CONGRESSIONAL BUDGET OFFICE
U.S. Congress
Washington, DC 20515

Robert D. Reischauer
Director

August 17, 1992

MEMORANDUM FOR THE RECORD

FROM: Mick Miller
Bill Myers
Ray Hall

SUBJECT: Annual SAR Review

The December 1991 Selected Acquisition Reports (SARs) were submitted to the Congress in March, 1992, in support of the fiscal year 1993 budget request. At the request of Congressional staff, we have examined these reports in detail. Our examination reveals that the Department of Defense (DoD) projects total program costs about 1 percent below levels of a year ago (adjusted for inflation and quantity changes), but cost projections for individual systems vary widely and the results of our analysis should be interpreted with caution.

This memorandum presents these results, highlighting aggregate cost changes and individual weapons system program changes. All costs are in current budget authority, unless otherwise noted.

AGGREGATE COST CHANGES

The total program costs provided in the SARs include research and development, procurement, military construction, and operation and maintenance appropriations. Total program costs reflect actual and projected costs of selected weapon systems from the development phase through the final buy. This year, the SARs cover 111 systems including 6 reports that are being submitted for the first time and over 2,500 pages of information. The systems' costs represent nearly 40 percent of the Administration's 1993 request for weapons procurement. Excluding systems that were first included in the SARs in the past year, our analysis shows that DoD projections of total program costs have increased by about 2 percent ($16.3 billion) over the past year, unadjusted for inflation and quantity changes.

The Defense Department reports projected cost changes in seven basic categories. The categories and their contribution to this year's cost changes are as follows:

- o Economic changes are cost changes resulting from a difference between actual and previously projected price growth, and from differences between past and current economic projections. These two differences combine to decrease projected costs in the SARs by about $18.3 billion.

- o Quantity changes refer to changes in the quantity of weapons to be procured. The SARs show that the planned quantity changes increase costs by $40.7 billion.

- o Schedule changes are changes in procurement delivery schedules, production completion date, or intermediate development or production milestones. These changes combine to increase costs by nearly $0.7 billion.

- o Engineering changes are changes in the physical or functional characteristics of the system, which this year decrease costs by $9 billion.

- o Estimating changes are changes in total program cost due to a correction of error in preparing the original estimate, refinement of a previous estimate, or a change in program or cost-estimating assumptions and techniques not provided for in the other cost-change categories. For these reasons, DoD has increased its previous cost estimates by $4.2 billion.

- o Support changes are cost changes associated with training and training equipment, peculiar support equipment, activation of an operational site, and initial spares and repair parts. These changes increase costs by almost $0.6 billion.

- o Other changes are changes in program cost not provided for in the other cost variance categories. These changes decrease costs by $2.5 billion.

Setting aside cost changes due to updated inflation assumptions and procurement quantities, total program cost projections are down about 1 percent ($6.1 billion) since December 1990 (See the top panel of Table 1) compared with a nearly 5 percent increase ($39.4 billion) a year ago. However, this analysis should be cautiously interpreted with three points in mind.

First, the results of any cost growth study depend on what systems are included in the analysis. Changes in the world situation and the acquisition environment have caused many programs to be terminated or restructured, and the overall decrease this year is primarily caused by these programs. The top panel of Table 2 shows that of 19 weapons with cost decreases, 18 systems were either terminated or restructured. Excluding these programs results in a 3 percent or $18.7 billion increase as against a 1 percent or $6.1 billion decrease (See the middle and top panels of Table 1). On the other hand the bottom panel of Table 2 shows 13 systems with cost increases of 10 percent or more. Excluding all weapons with cost increases or decreases of at least 10 percent results in an overall cost increase of 1 percent or $8.4 billion (See the bottom panel of Table 1).

Second, cost growth in individual systems varies widely from a 100 percent decrease for the Army's future infantry fighting vehicle to a 170 percent increase for the Army's future armored resupply vehicle (both systems are part of the armored system modernization program). Cost growth percentages are only one measure of how well a weapons program is progressing; the dollar value of the change is important also. For example, a 10 percent increase in last year's estimate for the Army's multiple launch rocket system terminal guidance warhead would cost $26 million, while a 4 percent increase in the C-17 aircraft estimate would cost nearly $1.3 billion. Furthermore, the analyst should review the reasons for cost change. For example, the 46 percent increase in the Army's Stinger RMP missile resulted from "corrections to last year's report," while a 11 percent increase in the Navy's AOE-6 fast combat support ship resulted from price increases (See Table 2). Congressional staff can refer to Summary Tables provided in the appendix to review cost growth percents, dollar amounts and the major reasons cited for cost changes for all of the systems included in this analysis (Army, Navy, and Air Force data are highlighted in separate tables).

TABLE 1. COST GROWTH EXCLUDING ECONOMIC AND QUANTITY CHANGES SINCE DECEMBER 1990 (In millions of current dollars and percents)

Service with Program Management Responsibility	Percent	Dollars
Total Cost Changes		
Army	2%	3,622
Navy	−3%	−13,229
Air Force	2%	5,376
DoD	−6%	−1,867
Grand Total	−1%	−6,098
Totals Less Systems with Cost Decreases of 10 Percent or More		
Army	6%	8,000
Navy	a	1,386
Air Force	5%	11,219
DoD	−6%	−1,867
Grand Total	3%	18,738
Totals Less Systems with Cost Increases or Decreases of 10 Percent or More		
Army	a	467
Navy	1%	2,117
Air Force	5%	7,651
DoD	−6%	−1,867
Grand Total	1%	8,368

Note: Excludes systems that have classified estimates or were first included in the SARs in the past year.

a. Less than one−half of one percent.

