOR REPAIR COSTS

Navy officials said that they generally have difficulty requiring GFM suppliers to repair defective items at the suppliers' expense and collecting repair costs from suppliers because most items had



been inspected and accepted at the suppliers' plants by government inspectors. Consequently, the Navy had little recourse against suppliers if materials were later found to be defective, with the exception of cases involving latent defects, fraud, or gross mistakes amounting to fraud. Navy officials we interviewed believed that inadequate government inspection at suppliers' plants is the major reason that defective GFM is shipped to prime contractors' plants.

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