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

RELEASED

B-162578

JUN 25 1973

The Honorable William Proxmire
Chairman, Subcommittee on Priorities
and Economy in Government
Joint Economic Committee
Congress of the United States

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Dear Mr. Chairman:

Our report (B-162578) of November 22, 1972, presented the results of our investigation into Mr. Durham's charges and indicated that we would report later on those charges relating to aerospace ground equipment (AGE). He charged that costs of C-5 AGE had been increased significantly because (1) parts and components used to manufacture AGE were supplied by aerospace companies specializing in aircraft parts rather than by commercial sources, (2) aircraft nuts and bolts of close tolerances and other specifications were being used, (3) silver-plated nuts were used on one piece of equipment to hold the wheels on, and (4) commercial parts were used on AGE of other aircraft programs but not on AGE of the C-5 program.

We interviewed Air Force management and engineering personnel at the C-5 System Project Office and at the San Antonio Air Materiel Area which is responsible for depot maintenance of the C-5 aircraft. These personnel explained the procedures followed in acquiring and managing C-5 AGE.

We reviewed correspondence and examined records to determine Air Force and Lockheed responsibilities in acquiring the equipment. Lockheed was responsible for identifying AGE to be used on the C-5 and the sources that could supply such equipment, and the C-5 System Project Office was responsible for approving or rejecting Lockheed's recommendations and for determining the availability of substitute AGE.

To determine if conditions cited by Mr. Durham did occur, we selected a sample of 30 items of C-5 AGE from a Lockheed-prepared list of 263 items it designed and manufactured.

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We examined the specifications and drawings used to manufacture C-5 AGE to determine (1) the type of materials used, (2) whether commercial parts and components were used, and (3) the tolerances required. We also examined Lockheed's detailed records to identify the source for the parts and components.

We discussed the design and use of AGE with Air Force personnel who use it for maintenance, and we observed the use of some AGE.

We compared commercial parts and components for C-5 AGE with functionally comparable AGE for three other aircraft programs to determine if their usages varied significantly. Air Force personnel identified the comparable AGE. We also identified the type of bolts specified for comparable AGE on the other programs to determine if usage on the C-5 was significantly different.

Our findings follow.

PARTS AND COMPONENTS

The majority of firms supplying parts and components for the AGE we examined were not aerospace companies specializing in aircraft parts.

In examining Lockheed's records, we identified 37 suppliers of parts and components used to manufacture the 30 selected items. We did not identify the business specialty of 11 of the 37 suppliers; however, they supplied electrical cable, bolts, tools, lumber, and rubber and foam padding. Of the remaining 26 suppliers, only one specialized in aircraft parts.

AIRCRAFT NUTS AND BOLTS

All of the bolts and a majority of the nuts specified for use on 15 of the 30 items of AGE were intended for aircraft use. The total cost of the 15 items was about \$1,285,000, and the cost of the aircraft nuts and bolts was \$1,200. When compared with nonaircraft nuts and bolts, they generally had closer tolerances and cost more.

Lockheed personnel stated that these nuts and bolts were used because they were on hand as a result of ordering them in economic quantities. We were unable to verify this statement because of the lack of records. According to Air Force personnel, such items are used because AGE is designed by aeronautical engineers who are more familiar with aircraft hardware and tend to use it rather than to search for possible commercial items that could be used.

We compared the types of bolts specified for AGE in the C-5 program with the types of bolts specified for functionally comparable AGE in the other three aircraft programs. Of 29 bolts specified for use under the other programs, 28 were aircraft bolts.

Although Lockheed's use of aircraft hardware on C-5 AGE did not differ significantly from that of other airframe contractors, we believe that it should be used only when essential to operations. In other cases, commercial hardware should be used to insure the most economical cost to the Government.

SILVER-PLATED NUTS

We did not find evidence to substantiate the charge that silver-plated nuts were used to hold wheels on.

The detailed drawings showed that the 30 items did not require silver-plated nuts. Air Force personnel responsible for standardization stated that they did not know of any instances in which silver-plated nuts were either specified or used. They stated also that such nuts are used in equipment subject to extreme heat conditions, such as aircraft engines.

COMMERCIAL PARTS

Seventy-four percent of the major components used to manufacture the 30 items of C-5 AGE were commercial parts. The use of commercial parts on AGE acquired under three other programs was essentially the same as under the C-5 program.

The results of our comparison follow.

	Major components used on 30 items of AGE in C-5 program		Components used on AGE in other programs	
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
Commercial parts	71	74.0	54	73.0
Specified aircraft parts	20	20.8	16	21.6
Unidentified	<u>5</u>	<u>5.2</u>	<u>4</u>	<u>5.4</u>
Total	<u>96</u>	<u>100.0</u>	<u>74</u>	<u>100.0</u>

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We discussed these matters with Air Force and Lockheed officials, but we did not request their formal comments.

We trust that this information responds to your needs. We do not plan to distribute this report further unless you agree or publicly announce its contents.

If we can further assist you in this matter, please let us know.

Sincerely yours,

Comptroller General
of the United States