TABLE 2. COST GROWTH EXCLUDING ECONOMIC AND QUANTITY CHANGES SINCE DECEMBER 1990 FOR SELECTED SYSTEMS
(In millions of current dollars and percents)

System Name	Percent	Dollars	Major Reason(s) for Cost Changes 1/
Systems with Cost Decreases of 10 Percent or More			
AN/SQY-1 Surface Ship ASW Combat System	-87%	-1,153	Program terminated.
SRAM II Missile	-61%	-1,369	Program terminated.
Small ICBM	-49%	-3,669	Program terminated
Comanche-Light Helicopter Program (LH)	-25%	-1,142	Program restructured.
Fixed Distributed System (FDS)	-23%	-1,261	Production program terminated.
Command, Control, and Intelligence	-22%	-726	Program restructured ("deletion of technical insertion for computer re-buys").
F/A-18 C/D Aircraft	-22%	-12,201	Program restructured (see footnote 2).
Peacekeeper Rail Garrison Equipment	-19%	-494	Program terminated.
Armored System Modernization (ASM):			
Block III Tank	-68%	-2,695	Program restructured.
Combat Mobility Vehicle (CMV)	-97%	-823	Program restructured.
Future Infantry Fighting Vehicle (FIFV)	-100%	-1,383	Program restructured.
Advanced Field Artillery System (AFAS)	126%	2,203	Program restructured.
Future Armored Resupply Vehicle (FARV-A)	170%	648	Program restructured.
Line-of-sight Antitank (LOSAT)	48%	392	Program restructured.
Subtotal ASM changes	-18%	-1,658	
Supersonic Low Altitude Target (SLAT)	-15%	-208	Program terminated.
Air Defense System Heavy (LOS-F-H)	-13%	-810	Program terminated.
IR Maverick Missile	-11%	-310	Revised estimates that are partially offset by quantity-related changes.
SSN 21 Submarine/AN/BSY-2	-10%	-3,487	Program terminated.
Fiber Optic Guided Missile (NLOS)	-10%	-44	Program terminated.
Systems with Cost Increases of 10 Percent or More			
Stinger RMP Missile	46%	684	Corrections to prior report.
Family of Medium Tactical Vehicles (FMTV)	40%	6,177	Contract price increases, and increase in Federal Retail Excise Tax.
Titan IV Missile	26%	4,712	Increases caused by a four-year stretch-out of the program.
F-14D Aircraft	21%	1,057	Quantity-related costs reported in other categories, and contract termination costs.
F-22 Advanced Tactical Fighter	21%	3,466	Configuration change, weight increase, composite complexities, and support changes.
V-22 Aircraft	18%	550	Congressional appropriations and reprogrammings.
Inertial Upper Stage (IUS) Rocket Booster	15%	263	Transfer of O&M funded activities to procurement, and revised sustaining efforts.
Javelin-Adv. Antitank Weapons Sys. (AAWSM)	14%	645	Increased hardware costs, revised estimates, and revised schedule.
DMSP Satellite Program	14%	253	Transfer of O&M funded activities to procurement.
NAVSTAR GPS Tri-service User Equipment	12%	717	Increased support requirements, schedule stretch-out and revised estimates.
AOE-6 Fast Combat Support Ship	11%	238	Repricing based on cost increases that were reported in September 1991 SAR.
Standard Missile (SM-2 MR/ER)	10%	1,119	Revised estimates, and schedule stretch-out.
MLRS Terminal Guidance Warhead (TGW)	10%	26	Reprogramming actions.

Note: Excludes systems that have classified estimates or were first included in the SARs in the past year.

1/ Major reasons for cost changes were either taken directly from the variance analysis sections in the SARs or represent our interpretation of the causes listed.

2/ A retroactive change deleted nearly $10 billion of prior changes without any explanation. The change was apparently done to report the F/A-18 E/F version in a separate SAR. However the SAR for F/A-18 E/F shows a planning estimate of only $4 billion.

Finally, CBO and other defense analysts[1] have pointed out many weaknesses in using the SAR data. For example, because the costs reported in the SARs include DoD's projections of future costs, the accuracy of these projections will not be known until all of the weapons have been produced and delivered.

Nevertheless, the information contained in the SARs is very valuable. The SARs are useful for monitoring cost changes and other developments in weapons acquisition programs, and for providing rough indicators of overall cost growth in procurement programs.

COST CHANGES FOR INDIVIDUAL WEAPONS

Congressional staff have found certain data from past reviews to be especially useful in helping them cope with the volumes of data contained in the SARs. These data are presented in the summary tables provided in the appendix (Army, Navy, and Air Force data are highlighted in separate tables) and include:

- unit cost changes based on procurement and total program funding,
- program status relative to established milestones and weapons deliveries,
- effects of production rate changes, and
- expected contract overruns and underruns.

Unit Cost Growth

Current law requires that Congress be notified when projections of program acquisition unit costs are more than 15 percent higher than a specified baseline for a particular program. The baseline is either the first comprehensive SAR, the SAR from the previous December, or another SAR in cases where a previous breach had occurred.

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1. See Paul G. Hough, Pitfalls in Calculating Cost Growth from Selected Acquisition Reports, RAND, N-3136-AF, 1992.

Table 3 shows that based on a December 1990 to December 1991 comparison, three SAR systems would violate the 15 percent threshold if acquisition would continue as planned by the Administration--the Air Force's space shuttle rocket booster (23 percent) because of a reduction of two 2 booster buys, the Air Force's sensor fused weapon (37 percent) because of a reduction of about 6,000 weapons, and the Air Force's Titan IV missile (24 percent) due primarily to a schedule slippage of about four years. Additionally, five other systems would experience unit cost growth of over 15 percent, although the Administration plans to terminate or cancel production of all five of these systems. The five systems are the Army's ADATS air defense system planned for deployment with heavy divisions, the Navy's fixed distribution system planned for use on ships to detect enemy submarines, the Navy's supersonic low-altitude target system, the Navy's SSN-21 Seawolf attack submarine, and the Air Force's advanced cruise missile program.

