



# ***Cost Growth & Acquisition Reform***

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**Dr. Nancy L. Spruill, OUSD(AT&L)**

**May 2009**



# Staggering Overruns?

## The Washington Post

**March 31, 2009:** Development costs for the Pentagon's major weapons systems soared last year, helping drive overruns that are "staggering," the Government Accountability Office said in a report released yesterday. Overall, the cost overruns associated with the military's major weapons ... total near \$300 billion, and the average program delay has stretched from 21 to 22 months,"

The figures reflect a weapons development and procurement system that is woefully broken... "Pentagon planners don't do a good enough job of analyzing those requirements to understand whether they have the technologies and designs to build to them," GAO analyst Michael J. Sullivan said.



## *Or... Sensationalism?*

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The new GAO report continues to sensationalize the assessed cost growth of \$296 billion on 96 programs. This number has been cited by many people as a condemnation of the defense procurement process. I have analyzed the components of this GAO number, and I would suggest that the number is misleading, out-of-date, and largely irrelevant to the current management of DoD programs.

--Mr. John J. Young, former USD(AT&L)

***The Math Matters....***



# GAO Methodology

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- **GAO defines cost growth as the change in total program acquisition costs from the original estimate to the current estimate**
  
- **GAO publishes an annual report focused on cost growth**
  - Summarizes 96 acquisition programs
  - Stated a \$296B cost growth for the FY08 portfolio, down from \$301B in FY07
  
- **The fine print....**
  - 1) Procurement of additional quantities and/or required capability counts as “bad”;
  - 2) Differing “portfolios” compared on an annual basis;
  - 3) Pre-Milestone B estimates used (i.e, before the program defined);
  - 4) Poor early performers can never recover, even if they have been performing well for many years;
  - 5) Acquisition painted with broad brush as though all programs are broken.



# ***Our Interpretation***

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- **Procurement of additional quantities and/or required capability is not cost “growth”**
  - Quantity and capability enhancements due to mission requirements should not be chargeable to cost growth.
  - AT&L estimates capability enhancements alone account for \$96B of total
- **Portfolio cost growth cannot be compared on an annual basis**
  - Analysis is grounded in dissimilar comparison of programs.
  - 59 programs moved into or out of the portfolio between 2003 and 2008.
- **Pre-Milestone B estimates should not be used**
  - Pre-Milestone B estimates are incomplete and are not a reliable estimate
  - AT&L methodology uses the more reliable Milestone B estimate
  - This alone yields total cost growth of \$278B as opposed to \$296B.



# *Our Interpretation*

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- **Past sins never forgiven (...some remorse is useful though)**
  - Original estimates are done many years ahead of actual production and can be greatly outdated. Examples are JSF, FCS, V-22, and C-17.
  - Twelve of the current programs are 15 years or older; 41 of the programs had a MS B before 2001 (Oldest: Trident II Missile July 1987)
  - Example: JSF and FCS programs are planned to be in the portfolio until 2034 and 2030, respectively. By GAO methodology, they will keep a \$78B cost growth mark even if they have no cost growth for the next 25 years!
  - Portfolio cost growth over last 5 years is \$176B
- **Sinners and saints**
  - The top eight highest cost growth programs account for about 80% of the total cost growth.
  - DDG 51, FCS, and JSF alone account for more than 45% of total
  - 29 Programs have zero or negative cost growth



# ***More Meaningful Metrics Needed***

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- **AT&L proposed new set of metrics to more fairly represent weapon system cost growth**
  - Performance Analysis: Total cost growth over a period of time
  - Trend Analysis: Average yearly cost growth over a period of time
- **GAO, OMB and OSD(AT&L) worked together to develop new metrics to measure acquisition cost growth**
  - Continue to measure cost growth from Original Estimate
  - Fair, transparent, and fact based (unbiased) metrics meant to provide total visibility
- **GAO and AT&L agreed to conduct a pilot study using new metrics**



