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United States Government Accountability Office  
Washington, DC 20548

March 9, 2011

The Honorable Thomas Carper  
Chairman  
Committee on Homeland Security and Governmental Affairs  
Subcommittee on Federal Financial Management, Government Information, Federal  
Services, and International Security  
United States Senate

Subject: *Trends in Nunn-McCurdy Cost Breaches for Major Defense Acquisition  
Programs*

Dear Mr. Chairman:

For nearly 30 years, the statutory provision, known as Nunn-McCurdy,<sup>1</sup> has been an oversight tool for Congress to hold the Department of Defense (DOD) accountable for cost growth on major defense programs. A Nunn-McCurdy breach occurs when a program's unit cost exceeds certain thresholds. When that happens, DOD must notify Congress of the breach. There are a number of statutory provisions that help implement cost growth reporting under Nunn-McCurdy. For the purposes of this report, we refer to these statutory provisions as the Nunn-McCurdy process. In September 2010, you requested that we examine trends in Nunn-McCurdy breaches and factors that may be responsible for these trends. In this report, we also discuss changes DOD is making or proposing to make to the Nunn-McCurdy process.

To identify trends in Nunn-McCurdy breaches, we collected and analyzed existing data on breaches from DOD's Defense Acquisition Management Information Retrieval system, which contains data on breaches since 1997. DOD officials also provided us with a list of programs that breached the cost growth thresholds since 1997, which we analyzed to remove duplicate entries.<sup>2</sup> In addition, we reviewed analyses by the

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<sup>1</sup>10 U.S.C. § 2433. The statutory provision is known as Nunn-McCurdy because it was first introduced by Senator Nunn and passed as a 1-year provision as part of the Department of Defense Authorization Act, 1982. 127 Cong. Rec. 9760-63 (1981); Pub. L. No. 97-86, § 917. The following year, Representative McCurdy introduced a permanent provision based on Senator Nunn's provision, which was enacted as part of the Department of Defense Authorization Act, 1983. 128 Cong. Rec. 18345-48 (1982); Pub. L. No. 97-252, § 1107.

<sup>2</sup>We considered an entry to be a duplicate if the program reported the exact same breach over multiple Selected Acquisition Reports (SAR). The most common duplicates were significant breaches, which continue to be reported annually until a new acquisition program baseline is approved.

Office of the Director of Cost Assessment and Program Evaluation to verify our data. We utilized information from SARs<sup>3</sup> for individual weapon systems to explore trends by various program characteristics including military service, type of weapon system, and contractor. To identify factors responsible for trends in Nunn-McCurdy breaches, we reviewed DOD's root cause analyses and analyzed data from SARs, compared breach trends to statutory changes, and summarized our past findings on programs that have experienced breaches. To identify factors responsible for trends and identify changes DOD is making or proposing to make to the Nunn-McCurdy process, we interviewed relevant officials from the offices of the Undersecretary of Defense for Acquisition, Technology, and Logistics; Performance Assessments and Root Cause Analyses; Cost Assessment and Program Evaluation; the Comptroller; and the Joint Staff. We also reviewed DOD policy memoranda and proposed legislation to learn about the current policy and proposed legislative changes.

We conducted this performance audit from November 2010 to March 2011 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

## **Results in Brief**

Since 1997, there have been 74 Nunn-McCurdy breaches involving 47 major defense acquisition programs. There were a larger number of breaches in 2001, 2005, 2006, and 2009, which coincides with changes in statute or presidential administration. The statutory changes added a program's original baseline estimate as a new benchmark against which to measure cost growth. During the last two changes in presidential administration, DOD did not submit annual comprehensive SARs, which, along with other factors, may have affected when breaches were reported. The Air Force had a higher proportion of total breaches compared to its proportion of total programs, whereas the Navy had a smaller proportion of breaches compared to its proportion of programs. Aircraft, satellite, and helicopter programs have experienced the largest number of breaches. Thirty-four different prime contractors were listed in the SARs for the programs that breached. Of the 47 programs that breached, 18 programs breached more than one time.

Nunn-McCurdy breaches are often the result of multiple, interrelated factors. Our analysis of DOD data and SARs showed that the primary reasons for the unit cost growth that led to Nunn-McCurdy breaches were engineering and design issues, schedule issues, and quantity changes. Cost increases resulting from engineering and design issues may indicate that those programs started without adequate knowledge about their requirements and the resources needed to fulfill them. Many programs also cited revised cost estimates as a factor behind breaches, suggesting estimates were based on inaccurate assumptions. Our previous work shows that without the

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<sup>3</sup>10 U.S.C. § 2432.

ability to generate reliable cost estimates, programs are at risk of experiencing cost overruns, missed deadlines, and performance shortfalls.

DOD has instituted a process to provide earlier warning of potential breaches and plans to propose changes to try to limit the effect of breaches caused by quantity changes. Specifically, the Joint Staff has implemented a Nunn-McCurdy trip wire process to evaluate the factors that are contributing to cost growth so that programs can take mitigating actions. Our analysis shows nearly 40 percent of Nunn-McCurdy breaches occurred after a production decision had been made—when a program has fewer options for restructuring. DOD also plans to propose a legislative amendment to reduce several statutory requirements added in 2009 for Nunn-McCurdy breaches when it determines the breach was caused primarily by quantity changes that were unrelated to poor performance. Tracking changes in research and development costs, which are not sensitive to quantity changes, would be one way DOD could evaluate program performance in this context.

