GAO
Accountability * Integrity * Reliability

U.S. General Accounting Office

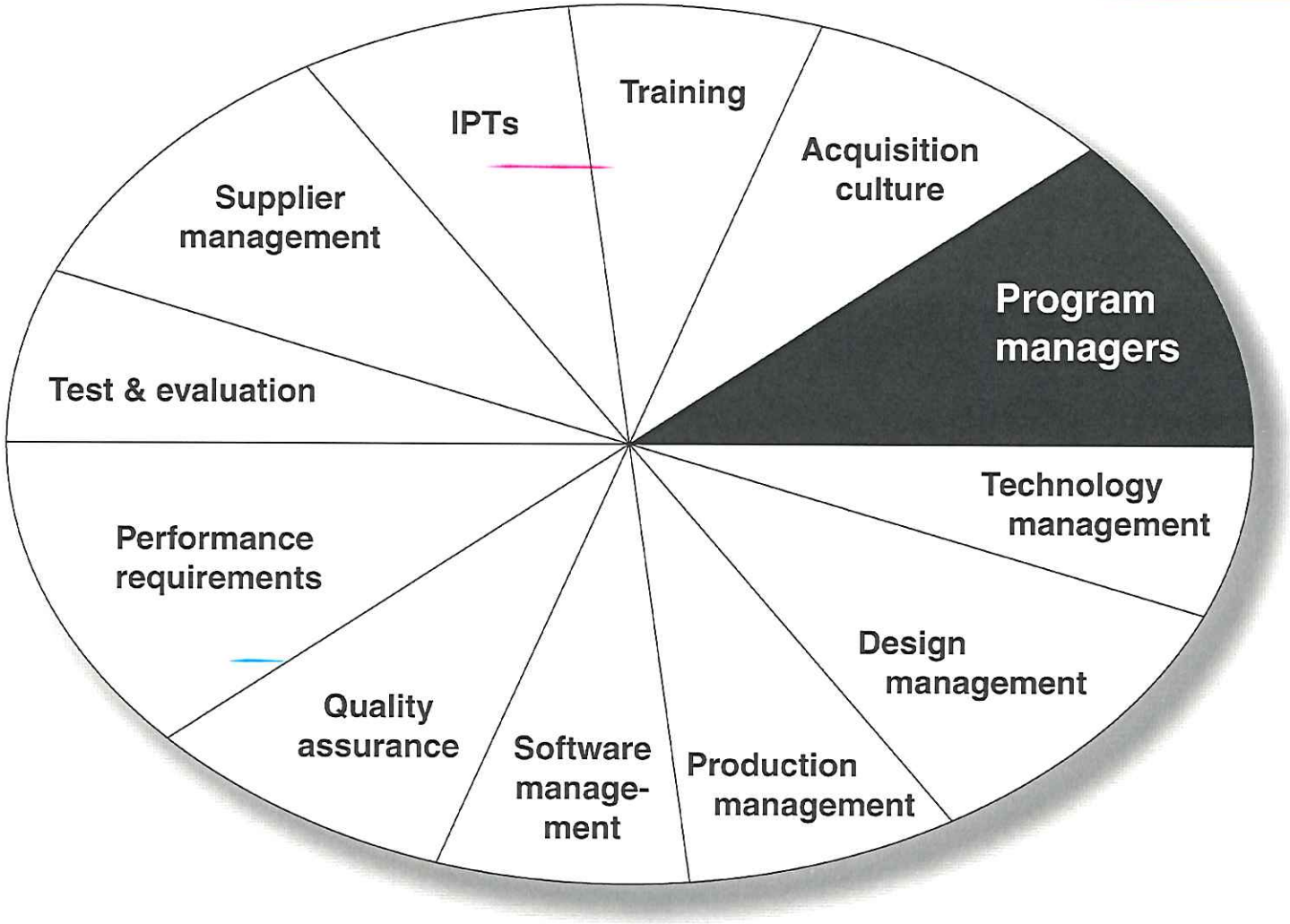
Presentation on Management of Defense Acquisitions

Before

THE DEFENSE ACQUISITION PERFORMANCE ASSESSMENT PROJECT
1560 Wilson Blvd (Rosslyn), Suite 400, Arlington VA
Thursday, 11 August 2005

GAO
Accountability * Integrity * Reliability

Program Management in Context



GAO
Accountability * Integrity * Reliability

Objectives of PM Study

- How do commercial companies support program managers and hold them accountable for effective management?
- How does DOD support and hold program managers accountable for effective program management?
- How does DOD position its program managers for success?

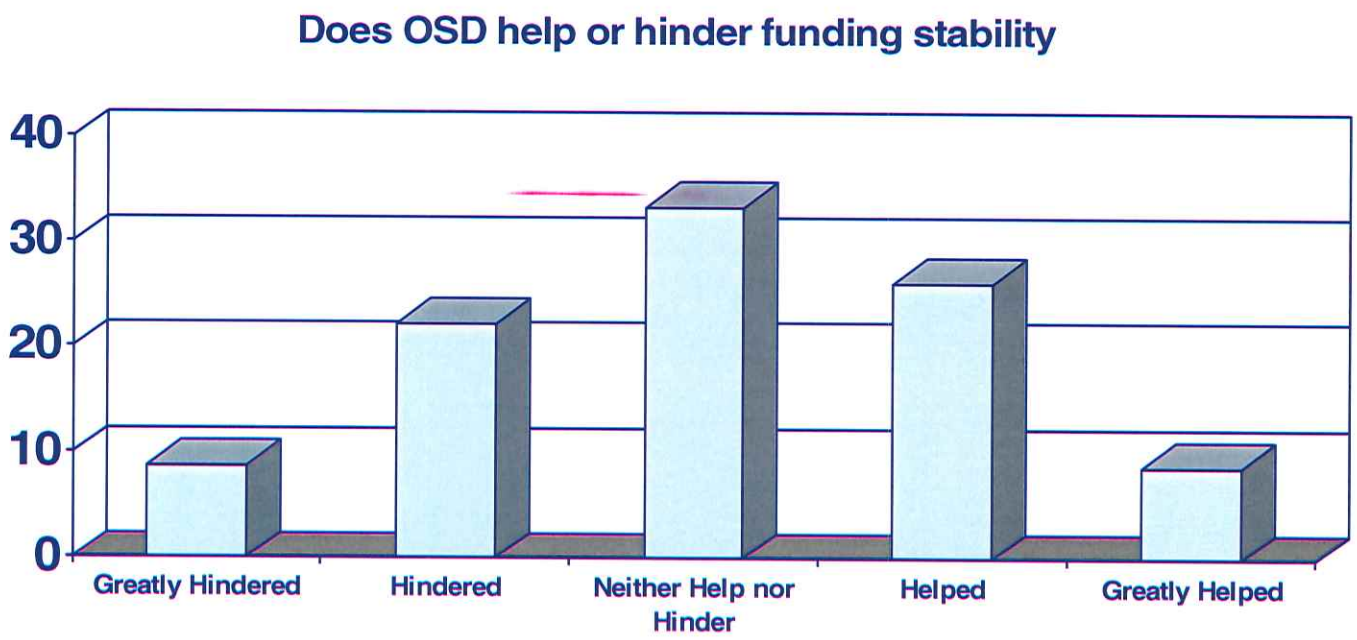
GAO
Accountability * Integrity * Reliability

