

**SUMMARY EXPLANATIONS OF SIGNIFICANT SAR COST CHANGES
(As of December 31, 2001)**

ARMY:

ATACMS-BAT (Army Tactical Missile System-Brilliant Antitank) - Program costs increased \$720.2 million (+12.4%) from \$5,795.1 million to \$6,515.3 million, due primarily to revised BAT/BAT P3I cost estimates resulting from suspension of program operational testing (+\$362.3 million in RDT&E and +\$16.1 million in procurement), a quantity increase in the BAT end item of 1,406 submunitions from 14,781 to 16,187 (+\$89.6 million) and associated engineering, estimating, and schedule allocations* (+\$107.8 million), a quantity increase in the ATACMS Block II missiles of 111 from 1,130 to 1,241 (+\$98.0 million) and associated schedule and estimating allocations* (+\$41.9 million), and a stretchout of the annual procurement buy profile by one year (+\$98.5 million). These increases were partially offset by revised ATACMS Block II cost estimate as a result of the suspension of program operational testing (-\$51.7 million) and the application of revised escalation indices (-\$36.5 million).

Bradley Upgrade - Program costs increased \$386.0 million (+10.0%) from \$3,859.8 million to \$4,245.8 million, due primarily to a quantity increase of 111 vehicles from 926 to 1,037 (+\$318.6 million), changes to the program estimate based on actual contract awards (+\$21.9 million), and an increase in initial spares (\$+18.7 million) and other weapon system support requirements (+\$17.5 million).

CGS (Common Ground System) - Program costs decreased \$428.5 million (-35.0%) from \$1,225.6 million to \$797.1 million, due primarily to the transfer of funds, previously identified as belonging to CGS, that has been transferred to the Distributed Common Ground System (not recognized as part of the CGS program) (-\$38.2 million in RDT&E and -\$390.4 million in procurement).

CH-47F (Chinook) - Program costs increased \$3,632.4 million (+117.9%) from \$3,081.4 million to \$6,713.8 million, due primarily to increased Boeing Philadelphia labor and overhead rates (+\$580.3 million); "Over and Above" costs (+\$538.9 million), i.e., additional costs needed to bring the Chinook (CH-47D) up to the right contractual specification to commence the CH-47F modification effort; and Full Component Recapitalization costs (+\$1,014.9 million), i.e., where selected aircraft parts are "zero-timed" by installing a new CH-47D part (these parts are already on the CH-47D aircraft and are not part of the basic CH-47F modification effort). There were additional increases related to new training requirements and a change in force structure (+\$797.6 million). Lastly, the quantity of CH-47F modifications increased 37 helicopters from 302 to 339 helicopters (+\$325.3 million).

Javelin - Program costs increased \$399.9 million (+10.5%) from \$3,819.8 to \$4,219.7 million, due primarily to a quantity increase of 3,436 rounds from 22,415 to 25,851 rounds (+\$192.1 million), an increase of 357 Command Launch Units (CLUs) from 4,510 to 4,867 CLUs (+\$28.3 million), and associated schedule and estimating allocations* (+\$38.0 million). There were also

increases to reflect a change in the acquisition strategy for procuring rounds and CLUs (+\$139.0 million).

MCS (Maneuver Control System) - Program costs decreased \$239.5 million (-18.7%) from \$1,278.8 million to \$1,039.3 million, due primarily to a revised estimate reflecting the change in requirements from a 10-year reprocurement to a 5-year reprocurement (-\$537.5 million), a decrease in initial spares requirements based on a change in the sparing concept (-\$40.4 million), and the application of revised escalation indices (-\$36.0 million). These decreases are partially offset by an increase in quantity of 4,059 units from 5,665 to 9,724 units (+\$1,427.5 million) and associated schedule, engineering, and estimating allocations* (-\$1,069.3 million), and an increase in support due to additional requirements for fielding teams (+\$11.6 million).

MLRS Upgrade (Multiple Launch Rocket System) - Program costs increased \$7,506.9 million (+153.5%) from \$4,891.6 million to \$12,398.5 million, due primarily to a quantity increase of 77,856 rockets from 62,148 to 140,004 rockets (+\$3,140.7 million) and associated schedule and estimating allocations* (+\$849.9 million). There were also increases to reflect a new estimating methodology that uses actual data versus parametric analysis, annual procurements rather than multi-year, and increased contractor overhead rates (+\$3,810.7 million).

