



Highlights of [GAO-08-294](#), a report to congressional committees

## Why GAO Did This Study

A Senate report related to the National Defense Authorization Act for Fiscal Year 2007 asked GAO to compare quality management practices used by the Department of Defense (DOD) and its contractors to those used by leading commercial companies and make suggestions for improvement. To do this, GAO (1) determined the impact of quality problems on selected weapon systems and prime contractor practices that contributed to the problems; (2) identified commercial practices that can be used to improve DOD weapon systems; (3) identified problems that DOD must overcome; and (4) identified recent DOD initiatives that could improve quality. GAO examined 11 DOD weapon systems with known quality problems and met with quality officials from DOD, defense prime contractors, and five leading commercial companies that produce complex products and/or are recognized for quality products.

## What GAO Recommends

GAO recommends that the Secretary of Defense take actions to set achievable requirements for new weapon system development, oversee and expand initiatives that could improve quality, and use data to assess contractor performance and weapon system quality. DOD partially agreed with the recommendations, stating that its current practices or planned actions are appropriate. We believe our recommendations remain valid and can improve weapons systems quality.

To view the full product, including the scope and methodology, click on [GAO-08-294](#). For more information, contact Michael Sullivan at (202) 512-4841 or [sullivanm@gao.gov](mailto:sullivanm@gao.gov).

## BEST PRACTICES

### Increased Focus on Requirements and Oversight Needed to Improve DOD's Acquisition Environment and Weapon System Quality

#### What GAO Found

Problems related to quality have resulted in major impacts to the 11 DOD weapon systems GAO reviewed—billions in cost overruns, years-long delays, and decreased capabilities for the warfighter. For example, quality problems with the Expeditionary Fighting Vehicle program were so significant that DOD extended development 4 years at a cost of \$750 million. The F-22A fighter aircraft experienced cracks in the plane's canopy that grounded the flight test aircraft, and initial operating capability for the Wideband Global SATCOM satellite was delayed 18 months because a supplier installed some fasteners incorrectly. GAO's analysis of 11 DOD weapon systems illustrates that defense contractors' poor practices for systems engineering activities as well as manufacturing and supplier quality problems contributed to these outcomes. Reliance on immature designs, inadequate testing, defective parts, and inadequate manufacturing controls are some of the quality problems that GAO found. Senior prime contractor officials GAO met with generally agreed with GAO's assessment of the causes of the quality problems.

In contrast, leading commercial companies GAO contacted use more disciplined systems engineering, manufacturing, and supplier quality practices. For example, rather than wait to discover defects after the fact, Boeing Commercial Airplanes tries to design parts that can be assembled only one way. Effective use of many systems engineering practices has helped Space Systems/Loral, a satellite producer, improve overall quality, for example, by allowing the company to operate its satellites for more than 80 million consecutive hours in orbit with just one failure. Companies also put significant effort into validating product design and production processes to catch problems early on, when problems are less costly to fix. They conduct regular audits of their suppliers and hold them accountable for quality problems.

DOD faces its own set of challenges—setting achievable requirements for systems development and providing effective oversight during the development process. In conducting systems development, DOD generally pays the allowable costs incurred for the contractor's best efforts. These conditions contribute to an acquisition environment that is not conducive for incentivizing contractors to build high-quality weapon systems and DOD, which typically uses cost-reimbursement contracts to develop weapon systems, assumes most of the risks and pays contractors to fix most of the problems.

DOD has taken steps to improve its acquisition practices by experimenting with a new concept decision review practice, selecting different acquisition approaches according to expected fielding times, and establishing panels to review weapon system configuration changes that could adversely affect program cost and schedule. None of these initiatives focus exclusively on quality issues, and none specifically address problems with defense contractors' practices.