Scope and Status of PM Study

- Visited five commercial companies.
- focus groups with 28 ACAT I program managers; all services and MDA represented.
- web-based survey of 200 ACAT I and II PMs.
- Interviews with six program executive officers.
- Interviews with acquisition career management officials, Defense Acquisition University faculty.
- Analysis of survey data has just begun
- Draft to DOD for comment in Sept/Oct 2005
- Final report in late November 2005

Funding

- Program managers cited funding instability as the greatest obstacle to success
- Program Managers: More than 30 percent report OSD as hindering or greatly hindering funding stability



GAO
Accountability * Integrity * Reliability

Have The Following Factors Helped or Hindered?

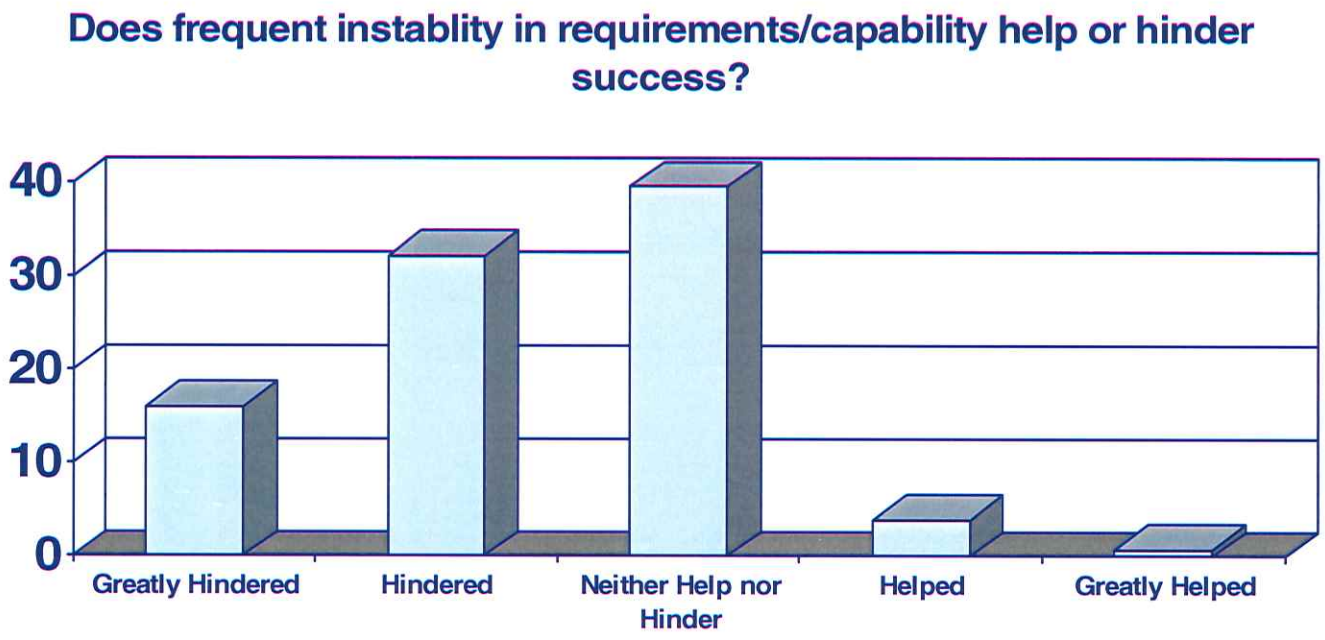
Factor	% Helped	% Hindered
Staff with right skills	78	19
K with right skills	76	16
Oversight (2 questions)	62	57
Priority	57	21
Maturity of Technology	71	7
Req instability	5	48
K staff in program office	91	5

Oversight & Funding - Requirements

Contracted Services.

Requirements

- More than 48 percent PMs report that frequent instability in requirements has hindered success



GAO
Accountability * Integrity * Reliability

Do You Have Formal or Informal Authority Over The Following?

Task	% Formal Authority	% Informal Influence
Requirements (OSD)	10	82
Changes to requirements	13	85
Technology development	42	45
APB	72	22
Testing requirements	48	49
RFP	85	11
Contractor selection	48	33

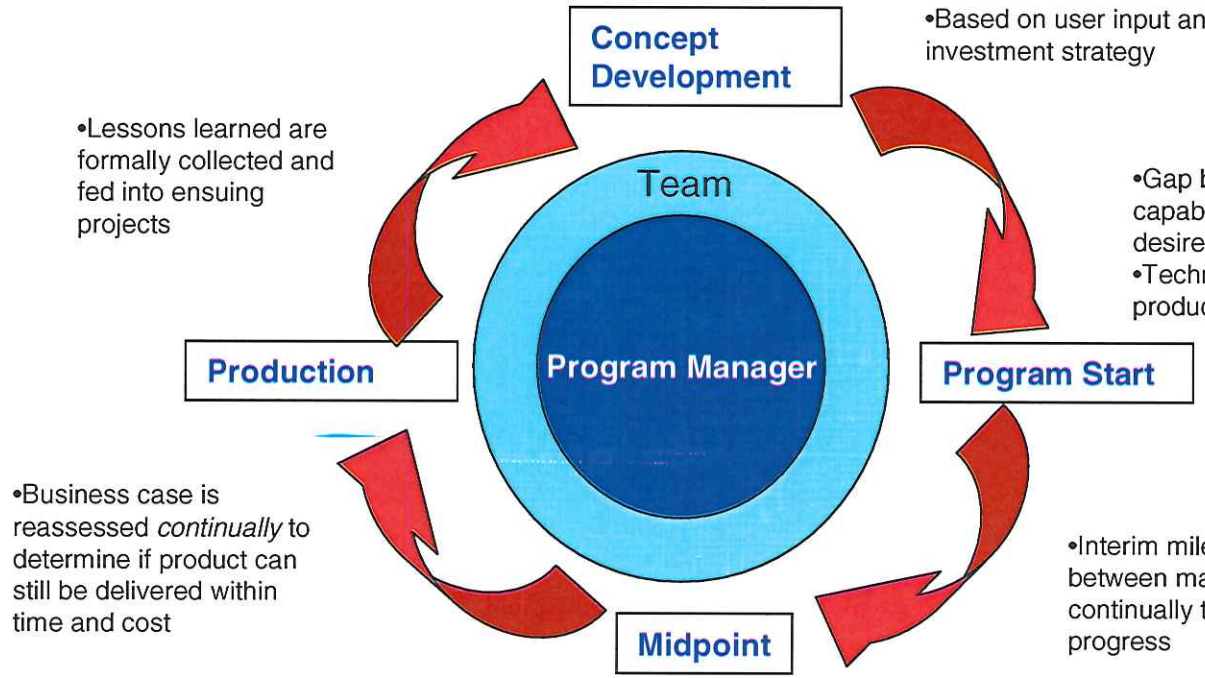
Vested by regulation
Omu other elec

GAO
Accountability * Integrity * Reliability

Results From Commercial Visits

- Corporate investment strategy reasonably supports all product development efforts
- Requirements process employs realistic requirements analysis techniques (SE) to new products prior to initiation
- Company fully funds realistic cost and schedule estimates
- Business case and product development process demands demonstrated knowledge at key investment points, holds PMs accountable, and steadfastly supports them once program is initiated
- Process designed to SUPPORT AND ENABLE program managers