In addition, CBO has identified several systems which have violated the threshold during the previous twelve months. These systems include three Army programs--the Avenger missile (32 percent) because of growth in missile costs, the family of medium tactical vehicles (35 percent) because of growth in hardware costs, and the Javelin advanced anti-tank weapon system (25 percent) due to schedule slippage, and five Navy programs--the AOE-6 fast combat support ship (30 percent) because of production inefficiencies at National Steel and Shipbuilding Company, the lead manufacturer, the DDG-51 Arleigh Burke destroyer (18 percent) because of reduced annual buys, the EA-6B aircraft (30 percent) and the F-14D remanufactured aircraft (23 percent) because of a decreased business base for Grumman Aerospace Company, and the Mk50 torpedo (23 percent) because of production deferrals. The Administration would continue production of all of these systems except the F-14D aircraft.

Schedule Performance

One measure of schedule performance is the degree to which contractors are meeting the planned delivery schedules. According to the SARs, most of the systems remain on or ahead of delivery plans, with about 10 percent behind schedule--most notably the Navy's Mk50 torpedo and the Air Force's advanced cruise missile, two programs which have experienced significant cost growth over the past year. The status of major milestones, such as completion of testing, production deliveries, and contract award dates, are other indicators of overall program execution, and, specifically acquisition costs. For example, a delay caused by technical, material, or manpower problems may require

TABLE 3. NUNN–MCCURDY PROGRAM ACQUISITION UNIT COST BREACHES

System Name	Percent Changes from Baseline	
	Unit Cost	Quantity
Programs with Reduced or Deferred Production		
Sensor Fused Weapon (Air Force)	37	−40
Titan IV Missile (Air Force)	24	a
IUS Space Booster (Air Force)	23	−17
Programs Planned for Production Cancellation or Termination		
ADATS Air Defense System (Army)	786	−91
SLAT Missile (Navy)	437	−82
SSN–21 Seawolf Submarine (Navy)	168	−78
Fixed Distribution System (Navy)	104	−71
Advanced Cruise Missile (Air Force)	19	−24

Source: Congressional Budget Office

a. Less than one–half of one percent.

additional funds to resolve, but other delays such as a three month delay in initial flight testing may not involve additional costs. According to the SARs, 60 percent of all systems have been behind in at least one milestone.

Effects of Production Rates on Costs

Unit costs are also affected by changes to the production rates which can occur for many reasons, including material or labor shortages, production line changes, changes in technology, or budgetary ceilings that result in reallocating dollars to fewer systems. When production rates are stepped-up, savings generally occur because the use of facilities comes closer to their capacities and the work force becomes more efficient. For this reason, DoD's management initiatives during the last decade included economic production rates.

As shown in Table 4, SAR system costs have been reduced by about $1.8 billion due to production rate changes for about 6 systems, most notably the Navy's Mk50 torpedo ($700 million), the Navy's standard missile ($410 million), and the Air Force's B-1B aircraft modifications ($360 million). In contrast, the SARs also provide evidence that the production rates for 16 programs have been slowed, raising costs by about $3 billion, most notably the Air Force's Titan IV missile ($980 million), the Army's hellfire missile ($310 million), the Air Force's C-17 aircraft ($300 million), the Air Force's AMRAAM missile ($290 million), the Army's medium tactical vehicle program ($260 million), and the Air Force's sensor fused weapon ($260 million).

Contract Cost Performance

Under current law, DoD must report contractor cost information for the six largest (in dollar value) contracts in each program. Of the contracts affected by this reporting requirement, program managers estimate eight times as many contract cost overruns as underruns (107 versus 14). The unclassified estimates that are published in the SARs show that expected overruns would cost about $9 billion compared to $300 million in savings from expected underruns.

However, this picture of contractor cost performance is incomplete because limiting the report to six contracts may exclude other large contracts. While six contracts may include a major portion of the contract effort of a small program like the Army's TOW-2 missile, this is not the case with large programs like the Air Force's C-17 aircraft or the Navy's Trident submarine. In these cases, the reporting requirement effectively limits the inclusion of cost performance of several large contracts.

TABLE 4. EFFECTS OF PRODUCTION RATE CHANGES (dollars in millions)

System Name	Changes from Baseline	
	Dollars	Percent
Production Rate Changes Resulting in Program Savings		
Mk-50 Torpedo (Navy)	-700	-9
Standard Missile (Navy)	-410	-4
B-1B Aircraft (Air Force)	-360	-2
DDG-51 Destroyer (Navy)	-140	a
Army Data Distribution System	70	-3
AN/SQQ-89 Combat System (Navy)	40	-1
Production Rate Changes Resulting in Increased Program Costs		
Titan IV Missile (Air Force)	980	6
Laser Hellfire Missile (Army)	310	16
C-17A Aircraft (Air Force)	300	1
AMRAAM Missile (Air Force)	290	3
Medium Tactical Vehicles (Army)	260	2
Sensor Fuzed Weapon (Air Force)	260	8
Javelin Missile (Army)	150	4
Trident II Missile (Navy)	120	a
HARM Missile (Navy)	80	1
NAVSTAR User Equipment (Air Force)	80	12
FAAD C2I NCTR (Army)	30	6
Manuever Control System (Army)	20	2
IUS Rocket Booster (Air Force)	10	1
Avenger Missile (Army)	10	1
FAAD C2I Ground-based Radar (Army)	10	2
SINCGARS Radio (Army)	10	a

Source: Congressional Budget Office

a. Less than one-half of one percent.