Patriot PAC-3 (Patriot Advanced Capability) - Program costs increased \$1,136.4 million (+10.7%) from \$10,669.4 million to \$11,805.8 million, due primarily to a quantity increase of 103 missiles from 1,056 to 1,159 missiles (+\$391.1 million) and associated schedule, engineering, and estimating allocations* (+\$143.2 million). Additional increases to the Missile segment included follow-on flight testing in FY03-04 (+\$82.5 million), a revised estimate of outyear inflation (+\$82.5 million), and an FY02 Congressional increase for missile procurement or initial production facilities (+\$60.0 million). There were also increases related to the Fire Unit modifications segment, e.g., additional funding for reliability, availability, and maintainability (RAM) modifications (+\$107.4 million), higher estimates for radar/classification discrimination (+\$99.1 million), and additional remote launch/communication enhancement upgrades (+\$77.8 million).

SMART-T (Secure Mobile Anti-Jam Reliable Terminal - Tactical) - Program costs increased \$116.2 million (+17.7%) from \$658.3 million to \$774.5 million, due primarily to a quantity increase of 107 terminals from 213 to 320 terminals (+\$91.7 million) and associated schedule, engineering, and estimating allocations* (-\$23.8 million).

NAVY:

DD(X) (formerly DD 21 Destroyer) - Development costs increased \$5,590.2 million (+107.1%) from \$5,219.5 million to \$10,809.7 million, due primarily to the addition of first ship construction funded by RDT&E funds (+\$2,549.0 million), added funding for engineering development models to support the DD(X) acquisition strategy (+\$1,250.0 million), the addition of funding in FY06-07 (+\$976.4 million), and a revised estimate for program costs beyond FY07 (+\$962.1 million). These increases were partially offset by miscellaneous program estimate adjustments (-\$31.2 million) and Congressional adjustments (-\$124.5 million).

DDG 51 Destroyer - Program costs increased \$10,219.1 million (+18.3%) from \$55,807.6 million to \$66,026.7 million, due primarily to the quantity increase of 6 ships from 58 to 64 ships (+\$5,853.5 million), post delivery and outfitting requirements for the 6 additional ships (+\$378.2 million), and revised estimates resulting from a change in the estimating assumptions with respect to the cost-quantity relationship for the 6 additional ships (+\$1,507.7 million). There were also increases for the addition of the Remote Minehunting System (+\$154.3 million); additional funds for previously unfunded requirements (+\$579.4 million); revised cost estimates for ship construction, Government Furnished Equipment (GFE), and outfitting and post delivery (+\$525.4 million); and the application of revised escalation rates (+\$433.2 million).

E-2C Reproduction - Program costs increased \$719.3 million (+22.5%) from \$3,193.2 million to \$3,912.5 million, due primarily to a quantity increase of 5 aircraft from 36 to 41 aircraft (+\$360.3 million) and associated schedule, engineering, and estimating allocations* (+\$12.5 million), additional funds to reprice and rephase the Cooperative Engagement Capability (CEC) (+\$25.6 million), and for parts obsolescence (+\$33.3 million). There were also increases for additional Contractor Furnished Equipment (CFE)/GFE for the new aircraft (+\$90.0 million), an increase in production support and initial spares for the five additional aircraft (+\$51.3 million), a revised estimate for initial spares unrelated to the quantity increase (+\$18.8 million), the addition of funds for a weapon systems trainer (+\$49.8 million), and additional funding for the development of E-2C improvements (+\$69.9 million).

F/A-18 E/F - Program costs increased \$1,965.4 million (+4.2%) from \$46,825.7 million to \$48,791.1 million, due primarily to a change in the procurement buy profile from a steady state production rate of 48 aircraft per year to a low of 42 to a maximum of 55 aircraft per year (+\$998.0 million), economic price adjustment increases (+\$402.7 million), Advanced Tactical Forward Looking Infrared cost growth (+\$142.2 million), increases for AESA costs transferred from CFE (+\$199.1 million), and an increase in support costs due to the change in the F/A-18E and F/A-18F squadron mix (+\$234.1 million).

JSOW (Joint Stand Off Weapon) - Program costs increased \$1,323.9 million (+23.0%) from \$5,749.3 million to \$7,073.2 million, due to a number of program adjustments including changes in contractor rates (projected savings not realized in the facility relocation) (+\$408.0 million), an increase of 1,154 missiles from 17,960 to 19,114 missiles (+\$241.5 million), incorporation of the Unitary BROACH warhead (+\$89.8 million). There were additional increases associated with the establishment of a more realistic production profile (+\$163.6 million), increased unit cost for BLU-108 enhancements (+\$132.4 million), and revisions to accommodate the Lost Cost Control Section (+\$119.4 million).