Best Practice—Disciplined Process Is Used to Assure Business Case is Sustained



•Based on user input and corporate investment strategy

•Gap between desired capability/product as well as desired cost/time is closed
•Technologies to be included on product are proven

•Interim milestones are held between major milestones to continually track and assess progress

•Measures such as percentage of design drawings completed used to make decisions to move forward

•Business case is reassessed *continually* to determine if product can still be delivered within time and cost

•Lessons learned are formally collected and fed into ensuing projects

GAO
Accountability * Integrity * Reliability

Observations On Issues Raised by PMs

- PMs are very high caliber, dedicated individuals
- PMs are not routinely put in a position to succeed
- Taking the PM perspective from survey results literally, one solution is to give the PMs more money and less oversight.
- Root causes for why PMs get put in suboptimal situations are deeper, as are the solutions.

GAO
Accountability * Integrity * Reliability

Milestone B Business Case Is Key

- If a program is unexecutable within resources at Milestone B, negative consequences are unavoidable
- Essential elements of a sound business case:
  - A requirement exists that warrants a materiel solution consistent with national military strategy priorities
  - The materiel developer has the requisite mature technologies and technical knowledge necessary to meet the requirement
  - The materiel developer has a knowledge-based product development plan that will attain high levels of design and production maturity at the right times.
  - Reasonable estimates have been developed to execute the product development and production plan
  - Funding is available to fully resource the product development and production plan

Disablers

- Requirements process that overpromises and allows inflexible and unachievable product requirements through Milestone B
- Funding process that forces program managers to forecast risk 2 years in advance, usually resulting in underestimated cost
- Acquisition process that is NOT knowledge-based OR evolutionary and does not demand knowledge in return for significant resource investments
- Development cycle-times that are too long to be delivery-oriented
- PM tenures that reduce accountability
- This is a process in equilibrium, reinforced by culture

GAO
Accountability * Integrity * Reliability

The Implementation Gap

- **DOD 5000 policy says most of the right things about getting a good business case at Milestone B**
  - Calls for technology maturity
  - Calls for evolutionary approach as a check on reqts.
  - Spells out what is needed to demonstrate design and manufacturing knowledge
  - Most individual programs do not abide by policy
  - Many programs fall outside: satellites, IT, MDA, ships
  - Those within are unique: eg., FCS, JSF
  - Preference is still for revolutionary, not evolutionary
  - Knowledge gaps and optimistic estimates at MS B are the norm and are reinforced with approval and funding

- **Renewed emphasis on SE, although sound, and consistent with DOD 5000 and a knowledge-based approach, not likely to get better outcomes in today's environment**

GAO
Accountability * Integrity * Reliability

Potential Solutions

- **Bigger role, responsibility for S&T**
- **Requirements process that applies resource constraints early**
- **New rules for Milestone B business case**
  - Match between requirements and resources using
  - Mature technologies
  - Adequate funding for 1st increment
  - Technology roadmap for future increments
- **New rules for funding investments**
  - Say "no" to unreasonable requirements
  - Leverage joint materiel solutions
- **Ensure knowledge-based, evolutionary product development**
  - Mandate knowledge deliverables at critical junctures
  - Limit SDD to 5 years
  - Ensure funding stability
  - Match PM tenure to SDD timeframe
- **Require services to absorb costs of overruns**

GAO
Accountability * Integrity * Reliability

Back up Slides

GAO
Accountability * Integrity * Reliability

Most Programs Proceed With Low Levels of Knowledge Resulting in Cost/Schedule Increases

In our most recent annual review of DOD programs (n=54), we found:

- Only 15% of programs began SDD with mature technology
  - programs that started with mature technologies averaged 9% cost growth and a 7 month schedule delay
  - programs that did not have mature technologies averaged 41% cost growth and a 13 month schedule delay

- At critical design review, 42% of programs demonstrated design stability (90% drawings releasable)
  - programs with stable designs at CDR averaged 6% cost growth
  - programs without stable designs at CDR averaged 46% cost growth and a 29 month schedule delay

Defense Acquisitions: Assessments of Selected Major Weapon Programs. GAO-05-301. Washington, DC.: March 2005.

Practice Has Not Followed Policy

- While policy has been strengthened, controls are lacking to ensure decisions made throughout product development are informed by demonstrated knowledge. Programs that don't measure up are approved.
- Despite the evolutionary acquisition policy, approved solutions favor grand designs and complex systems of systems with accelerated schedules:

Program	Immature Technologies	Length of SDD
F/A-22	***3***	***10 yrs.***
FCS	53	9 yrs.
DD(X)	10	7 yrs.
TSAT	6	4 yrs.
JSF	8	6 yrs.
JTRS (#1)	20	4 yrs.
Global Hawk	9	7 yrs.
WIN-t	9	3 yrs.

