

Highlights of [GAO-11-404](#), a report to the Ranking Member, Subcommittee on National Security, Homeland Defense and Foreign Operations, Committee on Oversight and Government Reform, House of Representatives

Why GAO Did This Study

Quality is key to success in U.S. space and missile defense programs, but quality problems exist that have endangered entire missions along with less-visible problems leading to unnecessary repair, scrap, rework, and stoppage; long delays; and millions in cost growth. For space and missile defense acquisitions, GAO was asked to examine quality problems related to parts and manufacturing processes and materials across DOD and NASA. GAO assessed (1) the extent to which parts quality problems affect those agencies' space and missile defense programs; (2) causes of any problems; and (3) initiatives to prevent, detect, and mitigate parts quality problems. To accomplish this, GAO reviewed all 21 systems with mature designs and projected high costs: 5 DOD satellite systems, 4 DOD missile defense systems, and 12 NASA systems. GAO reviewed existing and planned efforts for preventing, detecting, and mitigating parts quality problems. Further, GAO reviewed regulations, directives, instructions, policies, and several studies, and interviewed senior headquarters and contractor officials.

What GAO Recommends

DOD and NASA should implement a mechanism for periodic assessment of the condition of parts quality problems in major space and missile defense programs with periodic reporting to Congress. DOD partially agreed with the recommendation and NASA agreed. DOD agreed to annually address all quality issues, to include parts quality.

View [GAO-11-404](#) or key components. For more information, contact Cristina Chaplain at (202) 512-4841 or chaplainc@gao.gov.

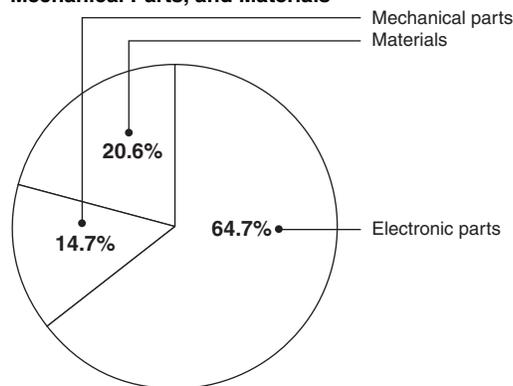
SPACE AND MISSILE DEFENSE ACQUISITIONS

Periodic Assessment Needed to Correct Parts Quality Problems in Major Programs

What GAO Found

Parts quality problems affected all 21 programs GAO reviewed at the Department of Defense (DOD) and National Aeronautics and Space Administration (NASA). In some cases they contributed to significant cost overruns and schedule delays. In most cases, problems were associated with electronic versus mechanical parts or materials (see figure). In several cases, parts problems discovered late in the development cycle had more significant cost and schedule consequences. For example, one problem cost a program at least \$250 million and about a 2-year launch delay.

Distribution of Quality Problems Found in Programs Reviewed Grouped by Electronic Parts, Mechanical Parts, and Materials



Source: GAO analysis of DOD and NASA data.

The causes of parts quality problems GAO identified were poor workmanship, undocumented and untested manufacturing processes, poor control of those processes and materials and failure to prevent contamination, poor part design, design complexity, and an inattention to manufacturing risks. Ineffective supplier management also resulted in concerns about whether subcontractors and contractors met program requirements.

Most programs GAO reviewed began before the agencies adopted new policies related to parts quality problems, and newer post-policy programs were not mature enough for parts problems to be apparent. Agencies and industry are now collecting and sharing information about potential problems, and developing guidance and criteria for testing parts, managing subcontractors, and mitigating problems, but it is too early to determine how much such collaborations have reduced parts quality problems since such data have not been historically collected. New efforts are collecting data on anomalies, but no mechanism exists to use those data to assess improvements. Significant barriers hinder efforts to address parts quality problems, such as broader acquisition management problems, workforce gaps, diffuse leadership in the national security space community, the government's decreasing influence on the electronic parts market, and an increase in counterfeiting of electronic parts. Given this, success will likely be limited without continued assessments of what works well and must be done.