# Top 10 Cost Growth Programs

Top 10 Programs	First Original Estimate Date	Cost Growth - GAO Method	Cost Growth - 2002 - 2007
DDG 51 Destroyer	Feb-88	48	-1
Future Combat System (FCS)	May-03	39	39
F-35 / Joint Strike Fighter	Oct-01	38	56
V-22 Joint Services Advanced Vertical Lift Aircraft	Feb-88	24	3
C-17 Globemaster III	Dec-88	23	0
Virginia Class Submarine (SSN 774)	Jun-95	23	-1
C-130J Hercules	Oct-96	11	-4
Family of Medium Tactical Vehicles	Oct-88	10	1
CH-47F Improved Cargo Helicopter (ICH)	May-98	9	5
Stryker Family of Vehicles	Nov-00	8	8
<b>Total</b>		<b>238</b>	<b>108</b>

All data in \$B, FY09





# What's Happened Lately?

## Total Portfolio Growth Last 5 Years

Program	Estimate SAR 2002 or Later	Estimate SAR 2007	Cost Growth 2002-2007	Program	Estimate SAR 2002 or Later	Estimate SAR 2007	Cost Growth 2002-2007	
1 JSF	188.3	244.8	56.5	48 Light Utility Helicopter	1.7	1.9	0.2	
2 FCS	89.8	129.7	40.0	49 AIM-9X	3.1	3.3	0.2	
3 CVN 21	3.5	29.9	26.5	50 SSGN	4.4	4.5	0.1	
4 DDG 1000	11.4	27.6	16.2	51 Cobra Judy Replacement	1.6	1.7	0.1	
5 Stryker	8.0	16.1	8.1	52 AGM-88E AARGM	1.5	1.6	0.1	
6 BLACK HAWK Upgrade	13.2	20.8	7.6	53 VH-71	6.5	6.6	0.1	
7 BFVS A3 Upgrade	3.3	10.1	6.8	54 RMS	1.4	1.5	0.1	
8 Chem Det							0.6	0.1
9 CH-47F							1.4	0.0
10 NPOESS							16.0	0.0
11 LONGBO							0.9	0.0
12 AMRAAM							3.5	0.0
13 Global Ha							0.4	0.0
14 V-22 OSP							3.9	0.0
15 EFV							3.6	0.0
16 Chem Det							1.6	0.0
17 SBIRS Hi							0.7	0.0
18 AEHF							1.2	-0.1
19 ARH							6.4	-0.1
20 FMTV							10.1	-0.1
21 H-1 Upgra							8.6	-0.1
22 JASSM							2.8	-0.1
23 MH-60R							16.6	-0.1
24 MH-60S							1.6	-0.2
25 E-2D AHE							5.3	-0.2
26 JSOW Un							6.8	-0.2
27 TACTICAL TOMAHAWK AUR	3.2	4.5	1.3	74 CEC	5.1	4.9	-0.2	
28 JTRS NED	0.9	2.0	1.1	75 SDB	1.8	1.5	-0.3	
29 ATIRCM/CMWS	3.8	4.8	1.1	76 P-8A MMA	30.0	29.6	-0.4	
30 Javelin	4.9	5.8	0.9	77 MP-R TIP	1.7	1.3	-0.4	
31 Navstar GPS User Equipment	1.3	2.1	0.9	78 VTUAV	2.5	2.0	-0.5	
32 C-17A	72.7	73.6	0.9	79 JDAM	6.4	5.8	-0.7	
33 C-130 AMP	4.7	5.4	0.8	80 PATRIOT/MEADS CAP Fire Unit	18.7	17.9	-0.8	
34 FBCB2	2.8	3.5	0.7	81 ADS Increment Alpha	1.5	0.6	-0.9	
35 T-AKE	4.8	5.5	0.7	82 PATRIOT PAC-3 Missile Segment	10.7	9.8	-0.9	
36 TRIDENT II MISSILE	48.9	49.6	0.7	83 VIRGINIA CLASS SUB	82.8	81.6	-1.3	
37 AB3	7.0	7.6	0.6	84 DDG 51	77.5	75.9	-1.7	
38 MIDS	2.0	2.6	0.6	85 JSOW Baseline/BLU-108	4.0	2.2	-1.8	
39 C-5 AMP	0.9	1.5	0.5	86 HIMARS	4.2	2.1	-2.1	
40 T-45TS	8.1	8.6	0.5	87 Excalibur	4.6	2.3	-2.3	
41 Navstar GPS Space & Control	6.7	7.1	0.5	88 LPD 17	16.8	14.4	-2.4	
42 CVN 68	6.4	6.8	0.4	89 MRAP	26.7	22.5	-4.2	
43 WGS	1.7	2.1	0.4	90 C-130J	17.1	12.3	-4.8	
44 Minuteman III PRP	2.6	2.9	0.3	91 F/A-18E/F	57.0	51.8	-5.2	
45 JLENS	6.4	6.7	0.3	92 GMLRS	11.2	5.4	-5.8	
46 JPATS	5.5	5.7	0.2	93 JTRS HMS	9.7	3.0	-6.7	
47 LHA Replacement	3.1	3.3	0.2	94 F-22 Raptor	82.2	73.7	-8.5	
				<b>Total</b>				
				<b>1,316.0    1,491.9    176.0</b>				