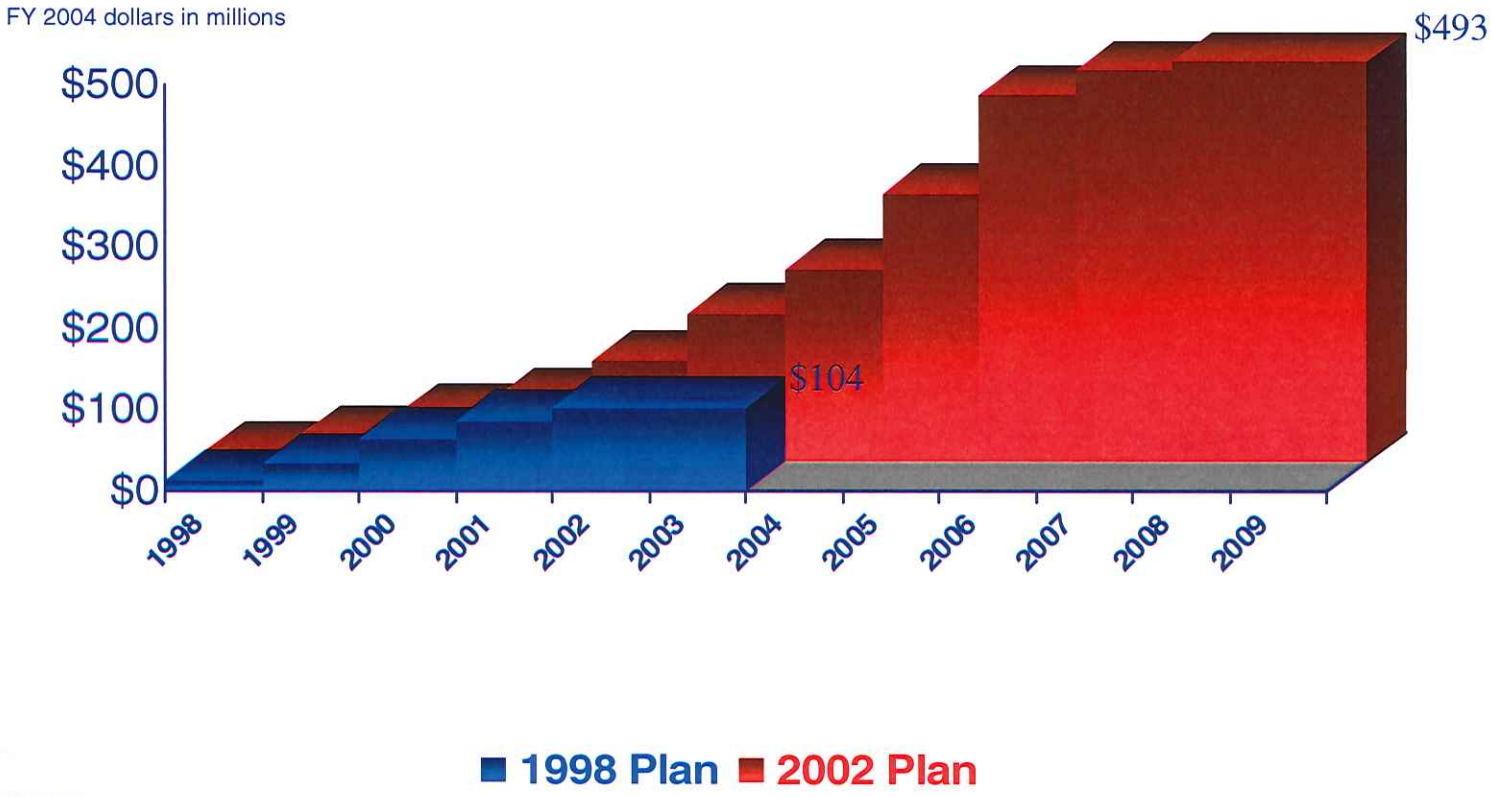
GAO
Accountability * Integrity * Reliability

Challenges

- How will initiatives like strengthened focus on SE, IMRLS, etc., succeed when incentives encourage starting programs too early, making revolutionary technical leaps, underestimating cost and risk, and promising record delivery times?
- Can we define programs in terms of a 5-year SDD cycle?
- Can we employ evolutionary acquisition and trade requirements to match a 5-year cycle?
- Can we put managers in a position to succeed with a shorter cycle and hold them accountable for results?
- Can we provide S&T the funds, organization, and authority to do the necessary pre-acquisition SE and technology development work?
- Can capabilities-based requirements be controlled so that tradeoffs can be made?
- If the solution requires the invention of numerous technologies, is so complex that the government cannot be the integrator, and so expensive that it takes most of a service's budget, is it really a viable solution?

GAO
Accountability * Integrity * Reliability

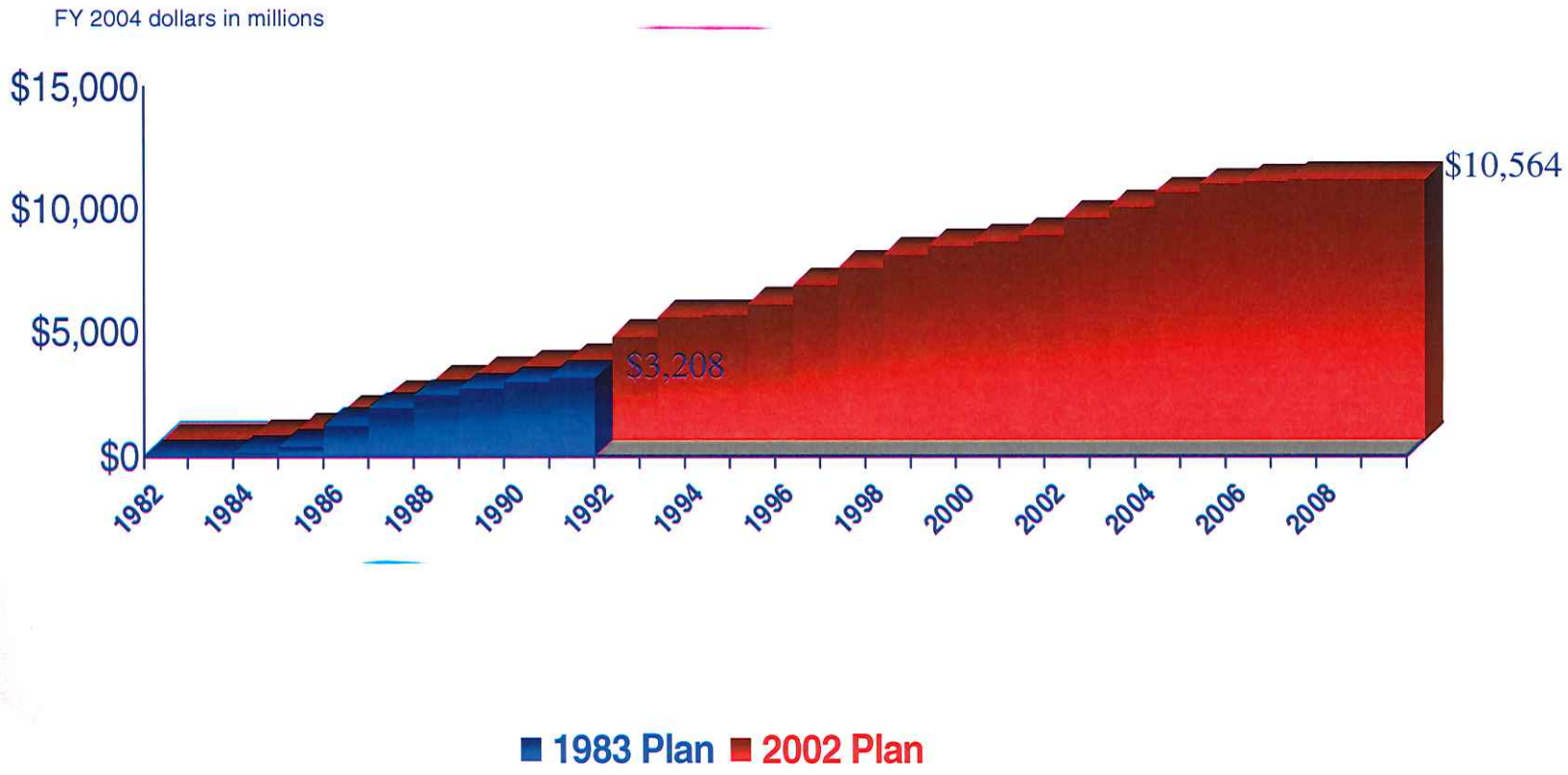
Guided Multiple Launch Rocket System Development Program Funding Plans: Original vs Latest (Cumulative)



Note: June 2003 SAR
Funding stream in 1998 plan includes $17.1 million more than development estimate.