LPD 17 - Program costs increased \$6,603.1 million (+75.2%) from \$8,777.6 million to \$15,380.7 million, due primarily to a quantity increase of 4 ships from 8 to 12 ships (+\$3,606.0 million) and associated schedule and estimating allocations* (+\$733.9 million), a rescheduling of the FY03-04 ships to FY05-06 (+\$87.1 million), revised cost estimates for LPD 17-20 (+\$945.5 million), revised estimates for outfitting and post delivery associated with the quantity increase and the rescheduling of the FY03-09 ships (+\$352.5 million), and an increase to LPD 21-28 to reflect increased labor hours, labor rates material costs, etc. (+\$1,451.6 million). These increases

were partially offset by FY02 Congressional reductions (-\$266.3 million) and revised estimates for outfitting and post delivery for LPD 17-20 (-\$227.2 million).

MH-60R (Multi-Mission Helicopter) - Program costs increased \$3,765.5 million (+66.9%) from \$5,631.4 million to \$9,396.9 million, due primarily to a revised cost estimate based on changing from modifying existing helicopters to manufacturing new helicopters (+\$1,985.4 million). There were also schedule-related changes, to include four more years of production due to a decreased production rate (+\$505.0 million) and a quantity increase of 12 aircraft from 231 aircraft to 243 aircraft (+\$242.2 million).

MH-60S (Fleet Combat Support Helicopter) - Program costs increased \$826.0 million (+18.1%) from \$4,561.5 million to \$5,387.5 million, due primarily to labor and overhead rate increases, and an underestimation of hours to do this effort (+\$513.3 million). Also, there have been additional integration efforts to include Mission Kits for Airborne Mine Countermeasures (a new requirement), other modifications, and non-recurring engineering being added to the aircraft procurement funded accounts (+\$228.9 million).

SSN 774 (Virginia Class) - Program costs increased \$7,762.6 million (+11.8%) from \$65,677.5 million to \$73,440.1 million, due primarily to an updated estimate for program repricing (+\$5,442.9 million), additional prior year completion funds (FY02-06) (+\$1,051.5 million), additional funds for major shore spares (+\$432.7 million), a stretchout of the annual procurement buy profile (+\$345.1 million), and revised escalation indices (+\$178.3 million).

Tactical Tomahawk - Program costs increased \$291.7 million (+15.5%) from \$1,878.2 million to \$2,169.9 million, due primarily to a quantity increase of 373 missiles from 1,352 to 1,725 missiles (+\$243.8 million), and associated schedule and estimating allocations* (+\$16.9 million), and an increase in other weapon system support costs (+\$147.0 million). These increases were partially offset by revised escalation rates (-\$47.8 million), a revised program cost estimate (-\$49.9 million), and a decrease in peculiar support requirements (-\$44.9 million).

Trident II Missile - Program costs increased \$10,360.1 million (+38.1%) from \$27,183.8 million to \$37,543.9 million, due primarily to a quantity increase of 115 missiles from 453 to 568 missiles (+\$4,256.0 million) in conjunction with extending the service life of the TRIDENT submarine from 30 years to 44 years. There were additional increases for replacement of MK-6 guidance systems and missile electronics associated with the D-5 life extension (+\$3,999.1 million), a revised estimate for age-driven replacement of the MK-4 reentry body, and fuzing and firing systems (+\$361.1 million), additional production support for extending production to FY13 that is associated with the D-5 life extension (+\$748.8 million), and a revised estimate for test flight instrumentation hardware (+\$1,062.2 million).

USMC H-1 Upgrades - Program costs increased by \$2,523.7 million (+68.0%) from \$3,710.9 million to \$6,234.6 million, due primarily to an increase in development costs to accommodate changes in development and integrated flight test efforts (FY03-05) (+\$218.7 million) and to accommodate engineering, logistics, and flight test support commensurate with the revised program schedule (+\$130.5 million), a realignment of contract costs for delay in production start from FY02 to FY04 (+\$342.0 million), a change in estimating assumptions to reflect a more

realistic composite learning curve (+\$450.7 million), and an update of the materials cost estimate based on prototype actual costs (+\$461.6 million). There were additional increases related to revised estimates for airframe and engine repair and refurbishment and for Target Sight System (+\$210.2 million), an increase to reflect further refinements based on prototype actual costs (+\$177.3 million), an increase in initial spares requirements to meet current readiness objectives (+\$314.1 million), and an increase in other weapon system support costs that includes blade fold racks and ground handling wheels (+\$126.4 million).