### Portfolio Growth (\$B)

	Estimate SAR 2002 or Later	Estimate SAR 2007	Cost Growth 2002-2007
<b>Total</b>	<b>1,316</b>	<b>1,491</b>	<b>176</b>



# Mandate for Reform



**THE WHITE HOUSE**  
Office of the Press Secretary

For Immediate Release      March 4, 2009

**Memorandum for the Heads of Executive Departments and Agencies**

**Subject: Government Contracting**

**The Federal Government has an overriding obligation to American taxpayers. It should perform its functions efficiently and effectively while ensuring that its actions result in the best value for the taxpayers...**

**I further direct the Director of OMB, in collaboration with the aforementioned officials and councils, and with input from the public, to develop and issue by September 30, 2009, Government-wide guidance to...**

*"I reject the false choice between securing this nation and wasting billions of taxpayer dollars .... I recognize the real choice between investments that are designed to keep the American people safe and those that are designed to make a defense contractor rich.*

*"...GAO looked into 95 major defense projects and found cost overruns that totaled \$295 billion. Let me repeat: That's \$295 billion in wasteful spending. And this wasteful spending has many sources. It comes from investments and unproven technologies. It comes from a lack of oversight. It comes from influence peddling and indefensible no-bid contracts that have cost American taxpayers billions of dollars."*

**BARACK OBAMA**



## ***Mandate for Reform. . .***

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*The perennial procurement and contracting cycle – going back many decades – of adding layer upon layer of cost and complexity onto fewer and fewer platforms that take longer and longer to build must come to an end. There is broad agreement on the need for acquisition and contracting reform in the Department of Defense. There have been enough studies. Enough hand-wringing. Enough rhetoric. Now is the time for action.”*



***Robert Gates, Secretary of Defense,***

***Defense Budget Recommendation Statement, April 6, 2009***



# Acquisition Reform Initiatives

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## DEPARTMENT POSITION

- *We get it. A lot's been done.*

## Hill Position. . .

- **S. 454**, Weapon Systems Acquisition Reform Act of 2009 (Levin-McCain)
- **H.R. 2010**, Weapons Acquisition System Reform Through Enhancing Technical Knowledge and Oversight Act of 2009 (Skelton-McHugh)

## WAY AHEAD. . .

- *Three pronged approach:*
  - Acquisition Workforce Reform
  - Tactical Acquisition Reform
  - Strategic Acquisition Reform



# ***Work Force Reform***

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## ***Ongoing Initiatives:***

- **Increasing number of acquisition personnel by 20,000 (~15%) positions over 2010-2015 FYDP**
  - 9,000 new civilian hires
  - 11, 000 conversions from contractor to federal civilian positions
  
- **Improve Training and Human Capital Planning**
  
- **Reinvigorate and Raise Certification Standards**



# ***Tactical Acquisition Reform***

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## **Building Strong Program Foundations for More Predictable Outcomes:**

***The Department's recently revised acquisition policy (DoD Instruction 5000.02) emphasizes building strong program foundations.***