Appendix Tables

TABLE A-1. COST GROWTH EXCLUDING ECONOMIC AND QUANTITY CHANGES SINCE DECEMBER 1990 FOR SELECTED ARMY SYSTEMS
(In millions of current dollars and percents)

System Name	Percent	Dollars	Major Reason(s) for Cost Changes 1/
Air Defense System Heavy (LOS-F-H)	-13%	-810	Program terminated.
Army Data Distribution System (ADDS)	-3%	-86	Quantity-related reductions, estimating error, and corrections to prior reports.
AH-64 Helicopter	a	38	Quantity-related increases that are partially offset by many decreases.
Armored System Modernization (ASM):			
Block III Tank	-68%	-2,695	Program restructured.
Combat Mobility Vehicle (CMV)	-97%	-823	Program restructured.
Future Infantry Fighting Vehicle (FIFV)	-100%	-1,383	Program restructured.
Advanced Field Artillery System (AFAS)	126%	2,203	Program restructured.
Future Armored Resupply Vehicle (FARV-A)	170%	648	Program restructured.
Line-of-sight Antitank (LOSAT)	48%	392	Program restructured.
Army Tactical Missile System (ATACMS)	2%	26	Revised estimates.
Avenger-Pedestal Mounted Stinger (LOS-F)	6%	121	Revised estimates.
Bradley Fighting Vehicle System (BFVS)	a	21	Many changes that net to a small increase.
CH-47D Helicopter	a	-2	Support decreases that are partially offset by revised estimates.
Comanche-Light Helicopter Program (LH)	-25%	-1,142	Program restructured.
Command, Control, and Intelligence	-22%	-726	Program restructured ("deletion of technical insertion for computer re-buys").
Fiber Optic Guided Missile (NLOS)	-10%	-44	Program terminated.
Family of Medium Tactical Vehicles (FMTV)	40%	6,177	Contract price increases, and increase in Federal Retail Excise Tax.
Javelin-Adv. Antitank Weapons Sys. (AAWSM)	14%	645	Increased hardware costs, revised estimates, and revised schedule.
Kiowa Warrior Helicopter (OH-58/AHIP)	1%	32	Quantity-related increases, and added engine reliability program costs that are partially offset.
Laser Hellfire Missile	9%	207	Corrections to prior reports and quantity related changes.
Longbow Apache (AAWWS)	3%	83	Schedule stretch-out from 51 to 70 months and revised estimates.
M1 Tank	a	-23	Revised estimates.
Multiple Launch Rocket System (MLRS)	1%	34	Many changes that net to a small increase.
MLRS Terminal Guidance Warhead (TGW)	10%	26	Reprogramming actions.
Mobile Subscriber Equipment (MSE)	4%	183	Estimating error.
Patriot Missile	a	46	Inflation offset, refined estimate and engineering changes.
Palletized Load System (PLS/FHTV)	-1%	-8	Many changes that net to a small decrease.
Sense and Destroy Armor (SADARM)	1%	43	Revised estimates.
SINCGARS Radio	-1%	-38	Reprogramming actions.
Stinger RMP Missile	46%	684	Corrections to prior report.
TOW 2 Missile	-8%	-256	TOW sight improvement terminated.
UH-60A/L Helicopter	1%	46	Increased estimates, that are partially offset by reductions in support.
Total Army Systems	2%	3,622	
Less weapons with changes of -10 percent or more	6%	8,000	
Less weapons with changes of ± 10 percent or more	a	467	

Note: Excludes systems that have classified estimates or were first included in the SARs in the past year.

1/ Major reasons for cost changes were either taken directly from the variance analysis sections in the SARs or represent our interpretation of the causes listed.

a. Less than one-half of one percent.

TABLE A-2. COST GROWTH EXCLUDING ECONOMIC AND QUANTITY CHANGES SINCE DECEMBER 1990 FOR SELECTED NAVY SYSTEMS
(In millions of current dollars and percents)