## **Background**

Enacted in 1982, the Nunn-McCurdy statutory provision requires DOD to notify Congress whenever a major defense acquisition program's unit cost experiences cost growth that exceeds certain thresholds. This is commonly referred to as a Nunn-McCurdy breach. The purpose of the statute was to provide Congress greater visibility into major defense programs' cost growth and to encourage DOD to manage and control cost growth. There are two types of Nunn-McCurdy breaches: significant breaches and critical breaches.<sup>4</sup> A breach of the significant cost growth threshold occurs when the program acquisition unit cost or the procurement unit cost increases by at least 15 percent over the current baseline estimate or at least 30 percent over the original baseline estimate.<sup>5</sup> A breach of the critical cost growth threshold occurs when the program acquisition unit cost or the procurement unit cost increases by at least 25 percent over the current baseline estimate or at least 50 percent over the original baseline estimate.

The Nunn-McCurdy statute has been amended a number of times over the years. One of the most significant changes to the statute occurred in the National Defense Authorization Act for Fiscal Year 2006, when Congress added the original baseline estimate as a benchmark against which to measure cost growth. The original baseline estimate is defined as the baseline description prepared before the program enters development, or at program initiation, whichever is later, without adjustment or

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<sup>4</sup>The Nunn-McCurdy statute did not use the terms "significant" or "critical" to describe the cost growth thresholds until 2006, when the statute was amended by section 802 of the National Defense Authorization Act for Fiscal Year 2006, Pub. L. No. 109-163.

<sup>5</sup>Program acquisition unit cost is the total cost of development, procurement, acquisition operations and maintenance, and military construction divided by the number of units procured. Procurement unit cost is the total procurement cost divided by the number of units to be procured.

revision.<sup>6</sup> By adding the original baseline estimate as a benchmark against which to measure cost growth, and by restricting the circumstances in which an original baseline estimate may be revised,<sup>7</sup> DOD can no longer avoid Nunn-McCurdy breaches by simply revising a program's baseline estimate. While DOD acquisition policy still allows current baseline estimates to be revised, the policy was modified in 2008 to limit the circumstances under which this may be done.<sup>8</sup>

Another significant change occurred in the Weapon Systems Acquisition Reform Act of 2009, in which Congress enacted a new provision requiring the Secretary of Defense to terminate a program that experiences a breach of the critical cost growth threshold, unless the Secretary submits a written certification to Congress.<sup>9</sup>

Now, Congress must be notified in writing of breaches and the information must be included in the appropriate quarterly or annual SAR. For significant breaches, no further action is required. For critical breaches, DOD is required to take a number of additional steps, including conducting a root cause analysis and reassessing estimated program costs. Programs with critical breaches must be terminated unless the Secretary of Defense certifies that

- continuation of the program is essential to national security,
- there are no alternatives to the program providing acceptable capability to meet the joint military requirement at less cost,
- the program's new estimates for program acquisition unit cost or procurement unit cost are reasonable,
- the program is higher priority than other programs whose funding must be reduced to accommodate the growth in cost of the program, and
- the program's management structure is adequate to manage and control program acquisition unit cost or procurement unit cost.

If the program is not terminated, the Secretary of Defense must (1) restructure the program to address the root causes of the cost growth; (2) rescind the most recent milestone or key decision point approval and withdraw any associated certification; (3) require a new milestone or key decision point approval before taking certain contracting actions to ensure that the program can be restructured without unnecessarily wasting resources; (4) report on all funding changes made as a result of

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<sup>6</sup>10 U.S.C. § 2435(d). The original baseline estimate serves as the current baseline estimate until a revised acquisition program baseline is prepared. Department of Defense Instruction 5000.02, Operation of the Defense Acquisition System Enclosure 4, Table 6 (Dec. 8, 2008). (Hereinafter cited as DODI 5000.02 (Dec. 8, 2008)).

<sup>7</sup>DOD can only revise the original baseline estimate if the program breaches the critical cost growth threshold. 10 U.S.C. § 2435(d).

<sup>8</sup>The 2008 revision to DOD's acquisition policy limits the circumstances in which the current baseline estimate may be revised to: (1) milestone decisions and full rate production, (2) as a result of a major program restructure that is fully funded and approved, or (3) as a result of a program deviation if primarily the result of an external cause beyond the control of the program manager. DODI 5000.02, Enclosure 4, Table 6 (Dec. 8, 2008).

<sup>9</sup>Weapon Systems Acquisition Reform Act of 2009, Pub. L. No. 111-23, § 206 (codified at 10 U.S.C. § 2433a(b)).

the growth in cost of the program, including reductions made in funding for other programs to accommodate the cost growth; and (5) conduct regular reviews of the program.