***– Starting Programs Right***

- Identifying Critical Warfighter Needs & Maintaining Requirements Stability
- Emphasizing Cost Realism & Improving Cost Estimating

***– Executing Programs Properly***

- Integrating Test and Evaluation
- Disciplining Systems Engineering
- Integrating Life Cycle Management Principles
- Improving Dialogue with Industry & Tying Profit to Performance

***– Improving Program Management & Oversight***

- Conducting More Frequent Program Reviews to Assess Progress
- Using Information to Manage Programs Effectively
- Empowering Program Managers
- Improving Acquisition of Services Management

***– Delivering Timely Solutions***



# ***Strategic Acquisition Reform***

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## **Aligning Strategy, Budget, and Governance:**

- ***ACTIONS NEEDED:***

- Align Investment Priorities to Strategic Priorities
- Balance Existing and Future Investments to Provide the Right Mix Capabilities at the Right Time
- Assign Responsibility for Fulfillment of Capability Gaps
- Establish a Fixed/Stable Investment Budget
- Create Integrated and Effective Governance



***Back up***





# Acquisition Reform

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- **DoD understands cost growth is an area of concern and is working to put processes in place to adhere to these fundamental principles**
- **Key elements that drive successful programs are funding and requirements stability, and greater technology maturity**
  - DoD policy requires configuration steering boards for all major programs
  - DoD is conducting early milestone reviews, using competitive prototyping, and increasing technology readiness levels for new programs.
  - DoD is strengthening personnel initiatives, to include tenure agreements with program managers and developing plans to improve and grow the workforce
- **Continue to update laws and policies governing acquisition process**
  - In 2007 Congress passed legislation requiring a Certification for Pre-MDAPs at MS A
  - Skelton/McHugh Legislation and Levin/McCain Legislation



# Example Program: V-22

	Basic Data				FY09 Conversion				Performance Analysis			Trend Analysis		
	Original APB	5 Year Prior Dec SAR	Prior Dec SAR	Current Dec SAR	Original APB	5 Year Prior Dec SAR	Prior Dec SAR	Current Dec SAR	%Change from Original APB	%Change from 5 year Prior Dec SAR	%Change from Prior Dec SAR	Average Yearly Change from Original APB	Average Yearly Change from 5 year prior Dec SAR	Average Yearly Change from Prior Dec SAR
Component:Navy														
Program: V-22														
Subprogram:														
Base Year \$M:	1986	1986	2005	2005	2009	2009	2009	2009						
Reporting Year:	Dec-88	Dec-02	Dec-06	Dec-07										
<b>Total Acquisition Cost (BY\$M)</b>	18,518.8	31,233.2	50,610.5	50,472.8	30,546.0	52,017.7	54,997.6	54,781.8	79.3%	5.3%	-0.4%	3.1%	1.0%	-0.4%
RDT&E	2,471.4	7,168.5	11,526.9	11,508.2	4,233.3	12,279.0	12,621.2	12,600.7	197.7%	2.6%	-0.2%	5.9%	0.5%	-0.2%
Procurement	15,911.3	24,030.0	38,893.1	38,713.8	26,312.7	39,738.7	42,376.4	42,181.1	60.3%	6.1%	-0.5%	2.5%	1.2%	-0.5%
MILCON	136.1	34.7	190.5	250.8	233.6	59.6	207.5	273.2	16.9%	358.6%	31.7%	0.8%	35.6%	31.7%
O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Procurement Quantity	682	456	456	456	682	456	456	456	-33.1%	0.0%	0.0%	-2.1%	0.0%	0.0%
Total Quantity	682	458	458	458	682	458	458	458	-32.8%	0.0%	0.0%	-2.1%	0.0%	0.0%
Program Acquisition Unit Cost (\$M)	27.2	68.2	110.5	110.2	45.1	113.7	120.5	120.2	166.3%	5.7%	-0.3%	5.3%	1.1%	-0.3%
Average Procurement Unit Cost	23.3	52.7	85.3	84.9	38.6	87.1	92.9	92.5	139.8%	6.1%	-0.5%	4.7%	1.2%	-0.5%
<b>Schedule</b>														
Initial Operating Test & Evaluation		Jun-06	Jun-06	Jun-08										
Initial Operating Capability	May-92	Sep-04	Jun-07	Jun-07										
Milestone B	Jun-05	Apr-86	Apr-86	Apr-86										
Milestone C	Dec-89	Oct-05	Oct-05	Oct-05										