System Name	Percent	Dollars	Major Reason(s) for Cost Changes 1/
AN/BSY-1 Submarine Combat System	a	5	Very small changes in estimating and support categories.
AN/SQQ-89 Surface Ship ASW Combat System	a	5	Many changes that net to a small increase.
AN/SQY-1 Surface Ship ASW Combat System	-87%	-1,153	Program terminated.
AOE-6 Fast Combat Support Ship	11%	238	Repricing based on cost increases that were reported in September 1991 SAR.
Airborne Self-protection Jammer (ASPJ)	-8%	-46	Adjustment to pre-planned product improvement program
AV-8B Aircraft	3%	236	Radar upgrade integration.
C/MH-53E Helicopter	1%	31	Many changes that net to a small increase.
CG 47 AEGIS Cruiser	1%	142	Increased estimates for all ship systems and adjustments to contract requirements.
SH-60F Helicopter (CV Helo)	-4%	-179	Decreased estimates that are partially offset by engineering and support increases.
CVN Aircraft Carriers:			
CVN-72/73 Carriers	a	-14	Decreased contract overrun and reductions in outfitting and post delivery.
CVN-74/75 Carriers	4%	261	Inflation offset and increase for change order updates.
DDG 51 Destroyer	2%	907	Increased R&D and procurement estimates.
E-2C Aircraft	1%	48	Increased estimates that are partially offset by quantity-related changes.
E-6A Aircraft	5%	94	Settlement of adjudicated claims.
EA-6B Aircraft	8%	736	Revised business base caused by cancellation of the F-14 partially offset by support decreases.
F-14D Aircraft	21%	1,057	Quantity-related costs reported in other categories, and contract termination costs.
F/A-18 C/D Aircraft	-22%	-12,201	Program restructured (see footnote 2).
Fixed Distributed System (FDS)	-23%	-1,261	Production program terminated.
HARM Missile	-1%	-96	Program terminated.
Harpoon Missile	a	2	Many changes that net to a small increase.
LAMPS MK III System	-1%	-112	Decreased estimates for the Blackhawk helicopter and lower support requirements.
Landing Craft Air Cushion (LCAC)	a	4	Inflation offset and corrections to prior reports net to a small increase.
LHD 1 Amphibious Assault Ship	7%	373	Quantity related costs, increased estimate based on bid price, and corrections to prior SARs.
LSD 41 (Cargo Variant) Dock Landing Ship	6%	76	Inflation offset, Congressional addition of "LLTM" funding, and corrections to prior reports.
MCM 1 Mine Countermeasures Ship	-1%	-14	Revised estimates.
MK 48 ADCAP Torpedo	-7%	-673	Propulsion improvement program restructured.
MK 50 Torpedo	-6%	-682	Savings from more efficient schedule & lower estimates are partially offset by support increases.
Phalanx CIWS System	a	2	Quantity related costs reported in other categories partially offset by lower R&D estimate.
Phoenix Missile	a	2	Revised estimate to reflect actual costs.
Supersonic Low Altitude Target (SLAT)	-15%	-208	Program terminated.
SSN 21 Submarine/AN/BSY-2	-10%	-3,487	Program terminated.
SSN 688 Submarine	1%	251	Increased estimate to reflect contract price, change orders and gov't-furnished equipment.
Standard Missile (SM-2 MR/ER)	10%	1,119	Revised estimates, and schedule stretch-out.
T-AO 187 Fleet Oiler	7%	207	Increase to build 3 ships with double hulls, inflation offset and outfitting and post delivery costs.
T45TS Training Aircraft	2%	151	Foreign exchange rate adjustments and support increases.
Tomahawk Missile	a	14	Increased estimates are partially offset by reductions in schedule and support categories.
Trident II Missile	a	96	Increases from schedule stretch-out and inflation offset combined with lower estimated prices.
Trident II Submarine	2%	278	Inflation offset and revised estimates.
UHF Follow-on Communication Satellite	1%	14	Inflation offset and Defense Business Operating Fund requirements.
V-22 Aircraft	18%	550	Congressional appropriations and reprogrammings.
Total Navy Systems	-3%	-13,229	
Less weapons with changes of -10 percent or more	a	1,386	
Less weapons with changes of ± 10 percent or more	1%	2,117	

Note: Excludes systems that have classified estimates or were first included in the SARs in the past year.

1/ Major reasons for cost changes were either taken directly from the variance analysis sections in the SARs or represent our interpretation of the causes listed.
2/ A retroactive change deleted nearly $10 billion of prior changes without any explanation. The change was apparently done to report the F/A-18 E/F version in a separate SAR. However the SAR for F/A-18 E/F shows a planning estimate of only $4 billion.

a. Less than one-half of one percent.

TABLE A-3. COST GROWTH EXCLUDING ECONOMIC AND QUANTITY CHANGES SINCE DECEMBER 1990 FOR SELECTED AIR FORCE SYSTEMS
(In millions of current dollars and percents)

System Name	Percent	Dollars	Major Reason(s) for Cost Changes 1/
Advanced Cruise Missile (ACM)	-8%	-511	Program terminated.
AMRAAM Missile	6%	806	Increased estimates, schedule stretch-out, and increased support requirements.
ATARS Tactical Air Reconnaissance System	1%	5	Increase in peculiar support requirements partially offset by funding reductions.
AWACS Radar System Improvement Program	4%	27	Increased estimates and spares requirements.
B-1B Aircraft	a	-80	Congressionally directed reductions that are partially offset by increases in many categories.
C-17A Aircraft	4%	1,279	Revised estimates, increased support requirements, and schedule stretch-out.
Cheyenne Mountain Upgrade (CMU) Program	2%	29	Increases in support requirements.
DMSP Satellite Program	14%	253	Transfer of O&M funded activities to procurement.
Defense Support Program	2%	176	Refinement of the estimate.
F-16 Aircraft	1%	234	Re-estimate and inflation offsets.
F-22 Advanced Tactical Fighter	21%	3,466	Configuration change, weight increase, composite complexities, and support changes.
IR Maverick Missile	-11%	-310	Revised estimates that are partially offset by quantity-related changes.
Inertial Upper Stage (IUS) Rocket Booster	15%	263	Transfer of O&M funded activities to procurement, and revised sustaining efforts.
JSTARS Radar	a	0	Many changes that net to nearly zero.
JTIDS Information System	1%	11	Inflation offsets.
KC-135R Aircraft Modernization Program	-7%	-803	Program restructured and planned for termination in 1993.
LANTIRN Navigation & Targeting System	a	12	Increases in support requirements.
Navstar Global Positioning System (GPS):			
Air Force Satellite	a	-10	Many changes that net to a small decrease.
Tri-service User Equipment	12%	717	Increased support requirements, schedule stretch-out and revised estimates.
Peacekeeper Missile	3%	423	Corrections to prior report.
Peacekeeper Rail Garrison Equipment	-19%	-494	Program terminated.
Sensor Fuzed Weapon (SFW)	6%	212	Schedule stretch-out.
Small ICBM	-49%	-3,669	Program terminated
SRAM II Missile	-61%	-1,369	Program terminated.
Titan IV Missile	26%	4,712	Increases caused by a four-year stretch-out of the program.
Total Air Force Systems	2%	5,376	
Less weapons with changes of -10 percent or more	5%	11,219	
Less weapons with changes of ± 10 percent or more	5%	7,651	
DoD Systems:			
Strategic Defense System GPALS	-6%	-1,741	Program restructured as a result of the Missile Defense Act of 1991.
WWMCCS ADP Modernization (WAM)	-8%	-126	Reduced Army requirements.
Total DoD Systems	-6%	-1,867	
Grand Total	-1%	-6,098	
Less weapons with changes of -10 percent or more	3%	18,738	
Less weapons with changes of ± 10 percent or more	1%	8,368	

Note: Excludes systems that have classified estimates or were first included in the SARs in the past year.