GAO
Accountability * Integrity * Reliability

V-22 (Osprey) Development Program Funding Plans: Original vs Latest (Cumulative)

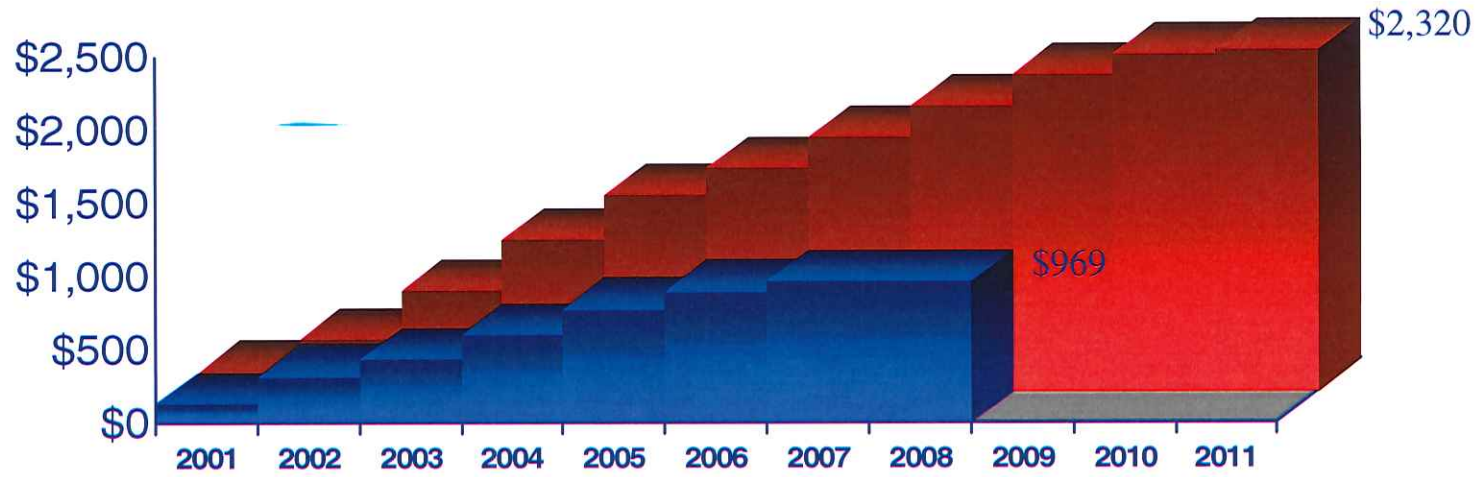


Note: December 2002 SAR

GAO
Accountability * Integrity * Reliability

Global Hawk Development Program Funding Plans: Original vs Latest (Cumulative)

FY 2004 dollars in millions

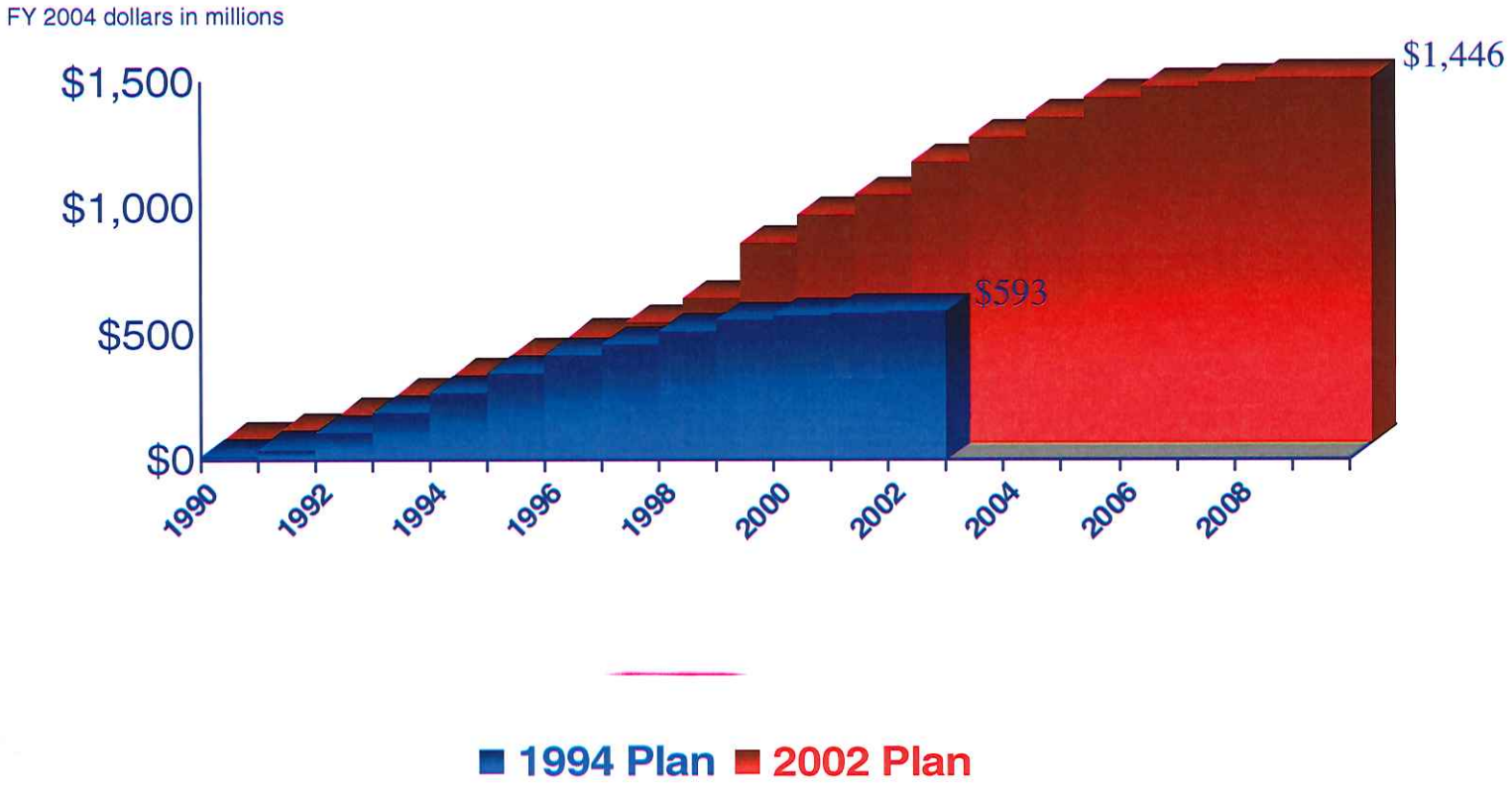


2001 Plan 2002 Plan

Note:t December 2002 SAR
Funding stream for 2001 plan includes $85.6 million more than development estimate because data is from 6 months after program start.