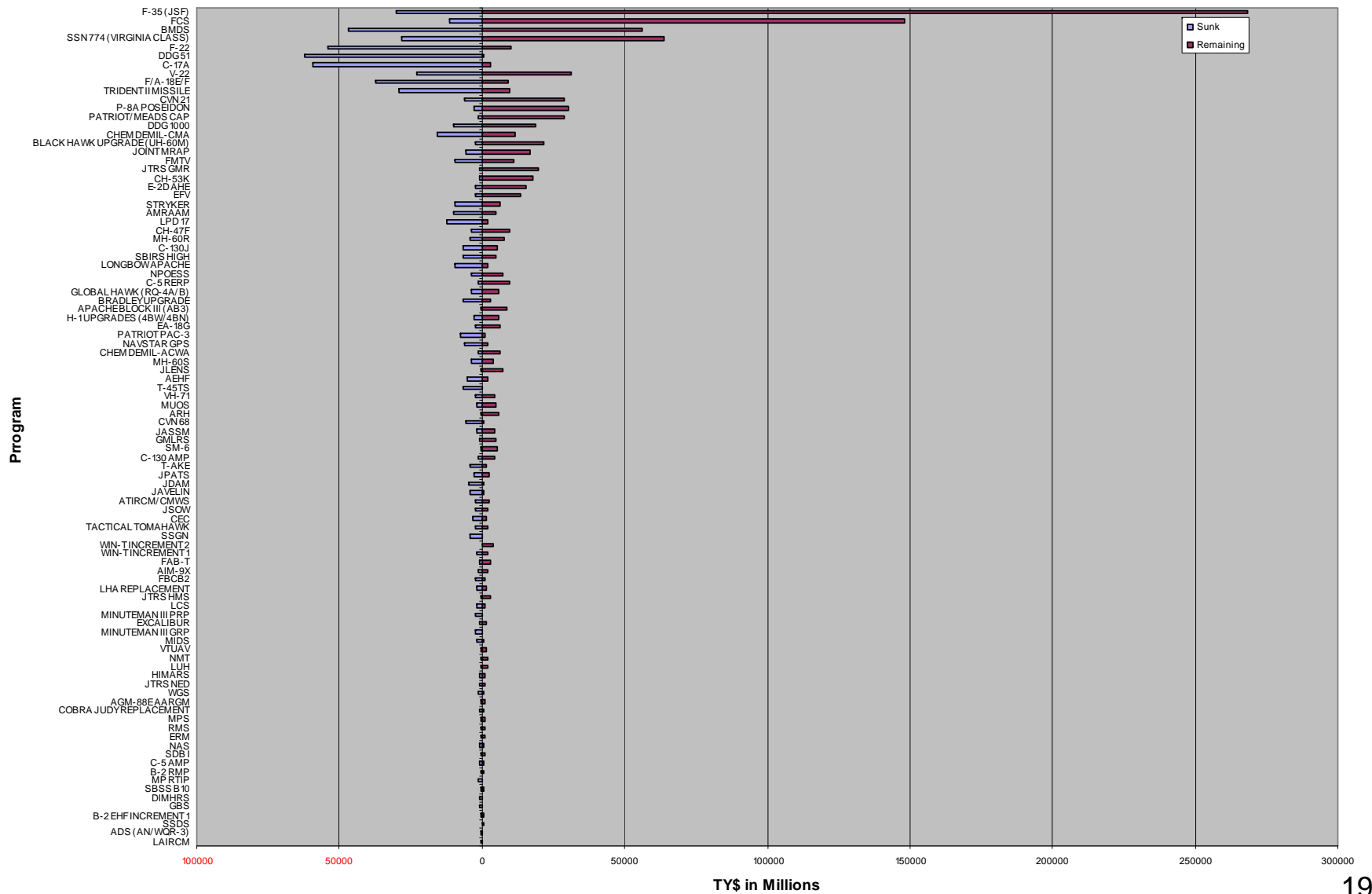
Only metrics reported by GAO

- Total Acquisition Performance Cost Analysis:
  - Pass: < 2% increase for total cost % change from prior year comparison
  - Pass: <10% increase for total cost % change from 5-year comparison
  - Fail: >15% increase for total cost % change from first original baseline
- Average yearly change in Total Acquisition Cost:
  - Pass: Improved from prior year comparison
  - Pass: Improved from 5 year comparison
- Notes: January 2006 Re-Baseline