V-22 - Program costs increased by \$9,023.0 million (+24.2%) from \$37,217.8 million to \$46,240.8 million, due primarily to increases to fully fund the restructured development efforts (+\$1,075.4 million), a production quantity increase of 19 aircraft from 437 to 456 aircraft (+\$1,089.2 million), a stretchout of the annual procurement buy profile (+\$850.0 million), revised estimates of the material curve/slopes (+\$1,813.3 million), revised estimates of the labor curve/rates (+\$2,837.1 million), and increases in initial spares, peculiar support, and other weapon system costs (+\$1,450.5 million).

AIR FORCE:

AEHF (Advanced Extremely High Frequency) Satellite - Development costs increased \$1,795.0 million (+75.2%) from \$2,385.9 million to \$4,180.9 million, due primarily to additional system requirements needed to fulfill warfighting requirements (+\$1,294.8 million), the addition of International Partner funding (+\$270.0 million), and a six month slip of satellites 1-3 launches and of Initial Operational Capability (+\$218.0 million). The cost increases were partially offset by the application of revised escalation indices (-\$104.1 million). As a result of the Defense Acquisition Executive (DAE) Milestone B approval, the program entered into the System Development and Demonstration (SDD) phase in October 2001, and \$1,380.4 million of procurement for 3 production satellites has been added to the SAR. Previously, the AEHF SAR was limited to development costs only (per 10 USC §2432). Since approval of the Milestone B acquisition strategy, the Deputy Secretary of Defense directed the Air Force to accelerate procurement of satellite 3 from FY06-07 to FY03-04 (+\$73.1 million).

C-17A - Program costs increased \$14,138.2 million (+31.5%) from \$44,860.1 million to \$58,998.3 million, due primarily to an increase of 46 aircraft from 134 to 180 aircraft (+\$5,810.3 million) and associated schedule, engineering, estimating, and other allocations* (+\$4,594.7 million). There were also increases for additional peculiar support related to the quantity change (+\$6,089.3 million). These increases were partially offset by reductions to reflect the C-17 follow-on buy efficient funding profile (-\$2,526.4 million).

C-130J - Program costs increased \$13,038.0 million (+495.1%) from \$2,633.2 million to \$15,671.2 million, due primarily to an increase of 136 aircraft from 32 to 168 aircraft (+\$12,163.5 million) and associated estimating allocations* (-\$1,129.4 million). There were additional increases for initial spares (+\$613.9 million) and logistical support, training, and training devices (+\$1,424.4 million) related to the quantity increase.

EELV (Evolved Expendable Launch Vehicle) - Program costs increased \$1,140.5 million (+6.6%) from \$17,244.6 million to \$18,385.1 million, due primarily to the addition of one Heavy

Lift Vehicle Demonstration Launch in the development program (\$+141.1 million), increases for launch services adjustments, to include commercial market price variations and payload weight growth (+\$957.0 million), programmatic adjustments to fully fund future launches (+\$121.7 million), and a revised estimate for required support services (+\$65.0 million). These increases were partially offset by the application of revised escalation rates (-\$204.5 million).

GBS (Global Broadcast Service) - Program costs increased \$131.4 million (+25.5%) from \$514.3 million to \$645.7 million, due primarily to including program procurement from FY04-07. Previous GBS SARs reflected procurement funding only through FY03. The Army quantity increased by 49 receive suites (RS) from 170 to 219 RS (+\$32.1 million); the Navy quantity increased by 75 RS from 93 to 168 RS (+\$43.1 million) with associated installation and integration costs from the Navy RS (+\$39.5 million); the Air Force quantity increased by 81 RS, from 41 to 122 RS (+\$16.5 million); and 103 RS from 136 to 239 RS were added for the Marine Corps (+\$20.2 million).

Global Hawk - Program costs increased \$1,351.1 million (+24.6%) from \$5,495.5 million to \$6,846.6 million, due primarily to additional requirements and capabilities approved for the Global Hawk program (+\$2,830.0 million), an extension of the engineering and manufacturing development (EMD) program from FY07-11 (+\$198.3 million). These increases were partially offset by a quantity reduction of 12 air vehicles from 63 to 51 air vehicles (-\$650.5 million) and an acceleration of the buy profile that deletes 9 years of the production program (-\$1,275.4 million).

JASSM (Joint Air-to-Surface Standoff Missile) - Program costs increased \$1,018.2 million (+48.5%) from \$2,101.4 million to \$3,119.6 million, due primarily to an increase of 1,300 production missiles from 2,400 to 3,700 missiles (+\$712.6 million). Cost increases also included the addition of Navy funds to integrate on the F/A-18 E/F (+\$97.0 million) and a revised program estimate at the low rate initial production (LRIP) decision (+\$115.3 million).