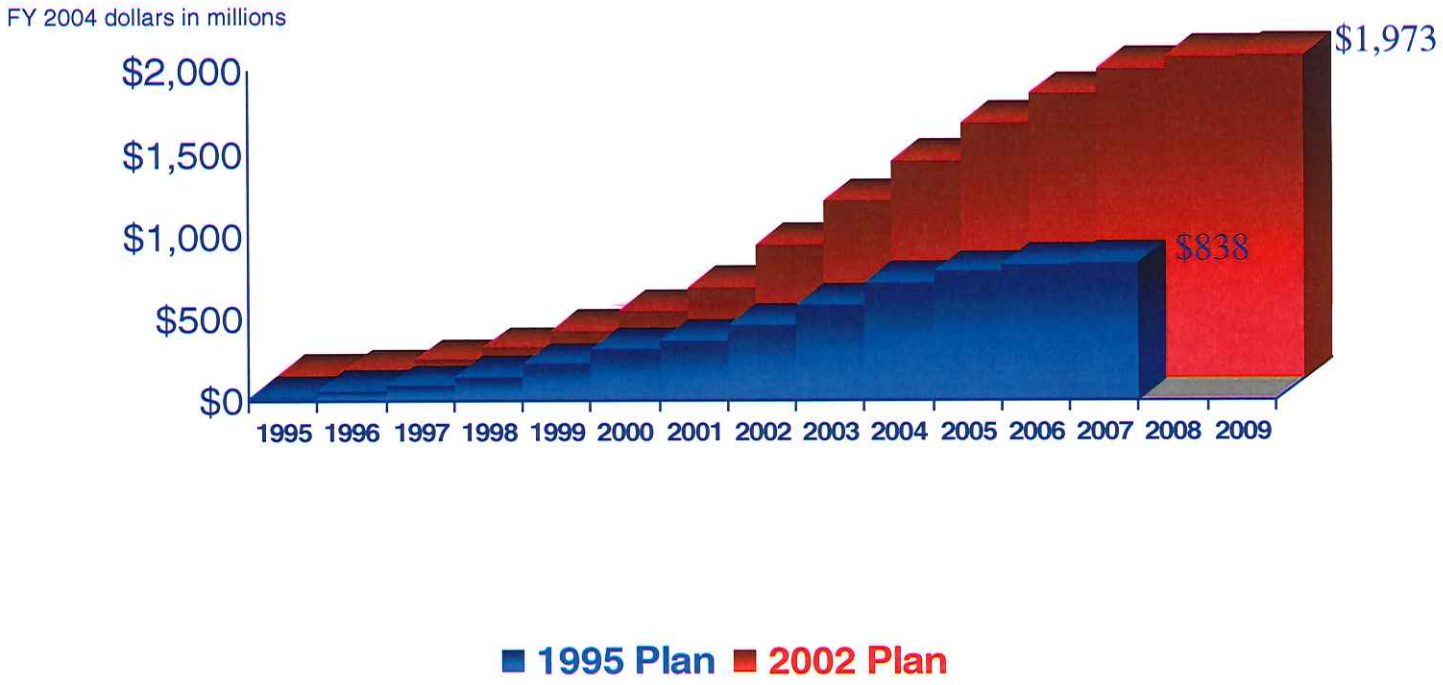
GAO
Accountability * Integrity * Reliability

MH-60R (Multi-Mission Helicopter) Development Program Funding Plans: Original vs Latest (Cumulative)



Note: December 2002 SAR

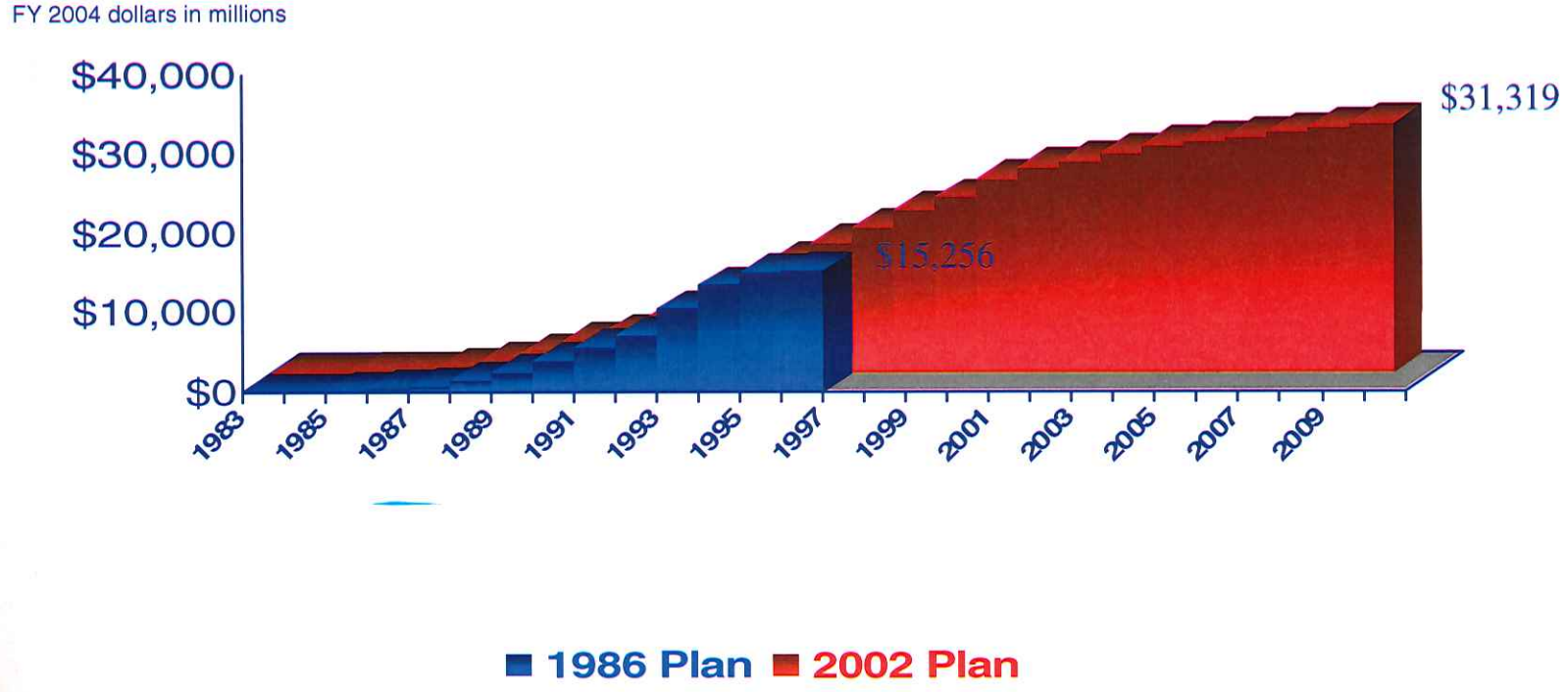
EFV Development Program Funding Plans: Original vs Latest (Cumulative)