### **Trends in Nunn-McCurdy Breaches**

Since 1997, there have been 74 Nunn-McCurdy breaches involving 47 major defense acquisition programs. There were a larger number of breaches in 2001, 2005, 2006, and 2009, which coincides with changes in statute or presidential administration. The statutory changes added a new benchmark against which to measure cost growth. During the last two changes in presidential administration, DOD did not submit annual comprehensive SARs, which, along with other factors, may have affected when breaches were reported. The Air Force had a higher proportion of total breaches compared to its proportion of total programs. Aircraft, satellite, and helicopter programs constituted the largest number of the breaches. Thirty-four different prime contractors were listed in the SARs for the programs that breached. Of the 47 programs that breached, 18 programs breached more than one time.

#### Nunn-McCurdy Breaches Increased after Changes in Statute or Presidential Administration

The number of Nunn-McCurdy breaches varied from 1997 to 2009, with increases in some years coinciding with changes in statute or presidential administration. As a result of Congress requiring DOD to measure cost growth against the original baseline estimate, the number of breaches reported increased in 2005 and 2006, as shown in table 1. In 2005 SARs, 13 of the 17 breaches were measured against a program's original baseline estimate, the benchmark for measuring cost growth that was added by the amendment to Nunn-McCurdy.<sup>10</sup> DOD released its December 2005 SARs on April 7, 2006, and the changes to Nunn-McCurdy were reflected in these SARs. As shown in table 1, the number of breaches was also high in 2001 and 2009—the first years of new presidential administrations. During both transitions, no annual comprehensive SARs were submitted, which, along with other factors, may have affected when breaches were reported.<sup>11</sup> For example, according to DOD, during the transition from one administration to another in 2001, the cost of several programs breached Nunn-McCurdy thresholds because of a change in management philosophy, which included fully funding these programs to higher independent cost estimates. A presidential transition also affected cost reporting for 2008. According to DOD, cost data for the December 2008 SARs could not be updated for all programs because the fiscal year 2011–2015 Future Years Defense Program was not complete, due to the transition from one presidential administration to another.

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<sup>10</sup>National Defense Authorization Act for Fiscal Year 2006, Pub. L. No. 109-163, § 802.

<sup>11</sup>DOD is required to submit SARs to Congress at the end of each fiscal year quarter on current major defense acquisition programs, although certain exceptions apply. SARs for the first quarter of a fiscal year are known as comprehensive annual SARs. Each comprehensive annual SAR is required to be submitted within 60 days after the date on which the President transmits the budget to Congress for the following fiscal year. 10 U.S.C. § 2432(b)(1), (c)(4), (f). While DOD is required to report breaches in quarterly SAR submissions, most breaches are typically reported in comprehensive annual SARs.

**Table 1: Nunn-McCurdy Breaches by Calendar Year, 1997-2009**

Year	Number of breaches	Original baseline	Current baseline	Both current and original baseline
2009	8	4	4	4
2008	4	1	3	2
2007	5	1	4	1
2006	10	9	1	7
2005	17	13	4	2
2004	7			
2003	2			
2002	3			
2001	11			
2000	0			
1999	3			
1998	3			
1997	1			

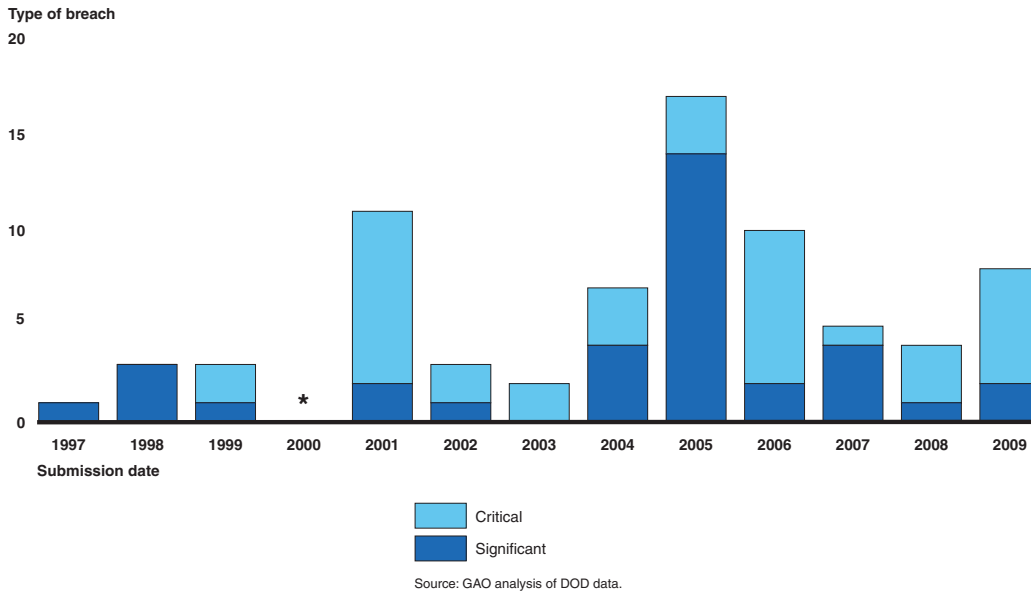
Source: GAO analysis of DOD data.