1/ Major reasons for cost changes were either taken directly from the variance analysis sections in the SARs or represent our interpretation of the causes listed.

a. Less than one-half of one percent.

TABLE A–4. DECEMBER 1991 SELECTED ACQUISITION REPORT (SAR) REVIEW SUMMARY TABLE FOR SELECTED ARMY SYSTEMS

Aug–92

SYSTEM NAME	NUNN–McCURDY AMENDMENT UNIT COST CHANGES (PERCENT)		SCHEDULE PERFORMANCE		EFFECTS OF PRODUCTION RATE CHANGES			EXPECTED CONTRACT OVERRUNS			EXPECTED CONTRACT UNDERRUNS		
			DELIVERY STATUS										
	1992 PROCUREMENT	TOTAL PROGRAM	% AHEAD	% BEHIND	COSTS ($M)	SAVINGS ($M)	PERCENT OF DEC 90 ESTIMATE	NUMBER OF CONTRACTS	% OVER TARGET PRICES	TOTAL AMOUNT OF OVERRUN ($M)	NUMBER OF CONTRACTS	% UNDER TARGET PRICES	TOTAL AMOUNT OF UNDERRUN ($M)
Air Defense System Heavy (LOS–F–H)	j/	786%	---	---	---	---	---	---	---	---	---	---	---
Army Data Distribution System (ADDS)	a/	f/	---	---	---	70	3%	---	---	---	---	---	---
Adv. Fld Artlry Tact. Data Sys. (AFATDS)	---	–3%	---	---	---	7	1%	1	14%	11	---	---	---
AH–64 Helicopter	---	f/	---	---	---	---	---	---	---	---	---	---	---
All Source Analysis System (ASAS)	b/	b/	a/	a/	---	---	---	1	f/	1	---	---	---
Armored System Modernization (ASM)	g/	g/	a/	a/	---	---	---	1	21%	20	---	---	---
Army Tactical Missile System (ATACMS)	---	f/	1%	---	---	4	f/	1	12%	13	---	---	---
Avenger–Pedestal Mounted Stinger (LOS–F)	---	f/	10%	---	13	---	1%	---	---	---	---	---	---
BAT Anti–armor Submunition	b/	b/	---	---	32	---	---	---	---	---	---	---	---
Bradley Fighting Vehicle System (BFVS)	a/	f/	---	---	---	---	---	---	---	---	---	---	---
CH–47D Helicopter	---	–1%	---	f/	---	---	---	---	---	---	---	---	---
Comanche–Light Helicopter Program (LH)	g/	g/	a/	a/	---	---	---	---	---	---	1	6%	105
Combat Service Support Control System	a/	–1%	---	---	0	---	---	1	1%	1	---	---	---
Command, Control, and Intelligence								1	3%	5	---	---	---
FAAD C2	a/	–49%	---	---	---	---	---	k/	k/	k/	k/	k/	k/
Ground–based Radar	a/	–3%	---	---	14	---	2%	k/	k/	k/	k/	k/	k/
NCTR	a/	–46%	---	---	25	---	6%	k/	k/	k/	k/	k/	k/
Fiber Optic Guided Missile (NLOS)	j/	j/	---	---	---	---	---	1	46%	115	---	---	---
Family of Medium Tactical Vehicles (FMTV)	---	1%	---	---	259	---	2%	---	---	---	---	---	---
Javelin–Adv. Antitank Weapons Sys. (AAWSM)	a/	–1%	---	---	146	---	4%	---	---	---	---	---	---
JSTARS Ground Station Module	a/	2%	---	---	---	---	---	1	16%	14	---	---	---
AHIP Helicopter (OH–58)	---	–3%	---	---	---	---	---	---	---	---	---	---	---
Laser Hellfire Modular Missile System	---	–2%	5%	---	310	---	16%	1	30%	18	---	---	---
Longbow Apache (AAWWS)	a/	1%	---	---	---	---	---	---	---	---	---	---	---
Longbow Hellfire	a/	–1%	---	---	---	---	---	---	---	---	---	---	---
M1 Tank	---	f/	---	---	2	---	f/	1	44%	144	---	---	---
Maneuver Control System	a/	f/	---	---	17	---	2%	1	28%	16	---	---	---
Multiple Launch Rocket System (MLRS)	---	1%	1%	---	---	---	---	---	---	---	---	---	---
MLRS Terminal Guidance Warhead (TGW)	g/	g/	a/	a/	---	---	---	1	3%	11	---	---	---
Mobile Subscriber Equipment (MSE)	a/	f/	---	---	---	---	---	---	---	---	---	---	---
Patriot Missile	a/	3%	---	---	---	---	---	---	---	---	1	f/	24
Palletized Load System (PLS/FHTV)	---	–3%	---	---	---	---	---	---	---	---	---	---	---
Sense and Destroy Armor (SADARM)			---	---				2	43%	178	---	---	---
MLRS Rocket	a/	–1%	k/	k/	---	---	---	k/	k/	k/	k/	k/	k/
155 mm Projectile	a/	–3%	k/	k/	4	---	f/	k/	k/	k/	k/	k/	k/
SINCGARS Radio	---	–3%	3%	---	13	---	f/	---	---	---	---	---	---
Stinger RMP Missile	a/	1%	1%	---	---	---	---	---	---	---	---	---	---
Stingray Combat Protection System	a/	f/	---	---	---	---	---	---	---	---	---	---	---
TOW 2 Missile	---	–9%	4%	---	8	---	f/	---	---	---	---	---	---
UH–60A/L Helicopter	---	f/	---	2%	---	---	---	---	---	---	---	---	---

NOTES:
a/ Not applicable.
b/ Classified data.
c/ No Congressional data sheet.
d/ To be determined data.
e/ No contract has been awarded as of this date.
f/ Less than one–half of one percent (0.5%).
g/ Total program costs include only research and development effort.
h/ Data was not reported.
I/ Comparison not possible.
j/ Program was terminated.
k/ Contract and schedule data was provided at the program level.