Note: Latest December 2002 SAR

GAO
Accountability * Integrity * Reliability

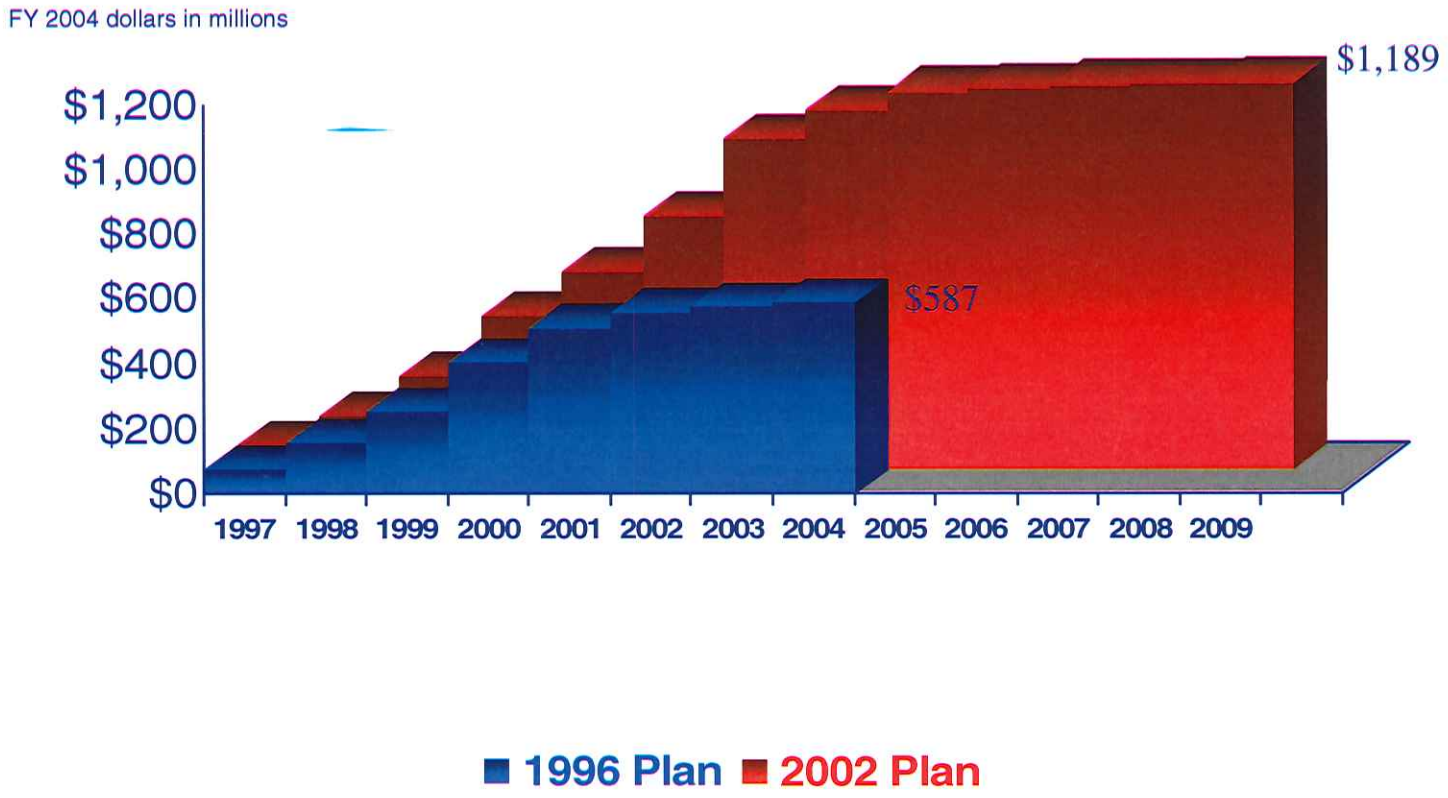
F/A-22 Development Program Funding Plans: Original vs Latest (Cumulative)



Note: December 2002 SAR

GAO
Accountability * Integrity * Reliability

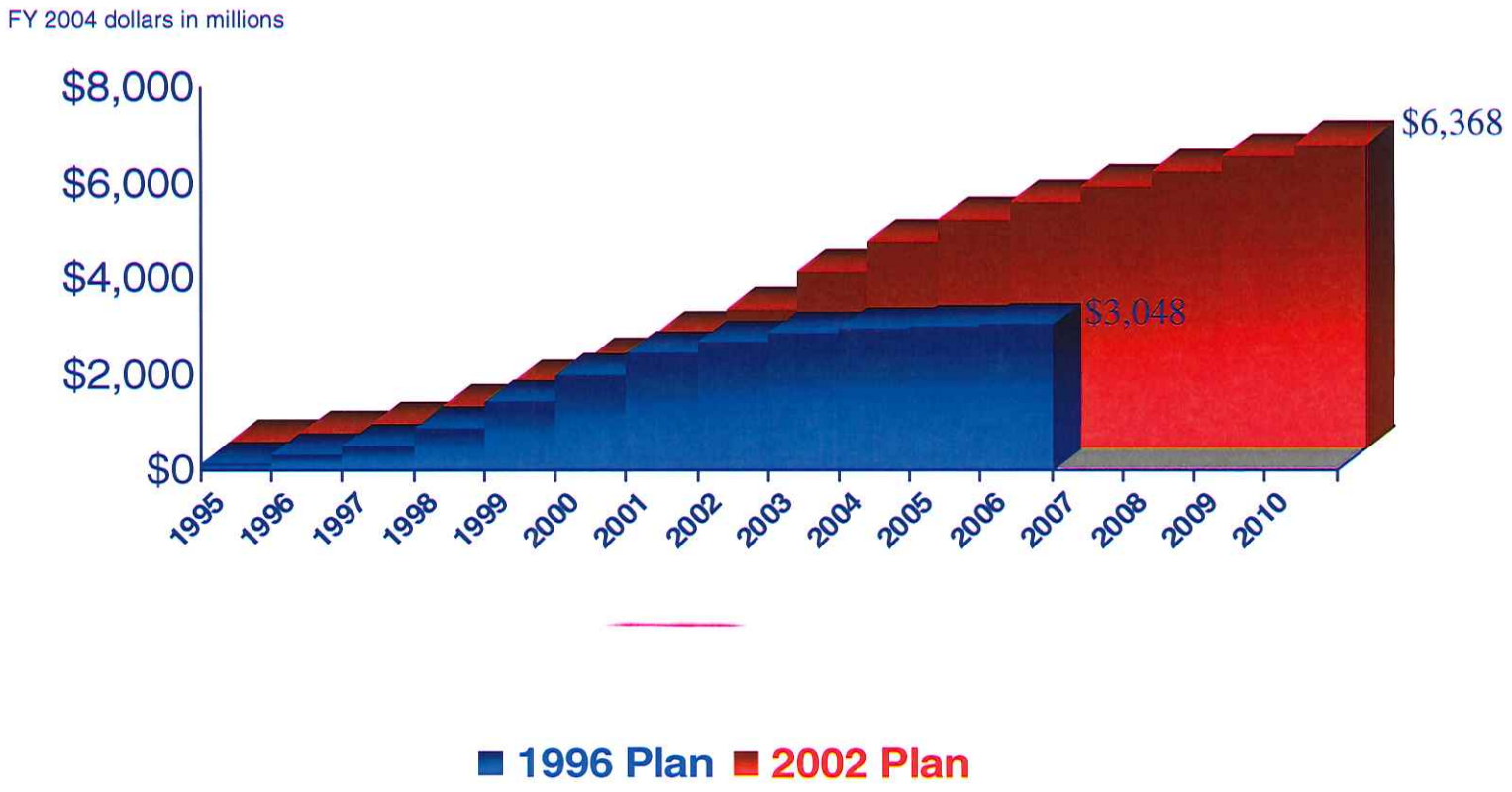
USMC H-1 Upgrades Development Program Funding Plans: Original vs Latest (Cumulative)