Since 1997, there have been 74 Nunn-McCurdy breaches involving 47 major defense acquisition programs.<sup>12</sup> Thirty-nine were critical breaches and 35 breaches were significant breaches.<sup>13</sup> The larger number of critical breaches in 2001, 2006, and 2009 were also likely due to the statutory changes, instances where DOD did not submit a SAR, and other factors, such as funding programs to higher independent cost estimates.

<sup>12</sup>If a program and a subprogram or more than one subprogram breached in the same SAR, we counted that as one breach.

<sup>13</sup>If a program reported a breach of both the significant and critical cost growth thresholds in the same SAR, we counted only the critical breach. If a program reported a breach of the significant cost growth threshold and subsequently reported a breach of the critical threshold before the program was rebaselined, we counted the two breaches separately.

**Figure 1: Critical and Significant Breaches by Calendar Year, 1997-2009**



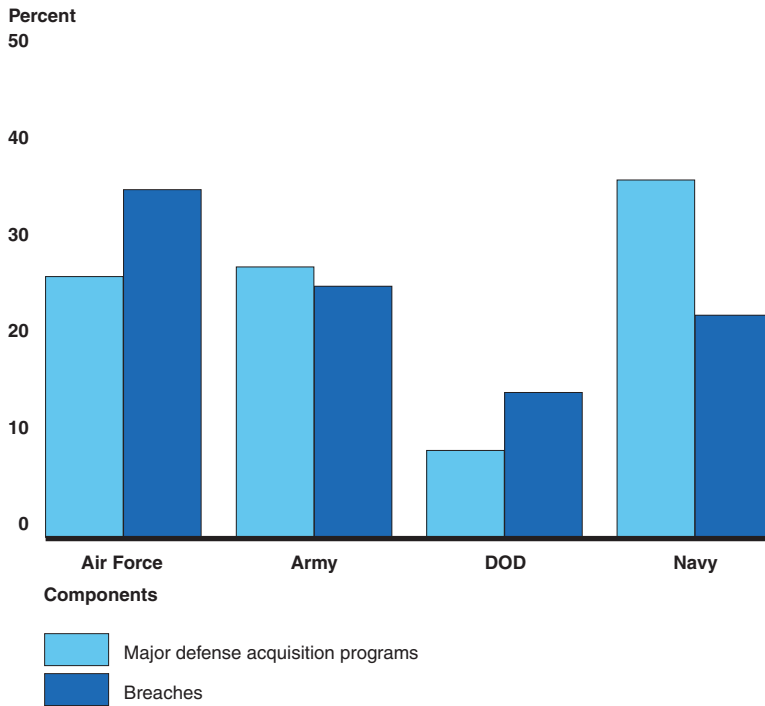
\*No breaches were reported in 2000.

Note: This figure uses the terms significant and critical to categorize reported program cost growth. We note, however, that prior to 2006, the statute did not use those terms to describe the cost growth thresholds.

**Air Force Programs Constitute a Higher Proportion of Nunn-McCurdy Breaches**

The Air Force had a higher proportion of total breaches compared to its proportion of total programs, whereas the Navy had a smaller proportion of breaches compared to its proportion of programs. Specifically, out of 134 total major defense acquisition programs from 1997 to 2009, 36 (or 27 percent) are Air Force, 37 (or 28 percent) are Army, 12 (or 9 percent) are DOD, and 49 (or 37 percent) are Navy programs. Of the 74 breaches during the same time, 27 (or 36 percent) are Air Force, 19 (or 26 percent) are Army, 11 (or 15 percent) are DOD, and 17 (or 23 percent) are Navy programs.

**Figure 2: Proportion of Nunn-McCurdy Breaches and Major Defense Acquisition Programs by DOD Component, 1997-2009**



Source: GAO analysis of DOD data.

Programs that breach the Nunn-McCurdy cost growth thresholds range from unmanned aircraft to munitions. Aircraft, satellites, and helicopters constitute the largest number of the 74 breaches. We could not determine whether the number of breaches by program type was proportional because DOD’s Defense Acquisition Management Information Retrieval system did not have information on the program type for all 134 programs from 1997-2009. Missile Defense Agency programs do not report Nunn-McCurdy breaches. We recommended in 2010 that the Missile Defense Agency establish cost baselines and report variances in those baselines to Congress.<sup>14</sup>

<sup>14</sup>GAO, *Defense Acquisitions: Missile Defense Transition Provides Opportunity to Strengthen Acquisition Approach*, GAO-10-311 (Washington, D.C.: Feb. 25, 2010).



**Table 2: Nunn-McCurdy Breaches by Program Type, 1997-2009**

<b>Program type</b>	<b>Number of breaches</b>
Aircraft	19
Aircraft (Bomber)	2
Aircraft (Fighter)	5
Aircraft (Other)	4
Aircraft (Transport)	5
Aircraft (Unmanned)	3
Helicopters	13
Satellites	11
Chemical demilitarization programs	7
Munitions	5
Command, control, communications and intelligence	5
Missiles	4
Ships	2
Submarines	3
Ground combat	2
Other <sup>a</sup>	2
Transport vehicles	1

Source: GAO analysis of DOD data.

<sup>a</sup>Includes Land Warrior and Evolved Expendable Launch Vehicle programs.