JDAM (Joint Direct Attack Munition) - Program costs increased \$1,239.0 million (+47.2%) from \$2,626.4 million to \$3,865.4 million, due primarily to an increase of 48,475 production kits from 87,496 to 135,971 kits (+\$1,149.2 million). Other cost increases included additional funding for new MK-82 (500 lb) variant (+\$80.0 million) and for new the Selective Availability Anti-Spoofing module (SAASM) and Anti-Jam development efforts (+\$51.4 million).

JPATS (Joint Primarily Aircraft Training System) - Program costs increased \$1,052.1 million (+26.5%) from \$3,974.6 million to \$5,026.7 million, due primarily to a quantity increase of 71 aircraft from 712 to 783 aircraft to reflect ORD III requirements (+\$380.0 million), a change in unit price and buy profile assumptions (+\$474.7 million), and an overall increase in Navy and Air Force support requirements (+\$238.7 million).

JSTARS (Joint Surveillance Target Attack Radar System) - Program costs increased by \$1,030.9 million (+12.0%) from \$8,597.1 million to \$9,628.0 million, due primarily to a quantity increase of 2 aircraft from 16 to 18 aircraft (+\$507.6 million) and associated engineering and estimating allocations* (-\$29.0 million). There were additional cost increases related to a baseline extension for Link 16, miscellaneous test efforts, and other engineering developments (+\$197.8 million); the addition of funding for Single Lab configuration and other development plus-ups (+\$61.0

million); a revised estimate for initial spares primarily due to funding received for long lead, logistics support, fuel tank modifications, and initial spares (+\$107.0 million); and an increase in support due to reprogramming of funds for satellite communications, new funding for the Computer Replacement Program, and modifications to the fuel tanks (+\$196.0 million).

NAS (National Airspace System) - Program costs increased \$111.1 million (+11.1%) from \$1,001.6 million to \$1,112.7 million, due primarily to a refinement of the Navy estimate based on buy profile and site specific configuration changes (+\$57.9 million), and refinement of the Air Force estimate, also based on buy profile and configuration changes (+ \$64.1 million).

SBIRS (Space Based Infrared System) High - Program costs increased by \$2,695.6 million (+66.6%) from \$4,047.9 million to \$6,743.5 million, due primarily to the addition of funds for Combined Test Force requirements (+\$52.8 million) and for Block II redesign (+\$473.3 million), for engineering and manufacturing development (EMD) cost growth (+\$344.7 million), and for EMD contract extension (+\$1,535.9 million). Costs also increased due to additional procurement funds needed for EMD cost growth (+\$105.0 million), additional funds required for O&M costs for FY06-08 (+\$53.1 million), the refinement of estimate for Relay Ground Station, Mission Control Station Backup (MCSB) activation costs and other costs (+\$34.1 million), the addition of MCSB Contract Logistics Support O&M funding (+\$47.1 million) and O&M costs for FY09 (+\$43.6 million).

DoD:

CHEM DEMIL (Chemical Demilitarization) - Program costs increased \$10,518.4 million (+79.8%) from \$13,183.6 million to \$23,702.0 million, due primarily to a revised estimate to demilitarize the Chemical Stockpile Program. The most significant cost drivers in the revision were (1) revised processing rates based on operational experience at the Johnston Island and Tooele facilities, (2) schedule extensions for disposal operations, (3) new/emerging environmental regulations, (4) worse-than-expected condition of the stockpile, (5) increase in equipment, labor rates, and construction costs, and (6) higher emergency preparedness costs.

JSF (Joint Strike Fighter) -Development costs increased \$7,904.2 million (+3.6%) from \$218,554.1 million to \$226,458.3 million, due primarily to delay of the System Development and Demonstration (SDD) decision, extension of the SDD phase from a 90-month to 126-month effort employing a block approach, a refined cost estimating model with a more detailed work breakdown structure, and addition of two flight test aircraft to the program. As a result of the Defense Acquisition Executive (DAE) Milestone B approval, the program entered into the SDD phase in October 2001, and \$196,600.0 million of procurement for 2,866 production aircraft has been added to the SAR. Previously, the JSF SAR was limited to development costs only (per 10 USC §2432).

** Note: Quantity changes are estimated based on the original SAR baseline cost-quantity relationship. Cost changes since the original baseline are separately categorized as schedule, engineering, or estimating "allocations." The total impact of a quantity change is the identified "quantity" change plus all associated "allocations."*