# Tornado Chart

Program Acquisition Sunk vs. Remaining Cost





# Older Acquisition Programs

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<b>Program</b>	<b>First Original Estimate Date</b>
Trident II (D-5) Missile UGM 133A	Jul-87
DDG 51 Destroyer	Feb-88
V-22 Joint Services Advanced Vertical Lift Aircraft	Feb-88
Family of Medium Tactical Vehicles	Oct-88
C-17 Globemaster III	Dec-88
AIM-120 Advanced Medium Range Air-to-Air Missile (AMRAAM)	Dec-88
Advanced Anti-Tank Weapon System - Medium	Jun-89
F-22A Raptor	Feb-92
Joint Standoff Weapon (JSOW) Baseline/BLU-108	Jun-92
F/A-18E/F Super Hornet	Jun-92
CVN-68 Class/Carrier Replacement Program	Jun-93
Minuteman III Guidance Replacement Program (GRP)	Aug-93



# ***National Security Acquisition Agenda for the New Administration***

**Dr. Nancy L. Spruill  
Director, Acquisition Resources &  
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# *Outline*

- **Weapon System Acquisition Cost Growth**
- **Acquisition Reform**
  - **Acquisition Work Force Reform**
  - **Tactical Acquisition Reform**
  - **Strategic Acquisition Reform**



# ***BACK-UP***

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# ***Work Force Reform Initiatives***

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## **Managing Programs with a Robust, Qualified, Agile and Ethical Workforce:**

- **Smartly Grow the Acquisition Workforce**
  - Increase the contracting & oversight workforce, including DCAA.
  - Enhance pricing and program-estimating capability.
- **Balance Government and Contractor Support**
  - Grow organic capability while downsizing the contractor support workforce.
- **Target Training and Human Capital Planning**
  - Complete an enterprise-wide competency assessment of the acquisition workforce.
  - Identify gaps and improve both training and human capital planning.
- **Reinvigorate and Raise Certification Standards**
  - Update certification programs and raise applicable standards.
  - Reward valued employees through structured recognition and incentive programs.
- **Formalize Requirements Manager Certification**
  - Includes several requirements-manager training courses.
  - Ensure that requirements managers understand their role throughout the acquisition cycle, including controlling requirements “creep.”





# ***Tactical Acquisition Reform Initiatives***

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## **Establishing a Firm Foundation for More Predictable Outcomes:**

- **Starting Programs Right**

- Instituted a Materiel Development Decision (MDD) review
- Instituting a requirement for competitive prototyping at either a key sub-system or full system level to demonstrate technology maturity.

- **Targeting Solutions Defined by the Joint Warfighter**

- JROC is experimenting with the delegation of Joint Capabilities Board (JCB) authority to appropriate functional combatant commands.
- Coordination with Combatant Commands required for all Joint requirements documents that support milestone decisions.

- **Identifying the Critical Needs of the Warfighter**

- JROC approves all capabilities documents for major defense acquisition programs and a significant percentage of the capabilities in the enabling portfolios. of battlespace awareness, net-centric, command and control, and logistics.

- **Emphasizing Cost Realism**

- Using Congressionally-mandated certifications before MS A and MS B to improve realistic cost estimating based on capability need and priority.
- Developing cost accounting systems for capital equipment that can provide information.



# ***Tactical Acquisition Reform Initiatives***

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## **Establishing a Firm Foundation for More Predictable Outcomes:**

- **Integrating Test and Evaluation**

- Implemented new policies designed to improve the integration of developmental and operational testing throughout the system lifecycle.
- Improving the complementary relationship between developmental and operational testing, eliminate costly redundancy, and ensure that test results are a key element of the knowledge-base that informs management decisions.