### Establishing Prime Contractor Trends in Nunn-McCurdy Breaches Is Difficult Based on the Information in SARs

We reviewed SARs for programs with Nunn-McCurdy breaches and found 34 contractors involved in those programs. (See encl. I for a list of Nunn-McCurdy breaches by program and contractors). It is difficult to track prime contractors and establish trends in Nunn-McCurdy breaches based on the information in SARs for several reasons. For example, some programs have multiple prime contractors and some contractors have experienced mergers and acquisitions over the life of programs.

### Only One Program That Has Breached Multiple Times Has Not Been Recertified to Continue

Of the 47 programs that breached, as shown in table 3, 18 programs breached more than one time. Only one of the programs with multiple breaches—the Armed Reconnaissance Helicopter—was not recertified after a breach of the critical cost growth threshold. The Navy Area Theater Ballistic Missile Defense was also not recertified and was terminated because of poor performance and projected future cost and schedule problems. Other programs that have experienced a breach—including Advanced Seal Delivery System, Army Tactical Missile System-BAT, Comanche Reconnaissance Attack Helicopter, Land Warrior, and the VH-71 Presidential Helicopter Replacement—have also been terminated, but it is unclear whether the breach precipitated the termination.

**Table 3: Programs with Repeat Breaches, 1997-2009**

<b>Program</b>	<b>Number of breaches</b>
Space Based Infrared System High	4
Advanced Extremely High Frequency Satellite	3
Advanced Threat Infrared Countermeasure/Common Missile Warning System	3
C-130 Avionics Modernization Program	3
Chemical Demilitarization - Chemical Materials Agency	3
F-35 Lightning II (previously Joint Strike Fighter)	3
Global Hawk	3
Guided Multiple Launch Rocket System	3
Joint Air-to-Surface Standoff Missile	2
Armed Reconnaissance Helicopter	2
B-1B Conventional Mission Upgrade Program	2
Chemical Demilitarization - Chemical Materials Agency Newport	2
Expeditionary Fighting Vehicle	2
H-1 Upgrades	2
Advanced Anti-Tank Weapon System - Medium (Javelin)	2
Joint Primary Aircraft Training System	2
National Polar-orbiting Operational Environmental Satellite System	2
Virginia Class Submarine (SSN 774)	2

Source: GAO analysis of DOD data.

### **Factors Responsible for Nunn-McCurdy Breaches**

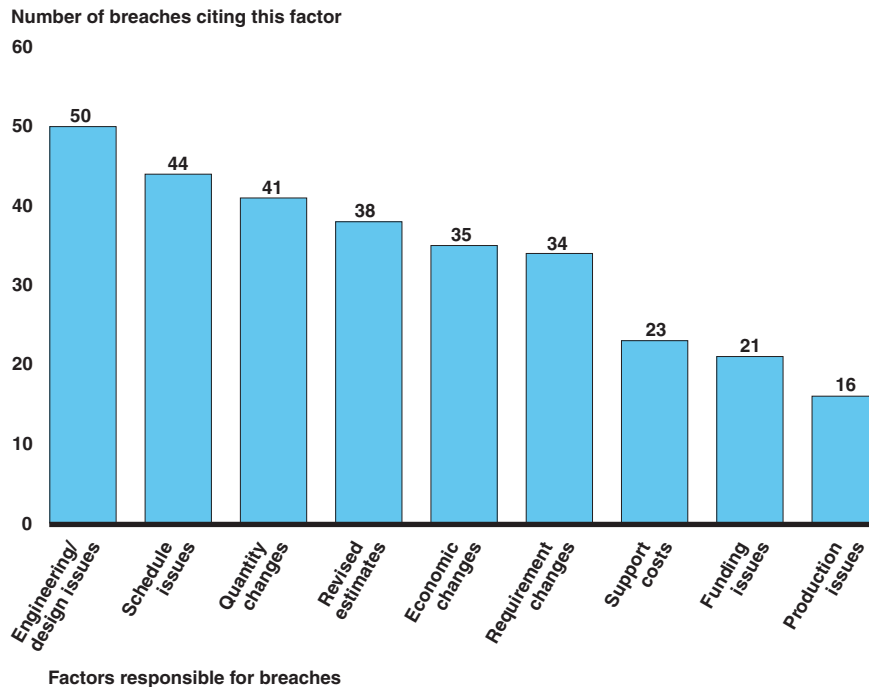
Nunn-McCurdy breaches are often the result of multiple, interrelated factors. Our analysis showed that the primary factors responsible for the unit cost growth that led to Nunn-McCurdy breaches were engineering and design issues, schedule issues, and quantity changes. A large number of programs that breached also cited revised estimates, requirements changes, and economic changes as factors that contributed to the breach. DOD began conducting root cause analysis for some programs that experienced a Nunn-McCurdy breach in 2009, which provides more detail on the factors responsible for breaches than was previously available.