TABLE A-5. DECEMBER 1991 SELECTED ACQUISITION REPORT (SAR) REVIEW SUMMARY TABLE FOR SELECTED NAVY SYSTEMS

Aug-92

SYSTEM NAME	NUNN-McCURDY AMENDMENT UNIT COST CHANGES (PERCENT)		SCHEDULE PERFORMANCE		EFFECTS OF PRODUCTION RATE CHANGES			EXPECTED CONTRACT OVERRUNS			EXPECTED CONTRACT UNDERRUNS		
			DELIVERY STATUS										
	1992 PROCUREMENT	TOTAL PROGRAM	% AHEAD	% BEHIND	COSTS ($M)	SAVINGS ($M)	PERCENT OF DEC 90 ESTIMATE	NUMBER OF CONTRACTS	% OVER TARGET PRICES	TOTAL AMOUNT OF OVERRUN ($M)	NUMBER OF CONTRACTS	% UNDER TARGET PRICES	TOTAL AMOUNT OF UNDERRUN ($M)
AMRAAM Missile	---	35%	---	---	---	---	---	---	---	---	---	---	---
Advanced Air-to-Air Missile (AAAM)	g/	g/	a/	a/	---	---	---	2	6%	18	---	---	---
Advanced Interdiction Weapon System	g/	g/	a/	a/	---	---	---	---	---	---	---	---	---
AN/BSY-1 Submarine Combat System	a/	a/	---	---	---	---	---	---	---	---	---	---	---
AN/SQQ-89 Surface Ship ASW Combat System	---	4%	3%	---	---	40	1%	---	---	---	---	---	---
AN/SQY-1 Surface Ship ASW Combat System	l/	l/	---	---	---	---	---	---	---	---	---	---	---
AOE-6 Fast Combat Support Ship	---	-2%	---	---	---	---	---	1	6%	60	---	---	---
Airborne Self-protection Jammer (ASPJ)	g/	g/	---	---	---	---	---	1	32%	81	---	---	---
AV-8B Aircraft	---	3%	2%	---	6	---	l/	---	---	---	---	---	---
C/MH-53E Helicopter	---	l/	---	---	---	---	---	---	---	---	---	---	---
CG 47 AEGIS Cruiser	a/	l/	---	---	---	---	---	4	3%	59	1	l/	l/
SH-60F Helicopter (CV Helo)	---	-7%	2%	---	---	---	---	---	---	---	---	---	---
CVN Aircraft Carriers:													
CVN-72/73 Carriers	a/	l/	---	---	---	---	---	1	3%	115	---	---	---
CVN-74/75 Carriers	a/	1%	---	---	---	---	---	1	6%	229	---	---	---
DDG 51 Destroyer	---	-3%	---	---	---	143	l/	6	20%	1,160	---	---	---
E-2C Aircraft	---	-2%	---	---	---	---	---	---	---	---	---	---	---
E-6A Aircraft	a/	4%	---	7%	---	---	---	---	---	---	---	---	---
EA-6B Aircraft	a/	1%	---	---	---	---	---	---	---	---	---	---	---
AN/UYS-2A(V) EMSP	---	---	---	---	---	---	---	---	---	---	---	---	---
F-14D Aircraft	a/	l/	---	---	---	---	---	---	---	---	---	---	---
F/A-18 C/D Aircraft	---	-24%	---	---	---	634	3%	---	---	---	1	4%	8
F/A-18 E/F Aircraft	---	---	a/	a/	---	---	---	---	---	---	---	---	---
Fixed Distributed System (FDS)	l/	104%	---	100%	---	---	---	2	13%	69	---	---	---
HARM Missile	l/	l/	---	---	75	---	1%	---	---	---	---	---	---
Harpoon Missile	a/	l/	0%	---	7	---	l/	---	---	---	---	---	---
LAMPS MK III System	---	-3%	---	---	---	---	---	---	---	---	---	---	---
Landing Craft Air Cushion (LCAC)	---	-1%	---	3%	---	---	---	1	1%	1	2	2%	3
LHD 1 Amphibious Assault Ship	a/	6%	---	---	---	---	---	4	6%	134	---	---	---
LSD 41 (Cargo Variant) Dock Landing Ship	a/	3%	---	---	---	---	---	3	11%	52	---	---	---
MCM 1 Mine Countermeasures Ship	a/	-1%	---	---	---	---	---	---	---	---	---	---	---
MHC 51 Coastal Minehunter Ship	---	---	---	---	---	---	---	6	12%	64	---	---	---
MK 48 ADCAP Torpedo	---	b/	6%	---	---	---	---	---	---	---	---	---	---
MK 50 Torpedo	---	b/	---	22%	---	703	9%	---	---	---	---	---	---
Phalanx CIWS System	-13%	-1%	---	---	3	---	l/	---	---	---	---	---	---
Phoenix Missile	a/	l/	---	5%	---	---	---	1	2%	4	---	---	---
Supersonic Low Altitude Target (SLAT)	a/	437%	l/	l/	---	0	l/	1	34%	68	---	---	---
SSN 21 Submarine/AN/BSY-2	a/	168%	---	---	---	---	---	6	15%	603	---	---	---
SSN 688 Submarine	a/	l/	---	---	---	---	---	6	15%	906	---	---	---
Standard Missile (SM-2 MR/ER)	---	9%	---	16%	---	411	4%	---	---	---	---	---	---
T-AGOS Ocean Surveillance Ship	---	---	---	---	---	---	---	2	31%	64	---	---	---
T-AO 187 Fleet Oiler	a/	6%	---	---	---	---	---	---	---	---	1	l/	1
T45TS Training Aircraft	---	8%	---	---	---	---	---	---	---	---	---	---	---
Tomahawk Missile	---	-3%	4%	---	---	---	---	---	---	---	---	---	---
Trident II Missile	l/	-1%	---	---	115	---	l/	3	2%	33	2	3%	20
Trident II Submarine	a/	l/	---	---	---	---	---	3	1%	55	---	---	---
Unmanned Aerial Vehicles (UAV)	---	---	---	---	---	---	---	1	8%	16	---	---	---
UHF Follow-on Communication Satellite	l/	-1%	---	---	---	---	---	---	---	---	---	---	---
V-22 Aircraft	a/	a/	---	33%	---	---	---	1	18%	409	---	---	---