- **Disciplining Systems Engineering**

- Systems Engineering Plan (SEP) is required to guide each phase of the development process.
- SEPs are independently reviewed at the executive level and incorporate event-driven technical reviews to ensure that program progress is carefully monitored consistent with sound engineering business practice.

- **Integrating Life Cycle Management (LCM) Principles**

- Incorporation of LCM considerations early in the design and development of weapon systems to ensure readiness and lower operations and support costs.
- Implemented a mandatory KPP of Material Availability in the acquisition processes.

- **Improving Dialogue with Industry**

- Increased emphasis on prototyping before program initiation will result in a more effective dialogue with industry that will improve their understanding of our needs and our understanding of their capabilities.



# ***Tactical Acquisition Reform Initiatives***

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## **Establishing a Firm Foundation for More Predictable Outcomes:**

- **Maintaining Requirements Stability**
  - Established Configuration Steering Boards in each DoD component to review all requirements changes and any significant technical configuration changes.
- **Tying Profit to Performance**
  - Moving away from Time and Materiel and award fee contracting and instead is emphasizing the use of objective incentives tied to delivered performance, be it technical, schedule or cost.
- **Conducting More Frequent Program Reviews to Assess Progress**
  - Preliminary Design Review and Critical Design Review have been identified as additional acquisition process decision points to provide acquisition decision authorities the opportunity to assess progress and direct remedial action when required.
- **Using Information to Manage Programs Effectively**
  - Effort underway to systematically address and revamp where necessary the EVM system



# ***Tactical Acquisition Reform Initiatives***

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## **Establishing a Firm Foundation for More Predictable Outcomes:**

- **Empowering Program Managers**

- Efforts underway include Tenure Agreements and Qualifications for Program Managers, Program Management Agreements (PMA), emphasis on professional civilian program manager development, use of program manager forums, and enhanced recruitment/retention and monetary/non-monetary rewards.

- **Establishing Flexible and Rapid Response Teams to Resolve Tough Issues.**

- Joint Analysis Teams set up to proactively engage all stakeholders and drive decisions that deliver resilient, joint, strategic capability at the lowest possible cost.

- **Improving Acquisition of Services Management**

- DoD has issued new policy designed to ensure comprehensive oversight and effective planning, contracting and execution for acquisition of services.

- **Delivering Timely Solutions**

- Changes have been instituted within the JCIDS Instruction that more clearly define the scope of Capability-Based Assessments and ensure they remain focused and streamlined to help quickly and clearly define the Capability gap.



# ***Strategic Acquisition Reform Initiatives***

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## **Aligning Strategy, Budget, and Governance:**

- **Align Investment Priorities to Strategic Priorities**

- To properly align strategy to investment, the National Defense Strategy needs to include a top-down investment strategy. Funding top-lines, should drive what resources the Department will make available for the development of new systems.

- **Balance Existing and Future Investments to Provide the Right Mix Capabilities at the Right Time**

- Requires a strategy that defines which desired strategic objective capabilities and an understanding of resource constraints to effectively identify risks and trades and produce an executable and stable investment plan.

- **Assign Responsibility for Fulfillment of Capability Gaps**

- During the 2006 Quadrennial Defense Review (QDR), the Department designed a concept—joint task assignment—intended to clearly establish responsibility for emerging tasks - operational and force development and identify the resources to support those tasks up-front before resources were executed.



# ***Strategic Acquisition Reform Initiatives***

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## **Aligning Strategy, Budget, and Governance (continued):**

- **Establish a Fixed/Stable Investment Budget**
  - Department must commit to stabilizing investment funding by realistically pricing programs, fully funding them up front and maintaining that level of funding throughout by enforcing established investment priorities and strategic guidance.
  
- **Create Integrated and Effective Governance**
  - DoD has overlapping governance processes for resource allocation, acquisition and requirements development. There is a need for clear delineation of roles and/or merging of roles to ensure these governance bodies work in concert in executing the established investment strategy.