#### Engineering and Design Issues Are the Most Cited Contributors to Nunn-McCurdy Breaches

Our analysis of DOD data and SARs showed that the primary factors responsible for the unit cost growth that led to Nunn-McCurdy breaches are engineering and design issues, schedule issues, and quantity changes. Major defense acquisition programs that breached Nunn-McCurdy cost growth thresholds often cited multiple, interrelated factors for the breaches. For example, the Expeditionary Fighting Vehicle program breached after the program was restructured to extend the system design and development phase and enable time for the system to be redesigned to meet reliability requirements. According to DOD SARs, a large number of programs that breached also experienced the following:

- revised estimates due to changes in program assumptions;
- requirements changes, such as adding capabilities; and,
- economic changes, such as increased costs of airframe manufacturing, labor, and materials or application of current inflation indices.

**Figure 3: Factors Cited in SARs as being Responsible for Nunn-McCurdy Breaches**



Source: GAO analysis of DOD data.

Cost increases resulting from engineering and design issues may indicate that those programs started without adequate knowledge about their requirements and the resources needed to fulfill them. For example, we reported in 2003 that the Space Based Infrared System High program was too immature to enter the system design and development phase and was based on faulty and overly optimistic assumptions about software reuse and productivity levels, the benefits of commercial practices, management stability, and the level of understanding of requirements.<sup>15</sup> The program has breached four times.

Many programs cited revised cost estimates as a factor behind breaches, suggesting estimates were based on inaccurate assumptions. Our previous work shows that without the ability to generate reliable cost estimates, programs are at risk of experiencing cost overruns, missed deadlines, and performance shortfalls. In 2008, we reported that development costs for major acquisition programs are often underestimated at program initiation—by 30 to 40 percent in some cases—in large part because the estimates are based on limited knowledge and optimistic assumptions about system requirements and critical technologies.<sup>16</sup> For example, initial development cost estimates for the Army’s Warfighter Information Network-Tactical communications system were understated by at least \$1.3 billion, or nearly 160 percent as of July 2008, in part because the estimates assumed that commercial off-the-shelf radio technology would be available. This assumption proved to be

<sup>15</sup>GAO, *Defense Acquisitions: Despite Restructuring, SBIRS High Program Remains at Risk of Cost and Schedule Overruns*, GAO-04-48 (Washington, D.C., Oct. 31, 2003).

<sup>16</sup>GAO, *Defense Acquisitions: A Knowledge-Based Funding Approach Could Improve Major Weapon System Program Outcomes*, GAO-08-619 (Washington, D.C., July 2, 2008).

wrong, and the program breached in 2006. Similarly, DOD officials told us that the estimates for the Armed Reconnaissance Helicopter were based on an assumption that the program would be able to quickly ramp up production using a helicopter frame built commercially by Bell Helicopter. However, when the business base for the commercial helicopter did not materialize, this key assumption changed, and the program was ultimately cancelled.

In a 2009 presentation on Nunn-McCurdy breaches, DOD's Office of Acquisition Resources and Analysis cited several factors as being responsible for breaches.

**Table 4: Factors for Nunn-McCurdy Breaches Cited by DOD**

Reason cited	Example(s) cited
Reductions in quantity	Guided Multiple Launch Rocket System
Change in requirements since baseline	Global Hawk
Development or production stretch-out	F-22 Advanced Tactical Fighter, National Polar-orbiting Operational Environmental Satellite System
Technical or performance/reliability issues	Armed Reconnaissance Helicopter, Expeditionary Fighting Vehicle
Inadequate baseline cost estimate	Chemical Demilitarization, Space Based Infrared System High

Source: DOD.

According to DOD, not all breaches are indicators of poor performance because quantity reductions or capabilities added to a program after it begins can affect unit cost. For example, the Excalibur program's unit costs increased by nearly 200 percent in 2010 as a result of reducing quantities from 30,000 to 6,264. However, the overall cost of the program decreased by 36 percent to \$1.6 billion. While in the case of Excalibur the Army reduced quantities based on capability needs, we have previously reported that quantities are often reduced in response to cost overruns on programs.<sup>17</sup> Of the 41 programs in our analysis that reported quantity changes as a contributor to unit cost increases, 26 experienced quantity decreases.

As a result of the Weapon System Acquisition Reform Act of 2009, DOD began conducting root cause analysis for programs that experienced a Nunn-McCurdy breach of the critical cost growth threshold. This analysis provides more detail on the factors responsible for breaches than was previously available in SARs. SARs contain general categories that help classify the reasons for cost growth and were the primary mechanism for understanding the factors responsible for breaches. For example, DOD's December 2009 SAR summary stated that the DDG-1000 program breached due to a quantity decrease from 10 to 3 ships and not as a result of poor performance. However, the root cause analysis also reported that the program also faced technical and fiscal challenges, such as incorporating 10 new transformational technologies, 4 of which were immature at program start. In addition, the Apache Block III program cited procurement quantity increases as the primary cause of its 2009 breach. The Army added 56 newly built aircraft to an existing program that was remanufacturing and upgrading existing aircraft. The program cites the higher unit cost of the new aircraft as the dominant cause of the breach; however, the root cause analysis report pointed out that cost estimates from the Office of the Director of Cost Assessment and Program Evaluation indicated that the program would have experienced a critical breach without the addition of the 56 new build aircraft.

<sup>17</sup>GAO-08-619.