NOTES: See Army or Air Force summary tables for note descriptions.

TABLE A–6. DECEMBER 1991 SELECTED ACQUISITION REPORT (SAR) REVIEW SUMMARY TABLE FOR SELECTED AIR FORCE SYSTEMS

Aug–92

SYSTEM NAME	NUNN–McCURDY AMENDMENT UNIT COST CHANGES (PERCENT)		SCHEDULE PERFORMANCE		EFFECTS OF PRODUCTION RATE CHANGES			EXPECTED CONTRACT OVERRUNS			EXPECTED CONTRACT UNDERRUNS		
			DELIVERY STATUS										
	1992 PROCUREMENT	TOTAL PROGRAM	% AHEAD	% BEHIND	COSTS ($M)	SAVINGS ($M)	PERCENT OF DEC 90 ESTIMATE	NUMBER OF CONTRACTS	% OVER TARGET PRICES	TOTAL AMOUNT OF OVERRUN ($M)	NUMBER OF CONTRACTS	% UNDER TARGET PRICES	TOTAL AMOUNT OF UNDERRUN ($M)
Advanced Cruise Missile (ACM)	---	19%	---	37%	---	---	---	3	11%	117	---	---	---
AMRAAM Missile	9%	4%	1%	---	293	---	2%	---	---	---	---	---	---
ATARS Tactical Air Reconnaissance System	a/	–1%	---	100%	---	---	---	---	---	---	---	---	---
AWACS Radar System Improvement Program	a/	2%	---	---	---	---	---	1	10%	25	---	---	---
B–1B Aircraft	a/	t/	---	---	---	359	1%	3	5%	1,001	2	3%	66
C–17A Aircraft	---	1%	---	---	305	---	1%	4	21%	1,809	---	---	---
Cheyenne Mountain Upgrade (CMU) Program	g/	g/	---	---	---	---	---	1	3%	5	1	13%	16
DMSP Satellite Program	---	13%	---	---	---	---	---	8	13%	86	---	---	---
Defense Support Program	a/	V	---	---	---	---	---	5	6%	147	1	1%	2
F–16 Aircraft	---	V	---	1%	---	---	---	2	2%	29	---	---	---
F–22 Advanced Tactical Fighter	a/	---	a/	a/	---	---	---	---	---	---	---	---	---
IR Maverick Missile	a/	–12%	---	---	0	---	---	---	---	---	---	---	---
Inertial Upper Stage (IUS) Rocket Booster	a/	23%	---	---	11	---	1%	1	2%	6	---	---	---
JSTARS Radar	a/	–2%	---	---	---	---	---	2	2%	23	---	---	---
JTIDS Information System	a/	a/	---	10%	---	---	---	---	---	---	---	---	---
KC–135R Aircraft Modernization Program	---	–18%	---	---	---	0	---	---	---	---	---	---	---
LANTIRN Navigation & Targeting System	a/	V	4%	---	---	---	---	1	11%	33	---	---	---
Navstar Global Positioning System (GPS):								3	10%	61	---	---	---
Air Force Satellite	–1%	–2%	---	---	---	---	---	k/	k/	k/	k/	k/	k/
Tri–service User Equipment	---	–20%	---	---	75	---	12%	k/	k/	k/	k/	k/	k/
Peacekeeper Missile	a/	t/	---	---	0	---	---	3	1%	11	---	---	---
Peacekeeper Rail Garrison Equipment	J/	J/	J/	J/	---	---	---	2	4%	24	1	3%	12
Sensor Fuzed Weapon (SFW)	---	37%	---	100%	255	---	6%	---	---	---	---	---	---
Small ICBM	J/	J/	J/	J/	---	---	---	---	---	---	---	---	---
SRAM Missile	J/	J/	J/	J/	---	---	---	---	---	---	---	---	---
Titan IV Missile	---	24%	---	---	980	---	6%	1	6%	609	---	---	---
WWMCCS ADP Modernization (WAM)	a/	a/	---	---	---	---	---	---	---	---	---	---	---

NOTES:
a/ Not applicable.
b/ Classified data.
c/ No Congressional data sheet.
d/ To be determined date.
e/ No contract has been awarded as of this date.
f/ Less than one–half of one percent (0.5%).
g/ Total program costs include only research and development effort.
h/ Data was not reported.
I/ Comparison not possible.
J/ Program was terminated.
k/ Contract and schedule data was provided at the program level.