Note: December 2002 SAR
Funding stream for 1996 plan includes
$5.3 million than total development estimate.

GAO
Accountability * Integrity * Reliability

SBIRS High Development Program Funding Plans: Original vs Latest (Cumulative)

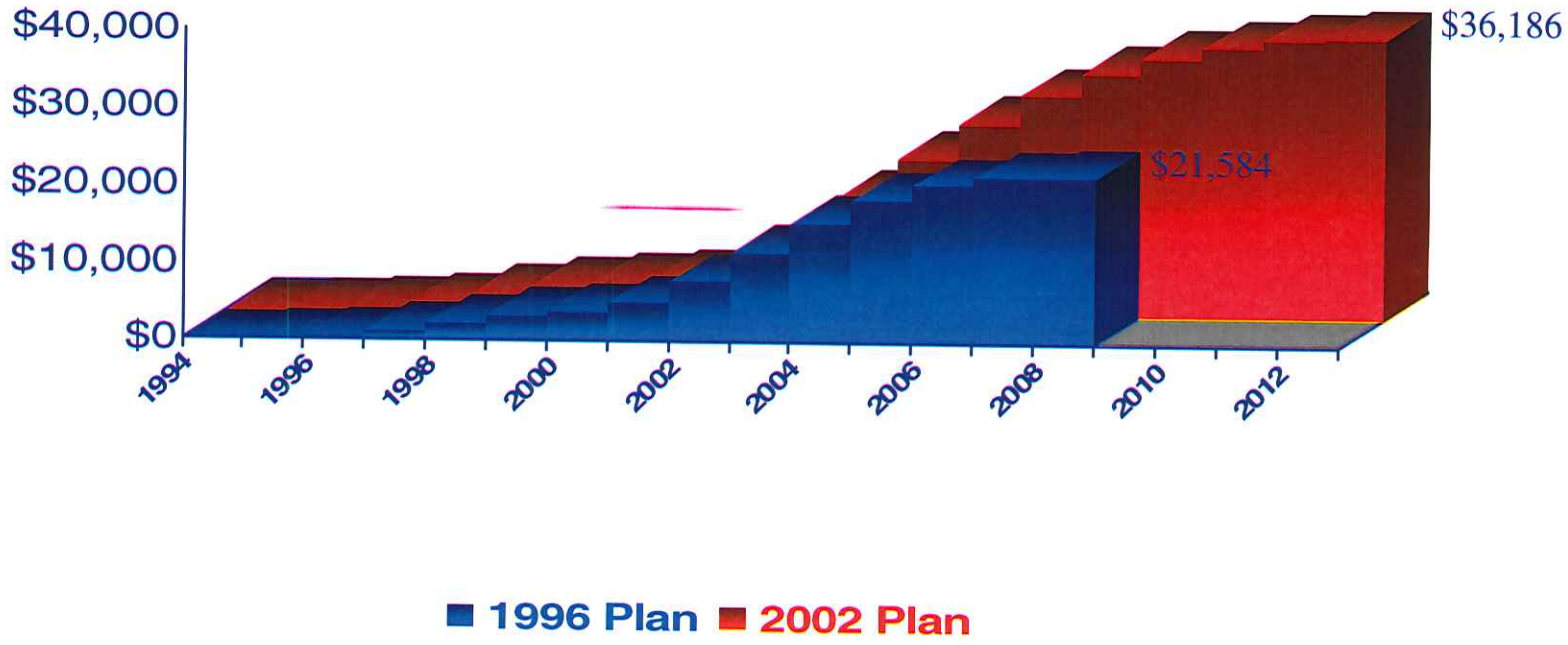


Note: December 2002 SAR
Funding stream for 1996 plan does not include
$340.2 million that was included in development estimate.

GAO
Accountability * Integrity * Reliability

JSF Development Program Funding Plans: Original vs Latest (Cumulative)

FY 2004 dollars in millions



Note: December 2002 SAR.
Plans include assumptions about foreign countries' funding.

Bio for Paul Francis

Current Position:	Director, Acquisition and Sourcing Management, U.S. General Accounting Office
Education:	Bachelor's degree in Accounting (University of Scranton) Masters Degree in Public Administration (George Washington University) Senior Executive Fellow, Kennedy School of Government
Work Experience:	Mr. Francis has been with GAO for 30 years, with most of his work experience being in the area of major weapon acquisitions. He has conducted or been involved with reviews of many individual weapon programs, including Army helicopters, Future Combat Systems, unmanned aerial vehicles, and shipbuilding programs. He has also conducted or been involved with cross-cutting reviews, several of which involved benchmarking with leading commercial firms and successful Department of Defense programs. These included acquisition culture, transition to production, technology maturation, requirements setting, supplier relationships, integrated product teams, requirements setting, training, test and evaluation, earned value management, milestone authorization, and affordability. He has also done work in the areas of wartime medical requirements and detection of landmines and unexploded ordnance. Mr. Francis spent one year with the House Science and Technology Committee early in his career.