## **Changes to DOD Practices and Proposed Changes to Nunn-McCurdy Process**

DOD has instituted a process to provide earlier warning of potential breaches and plans to propose changes to try to limit the effect of breaches caused by quantity changes. Specifically, the Joint Staff has implemented a Nunn-McCurdy trip wire process to evaluate the factors that are contributing to cost growth so that programs can take mitigating actions. Our analysis shows nearly 40 percent of Nunn-McCurdy breaches occurred after a production decision had been made—when a program has fewer options for restructuring. DOD also plans to propose a legislative amendment to reduce several statutory requirements added in 2009 for Nunn-McCurdy breaches when it determines the breach was caused primarily by quantity changes that were unrelated to poor performance. Tracking changes in research and development costs, which are not sensitive to quantity changes, would be one way DOD could evaluate program performance in this context.

### DOD Is Taking Steps Intended to Provide Earlier Warning of Potential Breaches and Plans to Propose Other Changes to the Nunn-McCurdy Process

DOD has instituted a process to provide earlier warning of potential breaches. Specifically, the Joint Staff has implemented a Nunn-McCurdy trip wire process, whereby some programs are reviewed when their current cost estimate exceeds either 10 percent of the current baseline or 25 percent of the original baseline. The process is intended to evaluate the factors that are contributing to cost growth so that programs can take mitigating actions. Officials stated that while it is too early to determine if the process successfully prevents critical breaches, they believe it has the potential to do so. Our analysis supports the need to identify breaches earlier because we found nearly 40 percent of Nunn-McCurdy breaches occurred after a production decision had been made—when a program has fewer options for restructuring.

Additionally, the Undersecretary of Defense for Acquisition, Technology, and Logistics is currently drafting a proposed legislative amendment to reduce several statutory requirements for Nunn-McCurdy breaches of the critical cost growth threshold added in 2009, if DOD determines the breach was caused primarily by quantity changes that were unrelated to increases in unit cost. According to DOD officials, Excalibur is an example of a program that would qualify for this relief. The Excalibur program experienced a Nunn-McCurdy breach of the critical cost growth threshold after the Army reduced quantities from 30,000 to 6,264. The quantity reductions were the result of Army assessments of munitions usage and needs, rather than in response to program-specific cost concerns. According to DOD officials, the proposed legislation would not apply to programs like the DDG-1000, in which quantities were decreased from 10 to 3 ships, in part in response to concerns about its affordability. One method of measuring cost growth that would not be sensitive to quantity changes is to analyze changes in research and development costs. This might also help to identify problem programs earlier in the acquisition process. We examined research and development cost increases for major defense acquisition programs in 2009 and found if the Nunn-McCurdy cost growth thresholds were applied to only research and development costs, nine programs that have not

experienced a Nunn McCurdy breach would have experienced a breach of the critical threshold and four programs would have experienced a breach of the significant threshold.<sup>18</sup>

**Table 5: Programs That Would Experience a Breach if Nunn-McCurdy Cost Growth Thresholds Were Applied to Research and Development Costs**

<b>Program</b>	<b>Type of breach</b>
CH-53K - Heavy Lift Replacement	Significant
Cooperative Engagement Capability	Critical
CVN-68 Class/Carrier Replacement Program (CVN 77)	Critical
Joint Mine Resistant Ambush Protected	Critical
Joint Standoff Weapon	Critical
Joint Tactical Radio System Handheld, Manpack, and Small Form Fit	Critical
Joint Tactical Radio System Network Enterprise Domain	Critical
LHA Replacement Amphibious Assault Ship	Significant
Multifunctional Information Distribution System – Joint Tactical Radio System	Critical
Patriot Advanced Capability - 3	Critical
Patriot/Medium Extended Air Defense System Combined Aggregate Program Missile	Significant
Stryker Family of Vehicles	Significant
Warfighter Information Network-Tactical, Increment I	Critical

Source: GAO analysis of DOD data.

### **Agency Comments and Our Evaluation**

DOD provided technical comments, which we incorporated as appropriate.

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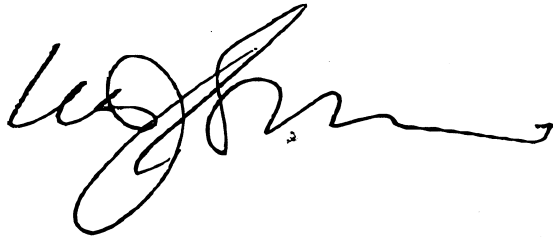
As we agreed with your office, unless you publicly announce the contents of this report earlier, we plan no further distribution of it until 20 days from the date of this letter. At that time, we will send copies of this letter to DOD and other interested congressional committees. In addition, these documents will be available at no charge on GAO’s Web site at <http://www.gao.gov>.

If you have any questions, please contact me at (202) 512-4841 or [sullivanm@gao.gov](mailto:sullivanm@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be

<sup>18</sup>For this analysis, we considered an increase in research and development cost of at least 30 percent over the original estimate to be a breach of the significant cost growth threshold and an increase of at least 50 percent over the original estimate to be a breach of the critical cost growth threshold.

found on the last page of this letter. GAO staff members who made key contributions to this report are listed in enclosure II.

Sincerely yours,

A handwritten signature in black ink, appearing to read 'Michael J. Sullivan', with a long horizontal flourish extending to the right.

Michael J. Sullivan  
Director  
Acquisition and Sourcing Management

Enclosures - 2

Enclosure I

**Programs That Experienced a Nunn-McCurdy Breach and Their Contractors, 1997-2009**

This enclosure provides a list of the contractors that were listed in Selected Acquisition Reports for programs that experienced a Nunn-McCurdy breach.

**Table 6: Programs That Experienced a Nunn-McCurdy Breach and Their Contractors, 1997-2009**

<b>Program</b>	<b>Contractors</b>
Advanced Anti-Tank Weapon System - Medium (Javelin)	Texas Instruments/Martin Joint Venture, Raytheon/ Lockheed Martin Joint Venture
Advanced Extremely High Frequency Satellite	Lockheed Martin
Advanced Seal Delivery System	Northrop Grumman
Advanced Threat Infrared Countermeasures/Common Missile Warning System	Lockheed Sanders Inc, BAE Systems
Apache Block III	McDonnell Douglas Helicopter, Longbow Limited Liability Company
Armed Reconnaissance Helicopter	Bell Helicopter Textron
Army Tactical Missile System/BAT	Lockheed Martin Missiles, Northrop Grumman Corporation, Vought Systems
B-1B Conventional Mission Upgrade Program	McDonnell Douglas/The Boeing Company
C-130 Avionics Modernization Program	The Boeing Company
C-130J Hercules	Lockheed Martin
C-5 Reliability Enhancement and Reengining Program	Lockheed Martin
CH-47F Improved Cargo Helicopter	Boeing Helicopters
Chemical Demilitarization - Assembled Chemical Weapons Alternatives	Bechtel National Inc., Bechtel Parsons BG
Chemical Demilitarization - Chemical Materials Agency	Bechtel National Inc., Westinghouse, Washington Demil Co., EG&G Defense Materials, Parsons Infra & Tech Group
Chemical Demilitarization - Chemical Materials Agency Newport	Parsons Infra & Tech Group
Chemical Demilitarization Legacy	Raytheon Engineers & Construction, Raytheon Demil Company, Bechtel National, Inc., EG&G Defense Materials
Comanche Reconnaissance Attack Helicopter	Boeing Sikorsky, LHTEC
DDG 1000 Destroyer	BAE Systems Armament Systems Division, Raytheon Integrated Defense Systems, Bath Iron Works, Northrop Grumman Shipbuilding
E-2D Advanced Hawkeye	Northrop Grumman Corporation
Evolved Expendable Launch Vehicle - Atlas V, Delta IV	Lockheed Martin Corporation, McDonnell Douglas Corporation
Expeditionary Fighting Vehicle	General Dynamics
F/A-18E/F Super Hornet	McDonnell Douglas, General Electric
F-22 Advanced Tactical Fighter	Lockheed Martin Aero Corporation, United Technologies Corporation
F-35 Lightning II (previously Joint Strike Fighter)	Lockheed Martin, Pratt and Whitney, General Electric/Rolls-Royce
Family of Medium Tactical Vehicles	Stewart & Stevenson Services
Force XXI Battle Command Brigade and Below	DRS Tactical Systems, Northrop Grumman Space and Missile Systems



<b>Program</b>	<b>Contractors</b>
Global Hawk	Northrop Grumman Corporation
Guided Multiple Launch Rocket System	Lockheed Martin Missiles and Fire Control - Dallas
H-1 Upgrades	Bell Helicopter Textron
Joint Air-to-Surface Standoff Missile	Lockheed Martin
Joint Primary Aircraft Training System	Raytheon Aircraft, Raytheon Aerospace
Joint Tactical Radio System Ground Mobile Radios	The Boeing Company
Land Warrior	General Dynamics
Longbow Apache	Boeing Company, Longbow Limited Liability Co., Lockheed Martin Federal
LPD 17 Class Amphibious Transport Dock Ship	Avondale Alliance, Bath Iron Works
MH-60R Multi-Mission Helicopter	Lockheed Martin, Sikorsky Aircraft Corporation
MH-60S Fleet Combat Support Helicopter	Sikorsky Aircraft Company, Lockheed Martin Corporation
National Polar-orbiting Operational Environmental Satellite System	Northrop Grumman Space Technology
Navstar GPS	Boeing North American
Navy Area Theater Ballistic Missile Defense	Coleman Research Corporation, Lockheed Martin GES, Standard Missile Company, Raytheon Systems Corporation
Presidential Helicopter Replacement (VH-71)	Lockheed Martin Systems Integration
Remote Minehunting System	Lockheed Martin
Space Based Infrared System High	Lockheed Martin Space Systems
V-22 Joint Services Advanced Vertical Lift Aircraft (Osprey)	Allison Engine Co., Bell Boeing, Rolls Royce
Virginia Class Submarine (SSN 774)	General Dynamics EB Corporation
Warfighter Information Network - Tactical	General Dynamics Government Systems
Wideband Global SATCOM	Boeing

Source: GAO analysis of DOD data.

Enclosure II

## **GAO Contact and Staff Acknowledgments**

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